Orange County
Asset Management Services
Jeffrey E. Thompson, Director

June 9, 2015

To: Bonnie Hammersley, Orange County Manager

From: Jeff Thompson, Director, Asset Management Services

Subject: Physical Assessment, Former Chapel Hill Town Hall, 100 West Rosemary Street

Summary:
This purpose of this study is to review the planning, architectural, and structural issues related to the Old Town Hall in Chapel Hill. A web site at www.OldTownHallNC.Wordpress.com has been created as an extension of this study.

On June 2, 2015, Dave Uhland, P.E of LHC Structural Engineers and Statler Gilfillen, an Architect working directly for Orange County, visited the site. Structural findings have been incorporated into this report with his letter attached to this study. Mr. Gilfillen managed the assessment and provided this summary information.

The structure is located at the corner of Rosemary Street and Columbia St. at 100 Rosemary Street in Chapel Hill. The Old Town Hall in Chapel Hill was built in 1938, altered in 1963, and renovated into a Men's Shelter in 1989 . A major asbestos remediation occurred prior to this renovation. The building is on .41 acres and has 9,195.27 gross square feet on three levels. The building is on the National Register of Historic Places; however the facility has no historic landmark protection. A recommended process for historic review has been provided.

The building is structurally sound and is in reasonably good condition. Additional structural support would be needed on the first and second floors to meet any new use and anticipated occupancy loads for future use. The building envelope is largely intact and watertight; however building eaves in certain areas are damaged and in immediate need of maintenance. The mechanical system was originally installed in 1989 and will need to be replaced in the next 2-4 years. There are other non-critical maintenance issues that need immediate action detailed in this report.

The building had accessibility improvements installed standards in 1989 with an elevator and a ramp to the basement. Consideration should be given to making the front entry accessible. Staff is currently evaluating the accessibility of the facility according to the current ADA accessibility code standards.

With regard to the current energy code, the building had major energy improvements in 1989 with upgrades including insulation and high efficiency, insulated exterior windows.

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General Information

Floor Area

1938 building	8,787.07	gross square feet
1963 stair tower at rear	415.20	gross square feet

Total gross square footage is 9,195.27 gross square feet. The following are the total gross square feet on each level:

Basement:	2,699.01
First Floor:	3,248.13
Second Floor	3,248.13

Notes

1. The basement has 549.12 less square feet, because the 1989 renovations leveled the first floor by approximately 4 feet leaving the 1938 equipment room (fire station) floor with a head height of approximately 4 feet in an inaccessible space.
2. The Town of Chapel Hill lists the building as having 9,255 square feet which is 59.73 more than these calculations.

Land

PIN(s): 9788371539 and 9783370577
Area: 150’ x 114.5’ = 17,175 square feet, or .39 acres

Assessed Value

Based on the Chapel Hill estimated value of $1,700,000, the cost per gross square foot would be $184.87 ($1,700,000 / 9,195.27 gross square feet)

Floor Heights

According to the 1989 Architect's drawings:

Basement		
Front portion:	from top of slab to finished first floor is	12'-0"
Back portion:	from top of slab to finished first floor is	9'-0"
First Floor:	from finished first floor to finished second floor is	12'-0"
Second Floor:	from finished second floor to finished ceiling is	12'-0"

Additional Structural Support Need

To meet any new use and anticipated occupancy loads, approximately 30 percent of the first floor and 90 percent of the second floor will need to be upgraded.

The rear and the southeast portions of the first floor that were part of the 1989 renovations can safely support 100 PSF live load. This confirms the design live load indicated on sheet S-2 of the 1989 structural drawings. The original framing in the southwest portion of the first floor can safely only support a live load of 50 PSF.

The second floor framing, which consists of original 1938 framing, except for the area adjacent to the elevator that was added in 1989, can safely support a live load of 45 PSF at the area to the rear of the building and a live load of 50 PSF at the southwest and southeast areas.

Based on the current North Carolina State Building Code, the areas with live load capacity of 45 PSF would be limited to uses such hotel, multifamily private rooms (Homeless Center) and school classrooms. The areas with at least 50 PSF live load capacities would be limited to the uses such as offices and the uses stated above.

The current live load capacities are based on a total dead load of 35 PSF, which includes 25 PSF for the concrete slab and 10 PSF for ceilings, mechanical, electrical, plumbing, and partitions. Needing to keep the weight of the partitions within the 10 PSF dead load, will greatly limit flexibility in planning for use of the current space and in any potential modifications. Anticipated uses of the building would likely require a higher live load.

