Wiss, Janney, Elstner Associates, Inc.
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Shelton, Connecticut 06484
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August 18, 2022

Louis Casolo, P.E.
Engineering Department
City of Stamford
888 Washington Blvd, 7th Floor
Stamford, CT 06904

Harbor Point- The Allure: P4 & P5- Local Slab Failure Final Report
WJE No. 2022.0759

Dear Mr. Casolo:

Per the request of the City of Stamford, CT, Wiss, Janney, Elstner Associates, Inc. (WJE) has reviewed the partial collapse of the 5th floor amenity deck at the Allure, which is located within the Harbor Point development in Stamford, CT. The following is our final report on the matter.

DESCRIPTION OF STRUCTURE

The Allure, located at 850 Pacific Avenue, also known as P4 & P5 is a 22-Story residential structure with a single basement level. It was built ca. 2019. Level Basement through Level 4 primarily consists of parking with some apartments and amenity spaces along the perimeter of all four sides. Level 5 primarily consists of an exterior amenities terrace with a pool and planters. Apartments are located along the east elevation. The overall dimensions of Levels B-5 are approximately 420 ft. north/south by 204 ft. east/west. Floor to floor heights range between 9.75 ft. and 13 ft. Above Level 5, two residential towers referred to as the north and south tower, continue up to Level 22. The North Tower has overall plan dimensions of approximately 187 ft. north/south by 79 ft. east/west and the South Tower has overall plan dimensions of approximately 156 ft. north/south by 79 ft. east/west. Typical floor-to-floor heights of both towers are 9.75 feet (Figure 1).

The building structure is founded on pile caps that are supported by 14 in. diameter pressure injected piles. Floors 1-4 consist of either 7.5 in. or 8 in. thick, post-tensioned, cast-in-place concrete flat plates[1]. The flat plates have uniformly spaced draped[2] post tensioning monostrand tendons that are typically oriented in the east/west direction at 3 ft. on center. Banded, draped monostrand tendons are oriented in the north/south direction at the column lines. Conventional reinforcing is also provided with a continuous bottom bars in both directions and top bars in both directions at and near the columns. Additionally, stud rails[3] are provided at some, but not all, columns. Column spacings vary from approximately 12 ft. to 24 ft.

[1] A "flat plate" is a reinforced concrete slab of without beams or drop panels.

[2] 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.

[3] 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

in the north/south direction and approximately 8.25 ft. to 27.75 ft. in the east/west direction. The columns consist of cast-in-place concrete and are conventionally reinforced. A 3 in. wide expansion joint separates the north side of the Level B-5 structure from the south side of the structure.

At the Level 5, the slab is 12 inches thick at the western portion where the pool and outdoor amenities terrace are located and are accessible. At inaccessible areas at the northwest and southwest portions of Level 5, the slab is 8 inches thick. At the eastern portion of Level 5. where the residential apartments are located, the slab is 7.5 in thick. The slab at Level 5 has uniformly spaced, draped, monostrand tendons that are typically oriented in the east/west direction at 3 ft. on center. Banded, draped, monostrand tendons are oriented 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 select columns. At level 5, some reinforced concrete beams are provided particularly beneath the amenities space. In order to allow for transitions between the occupied interior space and occupied amenities space, a step in the slab top surface is provided to allow for the installation of waterproofing and a pedestal paver system with the amenities space. A 3 in. expansion joint is provided to separate the north side of the structure from the south side of the structure.

The north and south towers (floors 6 to 22) have the same structural system which 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 ft. on center. The live end anchors are provided on both elevations based on the tendon layout. Draped 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 select columns. Post-tensioned cantilever balconies are provided on all elevations.

The building is clad with an exterior insulation and finishing system (EIFS) and has a flat roof. The building design architect was EDI International (EDI) and the design structural engineer of record is Henderson Rogers Structural Engineers (HRSE). The state of Connecticut required threshold structural peer review was performed by Loureiro Engineer Associates, Inc.

PARTIAL COLLAPSE

On February 1, 2022, a partial collapse of the Level 5 slab occurred in the amenities area. The collapsed area measures approximately 20 ft. east/west by 15 ft. north/south and is bound within column lines G9/G10 and TE/GA (Figures 4 & 5). The section of slab that collapsed is adjacent to a transition zone where there is a 10-inch-high step in the slab along its north and east sides. At the south edge of the collapsed area, there is an expansion joint. The step in the slab was provided to accommodate waterproofing and pavers installed at the topside of the amenities deck. The original design drawings indicate that the east/west oriented post tensioning at this area was to be continuous through slab step and the concrete slab construction was to be monolithic (Figure 6).

Immediately following the collapse, HRSE issued a letter entitled: *"Harbor Point The Allure- Local Slab Failure at the Amenities Deck"* dated February 2, 2022 (Appendix A). This letter indicates that:

- The failure is local and isolated within a segment of the stepped slab region of the amenities deck.

- The condition should not impact the global stability of the overall building structure and areas outside of the impacted region can be considered safe to occupy.
- Shoring will be needed to prevent future serviceability issues in the garage.
- The stepped slab condition within an interior bay is unique to this building and does not occur at any of the other Harbor Point P-Block Buildings.

Additionally, a second engineer, EDM was hired by BLT to review the partially collapsed structure. They issued a letter entitled: *"Emergency Investigation of Floor Failure"* dated February 1, 2022 (Appendix B). This letter indicates that:

- The failed slab appeared to be an isolated condition not having influence on the rest of the garage or residential structure. Therefore, the structural integrity of the remaining garage and residential building structure are not affected by this event and it does not present a threat to life and safety of the building's occupants.
- It was advised to shore and brace the immediate garage structure beneath the location of the failed slab to help distribute the added weight of the fallen slab. Additionally shoring directly underneath the sloping section of concrete slab will prevent motion of the damaged slab until a method of removal has been established.

Baker Concrete Construction (BCC) issued a *"Work Plan for Remedial Action"* dated February 4, 2022, which included the following (Appendix C):

- A preliminary shoring and safety plan, which was immediately installed.
- A proposed slab stabilization and removal plan which had not been implemented at the time of the WJE review.

OBSERVATIONS

John Cocca, P.E., Andrea Shear, P.E. and Hannah Rakowski, P.E. of WJE visited the site on February 5, 2022, to review the partially collapsed slab. The following conditions were noted:

- The partially collapsed Level 5 slab measures 20 ft by 15 ft. It is a portion of the lower slab within the bay bordered by column lines G9/G10 and TE/GA. There is a crack in the west end of the slab and the east end of the collapsed portion of the slab is resting on the 4th floor level (Figures 7 and 8).
- The PT is not continuous as shown in the design and shop drawings at the slab step transition. The live (stressing) end anchorages were observed at the east end of the collapsed slab (Figure 9)
- There is a cold joint at the step in the slab at this location there is no reinforcement crossing the joint and the concrete is not roughened (Figure 10).
- Review of the failure plane indicates that there doesn't appear to be any reinforcing steel in the lower slab located higher than approximately 1-3 in. above the bottom of the slab (Figure 11 through 12).

- WJE utilized a ground penetrating radar (GPR) [4] to identify the PT tendons and mild reinforcing in the east/west direction of the partially collapsed slab. Starting from the north end of the slab, the first band is approximately 14.5 in. from the edge and the next two bands are spaced at approximately 36 in. and 43 in. on center. This results in an approximately 83.5 in. section of the south end of the slab that does not have any tendons (Figure 10). Furthermore, WJE used the GPR to identify the tendons at the remaining west lower slab. The existing 3 bands of tendons span over the existing B21 beam at the GA column line and continue west. Due to spray foam insulation on the ceiling, WJE was not able to verify if there are additional tendons to the south outside of the failure area as none were visually observed at the failure plane. (Figure 13-15).
- It is also noted that an additional north-south spanning beam exists between column line T12/T13 along GD that is not shown in the design or shop drawings provided to WJE (Figure 16).
- Since the tendons were observed to be anchored in the lower slab and not continuous across the step, it is unclear to WJE how the upper slab is reinforced or supported (Figure 17).

