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August 4, 2022

Louis Casolo City of Stamford Engineering Bureau 888 Washington Boulevard Stamford, CT 06901

P6: 2 Harbor Point South, Stamford, CT Visual Survey

WJE No. 2022.0759

Dear Mr. Casolo:

Pursuant with our proposal dated April 6, 2022, and at the request of the Mayor of Stamford's Office; Wiss, Janney, Elstner Associates, Inc. (WJE) has completed our limited assessment of the above referenced property. The following is our report on the matter.

#### **BACKGROUND**

Following the partial collapse of the 5<sup>th</sup> floor plaza level post-tensioned concrete slab at the Allure in Stamford, CT, the mayor of Stamford, Ms. Caroline Simmons asked WJE to perform limited assessments of additional properties that have been developed by Building and Land Technology (BLT) in Stamford utilizing similar construction, similar designs and/or similar construction teams. The scope of these assessments was outlined in a March 25, 2022 letter issued to BLT by Mayor Simmons.

## **DESCRIPTION OF STRUCTURE**

2 Harbor Point South, also known as P6 is a 15-story residential structure with a single basement level. It was built ca. 2022. The Basement Level through Level 3 primarily consists of parking with some apartments and amenity spaces along the north, east and west sides. Level 4 primarily consists of an exterior amenities terrace with a pool. Some apartments are provided along the east elevation. The overall dimensions of Levels B-4 are approximately 241 feet north/south by 210 feet east/west. Floor to floor heights are between 9.75 feet and 13 feet. Above Level 4, the residential tower continues up to Level 15. The residential tower has overall dimensions of approximately 200 feet north/south by 75 feet east/west. Typical floor heights in the tower are 9.75 feet.

The building structure is founded on pile caps that are supported by 14 inch diameter pressure injected piles. Floors 1-3 consist of either 7.5 inch or 8 inch thick, post-tensioned, cast-in-place concrete flat plates<sup>1</sup>. The flat plates have uniformly spaced draped<sup>2</sup> post-tensioned monostrand tendons that typically span in the east/west direction at 3 feet on center. Banded, draped monostrand tendons span in the

<sup>&</sup>lt;sup>1</sup> A "flat plate" is a reinforced concrete slab of without beams or drop panels.

<sup>&</sup>lt;sup>2</sup> Draped tendons refers to the elevation profile of the strands which are typically located high in the slab at column lines and low in the slab at midspans.



north/south direction at the column lines. Conventional reinforcing is also provided with a continuous bottom mat in both directions and top bars in both directions at the columns. Additionally, stud rails<sup>3</sup> are provided at the columns. Column spaces vary from approximately 12.25 feet to 28 feet in the north/south direction and approximately 8.25 feet to 29.25 feet in the east/west direction. The columns consist of cast-in-place concrete are conventionally reinforced.

At the 4<sup>th</sup> floor level where the amenities deck is provided, the slab thickness increases to 12 inches thick at the western portion where the pool and outdoor amenities terrace are located; at the eastern portion of the 4<sup>th</sup> floor where the residential apartments are located, the slab remains 7.5 in thick. The flat plates have uniformly spaced draped tendons that typically span in the east/west direction at 3 feet on center. Banded, draped, tendons span in the north/south direction at the column lines. Conventional reinforcing is also provided with a continuous bottom mat in both directions and top bars in both directions at the columns. Additionally, stud rails are provided at the columns.

The remainder of the tower (floors 5 to 15) has a slab thickness of 7.5 inches. The flat plates have uniformly spaced draped tendons that typically span in the east/west direction at 3 feet on center. The live end anchors are typically located on the east elevation. Undulating banded tendons span in the north/south direction at the column lines. Conventional reinforcing is also provided with a continuous bottom mat in both directions and top bars in both directions at the columns. Additionally, stud rails are provided at the columns. Post-tensioned cantilever balconies are provided on all elevations.

The building is clad with an exterior insulation and finishing system (EIFS) and the building has a flat roof (Figures 1-4). The building was designed by EDI International (EDI) and the structural engineer of record is Cary Kopczynski & Company (CKC). The State of Connecticut threshold structural peer review was completed by Pelliccione & Associates, LLC.

# **DOCUMENTS REVIEWED**

The following documents were reviewed by WJE to gather a basic understanding of the building design and construction:

- Architectural Drawings issued by EDI for permit on July 31, 2020.
- Structural Drawings issued by CKC for permit on July 31, 2020.
- Post Tensioning Shop Drawings issued by CCL dated October 2, 2020.
- Rebar Shop Drawings issued by MDS Rebar dated November 24, 2020.