To allowing for accommodating maximum use and flexibility of the spaces, the engineer undertook to explore options to increase the design live load capacity of the floors. The engineer's opinion is that the most cost effective and feasible way to increase the capacity of the floors is to remove those portions of the existing floor framing designed for 45 to 50PSF and replace them with new structure designed for 100PSF. This would be similar to what was done on the first floor as part of the 1989 renovations.

New framing will consist of open web steel joists, spaced at 2 feet on center, with 2 inch concrete slab on 26 gage metal form deck, reinforced with 6x6 W2.1xW2.1 Welded Wire Fabric. At the southwest corner of the first floor, the new framing could incorporate an anticipated handicap accessible ramp which is discussed below. This would require at least one new column and foundation pad in the basement to support the beam just to the west of the front entrance.

The attached structural engineering analysis illustrates the new framing and the approximate location of the new column. The defined areas for the required remedy at approximately 600 square feet on the first floor and 2200 square feet on the second floor.

For planning purposes, the engineer estimated that the cost of the construction to remove and replace structural floor framing system to be between $110 and $150 per square foot. The amounts are rough estimates do not include any costs associated with de-construction, removal and replacement of architectural, mechanical, electrical, or plumbing components. Cost for that work is assumed to be part of the overall up fit of the building.

Accessibility

In 1989, accessibility to the facility was improved with a Dover elevator and a ramp to the basement. The accessible entry into the building is through the basement. Although this may meet the technical requirements of the building code, an analysis of a front door accessible was undertaken.

Although there are still some issues to be detailed, it appears that a ramp from the Rosemary Street and Columbia Street can be made to the level of the front door. The front door is 4'- 0". With modification to the current landing and steps access into the building can be made. The platform inside the door is 4'x8' and is 1'-6" below the first floor level. An 18' interior ramp, framed as part of the new floor on the south west corner, can be created to meet the 18 rise necessary.

The dimensions of the existing Dover elevator would indicate that it is adequate to meet the accessible standards. It is recommended that the existing elevator be reviewed by experts for maintenance or replacement.

Energy Efficiency

The 1938 building is of 1'-5" brick construction. Major energy upgrades were done during the 1989 renovations which included high efficiency insulated windows and insulation, particularly in the attic. Even though the attic was insulated in 1989, the cost of adding even more insulation in the attic may be a more cost effective solution than furring out and adding additional insulation on the interior walls. Additionally, any insulation provided against the interior of the brick walls must be carefully evaluated for moisture and vapor barrier issues.

Site, Parking Considerations

Under the current use guidelines, no additional parking is required. Currently there are 12 to 14 parking spaces on site. Initial review indicates that the existing drive and parking area can be reconfigured to allow for 7 to 10 additional angled parking spaces. To confirm this, a dimensioned survey is necessary.

Historic Preservation Topics

In 1990 the "Chapel Hill Town Hall" was placed on the National Register of Historic Places. There are only 14 structures or districts in Chapel Hill and the Chapel Hill Vicinity listed on the National Register. The Chapel Hill Town Council is considering granting a preservation easement to provide more protection for the building.

Although the exterior of the building retains its historic significance and should be preserved, the 1963 Alterations and 1989 Renovations stripped away the original detailing, except the entry stair to the second level. During any potential de-construction process, additional detailing may be found and this historic detailing may be considered for incorporation into the new interior design. Essentially the interior is a “clean slate” for the designers to meet any future need.

"…….North Carolina law (G.S. 121-12a) provides for consideration of National Register properties in undertakings funded or licensed by the state. Where a state undertaking is in conflict with the preservation of a National Register property, the North Carolina Historical Commission is given the opportunity to review the case and make recommendations to the state agency responsible for the undertaking. The commission's recommendations to the state agency are advisory." (http://www.hpo.ncdcr.gov/whatis.htm) This requirement applies specifically to the State of North Carolina and not to county and local governments.

Without a resolution in place protecting the Old Town Hall, it is recommended that a similar review process utilizing the Orange County and Chapel officials and boards so they are "given the opportunity to review the case and make recommendations to the [appropriate] agency responsible for the undertaking."

The Secretary of the Interior's Standards for Rehabilitation should be followed in all exterior work on the Old Town Hall. Specific reference to their preservation bulletins is made under the maintenance section and on the web site.

The historic document file from Preservation Chapel Hill was copied and has been included on the web site. The contact is Cassandra Bennett (919.942.7818; Cassandra@preservationChapelHill.org)

Eric Field is the Town of Chapel Hill Community Sustainability Planner II who is responsible for coordination of historic issues (919-969-5077; efeld@townofchapelhill.org).

Peter Sandbeck is the Orange County Cultural Resources Supervisor and secretary to the Orange County Historic Board (919-245-2517; psandbeck@orangecountync.gov).