DOCUMENT REVIEW

Following our visit, HRSE issued a report entitled: *"Harbor Point- The Allure: Opinion of Causation- Local Slab Failure"* dated February 9, 2022 which indicated the following (Appendix D):

- The cause of the collapse is a result of the discontinuity of the PT across the slab step and that a horizontal construction joint was placed within the step transition with no shear transfer mechanism resulting in inadequate slab support. The report also indicates that the PT shop drawings show the tendons as continuous.

WJE issued a report entitled: *"Harbor Point- The Allure- Local Slab Failure Progress Report"* dated February 15, 2022 (Appendix E). The report included the observations above as well as the following preliminary findings:

- Based on our initial review we agree that the likely cause of the collapse is associated with the lack of continuous PT and inadequate support at the slab step between the upper and lower slab.
- The report also requested that various documents including the full set of design drawings, approved PT shop drawings, and approved mild steel shop drawings be provided to WJE. The letter also poses questions to HRSE prior to the City's approval to remove the existing partially collapsed slab.

HRSE issued a response letter to the WJE report entitled: *"Harbor Point- The Allure: Response to WJE Letter"* dated February 15, 2022 (Appendix F). Key points from this letter are the following:

- The as-built condition of the step does not appear to conform with the structural drawings and PT shop drawings, and the Engineer-of-Record (EOR) was not notified by the special inspector about this

[4] GPR is a non-destructive testing device that is rolled along the concrete surface and probes interior conditions using high frequency radar waves. Voids in the concrete, the bottom surface, or the presence of metal embedments such as reinforcing or post-tensioning tendons, are reflected in the GPR display.

non-conformance. The EOR was not aware of this condition, and no sketches/drawings/calculations were provided to the EOR for review.

- HRSE does not have special inspection reports for this area, as they were not provided to the EOR for review.
- The as-built condition of the PT layout in the partially collapsed area does not appear to conform with the structural drawings and PT shop drawings. There should be six (6) bundles of PT cables extending from low slab into the high slab at the step and anchoring at the expansion joint. Slab assessment for missing PT cables will be conducted in our Phase 2 of the Work Plan.

WJE was requested on behalf of the city to review the February 4, 2022, BCC plan for slab stabilization and removal of the partially collapsed slab. WJE reviewed the documents and issued a letter entitled: "*Harbor Point- The Allure- Local Slab Failure Demolition Application*" dated February 18, 2022 (Appendix G). In this letter WJE provided recommendations on the proposed temporary shoring and suggested that prior to demolition, material samples be taken in the event that further analysis was required. BCC updated their demolition plan and resubmitted it on February 22, 2022 (Appendix H). The plan was ultimately approved by the city and a demolition permit was issued by the City. The following samples were taken and are currently located in the Stamford Engineering Department:

- 6 concrete cores from partially collapsed slab.
- Samples of conventional reinforcement and PT strands.

On February 18, 2022, WJE issued a report entitled: *"Harbor Point- The Allure- Special Inspection Questions" (Appendix I).* This report poses questions regarding the special inspections that were performed and HRSE's role as the special inspection coordinator. WJE requested copies of the special inspection reports for review.

HRSE responded to the WJE February 18 letter with a letter issued on February 22, 2022 entitled: *Response: Harbor Point-The Allure-Special Inspection Questions" (Appendix J).* In this report, HRSE indicates the following:

- HRSE have been re-reviewing all of the inspection reports, PT and mild steel shop drawings, and the recently received pour sequence document, correspondence, and photographs from Baker Concrete. HRSE intends to identify locations for review with the City of Stamford and/ or their Engineering or technical representative, as well as the Design, Development, and Construction teams where HRSE finds potential discrepancies or where additional testing may be required to determine or verify as-built conditions.
- Additionally, HRSE explains they feel they performed their duty as the special inspection coordinator and provided the "*Statement of Special Inspections*" dated 2/27/2018 as well as their signoff letter dated May 18, 2020 and the special inspector, Coastal Materials Testing Lab, LLC (CMTL), signoff letter dated May 12, 2022 indicating that all inspections were completed in accordance with the statement of special inspections (Appendix K).
- Finally, HRSE provided all special inspection reports for review.

WJE reviewed the following documents to understand the design and construction of the building with a particular emphasis on the Level 5 slab as this is where the partial collapse occurred.

- Architectural Drawings issued by EDI issued for permit on October 19, 2017.
- Structural Drawings issued by HRSE for permit on January 22, 2018
- Post Tensioning Shop Drawings issued by CCL dated March 7, 2018
- Partial Rebar Shop Drawings issued by Gerdau dated April 12, 2018.

WJE reviewed the provided special inspection reports which were completed by CMTL particularly for the Level 5 slab construction. Attached in Appendix L is the Level 5 slab pour sequence as well as the special inspection reports for all pours at Level 5. None of the reports indicate that the special inspector had the PT shop drawings on site at the time of their visit, only the Gerdau rebar drawings are referenced in the reports and none of the inspection reports mention the post-tensioning or the CCL shop drawings. All reports indicate "area ready for concrete placement." When further documentation regarding the post-tensioning placement inspections were requested by the City, the only thing provided by CMTL was a March 25, 2022 letter entitled *"Building P4-P5 (Permit #B-17-782)"* stating that they did in fact inspect the post-tensioning tendons for layout, profile and bundling (Appendix M). No reports, photos or additional information was provided. Based on this, WJE recommended that two typical bays be scanned using ground penetrating radar (GPR) at the north and south sides of the structure to verify that the post-tensioning layout was done in accordance with the approved shop drawings. Additionally, GPR scanning was done directly adjacent to the partially collapsed area as directed by HRSE.

WJE reviewed the March 31, 2022 and June 7, 2022, Baker Concrete Construction (BCC) reports entitled: *"Harbor Point Allure Block P4-P5"* (Appendix N). These reports presents the findings of GPR scanning that was completed at the topside of the Level 5 slab directly adjacent to the area of the partial collapse and at the underside of two typical bays at Level 5 slab. Additionally, while on-site on May 31, 2022, WJE reviewed the markings at the underside of the slab from the scanning performed by Baker. The following was noted in the reports:

- BCC subcontracted the scanning to Ground Penetrating Radar Systems, LLC (GPRS)
- Uniformly spaced tendons were documented with spacings and drapes that appear to match the approved shop drawings at all scanning locations
- Banded tendons at the column line were documented with spacings and drapes that appear to match the approved shop drawings at all scanning locations.

On March 11, 2022, HRSE submitted their initial repair drawings and calculations to the City for approval of the repair of the partially collapsed slab. WJE was asked to peer review the design on behalf of the City. The peer review consisted of review of the repair design drawings as well as review of the calculations for the design.

