May 3, 2013

Craig Dothe, Architect
33 North Brighton
Atlantic City, NJ 08401

RE: Structural Engineering Assessment
1 North Boston
Atlantic City, New Jersey

Dear Mr. Dothe:

As you know, we were engaged by your firm to perform a structural engineering survey of the building located at 1 North Boston in Atlantic City, New Jersey.

This report is preliminary and will present background information, describe the existing structure and building envelope, identify methods used to evaluate the existing construction conditions and describe the findings from this investigation, identify the relevant deficient conditions and document our opinions. It will be modified upon completion of testing and selective demolition. All opinions contained in this report are based upon standard engineering practice and accepted professional standards of care, and are offered to a reasonable degree of engineering certainty.

In making our evaluation, we relied upon the following codes, standards and other pertinent information supplied by the owner:

1. The State of New Jersey Department of Community Affairs, Construction Code Elements "Uniform Construction Code".

The 1 North Boston is located on the northerly corner of Atlantic and North Boston Avenues, in Atlantic City. It consists of four stories of multi-family residential over first floor retail (facing Atlantic Avenue). Based on the materials and method of construction, we estimate that the building was originally constructed circa 1930. Aside from an apparent addition (or porch infill) at the rear of the building, the only major renovation to the building since its original
construction was the recent overhaul of the exterior facade and reconfiguration of the residential units.

The primary structure consisted of wood framing with exterior masonry and interior wood bearing walls on the residential floors supported by post and beam framing and/or bearing walls over the first retail units. The roof structure was composed of wood decking on 2x8 rafters covered with APP-modified bituminous membrane roofing on the high roof and EPDM on the lowrise section.

A steel framed rooftop billboard rested on steel dunnage framing over the existing roof structure. Loads appear to have been effectively channeled to pre-existing load bearing partitions below.

The residential floors were framed with 2x10 wood joists at sixteen inch centers firecut into the exterior masonry walls and fastened directly to the interior bearing walls.

The ground floor consisted of a concrete slab-on-grade and, although the foundations were inaccessible due to the surrounding pavements, visual evidence suggested the building was founded on soil supported concrete spread footings or minimal remnants of a pile foundation (effectively soil supported) with brick masonry foundation walls.

The building facade consisted of multiple brick wythes covered with cementitious stucco and/or a basic exterior insulation and finishing system (EIFS). Horizontal steel lintels supported the brick over door and window openings.

Based on the FEMA advisory flood maps, this property's Advisory Base Flood Elevation is 10 feet (NAVD88) in Advisory Flood Zone “A”.

This report is based on a limited visual inspection of the interior and from the perimeter (see enclosed photographs). From these cursory examinations, we were able to ascertain a representative sampling of the worse case conditions and extrapolate the overall structural condition of each building. Wherever possible, the structural makeup was determined with specific conditions and common problems located and photographed.

Although not readily apparent, the age and location of this structure dictates varying levels of concealed water damage, rotten wood framing and probable steel (lintel) corrosion. However, a proper and complete identification of these conditions was infeasible short of physically dissecting the building. Therefore, the observations contained in this report are limited with no assertion that every detrimental condition has been identified.

Based on our extensive experience with construction in close proximity, this building is underlain with soils natural to the area which are derived from marine and eolian deposits and consist of gray fine quartz sand with varying amounts of shell fragments and some fine gravel. Published soil data verified that this site is located entirely within the Atlantic Coastal Plain Physiographic Province of New Jersey. The Geologic Map of Central and Southern New Jersey.
indicates the site as completely underlain by the Belleplain Member of the Kirlwood Formation. The Belleplain Member consists of quartz sand overlying a basal unit of clay and salty clay. The formation tends to be medium to dark gray. We expect groundwater depth to be approximately at or slightly above sea level with seasonal and tidal fluctuations.

Per the modern IBC building code governing this area, the presumptive loadbearing values of the subsoils is at least 3000 pounds per square foot.

The following items were observed during our inspection of April 15, 2013:

**Roofing**

The existing APP-modified bituminous membrane roofing on the high roof was in fair to poor condition. The membrane was brittle, blistered and the coating was weathered. Workmanship on the penetration and edge flashings was substandard and did not comply with modern National Roofing Contractors Association requirements as dictated by the building code.

The single ply EPDM membrane on the lowrise roof was relatively new and in fairly good condition. The membrane was tight with no seam separation or delamination. We saw no other indications of recent leaks. Flashed with EPDM counterflashing and metal capping, the parapet walls appeared tight and in good condition.

