



**GILSANZ . MURRAY . STEFICEK . LLP**

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July 13, 2016

Mr. Ari Goldstein  
Extell Development Company  
805 3<sup>rd</sup> Ave., 7<sup>th</sup> Floor  
New York, NY 10022

**Re: City Point Phase 3, 138 Willoughby St., Brooklyn, NY  
Foundation Independent Structural Engineering Review  
GMS Project Number 16283**

Dear Mr. Goldstein

As per your request, Gilsanz Murray Steficek LLP conducted an independent structural engineering peer review of the proposed City Pont Phase 3 - Foundation Structure. We reviewed drawings prepared by McNamara Salvia, dated 05/02/16 (100% Design Development). We understand this set of drawings reflect 100% CD level foundation design. Based on our review, the foundation design shown on the plans and specifications is generally in conformance with the requirements of the NYC Building Code. The results of the peer review are detailed in the attached report, and are summarized as follows:

1. The foundation design loads conform to the NYC Building Code.
2. The structural design criteria and design assumptions conform to the NYC Building Code, and are in accordance with generally accepted engineering practice.
3. The existing conditions at the site have been investigated by a geotechnical engineer and by a wind tunnel consultant. We have reviewed the draft geotechnical investigation report and the preliminary wind tunnel results and confirmed that the design generally incorporates their results. It is our understanding that the final reports have not been issued.
4. The foundation structure has a complete load path.
5. Calculations have been performed for a representative fraction of the foundation system, members, and details, and we have confirmed their adequacy.
6. The structural integrity provisions of the code, where they are required in the foundation design, are being followed.
7. The structural plans are in general conformance with the architectural plans available at the time regarding loads and other conditions that may affect the foundation structural design.

8. The major mechanical items available at the time are accommodated in the structural plans.
9. It is our opinion that the general completeness of the foundation plans and specifications is adequate for a 100% level of completion.

I trust this information is sufficient for your current purposes. If you have any questions or comments, please do not hesitate to contact us.

Very truly yours,



Ramon Gilsanz, PE  
Partner  
Gilsanz Murray Steficek, LLP

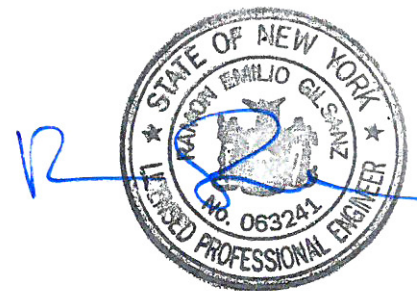
A handwritten signature in black ink, appearing to read "JL-7".

Jennifer Lan, PE  
Associate  
Gilsanz Murray Steficek, LLP

**INDEPENDENT STRUCTURAL ENGINEERING  
PEER REVIEW**

**CITY POINT PHASE 3  
BROOKLYN, NY**

July 13, 2016



**GILSANZ . MURRAY . STEFICEK . LLP**

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## **Executive Summary**

We performed an independent structural engineering peer review for the 100% Design Development drawings of the foundation structure of City Point Phase 3 in Brooklyn, New York, per NYC Building Code. Based on our review, the foundation design shown on the plans and specifications is generally in conformance with the requirements of the NYC Building Code. The results of the peer review are detailed in the attached report, and are summarized as follows:

1. The foundation design loads conform to the NYC Building Code.
2. The structural design criteria and design assumptions conform to the NYC Building Code, and are in accordance with generally accepted engineering practice.
3. The existing conditions at the site have been investigated by a geotechnical engineer and by a wind tunnel consultant. We have reviewed the draft geotechnical investigation report and the preliminary wind tunnel results and confirmed that the design generally incorporates their results. It is our understanding that the final reports have not been issued.
4. The foundation structure has a complete load path.
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6. The structural integrity provisions of the code, where they are required in the foundation design, are being followed.
7. The structural plans are in general conformance with the architectural plans available at the time regarding loads and other conditions that may affect the foundation structural design.
8. The major mechanical items available at the time are accommodated in the structural plans.
9. It is our opinion that the general completeness of the foundation plans and specifications is adequate for a 100% level of completion.

**Information Provided to GMS for Review:**

Structural drawings, prepared by McNamara Salvia, dated 05/02/16 (100% Design Development).

Architectural drawings, dated 12/21/2015, prepared by KPF.