While reviewing the approved shop drawings and the original design drawings for the 5th floor slab, it was determined that at all of the slab steps at the Level 5 slab, the post-tensioning was dis-continuous at the step (Appendix O). WJE reviewed a March 21, 2022, letter from HRSE entitled: *Response: Harbor Point-The Allure-Special Inspection Questions- WJE Comment 1"* which states the following (Appendix P):

- HRSE recently discovered that the post tension engineer, CCL, modified the original design intent shown on the Construction Documents at the stepped plaza deck. Instead of running the tendons continuous through the step, they were terminated at the upper and lower slab faces, similar to (but not the same) as the collapsed slab area.
- This modification altered the design and behavior from continuous flat plate spanning between columns to a cantilevered slab with opposing ends of the cantilever occurring at the step.
- CCL and HRSE independently developed new structural models of the as-built condition and they reviewed each other's models.
- One of the models found a slight overstress in three isolated locations when subject to the code prescribed live loads.
- As a result two existing beams were strengthened and one new beam was added at the garage in addition to the repairs for the partial collapse.

WJE completed the peer review of the repair design and the permit for the re-construction was issued on 4/28/2022 (Appendix Q). WJE was engaged by the City to perform construction period services during the repair of the slab. WJE reviewed the submittals approved by HSRE and performed site visits at key points during the construction. Site visit reports were provided to both the City, BCC and HRSE. All the reconstruction work was found to have been completed in accordance with the approved construction documents.

Finally, WJE was provided with a copy of the Adapt Builder models of the Level 5 slab which were independently reviewed. WJE issued a letter to HRSE with comments on the model for review (Appendix R). The comments pertained to loading of the model, material properties used and questions regarding the top bars.

HRSE responded to our comments in an August 11, 2022 letter entitled *"Response: Harbor Point- The Allure-Stamford Model Review- WJE Comments"* (Appendix S).

- HRSE provided clarifications on their model loadings that appear reasonable.
- Although HRSE did not use the ACI method to determine concrete strength based on the actual concrete break strengths, they feel as though they used conservative low-end values based on their review of the break strengths.
- Finally, there remains a couple isolated areas where the number of top bars provided at the columns does not meet the minimum requirements of ACI. HRSE has indicated and provided documentation that are these locations, the bars are not required for strength. ACI commentary indicates that these bars are provided for crack control and ductility. Due to the slab being a 2-way flat plate, ACI requires the design be based on an uncracked section therefore the bars are not needed for crack control. HRSE also cites a PTI reference for the bars not being necessary other than the code requiring them.

CONCLUSIONS

Based on our review WJE concludes the cause of the collapse is associated with the lack of continuous PT and a cold joint at the slab step transition between the upper and lower slab. The as-built condition

results in a 20 ft. cantilevered slab span east of column line GA. This is a change to the structural system that doesn't appear in either the provided original design drawings or approved PT shop drawings.

Since the as-built condition was not documented on the shop drawings that were reviewed and approved by the EOR, and there were no issued revised sketches from the EOR, the special inspector should have issued a non-conformance report for this condition during his review of the installed post tensioning prior to the concrete pour. It is our opinion that the special inspector never reviewed the post tension layout prior to concrete placement as none of their reports mention the post tensioning or the shop drawings. The special inspection reports only reference the conventional reinforcing steel and the "ready for concrete placement" is solely based on the conventional steel placement. These reports were reviewed by HRSE and the missing information pertaining to PT was never identified.

BCC, the concrete sub-contractor, should have issued a request for information (RFI) from HRSE and CCL while installing the post-tensioning in the area of the collapse since the as-installed layout is not found in any documentation from HRSE or CCL provided to us.

HRSE, as the special inspection coordinator, should have been reviewing the special inspection reports as the work was progressing. In our opinion, they should have noticed that there was no documentation in regarding the required inspections for the post tensioning layout, drape and bundling in any of the reports nor a mention that the inspector had the CCL shop drawings with him on site. In our opinion, this oversight should have been corrected by the time the construction reached Level 5. Additionally, HRSE approved the Level 5 floor post tensioning shop drawings without realizing there was a major structural design change in the CCL drawings that resulted in additional beam repairs to the building outside of the area of the collapse.

Should you have any questions, please feel free to contact is

Sincerely,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.

