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October 14, 2016

Mr. Ari Goldstein
Extell Development Company
805 3rd Avenue, 7th Floor
New York, NY 10022

Re: City Point Phase 3 (aka 138 Willoughby Street), Brooklyn, NY
Independent Engineering Review for Superstructure
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 Point Phase 3 per NYC Building Code Section 1627. We reviewed drawings prepared by McNamara Salvia, dated 08/22/2016.

Based on our review, the structural design shown on the plans and specifications is generally in conformance with the structural and foundation 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 design loads generally conform to the requirements of 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 geotechnical investigation report and the wind tunnel results and confirmed that the design generally incorporates their results.

4. The structure has a complete load path.

5. Calculations have been performed for a representative fraction of the system, members, and details, and we have confirmed their adequacy.

6. We have confirmed that the structural integrity provisions of the code are being followed.

7. The structural plans are in general conformance with the architectural plans made available for the peer review.

8. The major mechanical items shown on the architectural drawings are accommodated in the structural plans.
9. It is our opinion that the general completeness of the plans and specifications is adequate.

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,

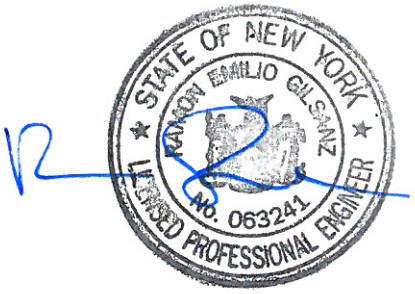
Ramon Gilsanz, PE
Partner
Gilsanz Murray Steficek, LLP

Jennifer Lan, PE
Associate
Gilsanz Murray Steficek, LLP

INDEPENDENT STRUCTURAL ENGINEERING SUPERSTRUCTURE PEER REVIEW

CITY POINT PHASE 3
NEW YORK, NY

October 14, 2016



GMS
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Executive Summary

Gilsanz Murray Steficek LLP conducted an independent structural engineering peer review of the proposed City Point Phase 3 per NYC Building Code Section 1627. We reviewed drawings prepared by McNamara Salvia, dated 08/22/2016.

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9. It is our opinion that the general completeness of the plans and specifications is adequate.

Information Provided to GMS for Review:

Structural drawings, prepared by McNamara Salvia, dated 08/22/2016. Below is a list of the drawings reviewed:

FO-000 to FO-004, FO-100, FO-200 to FO-205, FO-210, FO-300 to FO-306, S-000 to S-004, S-010 to S-011, S-020 to S-021, S-040 to S-042, S-050 to S-051, S-060 to S-061, S-070 to S-071, S-080 to S-081, S-090 to S-091, S-100 to S-101, S-190 to S-191, S-310 to S-311, S-320 to S-321, S-330 to S-331, S-430 to S-431, S-440 to S-441, S-510 to S-511, S-520 to S-521, S-570 to S-571, S-580 to S-581, S-590 to S-591, S-910, S-915 to S-917, S-920 to S-926, S-930 to S-932, S-935, S-940 to S-943, S-960, S-970 to S-971, S-980 to S-982.

Architectural drawings, dated 07/22/2016, prepared KPF and SLCE Architects.

Wind tunnel tests for City Point Phase 3, New York, NY – RWDI Project # 1600343, dated 05/06/2016, prepared by RWDI.

Draft Geotechnical Investigation Report for Proposed 138 Willoughby Street- City Point Phase 3 Development, Brooklyn, New York., dated 01/28/2016, prepared by Langan.

Calculations of specific structural elements were provided to GMS upon request during the peer review.

Design Codes

New York City Building Code 2014 Edition

ACI-318 Building Code Requirements for Structural Concrete

Building Description:

The project, known as City Point phase 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 698 feet above street level.

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 multiple floors such as 5th floor, 6th floor, 7th floor, and 32st floor. There are some large double-height spaces in the lower portion of the building. The concrete strength ranges from 5,950 psi to 12,000 psi.