Needed Maintenance

There are specific maintenance issues that need further study or attention:

Moisture Damage. Moisture damage is evident at the roof line. This damage appears more evident at the locations where the gutters and downspouts meet. Determination of the specific cause of this moisture should be undertaken immediately.

Once moisture damage is noted, the damage typically increases and an increasing rate. Failure to correct this problem in the very near future could leave the entire structure vulnerable to serious damage and structural damage. Although the slate roof appears to be in excellent condition, failure to repair the moisture problem could lead to a very expensive need to repair and/or replace sections of the slate roof.

First the exact cause of the moisture needs to be determined and repaired. Once that is done, the brick mortar and wood trim should be repaired.

The 1938 design called for copper lined boxed gutters. Traditionally, even the best designed and constructed boxed gutters, can cause long term maintenance and repair issues. Once they begin to fail they continue to fails at an increasing rate. At several locations, the mortar has deteriorated due to exposure to moisture. The wood fascia and detailing at the eaves shows some substantial ongoing wood rot and damage with holes in the eaves and pieces of the wood trim that have fallen off. On the south east, second floor room, the interior plaster wall shows substantial damage from moisture.

Reference is made to the Technical Preservation Briefs, National Park Service, U.S. Department of Interior Brief no. 2: Repointing Mortar Joints in Historic Masonry Buildings by Robert C. Mack, FAIA, and John P. Speweik (http://www.nps.gov/tps/how-to-preserve/briefs/2-repoint-mortar-joints.htm); Brief no. 47: Maintaining the Exterior of Small and Medium Size Historic Buildings by Sharon C. Park, FAIA (http://www.nps.gov/tps/how-to-preserve/briefs/47-maintaining-exteriors.htm).

Cupola. The drawings would indicate that the cupola has been replaced three times since 1938. The architectural drawings call for replacing the cupola in 1963 and again in 1989. The documents show that the cupola was replaced in 1990.

Currently, sections of the base flashing are sloped so that the rain water is trapped next to the cupola instead of flushing the water away. Serious deterioration of the wood fascia and moisture damage was noted. Our review would indicate that this should be repaired in the near future.

Steel Lintels. Although generally the steel window lintels are in good condition, some rusting was noted. All lintels should be carefully inspected, cleaned and finished. All lintels should be protected before repointing any masonry.

Basement Moisture. In the rear of the basement in the mechanical room, moisture and minor damage was noted at the brick along the floor. It was also noted that the AC condensate line going to the floor drain has a consistent flow of water from the pipe to the drain. Along the basement wall at the back of the original equipment room, the paint on the brick wall has bubbled and separated from the masonry. No determination could be made as to how old this damage to the paint is. The bottom of the elevator shaft is the lowest elevation of the building. Visual inspection indicated that there has been some water seepage and damage.

Plantings. From the roof, it was noted that the trees on the Rosemary elevation are overgrown and protrude onto the roof. Proper plant trimming and maintenance needs to be done.

LHC STRUCTURAL ENGINEERS

June 9, 2015

Orange County Asset Management Services
131 West Margaret Lane
Hillsborough, NC 27278

Attn: Mr. Jeff Thompson

RE: CHAPEL HILL OLD TOWN HALL - STRUCTURAL ASSESSMENT

Dear Mr. Thompson:

On June 2, 2015, LHC Structural Engineers accompanied Statler Gilfillen, Architect, of your office, to conduct a condition survey of the referenced building located at 100 West Rosemary Street in Chapel Hill, North Carolina. The purpose of the survey from our standpoint was to assess the overall structural condition of the building to aid Orange County in their decision of whether or not to purchase the building. After our site visit, we also reviewed construction documents that were provided to us for the original design and two later renovations of the building (described in more detail below), in order to determine the safe live load capacity of the first and second floors.

Executive summary:

It is our opinion that the overall structural condition of the original1938 building including the renovations made in 1963 and 1989, is very good. We observed very few structural concerns. There was no visible evidence of any foundation settlement, such as cracking of either the load bearing masonry walls or interior partition walls.

Based on our review of the available drawings, the southwest quadrant of the first floor and a large portion of the second floor have live load capacities of 50 pounds per square feet or less, limiting the potential use of the building. (See more detailed discussion later in this report.)

To allow for greater flexibility in the use of the space, it may be desired to increase the capacity of the floors to a design live load of 100 PSF. One method to accomplish this includes removal and replacement of the affected sections of the floor. We estimate the cost to replace one section of the first floor to be between $110 and $150 per square for the areas replaced. These amounts are rough estimates for planning purposes only and do not include any costs associated with removal and replacement of architectural, mechanical, electrical, or plumbing components.