John Cocca, P.E.
Associate Principal & Project Manager

Figure 1- Overall View of Allure. West Looking East

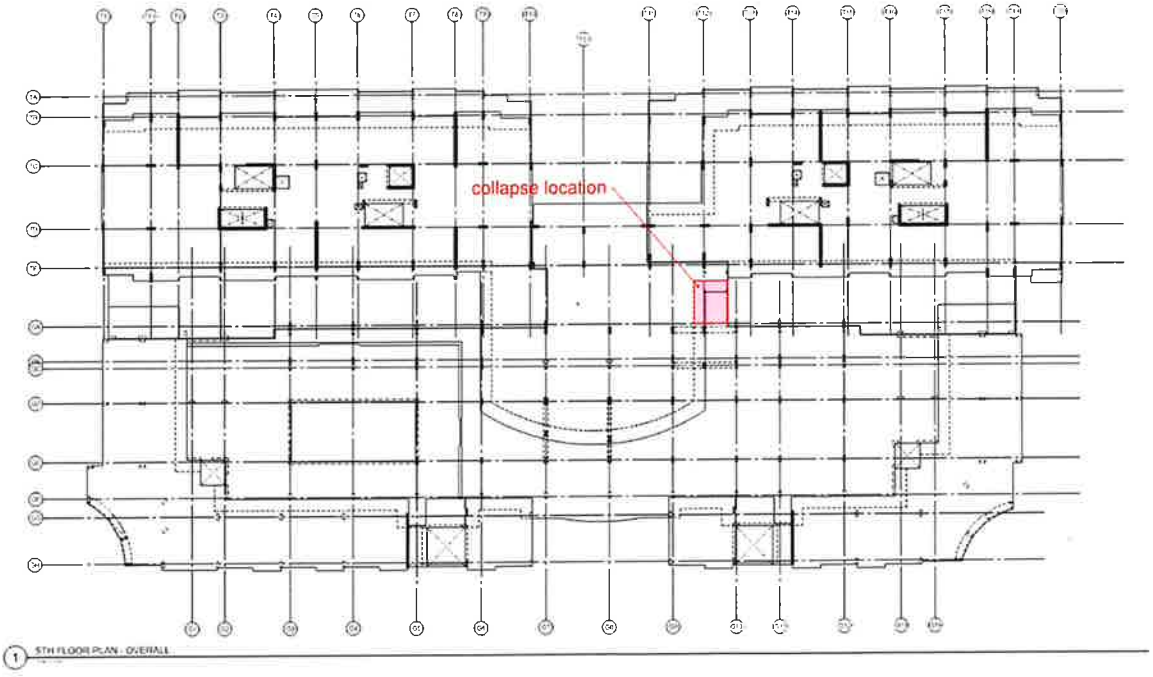


Figure 2- Collapse Location From Structural Drawings

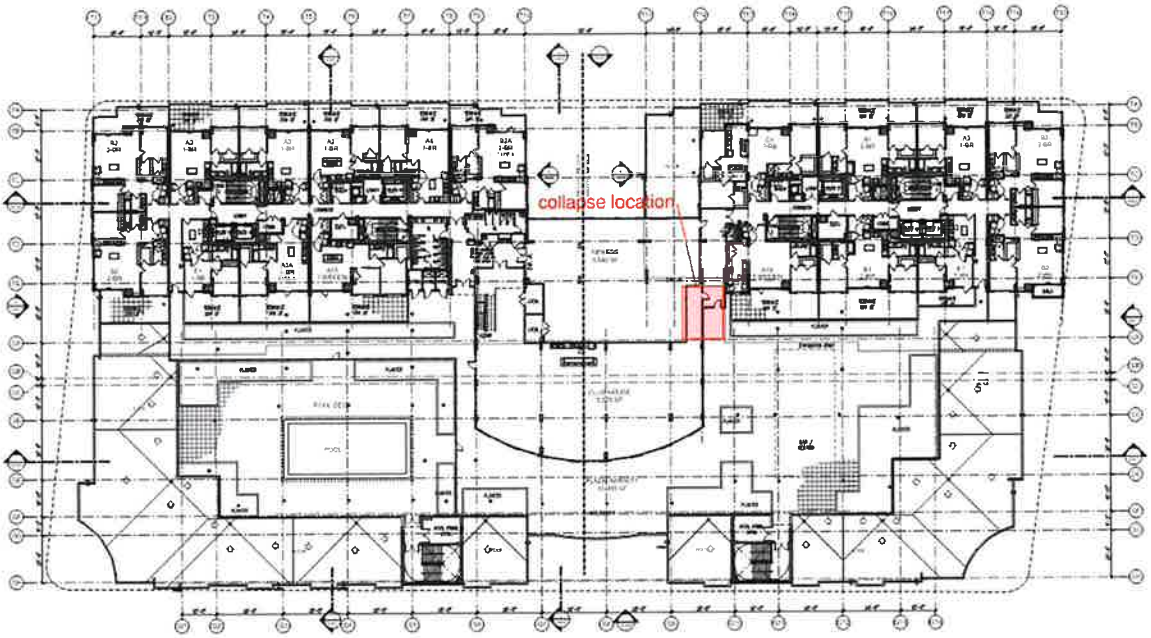


Figure 3- Collpase Location from Architectural Drawings

Figure 4- Partially Collapsed 5th Level Slab. Looking East to West

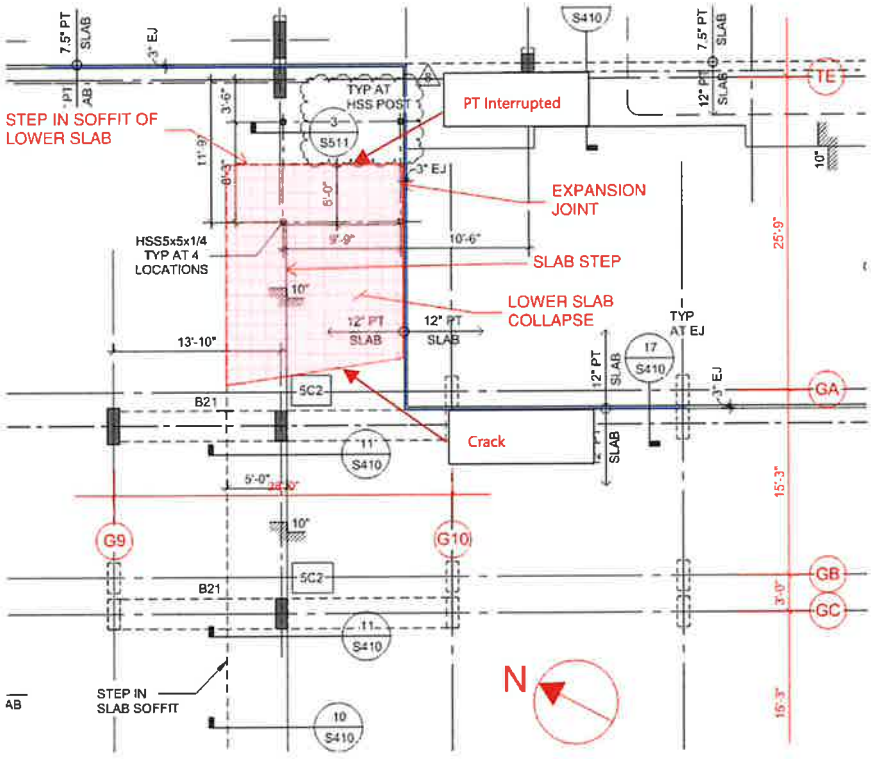


Figure 5- Partial Floor Plan from HRSE Report

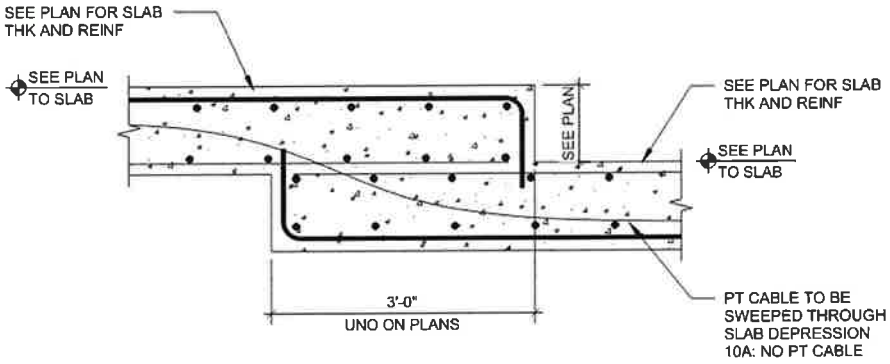


Figure 6- PT Step Detail from Original Drawings and HRSE Report

Figure 7- Partially Collapsed Slab looking West

Figure 8- Shear Failure at West End of collapsed slab (left arrow). Note B21 Beam (right arrow). Collapsed Area looking South

Figure 9- Live End Anchorages at East End of Lower Collapsed Slab (Red Arrow)

Figure 10- Formed cold joint within transition band of stepped slab, East End of Collapsed Slab

Figure 11- No top reinforcement at failure plane Northwest Portion of Collapsed Slab. Note smooth formed surface at underside of upper slab at transition.

Figure 12- No Top reinforcing Steel Crossing Failure Plane. View Looking North to South at West Failure Plane. Exposed bars exposed are bottom bars.

Figure 13- PT Layout at Slab Looking East to West. Red lines indicate positions of PT strands

Figure 14- Underside of lower slab to west of partial collapse. Arrow indicates 83.5 in. wide region where tendons were missing in collapsed slab. WJE could not scan because of Insulation.