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 building. There are outriggers and a belt wall at the 31st floor to engage columns in the lateral system. A shear wall offset also occurs at this level.

Structural Review:

Design Criteria & Loads:

Dead & Live Loads:
The gravity loading criteria is based on occupancy per loading schedule on drawing S-001. The structural design loads and assumptions conform to the NYC Building Code, and are in accordance with generally accepted engineering practice.

Wind Loads:
The wind loads are based on loading provided in RWDI's wind tunnel test report. The building is analyzed as Exposure C in the east-west (X) direction and as Exposure B in the north-south (Y) direction.

The wind tunnel base moment is approximately 91% of the code calculated wind load base moment in the X direction and 82% of the code moment in the Y direction.

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 5.7 seconds, which is shorter than the period studied in the wind tunnel. Since a stiffer building would have been subject to smaller wind loading, the wind tunnel results are slightly conservative.

The design wind load in in conformance with the code.

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.

Superstructure:

Columns:

We have performed an independent load takedown of the building and found the loads shown on the column schedule to be adequate. We performed independent calculations for a fraction of the columns to confirm their capacity.

We reviewed the design of walking column from 5th floor to 7th floor, and 31st floor. We confirmed the load path is adequate at these transfers.

We reviewed the design of 4 columns (Col. 1, 12, 13 and 14) that are unbraced for more than one floor, and found the design to be adequate.

Slab Design:

Finite element models of two building floors (10th -18th floor, 52rd -56th floor) were modeled in SAFE. Our models included the following modeling idealizations:

- F'c = 8600psi at 10th -18th floor slab model, F'c=6000psi at 52nd -59th floor slab
- Columns/walls fixed at base below, columns above fix for Rx, Ry only.
- Rigid zone modeled at column locations
- All geometry (including openings) per structural drawings

We verified the slab reinforcement and found them to be adequate. The total long term slab deflection was found to be acceptable. Images of the analysis model and the deflected shapes are shown below.