We noted exhaust fans, vent pipes, area vents and roof access penthouses, all of which appear to be watertight. The flashings on the roof were in good condition and meet the modern National Roofing Contractors Association recommendations for minimum projection.

The steel billboard was in fair condition with surface corrosion, pitting and bolt compromise.

**Roof and Attic Framing**

Generally, the visible roof rafters and ceiling joists were in fair condition. However access was severely restricted and our inspection was limited. We did not see evidence of significant water infiltration but, based on the condition of the roofing membrane, we anticipate some deterioration of the wood sheathing and rafters. Additionally, moisture migrating through the exterior masonry may have damaged some of the rafter ends.

There were a few localized areas of framing that were not adequate and were deflected. Attempts have been made to correct these conditions, but overall, these areas were not well structured and load transfer through the lower floor framing was deficient.

**Residential Floor Framing**

Again, access was limited and most of the floor framing was concealed. Further destructive testing is required. The floor joists we were able to examine were in fair condition but
have sagged under load related long term creep, deflection and inadequate load transfer from the renovations.

Many of the original bearing walls have been moved or removed, possibly leaving areas of the floor system inadequately supported (further investigation is required). This is evidenced by sloping floors, humps and valleys, severe plaster cracks, and racked door openings. From what little was open for examination, we noted floor joists hanging off other joists where substantial beams and/or bearing walls should have been. We suspect that these conditions are mirrored throughout since the floor plan modifications were consistent floor to floor.

Although we were unable to perform a detailed analysis, the load necessary to deflect the joists as observed limits the capacity to substantially less than the 40 psf required by the modern building code.

First Floor and Foundations

The first floor concrete slab-on-grade was in fair condition with some minor cracks and differential settlement.

Although we were unable to directly expose the building foundations, they appear to be in good condition with no visible signs of settlement. We did not perform geotechnical testing but the presumptive soil bearing capacity meets or exceeds the actual bearing pressures.

Facade

The masonry facade was covered by the EIFS stucco system. However, we anticipate that over the years some areas of brick may have been repaired but overall, the brick was likely cracked and not sealed and the steel lintels corroded.

Regarding the EIFS, we offer the following comments:

1. Head and sill flashings, and the improper fillet-style sealant joints around the doors were cracking and peeling in some areas.
2. Control joints were used to control settlement of the building as it dries out, and also to control seasonal movement. They should have been placed at expected stress points. Control joints were present but there should have also been joints where the EIFS abuts all dissimilar materials, and these joints were generally unsealed. Fixtures and other minor penetrations were also unsealed.
3. There were stress cracks originating from some of the corners. There were dings and dents from impact with vehicles, pedestrians, etc. Importantly, there were water stains leaking from the EIFS.
4. Some fillet joints were already peeling away from the finish. Sealant should have been applied to basecoat, not to the finish coat as finishes do not provide good adhesion for sealants.
5. Roof terminations were generally done poorly. Terminations should have been sealed, but
most were not.

6. Panels and penetrations were improperly embedded in the EIFS. They were not designed for this application. They should have been be mounted to blocking and properly sealed.

7. Lights and other fixtures were unsealed. There should have been seals around their perimeters

This structure was evaluated based on our very limited observations of clearly visible, open and unobstructed areas. This yielded sufficient information to formulate a preliminary structural assessment. Further testing and/or dissection will be required in the next phase and will expand the scope of work.

Please be advised that this evaluation was for structure only. For a comprehensive determination of the building conditions, I also recommend that you contract for architectural, mechanical, electrical, plumbing and environmental (hazardous materials) assessment by independent consultants. The building should also be inspected by an exterminator for possible insect infestation.

The scope of this investigation has been limited to this engineering evaluation of the foundation, facade, sign support structure, and roofing of the 1 North Boston building as identified in the report and is not intended to be a complete and comprehensive analysis of the structure. It is also not intended to warrant against future or currently hidden structural problems, nor is this evaluation intended to determine building code compliance or the presence of hazardous materials. The conclusions contained herein are based solely on the information obtained during the field inspection phase of this investigation and represent a professional opinion from experience on many similar structures. They are based on visual evidence, or lack of visual symptoms of structural problems common to this particular type of construction. No destructive inspection or testing was performed (unless specifically noted herein), and consequently this report is based upon inspection of the accessible areas only. The use of this report by other than the Casino Reinvestment Development Authority and the addressee, or for any purpose other than advisement regarding the structure at the subject property to the addressee is expressly prohibited.

Mr. Dothe, if you have any questions or need further information, please feel free to contact our office.

Sincerely,

Lamont H. Czar, P.E.

Enc: Photographs
PHOTOGRAPHS
1 NORTH BOSTON BUILDING
April 15, 2013