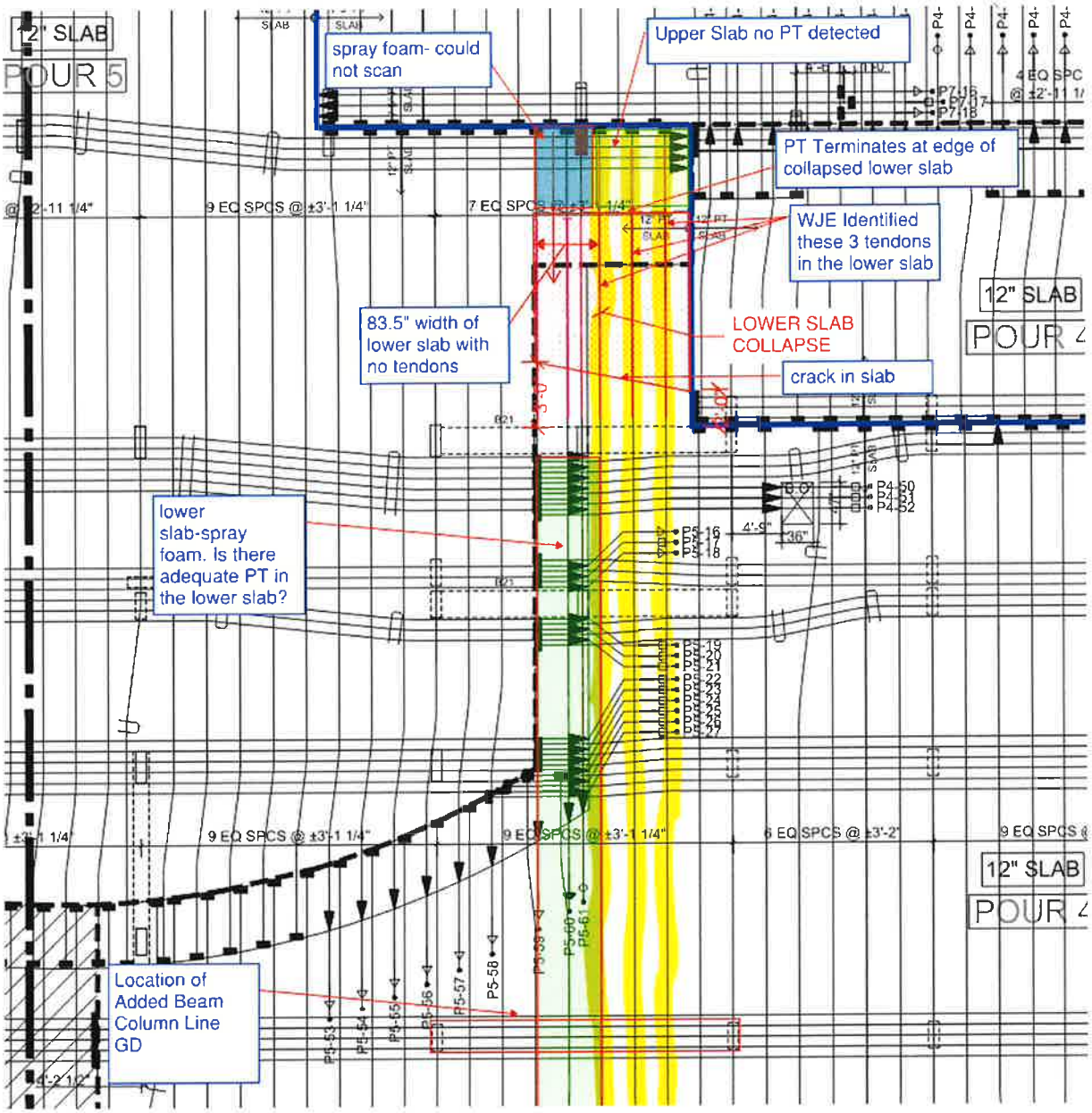


Figure 15- Sketch of Existing PT Layout

Figure 16- Added Beam Not Shown in any Drawings at Line GD (arrow)

Figure 17- Upper Slab Reinforcement in the step transition Area adjacent to the Collapsed Slab is not evident (arrow band).

Appendix A

HENDERSON ROGERS
structural engineers

February 2, 2022

Mr. Tim Yahn
Managing Director of Construction
Building and Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

RE: Harbor Points The Allure-Local Slab Failure at Amenities Deck
850 Pacific Street, Stamford CT

Dear Tim:

Yesterday afternoon, we were advised of a partial floor failure at the amenities deck (Level 5) above the existing parking garage. Subsequent our discussion and review of the photos, we visited the site this morning to assess the condition in person and found the floor failure to be local and isolated within a segment of the stepped slab region of the amenities deck. Based on our findings at the time of our visit, the condition should not impact the global stability of the overall building structure and the areas outside of the impacted region can be considered safe to occupy. Shoring will be needed; however, in the shaded regions of the attached plan to prevent future serviceability issues until the area can be properly repaired. We should note that the failed stepped slab condition within the interior bay is unique to this building and does not occur at any of the other Harbor Points P-Block buildings.

We hope you find this information useful. Please contact our office should you have any questions or need additional information regarding this matter.

Respectfully,
Henderson Rogers Structural Engineers, LLC

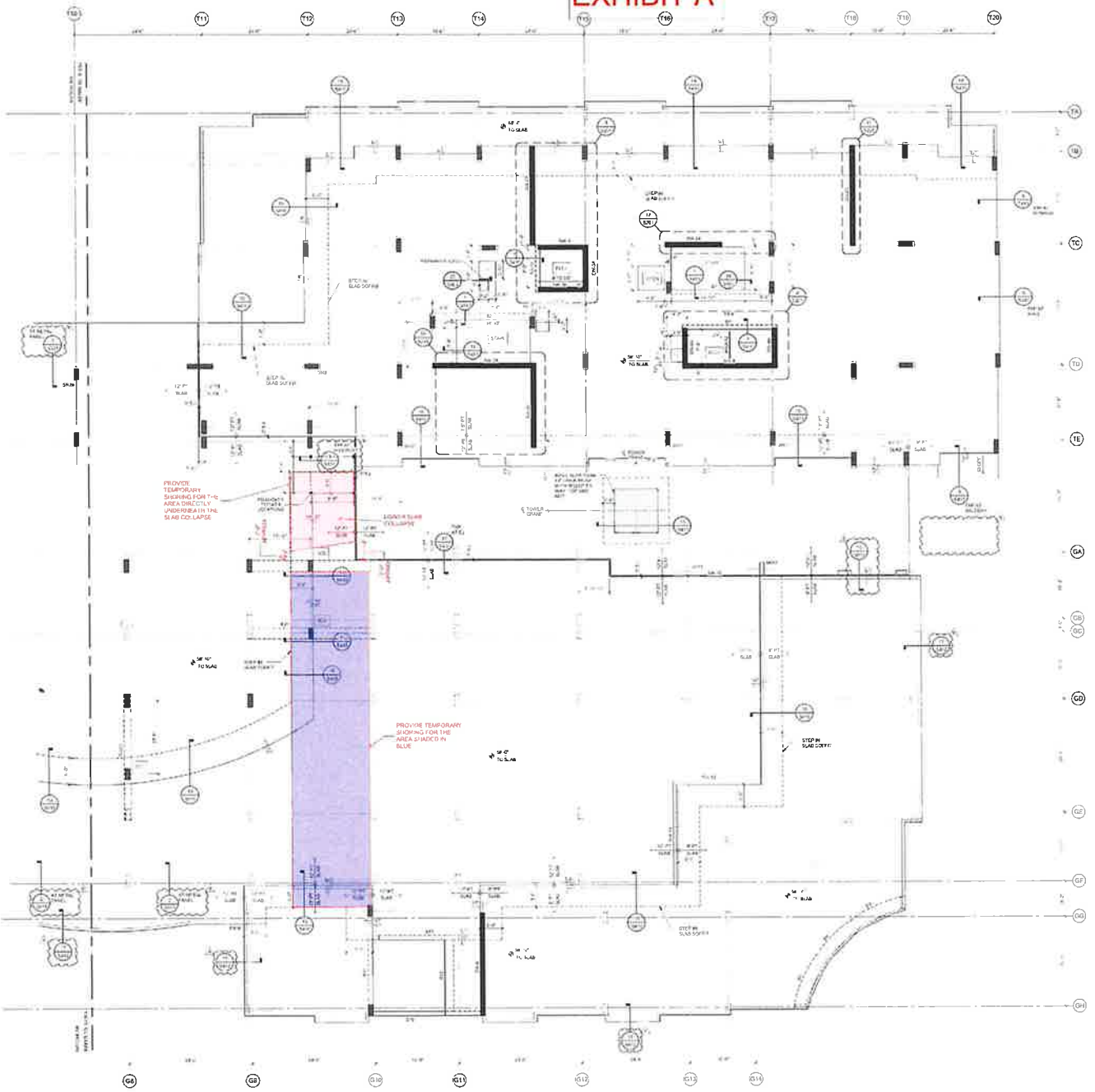
Madison H. Henderson, P.E.
Principal

02/02/2022

Cc: Ralph Martin (BLT); Vivek Gurjar, PE (HRSE); Ben Downing, PE (DCE)

Encl: Partial Plan

EXHIBIT A



1 5TH FLOOR PLAN - SOUTH

KEY PLAN

EDF International, PC.