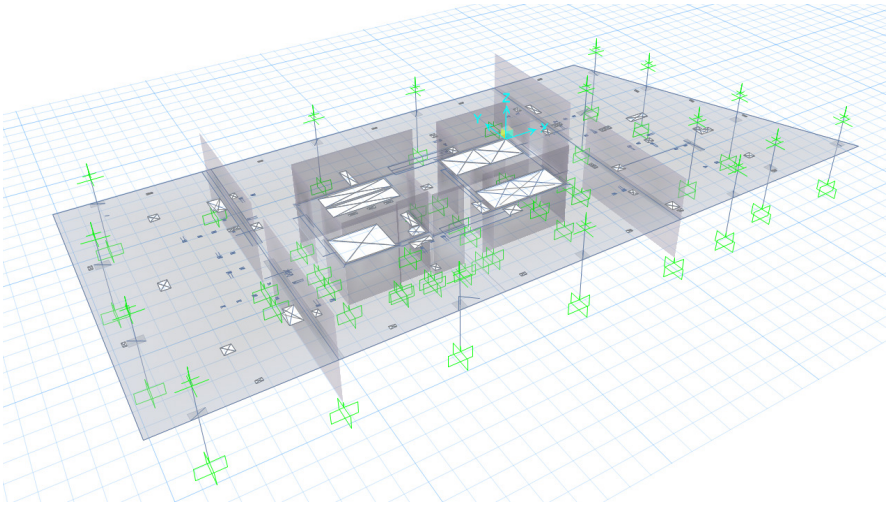

Figure 1 10th-18th floor slab model

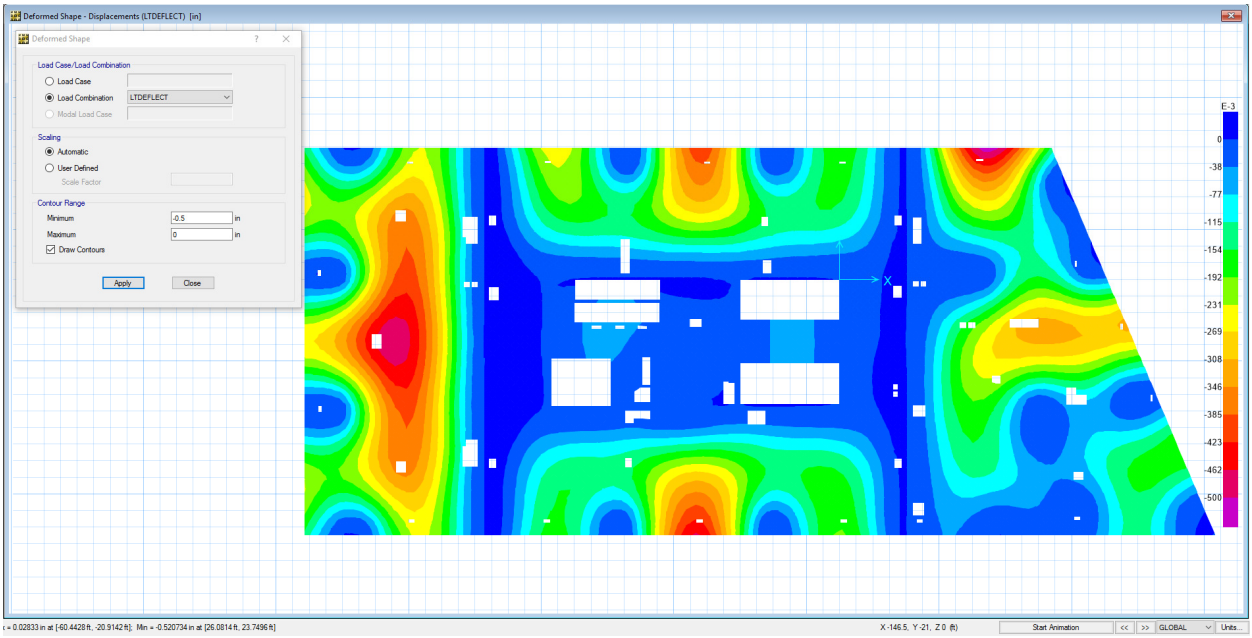

Figure 2 10th-18th floor slab total deflection

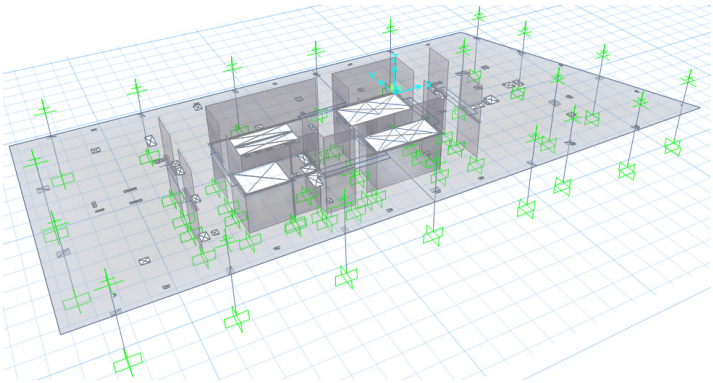

Figure 3 52nd-56th floor slab model

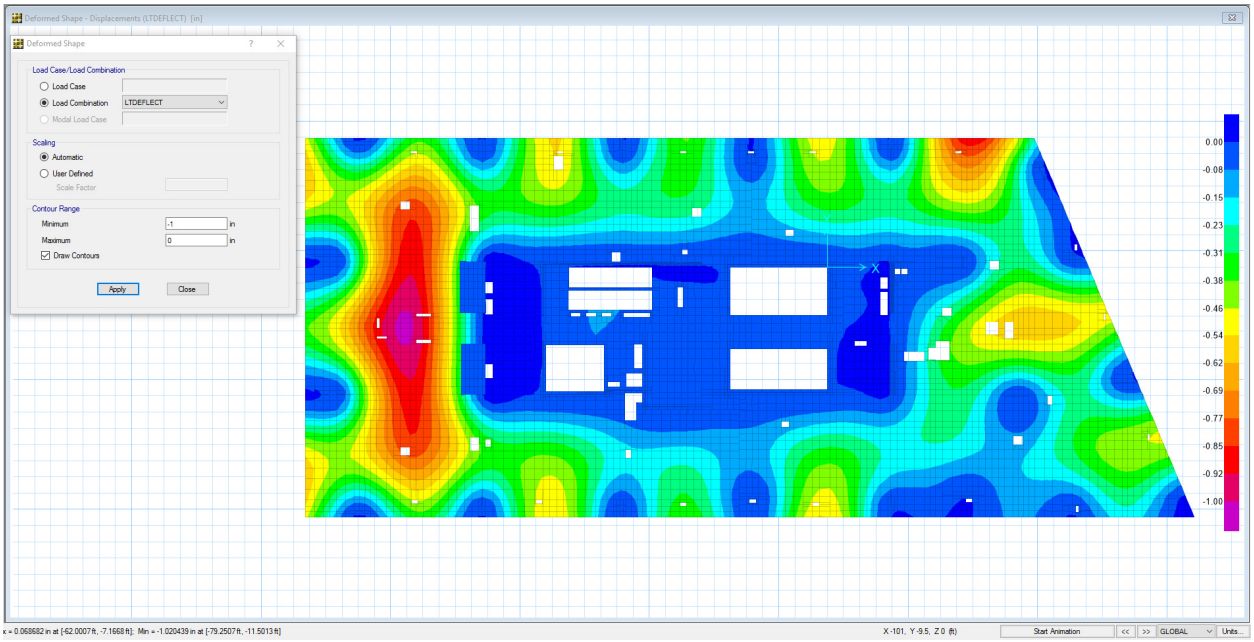

Figure 4 52nd-56th floor slab total deflection

Structural Integrity:

We have confirmed that the structural design follows the structural integrity requirements outlined in New York City Building Code Sections 1615, 1916, and ACI 318-11 Chapter 13.

- At all floors, slabs have a mat of bottom reinforcement which is made continuous with lap splices, and the amount of reinforcing is not less than the steel required for temperature reinforcing.
- At each floor and roof level, adequate peripheral ties are provided.
- Sufficient bottom bars are provided through the core of the column to comply with BC 1916.2.3. We understand the EOR will add reinforcing as required based on our comments.

- Each column and each wall carrying vertical load are vertically tied continuously from its lowest to highest level, and vertical reinforcing is capable of resisting a tensile force equal to the maximum design DL+LL received by the column or wall from any one story within four floors below.
- In the detailing of reinforcing and connections, members of a structure are effectively tied together.
- Where splices are needed to provide the required continuity, the top rebar are spliced at or near mid-span and bottom rebar are spliced at or near the support using tension splices.
- All bottom bars within the column strip, in each direction, are continuous or spliced with Class B tension splices. Splices are located as required by ACI 318-11 Fig. 13.3.8. At least two of the column strip bottom bars or wires in each direction pass within the column core and shall be anchored at exterior supports.
- Floor and diaphragms and other horizontal elements are tied to the lateral load-resisting system
- Column exposed to traffic are adequate to resist vehicular impact.

Lateral System Review

We created an independent structural analysis model using ETABS to estimate the building behavior under lateral loads. Our model included the following modeling idealizations:

- Columns are pinned at each floor
- Inertia-gross modified per ACI coefficients for strength calculations
- The foundation mat is modeled and foundation springs are assigned over the area of the mat based on soil stiffness provided by the geotechnical engineer.
- Slab is modeled with shell elements
- Link beams are modeled with line elements