Robert E. Lasater, Jr., P.E. Robert J. Stevenson, P.E.
1331 Sunday Drive, Suite 121, Raleigh, NC 27607 919.832.5587 office 919.833.3929 fax lhcengineers.com

Background and Description

The original building, built in 1938, is a two story building with a basement and consists of exterior multi-wythe load-bearing brick walls. The typical floor framing consists of a two inch thick concrete slab on lathe supported by open web steel joists at 16 inches on center that frame either to masonry walls or steel beams and columns. The roof framing consists of slate shingles on gypsum planks on sloping open web steel joists, supported by steel beams and columns. There is a wood framed cupola near the south end of the roof that is anchored to the steel framing with ¾ inch diameter rods.

The original building had a split-level basement and first floor, with the rear of areas approximately four feet lower than the front areas. The second floor was at a consistent elevation.

The following is a brief list of some of the significant structural work done in the 1963 renovations:

1. A mezzanine was added between the lower first floor and the second floor.
2. A new stair was also added to the rear of the building.
3. The original cupola was replaced with a similar cupola.

The following is a brief list of some of the significant structural work done in the 1989 renovations:

1. The mezzanine that was added in 1963 was removed.
2. New first floor framing was added at the rear of the building to eliminate the split-level floor and create a first floor at a consistent elevation.
3. A portion of the first floor framing at the southeast corner was removed and replaced with new floor slab on metal form deck, steel joists, steel beams, and two columns with footings below the basement slab. (According to the structural drawings, the design live load for in this area is 100 PSF.)

Observations:

At some locations the mortar has deteriorated due to exposure to moisture. See photos below.

Area below catch basin on west side.

Deteriorated mortar below area in left photo.

We recommend that deteriorated mortar joints be repointed by an experience mason. The cause of the water leaking must be identified and corrected to prevent further damage. Other locations may also require repointing, such as at a steel lintel where the mortar had become loose due to minor rusting of the steel. At that location, the lintel should be cleaned and protected before repointing.

We also observed damage to the trim of the cupola caused by exposure to water. From within the cupola, the wood framing shows evidence of exposure to moisture, but we observed no significant structural damage. Once the moisture problems have been corrected, the trim can be replaced.

Water damage to trim of cupola.

Evidence of moisture at interior of cupola. Structural damage not yet significant.

Below the lower portion of the cupola, some of the anchoring threaded rods were visibly loose. We recommend that these be tightened:

View of loose threaded rod inside the cupola.

In summary, it is our opinion that the overall structural condition of the building is very good. Other than the items noted above associated with moisture, we observed no visible evidence of distress to the structure.

Load capacity review

Since the capacity of the floor may affect the potential occupancy or use of the building, we also reviewed the construction documents for the building to determine the uniform live loads that the floor framing can adequately support. From our review, we conclude the following:

1. The rear and the southeast portions of the first floor that were built as part of the 1989 renovations can safely support 100 PSF live load. This confirms the design live load indicated on sheet S-2 of the 1989 structural drawings. The original framing in the southwest portion of the first floor can safely support a live load of 50 PSF.
2. The second floor framing, which consists of original framing except for the area adjacent to the elevator that was added in 1989, can safely support a live load of 45 PSF at the area to the rear of the building and a live load of 50 PSF at the southwest and southeast areas.

The attached reduced plans (Figures 1 and 2) from the 1989 structural drawings provide the above information graphically.

Based on the current North Carolina State Building Code, the area with live load capacity of 45 PSF would be limited to uses such hotel and multifamily private rooms and school classrooms. The areas with at least 50 PSF live load capacity would be limited to the uses such as offices and the uses stated above.

We have based the live load capacities on a total dead load of 35 PSF, which includes 25 PSF for the concrete slab and 10 PSF for ceilings, mechanical, electrical, plumbing, and partitions. To keep the weight of the partitions within the 10 PSF dead load will greatly limit flexibility in planning the current space and in any potential modifications to the space. Due to this fact and that the anticipated use of the building would likely require a higher live load, at your request, we have explored options that would increase the design live load capacity of the floors.

It is our opinion that the most cost effective and feasible way to increase the capacity of the floors is to remove portions of the existing floor framing and replace it with new structure that has the required capacity. This would be similar to what was done on the first floor as part of the 1989 renovations. We recommend that the design live load for the new framing be 100 PSF, allowing for maximum flexibility in planning the space.

Recommendations for new framing and cost estimate:

The new framing will consist of open web steel joists spaced at 2 feet on center, with 2 inch concrete slab on 26 gage metal form deck, reinforced with 6x6 W2.1xW2.1 Welded Wire Fabric. It is our understanding from the architect that, to provide accessibility at the front entrance, a ramp may be required at the southwest corner of the first floor. The new framing could incorporate this ramp by adding at least one new column and footing to support the beam just to the west of the front entrance so that the end can be removed, allowing the framing to be lowered for the ramp.