OWNER
BUILDING & LAND TECHNOLOGY

CIVIL
CIVIL 1

PLANNING
REDNISS & MEAD

STRUCTURAL
Henderson Rogers Structural Engineers

MEP
COLLECTIVE DESIGN ASSOCIATES, LLC.

SIGNAGE
FUSS & O'NEILL, INC

POOL
FRANK A. SABATINI, PE

HARBOR POINT

HARBOR POINT
BLOCK P4-P5
STAMFORD, CT

5TH FLOOR PLAN

S105B

Appendix B

edm

February 01, 2022

architecture
engineering
management

Mr. Tim Yahn
Managing Director of Construction
Building and Land Technology
1 Elmcroft Road – Suite 500
Stamford, Connecticut 06902

Re: Emergency Investigation of Floor Failure
Harbor Point, Block P4-P5, 850 Pacific Street, Stamford, Connecticut

Dear Mr. Yahn,

On the afternoon of February 1st, I received a phone call from you indicating that a section of concrete slab at the above referenced location had failed. You requested that I visit the site as soon as possible to make a preliminary evaluation of the failure condition. In addition, determine the nature of this structural failure and whether there was reason for concern that further damage may develop making it necessary to take additional steps to protect life and safety of those in the garage and in the adjacent residential units. I arrived on site at around 5:00 pm. My initial observations were that a section of concrete roof slab (fifth floor level) had partially collapsed with one end falling to the fourth-floor parking deck below. The other end of the of the concrete slab remained connected to the fifth floor. According to BLT staff the location of the failed concrete slab was approximately between column lines TE/GA and G9/G10 at the fifth-floor level which happens to be the roof over this section of parking.

The failed slab appeared to be an isolated condition not having influence on the rest of the garage or residential structure. Therefore, the structural integrity of the remaining garage and residential building structure are not affected by this event and does not present a threat to life and safety of the building's occupants.

It was advised to shore and brace the immediate garage structure beneath the location of the failed slab to help distribute the added weight of the fallen slab. In addition, shoring directly underneath the sloping section of concrete slab will prevent additional motion of the damaged slab until a method of removal has been established.

It does not appear that the fourth-floor parking slab was damaged as a result of the slab falling from the fifth floor and impacted the fourth-floor slab. Once the damaged slab is removed, it would be advisable to re-examine that section of the fourth-floor parking slab for damage that was not visible earlier. It would be prudent to consult with the design structural engineer to determine what may have happened.

If you have any questions regarding our preliminary observations, please contact us at your earliest convenience.

Sincerely,

edm

Edward G. Shelomis, P.E. & L.S.
Director of Engineering

pittsfield, ma
unionville, ct
troy, ny

888.336.6500

www.edm-ae.com

Appendix C

>>> PEOPLE. HONOR. GRIT.
BAKER CONCRETE CONSTRUCTION
expect more

Attachment 1
7 pages

CORPORATE OFFICE
900 North Garver Road • Monroe, OH 45050
Phone: 513.539.4000 • Fax: 513.539.4251
www.bakerconcrete.com • Toll Free: 800.539.2224

Harbor Point, Block P4-P5, 850 Pacific Street, Stamford, Connecticut
Work Plan for Remedial Action Level 5 Slab

The purpose of this work plan is to provide a phased approach (process) to safely stabilize and remove the affected slab area on the Allure (P4-P5) building in Stamford CT. This plan is limited to the first two phases of work:

- Preliminary Shoring and Safety
- Slab Stabilization and Removal

A work plan for the third phase, Slab Reconstruction, will be submitted separately once Henderson Rogers Structural Engineers (HRSE), the engineer of record, has prepared the plans for slab replacement.

1. Phase 1 - Preliminary Shoring and Safety
    a. Initial Response
        i. Building and Land Technology (BLT) installed security fencing around the affected area on Level P4 and access to the area from the inside the building and on the Plaza Level (Level 5) was safe guarded.
        ii. BLT contacted a local structural engineer from EDM to provide a preliminary evaluation of the structure and to recommend initial safeguards of the garage and surrounding structure. See attached EDM letter dated February 1, 2022.
        iii. BLT addressed EDM's recommendation to stabilize the fallen slab by installing 6x6 dimensional wood posts on two sides of the fallen slab and steel post shores were installed on the level immediately below the affected area.
        iv. Two additional lines of 6x6 dimensional wood posts have been installed under the fallen slab to provide additional support and to further distribute the loads the fallen slab is imposing on the Level 4. The wood posts were cut and braced together as a unit beside the fallen slab and will be slid into place so that no one entered the area beneath the fallen slab.

2. Phase 2 - Slab Stabilization and Removal
    a. Slab Stabilization– Reference HRSE Letter dated February 2, 2022, attached.
        i. The HRSE letter identifies the two areas that require temporary shoring, the area immediately below the fallen slab (marked in Red) and a larger area adjacent to the fallen slab (marked in Blue).
        ii. Baker has completed a temporary shoring plan showing the density and number of levels that will be temporarily shored. This sealed plan will be included as a separate document.
        iii. This temporary shoring will be installed prior to the issuance of the demolition permit.
        iv. The temporary shoring plan has been designed to allow for the garage levels Basement, Level 1, Level 2, and Level 3 to remain in use during the Slab Removal and Slab Reconstruction phases. The temporary shore layout has drive aisles to allow cars to pass through the shored areas. See the cross sections on the attached temporary shoring plan.

CORPORATE OFFICE
900 North Garver Road • Monroe, OH 45050
Phone: 513.539.4000 • Fax: 513.539.4251
www.bakerconcrete.com • Toll Free: 800.539.2224

v. Barriers will be installed at the drive aisles to prevent any vehicles from hitting the temporary shores.

b. Slab Removal
   i. This work plan along with the attachments will be submitted to the City of Stamford, Building Inspection Department for issuance of a demolition permit.
   ii. Once the permit has been issued, Structural Technologies, a Baker subcontractor, will perform the slab removal work.
   iii. The following is an overview of the slab removal plan:
      1. Post tension slab tendons P4-84, 85 and 86 will be exposed at Level 5, adjacent to the fallen slab to relax any remaining tension. See attached CCL PT shop drawing PT 2.10 5TH Floor Slab Tendon Layout.
      2. The fallen slab will be safely demolished using remote controlled machines so that no workers will be on or under the fallen slab during the demolition process.
      3. The demolition work will be confined to the area safeguarded by the security fencing.
      4. A forklift will be used to remove the concrete debris to a dumpster or dump trucks at the ground level. This debris will be removed from the premises daily.
   iv. Structural Technologies will present their specific means and methods for the slab removal and safety plan in a Pre-Construction meeting prior to starting this work.
   v. The shores installed to stabilize the area below the fallen slab (Red Area) will remain in place until the Slab Reconstruction phase is completed.
   vi. The shores installed in the area adjacent to the fallen slab (Blue Area) will be removed once the slab tendons at Level 5 are re-stressed.

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Attachment 1: EDM letter dated February 1, 2022

Attachment 2: HRSE Letter dated February 2, 2022

Attachment 3: CCL PT shop drawing PT 2.10 5TH Floor Slab Tendon Layout

S105B

Attachment 4: Baker Concrete Temporary Reshoring Plan and Calculations – Attached separately.