WJE briefly reviewed the provided special inspection reports which were completed by Special Testing Laboratories, Inc. (STL). These reports indicate that the special inspector had the required PT shop drawings on site and that at the time of their visit, the post tensioning layouts matched the approved shop drawings.

<sup>&</sup>lt;sup>3</sup> Stud rails are welded assemblies of steel strips and headed studs that are positioned around columns to enhance the punching shear strength of the slabs



Finally, WJE reviewed a report issued by Desimone Consulting Engineers entitled: "Harbor Point P6- On-Site Structural Assessment" dated May 9, 2022. The following is described in the report:

- Desimone conducted a visual assessment.
- The exposed garage structure was found to generally be in good condition.
- Shrinkage cracks were observed but are not of structural concern.
- The remainder of the residential spaces in the podium levels and tower levels as well as other interior occupied amenity and lobby spaces were covered by finishes. No visual indications of structural concern such as cracks in the finishes, cracks in the ceilings and walls, or perceptible excessive slab deflections at the first-floor lobby spaces and amenity spaces above were noted.
- Based on the on-site visual observations, Desimone did not observe any items of structural concern.
- In general, the existing garage structure in its current condition appears structurally sound.
- Desimone apparently performed no calculations in support of their opinions.

### **OBSERVATIONS**

On May 3, 2022, John Cocca, P.E., Hannah Rakowski, P.E., Josh Jaskowiak, P.E. and Chase Gallik performed a limited visual review of the building. Prior to our site visit, we reviewed the drawings to look for areas of structural anomalies such as steps in the slabs, large openings or other features that could create design or construction issues. During our visit, WJE visually reviewed the exposed structure within the parking garage, the 4<sup>th</sup> floor terrace and amenity spaces, 40 apartments within the tower and various halls and stairwells. Field sheets indicating the areas surveyed are provided in Appendix A. The following conditions were noted:

## Garage

- Basement Level of garage appears in good condition no deleterious conditions were noted (Figure 5).
- First level of garage appears in good condition a few hairline shrinkage cracks were noted at the underside of the 2<sup>nd</sup> floor slab (Figures 6-8).
- Minor step cracking was noted at the southeast corner of the 1<sup>st</sup> level CMU wall between the garage and residential space (Figure 9).
- Cracking and delaminated concrete were noted at a beam to column connection at the southwest corner of the 1st floor level (Figures 10-11).
- Second Level of garage appears in good condition. A shrinkage crack with efflorescence staining emanating from it was noted at the ceiling at the northwest corner (Figures 12-13).
- Third Level of garage appears in good condition. A couple of shrinkage cracks with efflorescence staining emanating from them were noted at the ceiling of the northwest corner beneath the terrace (Figures 14-16).
- WJE reviewed areas beneath the 4<sup>th</sup> floor terrace where the slab steps up or down changing elevation and found no deleterious conditions (Figures 17-18).



### **Terrace**

WJE visually reviewed the amenity terrace at the 4<sup>th</sup> floor level which was under construction at the time of our visit, WJE did not observe any cracking in finishes or excessive deflections that could be an indication of an underlying structural issue (Figures 19-22).

# **Tower/Interior Spaces**

- At the time of our visit, the building was still under construction, WJE visually reviewed 40 apartments and all accessible public and amenities spaces. As part of our review, WJE was looking for cracks in the drywall finishes especially at doorways and floor to ceiling transitions that may be an indication of recent movement. Additionally, WJE was looking for separations in the trim or gaps in the trim that may indicate the presence of slab deflections. No deleterious conditions were noted at the reviewed areas (Figures 23-26).
- Elevator lobbies and corridors were visually inspected for similar cracks and separations. In some instances, the slab was exposed at the corridor. No deleterious conditions were noted at the reviewed areas (Figures 27-28).
  - The north and south stair towers were partially reviewed. At these locations, painted concrete shear wall are exposed. No cracking or deleterious conditions were noted at the reviewed areas (Figures 29).

#### **Exterior**

- WJE visually reviewed the exterior elevations of the building from grade, select apartments terraces and from the 4<sup>th</sup> floor terrace. In general, WJE did not observe any cracking in the EIFS or exposed concrete that would be indicative of an underlying structural issue.
- At one location at the top level (i.e. 15<sup>th</sup> floor) and at a location at the southeast corner, there appears to be grout missing at the live end anchorages at the face of the cantilevered balconies (Figure 30).