The attached plans (Figures 3 and 4) show the new framing and the approximate location of the new column.

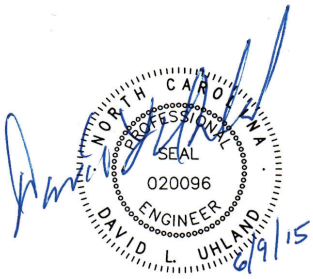
For planning purposes, we estimate the construction cost to remove the existing framing and replace it to be between $110 and $150 per square for the areas replaced. The amounts are

rough estimates for planning purposes only and do not include any costs associated with removal and replacement of architectural, mechanical, electrical, or plumbing components. Cost for that work is assumed to be part of the overall upfit of the building.

Thank you for this opportunity to assist you with this project. Please contact us if you have any questions or concerns regarding our evaluation.

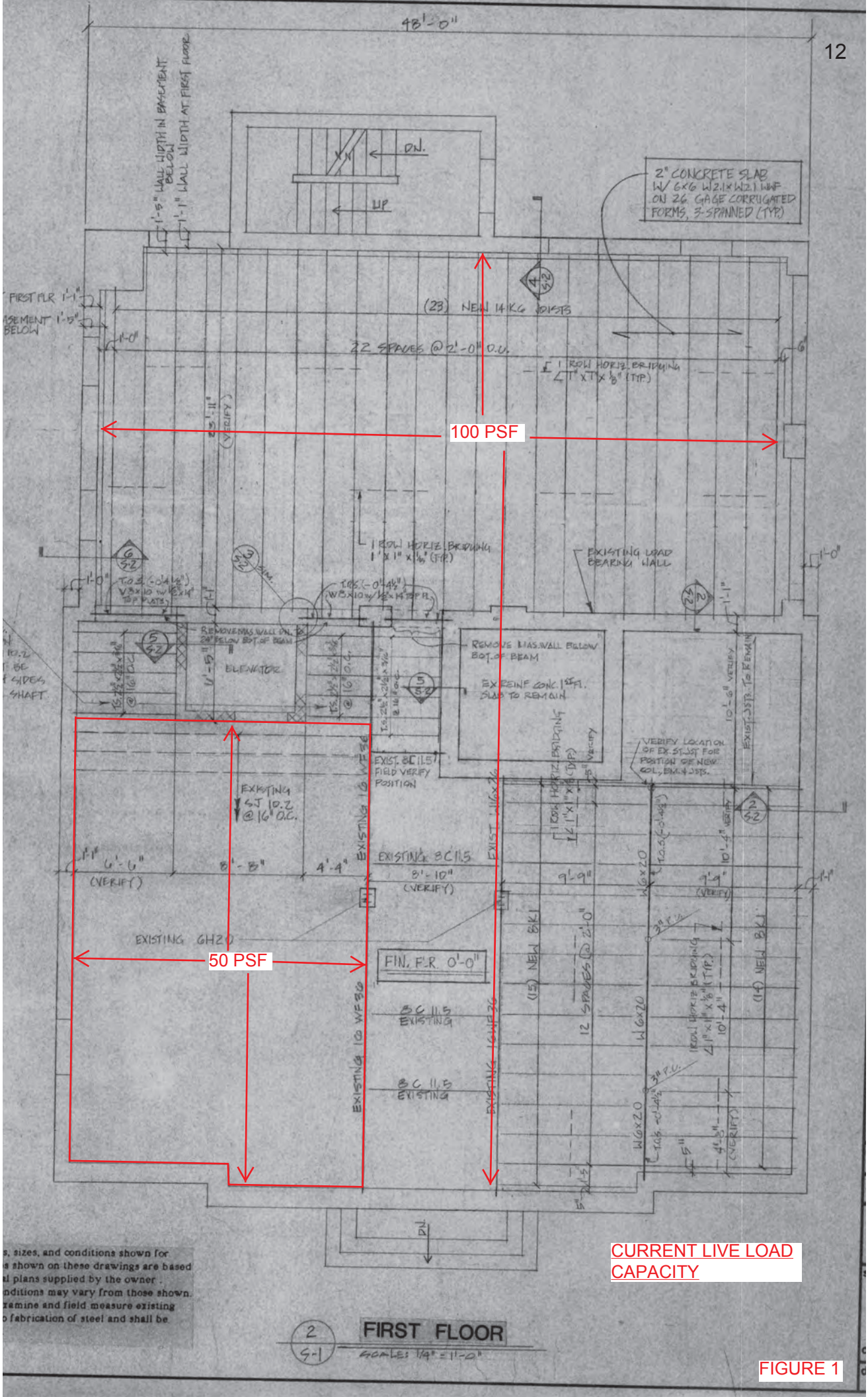
Sincerely,

LHC Structural Engineers, P.C.