HENDERSON ROGERS
structural engineers

February 2, 2022

Mr. Tim Yahn
Managing Director of Construction
Building and Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

RE: Harbor Points The Allure-Local Slab Failure at Amenities Deck
850 Pacific Street, Stamford CT

Dear Tim:

Yesterday afternoon, we were advised of a partial floor failure at the amenities deck (Level 5) above the existing parking garage. Subsequent our discussion and review of the photos, we visited the site this morning to assess the condition in person and found the floor failure to be local and isolated within a segment of the stepped slab region of the amenities deck. Based on our findings at the time of our visit, the condition should not impact the global stability of the overall building structure and the areas outside of the impacted region can be considered safe to occupy. Shoring will be needed; however, in the shaded regions of the attached plan to prevent future serviceability issues until the area can be properly repaired. We should note that the failed stepped slab condition within the interior bay is unique to this building and does not occur at any of the other Harbor Points P-Block buildings.

We hope you find this information useful. Please contact our office should you have any questions or need additional information regarding this matter.

Respectfully,
Henderson Rogers Structural Engineers, LLC

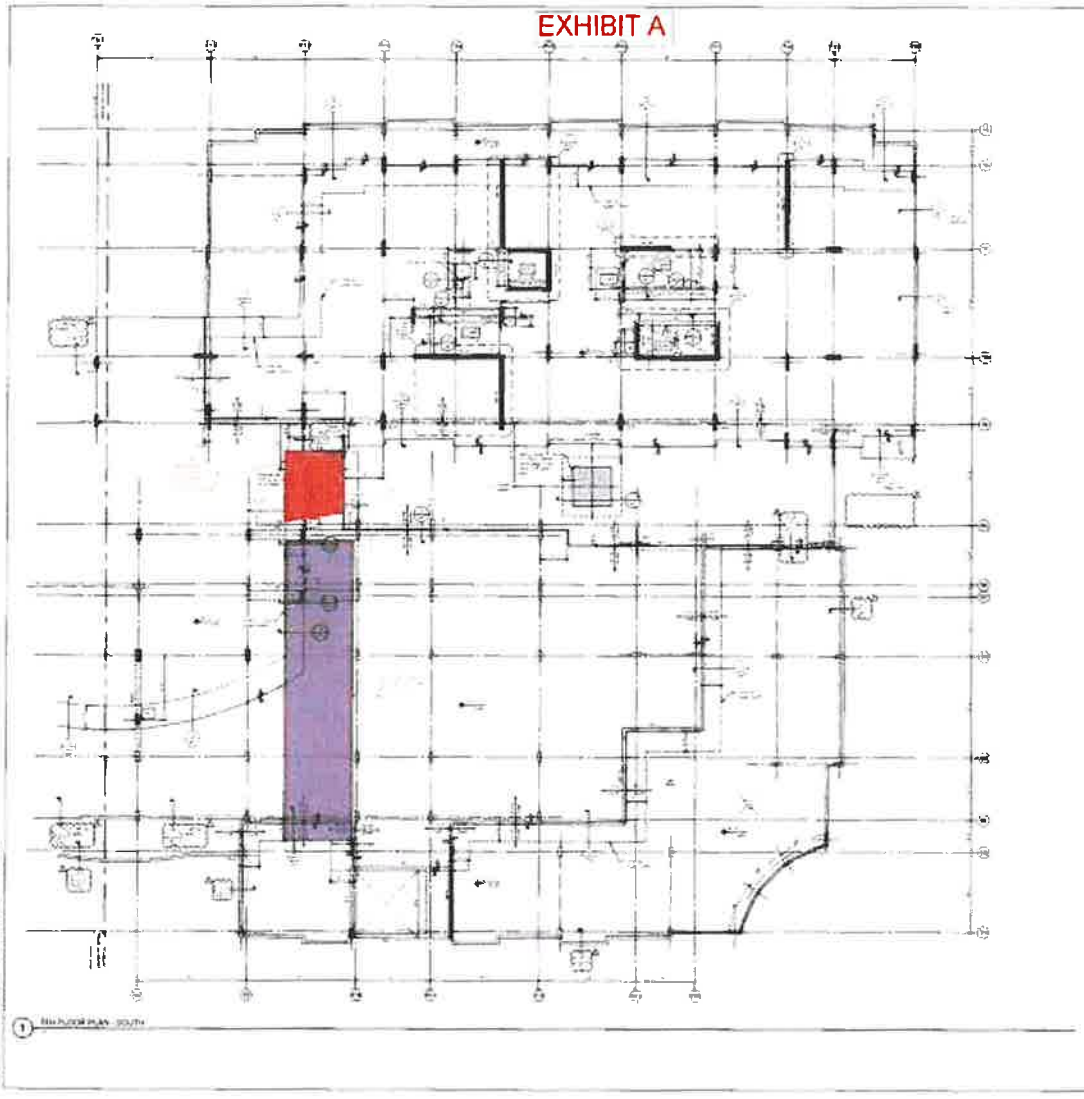
Madison H. Henderson, P.E.
Principal

02/02/2022

Cc: Ralph Martin (BLT); Vivek Gurjar, PE (HRSE); Ben Downing, PE (DCE)

Encl: Partial Plan

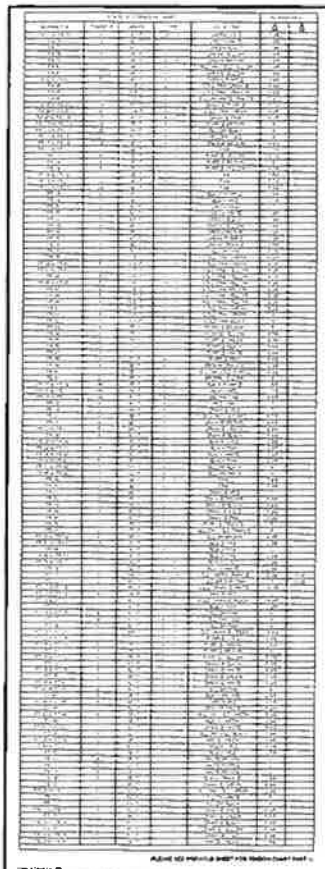
EXHIBIT A

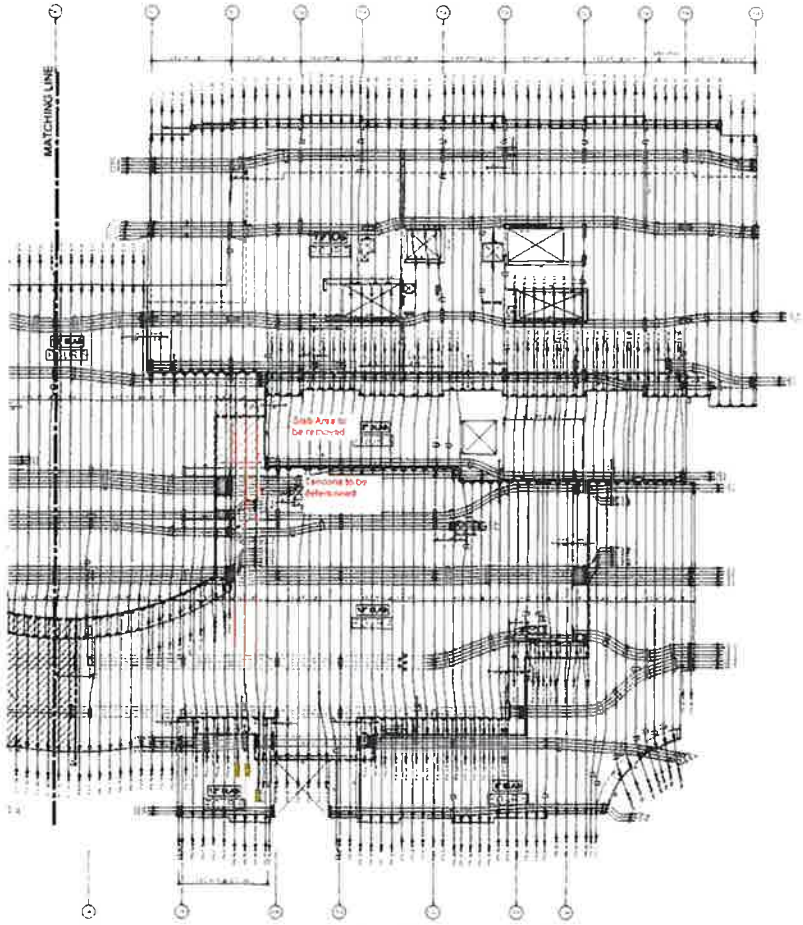


HARBOR POINT
BLOCK P4-P5
STAMFORD CT

KEY PLAN

S105B





SLAB TENDON LAYOUT - 5TH FLOOR (SLAB THICKNESS 7 1/2" U.N.O.)