Draft Geotechnical Investigation Report, dated 01/28/16, prepared by LANGAN.

“Preliminary Results- Wind Induced Structural Responses City Point Tower 3, Brooklyn, NY – RWDI Project # 1600343, dated 05/11/2016, prepared by RWDI.

Sketch LSK#3 by McNamara Salvia showing the stiffness of the soil with ground improvement elements.

Revised Sketch of Foundation Soil Springs, dated 5/4/2016, prepared by McNamara Salvia.

Structural drawings, prepared by McNamara Salvia, dated 07/12/16 (Issue for NYCTA Approval).

**Design Codes**

New York City Building Code 2014 Edition

ACI-318 Building Code Requirements for Structural Concrete

**Design Criteria**

The gravity loading criteria is based on occupancy per loading schedule on drawing S-001.

The wind loading criteria is based on RWDI’s wind tunnel report, in addition to the requirements of NYCBC 2014.

The seismic loading criteria are based on the Geotechnical Report by Langan, in addition to the requirements of the NYC Building Code.

**Building Description:**

The project, known as City Point Phase 3 (CP-3), is located in 138 Willoughby St., Brooklyn, NY. It is a residential building consisting of a 57-story tower and two below ground levels. The building will be and will be 698 feet above street level.

**Foundations:**

The building has 2 floors below grade. The shear walls and columns are supported on mat foundation on soil and ground improvement elements. Stiffness of the soil (including the effect of the ground improvement elements as specified in document LSK#3) is used in the foundation analysis. The site contains foundation walls at the perimeter on all sides.

**Superstructure:**

The superstructure consists of cast-in-place slabs, shear walls, and columns. The floor slabs are of two-way flat plate construction and variable thicknesses that are typically in the range of 9"-12". Column walks/transfers occur at 31<sup>th</sup> floor.

**Lateral System:**

The lateral system consists of cast-in-place shear walls that vary in thickness. There is a central core and two lines of north/south walls that make up the lateral system of the tower.

**Structural Review:**

**Design Criteria & Loads:**

Dead & Live Loads: The dead loads and live loads used by the structural engineer of record are in compliance with the building code and generally accepted engineering practice.

Wind Loads:

The wind tunnel base moment is approximately 83% of the code calculated wind load base moment in the X direction and 72% of the code moment in the Y direction. We assumed that the wind tunnel study included supplemental tests that allowed for a reduction of more than 20% of the code wind base moment.

Wind loads were based upon the following natural building frequencies:

- Mode 1: 6.07 sec (primary Y-sway)
- Mode 2: 4.97 sec (primary X-sway)
- Mode 3: 3.55 sec (primary torsion)

Our analysis model shows a first mode period of 6 seconds, which is similar to what was provided to the wind tunnel.

Seismic Loads: The seismic parameters shown on the structural drawings are in conformance with the requirements of the code and the recommendations outlined in the geotechnical report.

**Foundation Review**

*Foundation Mat*

We created a finite element model of the foundation mat using CSI SAFE, which accounted for the varying spring stiffness of the soil subgrade. We verified that the flexural and shear reinforcing of the mat is adequate. We received confirmation from McNamara Salvia that our comments regarding the foundation mat design have been incorporated.

We received confirmation from Langan, the geotechnical engineer, that the bearing pressures and spring constants used by McNamara Salvia are acceptable.

*Foundation Walls*

We reviewed the designs of the typical foundation walls and found them to be adequate.

The northeast portion of the building is cantilevered over the subway structure using the foundation walls. We have reviewed the design of the cantilevered foundation walls and found them to be adequate.

*Loads Imposed on MTA Structure:*

We understand the soil immediately adjacent to the MTA tunnel (within the MTA influence zone) at the northeast section of the building will be loaded by the building. We understand from Langan that they have studied the impact on the TA and the drawings are being reviewed by the TA for approval.

**Superstructure:**

The scope of this peer review is limited to the foundation only. A limited review of the superstructure is done to ensure that the design foundation loads are adequate. The design of the superstructure is not reviewed at this time.

We have performed an independent load takedown of the building and found the foundation loads shown on the column schedule to be adequate.

We created an independent structural analysis model using ETABS to estimate the foundation loads due to gravity and lateral loads. The first three modal periods of our model are similar to those provided to the wind tunnel for analysis. Our model shows that the foundation loads assumed by McNamara Salvia is reasonable.