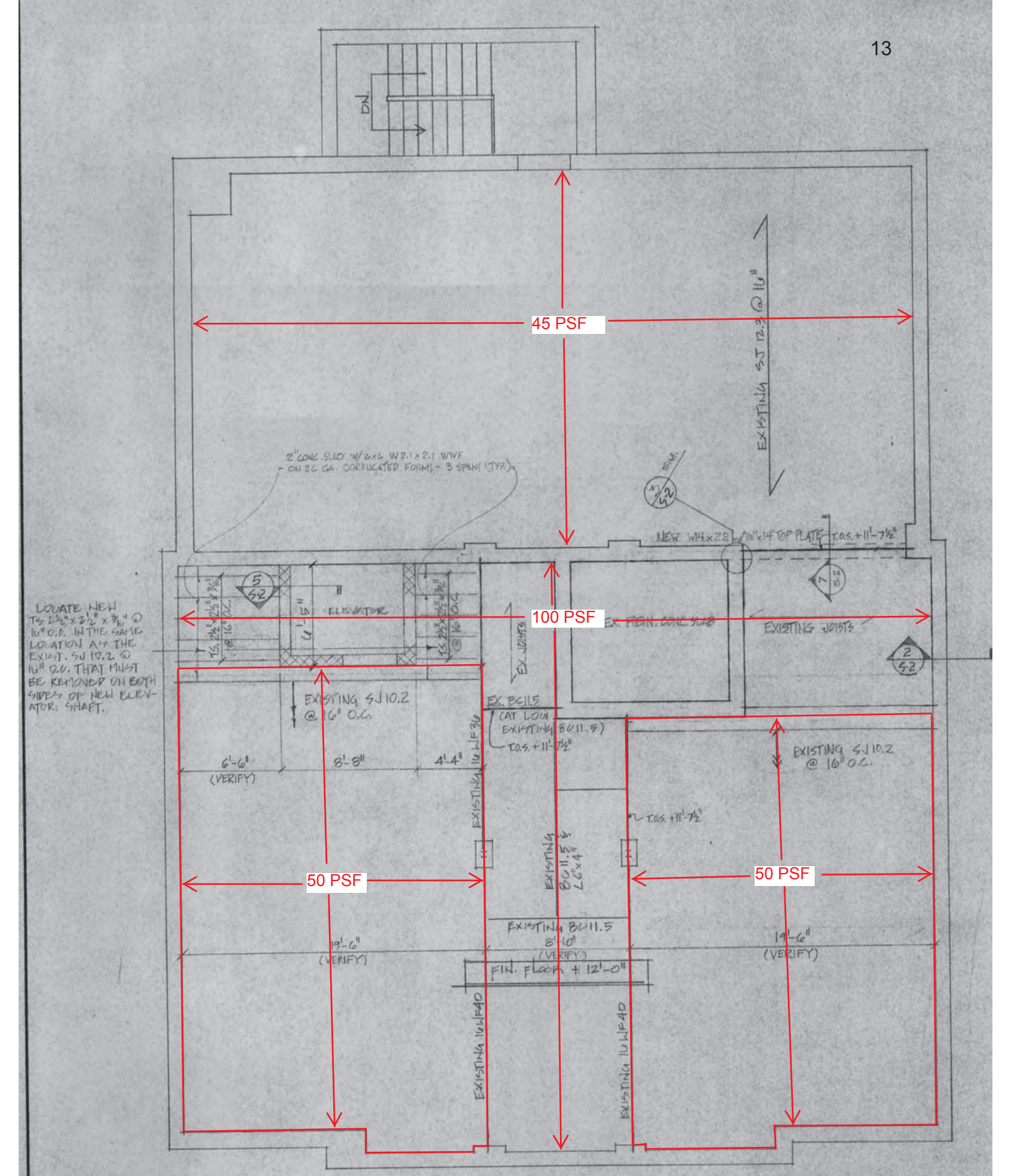
David L. Uhland, P.E.
Senior Project Engineer

Attachments: Figures 1 through 4



CURRENT LIVE LOAD CAPACITY

FIGURE 1



CURRENT LIVE LOAD CAPACITY

1 / S-2 SECOND FLOOR
SCALE: 1/4" = 1'-0"

NOTE: Dimensions, sizes, and conditions shown for existing structures shown on these drawings are based on various original plans supplied by the owner. Actual existing conditions may vary from those shown.