## **CONCLUSIONS**

Based on our limited review of the provided documents and our visual assessment of the building, WJE did not identify any conditions that would be indicative of an underlying structural issue at the building at the time of our inspections. It should also be noted that the engineer of record, concrete contractor and special inspection agency are different from those used at the Allure.

### RECOMMENDATIONS

Based on our review, WJE would offer the following recommendations to the owner to prolong the life of the structure and help to limit future maintenance.

- WJE would recommend routing and sealing the shrinkage cracks to prevent the ingress of air and water which could result in corrosion of the underlying steel and/or post tensioning.
- WJE recommends that an adequate soft joint should be provided between the CMU walls and concrete slabs at the garage to prevent further cracking from frame shortening and concrete creep.





- WJE recommends that the spalled concrete at the beam to column connection be repaired to prevent further deterioration.
- The owner should consider applying a penetrating sealer to the parking levels or installing a traffic coating to protect the mild reinforcement from chloride laden water that gets tracked into the garage from vehicles
- Repairs to the exposed grout pockets at the live end anchorages should be made, if necessary, at the cantilever balconies.

Sincerely,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.

John Cocca, P.E.

Associate Principal & Project Manager





Figure 1- P6: East Elevation



P6-West Elevation





Figure 3- P6: South Elevation



Figure 4- P6: North Elevation



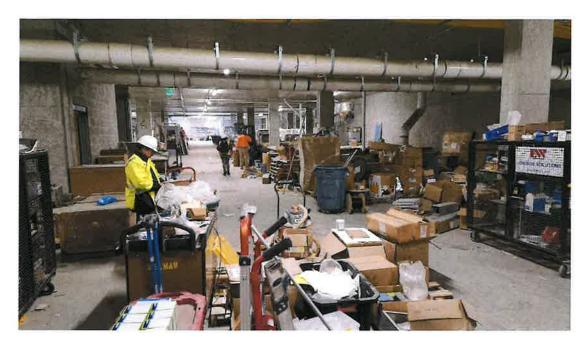


Figure 5- Basement Level of Parking Garage



Figure 6- 1st Level of Parking Garage







Figure 7- Hairline Shrinkage Cracks



Figure 8- Hairline Shrinkage Cracks





Figure 9-Vertical Cracking at CMU



Figure 10- Cracking/Delamination at Beam to Column Connection





Figure 11- Cracking/Delamination at Beam to Column Connection



Figure 12- 2<sup>nd</sup> Floor of Parking Garage





Figure 13- Shrinkage Crack with Efflorescence



Figure 14- 3<sup>rd</sup> Floor of Parking Garage



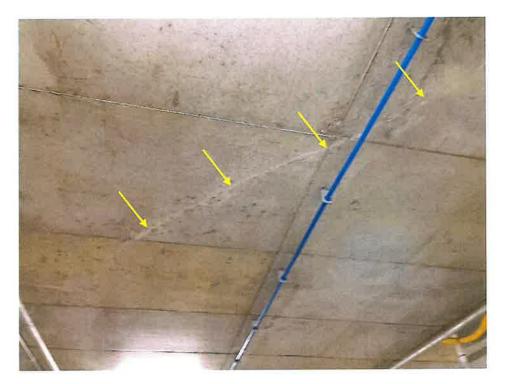


Figure 15- Shrinkage Crack with Efflorescence

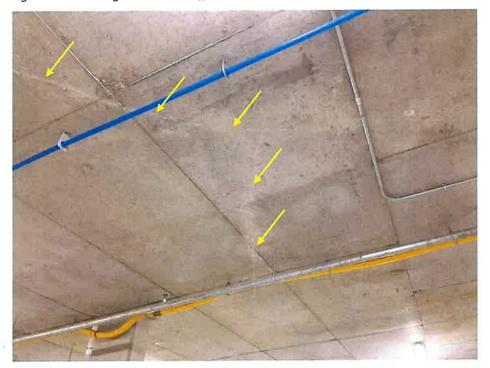


Figure 16- Shrinkage Crack with Efflorescence





Figure 17- Step in 4th Floor Terrace Level Slab



Figure 18- Step in 4th Floor Terrace Level Slab





Figure 19- Amenity Terrace



Figure 20- Amenity Terrace





Figure 21- Amenity Terrace



Figure 22- Amenity Terrace





Figure 23- Typical Apartment



Figure 24- Typical Apartment





Figure 25- Typical Apartment



Figure 26- Typical Apartment





Figure 27- Typical Corridor



Figure 28- Typical Corridor





Figure 29- Typical Stairwell



Figure 30- Possible Missing Grout at End Anchorages