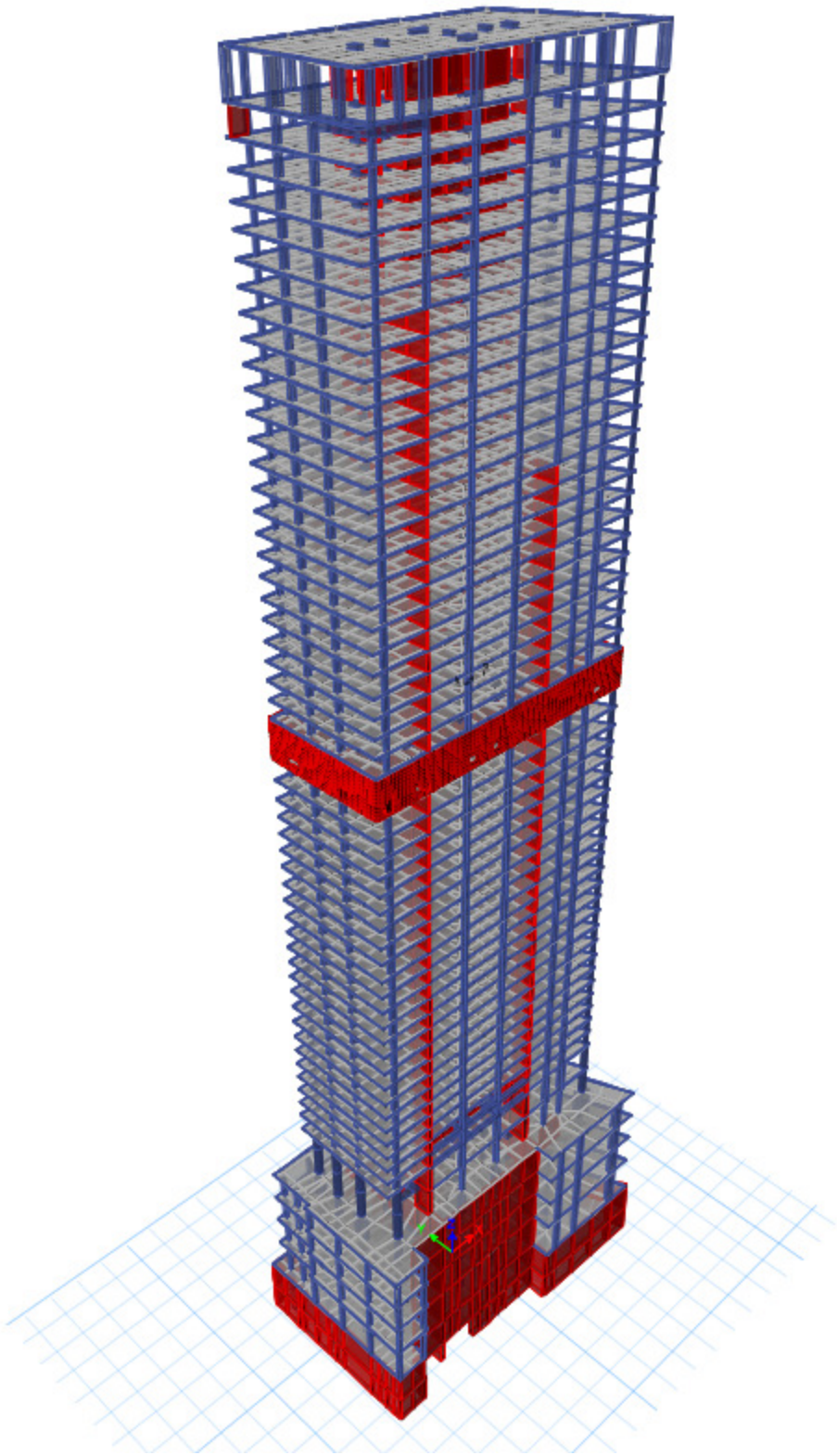

Figure 5 Building ETABS model 3D view

We performed calculations for a representative portion of the lateral system, as described below, and confirmed its adequacy.

We checked the shear walls at the 2nd floor level and the 33rd floor level for the lateral wind loads from the RWDI. The adequacy of the walls were checked using spColumn. We found that the capacity in the analyzed walls are adequate for the considered loads.

We checked link beams at cellar, 6th floor, and 31st floor levels. The link beam design is in conformance with the code.

We checked outriggers on 32nd floor and found reinforcement in the belt wall to be adequate.