FIGURE 2

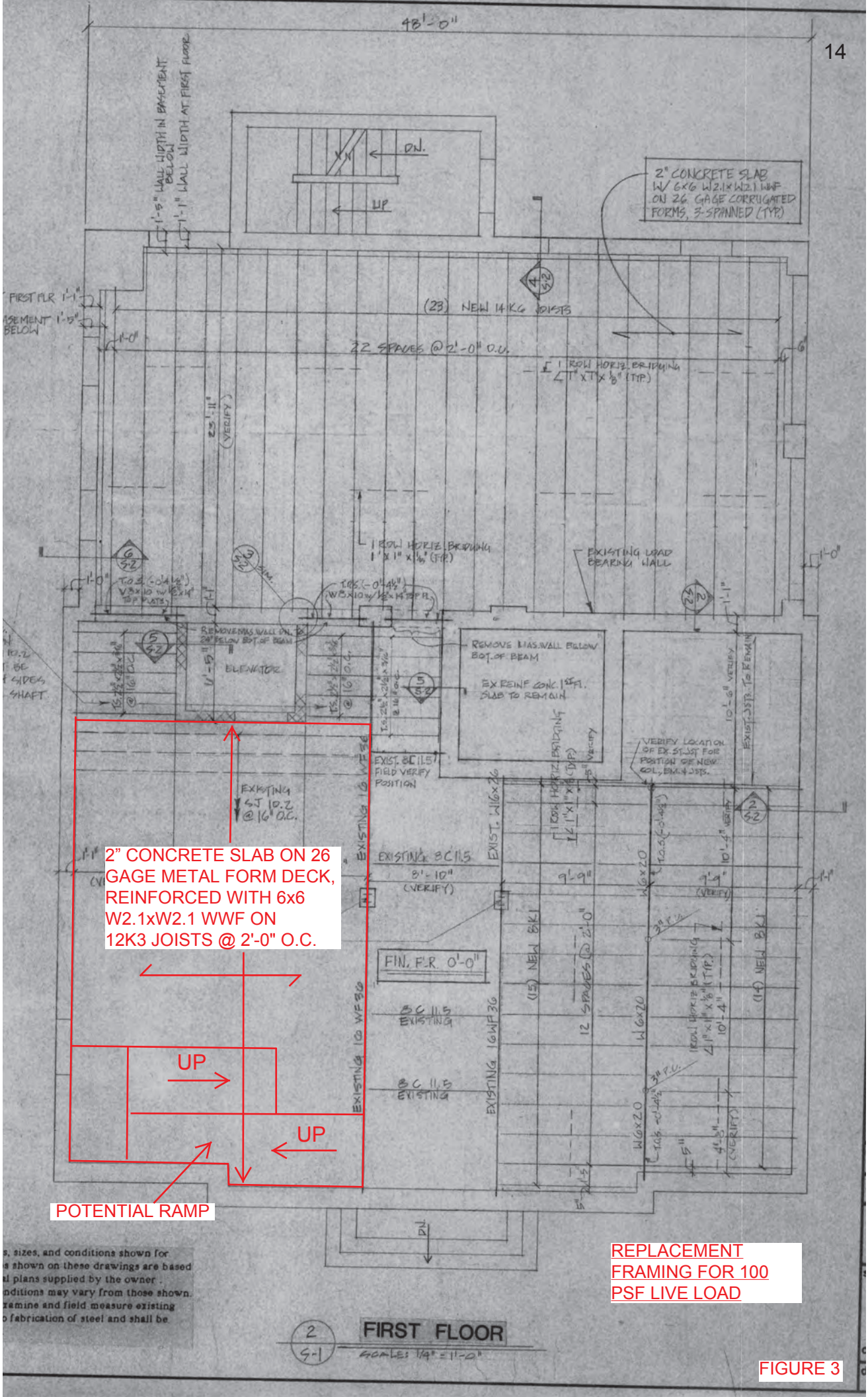
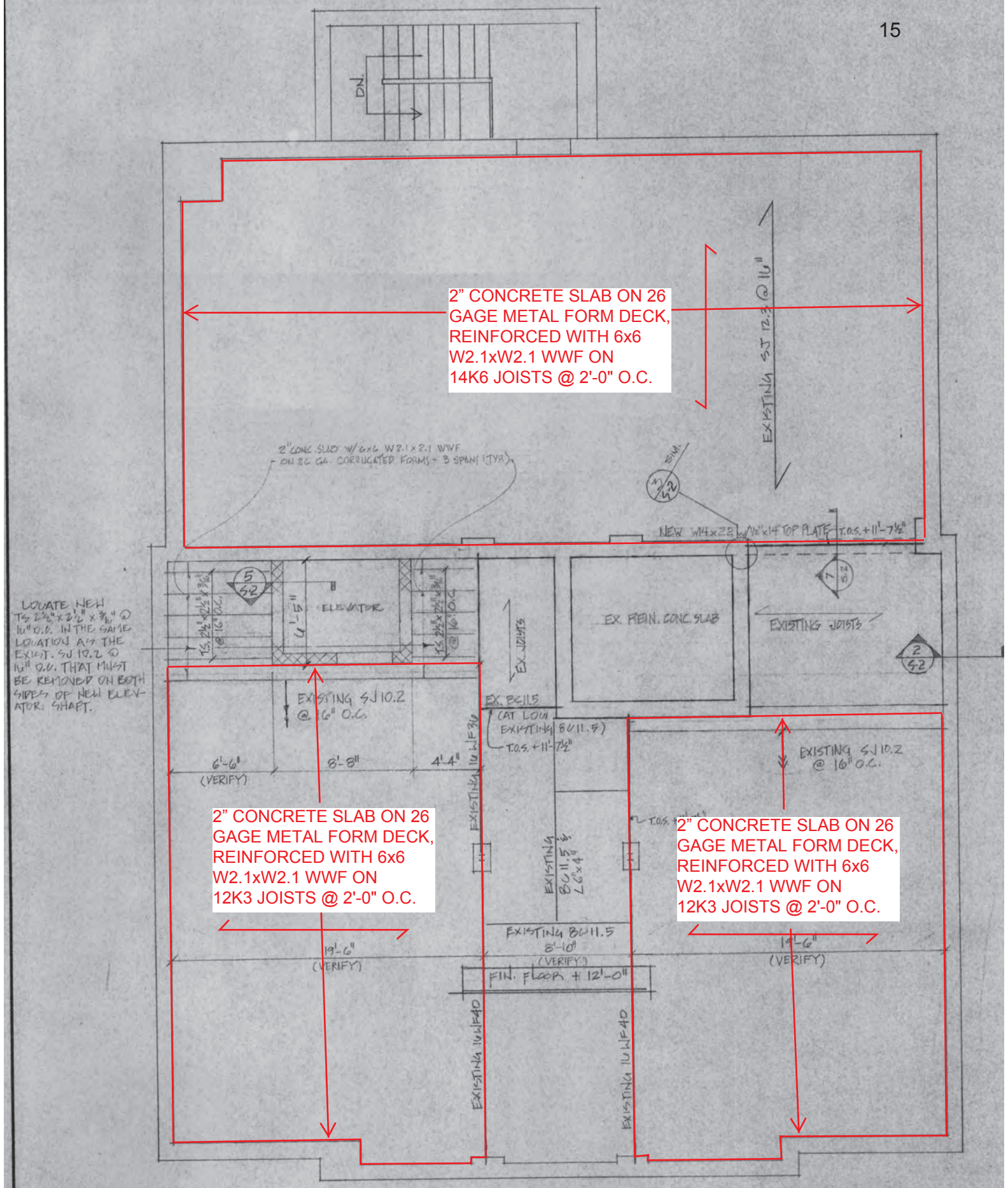

48'-0"
DN.
UP
2" CONCRETE SLAB W/ 6x6 W2.1xW2.1 WWF ON 26 GAGE CORRUGATED FORMS, 3-SPANNED (TYP.)
(23) NEW 14K6 JOISTS
22 SPACES @ 2'-0" O.C.
1 ROW HORIZ. BRIDGING
EXISTING LOAD BEARING WALL
REMOVE MAS. WALL BELOW BOT. OF BEAM
EX. REINF. CONC. 1ST FL. SLAB TO REMAIN
ELEVATOR
EXISTING SJ 10.2 @ 16" O.C.
EXIST. W16x26
EXISTING 8C11.5
8'-10" (VERIFY)
FIN. F.L. 0'-0"
EXISTING 16 WF 36
(15) NEW 8K1
12 SPACES @ 2'-0"
W6x20
(14) NEW 8K1
2" CONCRETE SLAB ON 26 GAGE METAL FORM DECK, REINFORCED WITH 6x6 W2.1xW2.1 WWF ON 12K3 JOISTS @ 2'-0" O.C.
UP
UP
POTENTIAL RAMP
REPLACEMENT FRAMING FOR 100 PSF LIVE LOAD
FIRST FLOOR
SCALE: 1/4" = 1'-0"

FIGURE 3



REPLACEMENT FRAMING FOR 100 PSF

1 / S-2 SECOND FLOOR
SCALE: 1/4" = 1'-0"

NOTE: Dimensions, sizes, and conditions shown for existing structures shown on these drawings are based on various original plans supplied by the owner. Actual existing conditions may vary from those shown.

FIGURE 4