SCALE: 1/32"=1'-0"

FOR APPROVAL

NOT FOR CONSTRUCTION

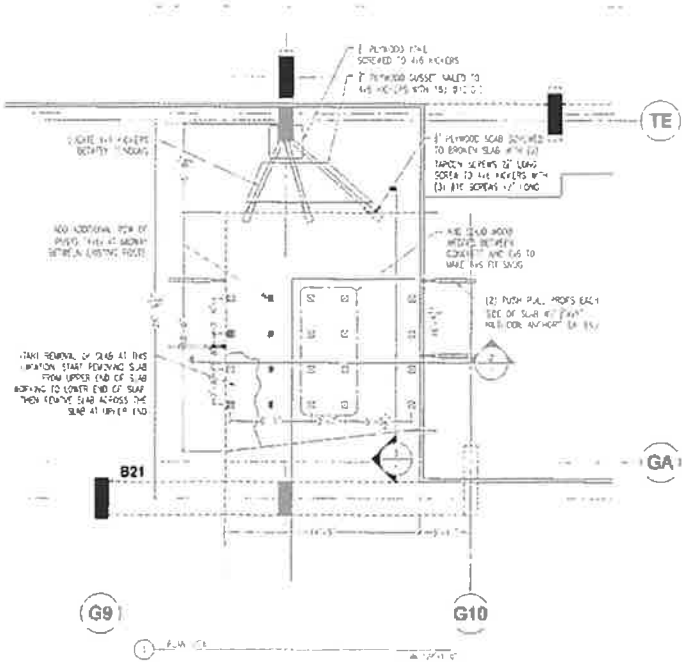
ENCAPSULATED

HARBOR POINT
BLOCK P4-P5
STAMFORD, CT

5TH FLOOR
SLAB TENDON LAYOUT

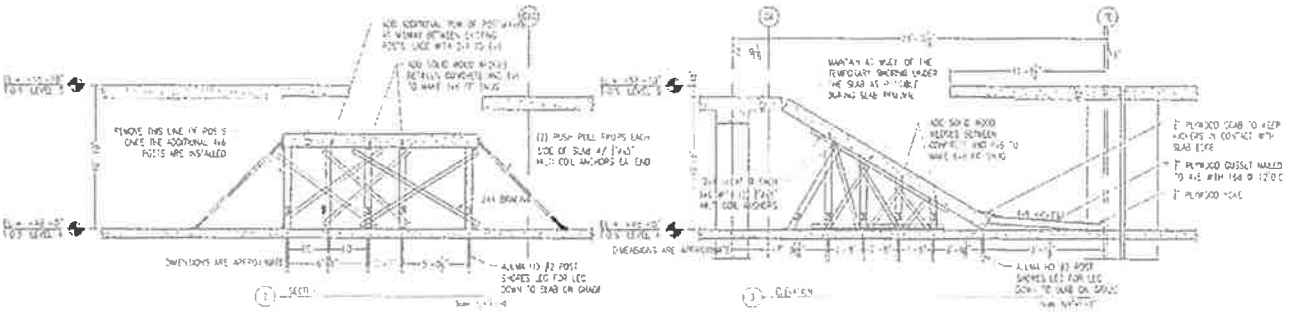
PT-2.10

ATTACHMENT 2
1 Page



NOTES

1. ADD SOLID WOOD WEDGES TO MAKE EXISTING 6x6 S FIT SNUG
2. ADD 2x4 CLEATS TO TALLEST ROW OF POSTS
3. ADD 4x6 ON LEVEL 4 BETWEEN COLLAPSED SLAB EDGE AND COLUMN (3 LOCATIONS) SNUG FIT. NAIL PLYWOOD GUSSET ON 4x6 WITH 16d NAILS @ 12"O.C. TO EACH MEMBER.
4. ADD ADDITIONAL ROW OF 4x6 POSTS (SHOWN IN SECTION 2).
5. REMOVE LEFT ROW OF POSTS (IN SECTION 2), ONE AT A TIME AS THE SLAB REMOVAL PROGRESSES.
6. DETENSION CABLES
7. START DEVOLITION OF SLAB ON LEFT SIDE UPPER END OF COLLAPSED SLAB. WORK IN DOWN HILL DIRECTION TWO OR THREE FEET THEN WORK ACROSS THE SLOPE TO REMOVE THE SLAB FROM THE HIGH END TO THE LOWER END OF THE SLAB
8. MAINTAIN AS MUCH OF THE TEMPORARY SHORING UNDER THE SLAB AS POSSIBLE DURING SLAB REMOVAL.
9. RESHORING SHOWN ON SHEET HP-L5-R-1 DATED 02.04.22 SHALL BE IN PLACE PRIOR TO DETENSIONING THE TENDONS.



BAKER

DESSLER COOPER ARCHITECTS

HARBOR POINT BLOCK P4-P5
—
STAMFORD, CT

DRAWN BY: MMS
DATE: 02.11.22
CHECKED BY: K.B.H
DATE: 02.17.22
JOB #: 10900
SCALE: 1/4"

Plan North

HARBOR POINT BLOCK P4/P5
LEVEL 5
SHORING

HP-L5-F-1

Appendix D

HENDERSON ROGERS
structural engineers

February 9, 2022

Mr. Tim Yahn
Managing Director of Construction
Building and Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

RE: Harbor Points-The Allure: Opinion of Causation-Local Slab Failure
850 Pacific Street, Stamford CT

Dear Tim:

It is our understanding that the City of Stamford, CT is requesting our professional opinion regarding the reason or cause for the recent partial collapse of the 5th level amenity deck of the Allure.
The following descriptions and conclusions are based on our review of the existing structural drawings, the post tension shop drawing submittals, photographs of the collapsed slab section, discussions with our in-house Engineers (including one who visited the site), discussions with the concrete sub-contractor, and discussions with the building developer/ owner.

The slab structure at the 5th level amenity deck and the lower garage levels consists of cast-in-place, two-way, flat plate construction reinforced with post tensioning and conventional mild steel. The tendons are banded in the north-south direction, with uniformly spaced bundles of three (3) or four (4) in the east-west. The collapsed area of slab is approximately 16'-0" x 20'-0" and bound within structural grids G9/ G10 and TE/ GE (See attached SK-1 partial plan). The failed section bears on the 4th level garage at the east side and is still connected near the 5th level beam on the west side. There is a ten (10) inch step in the slab around the failure boundaries of the north and east sides and a transition zone or widened/ deepened slab soffit to allow passage and transition of the tendons from the "high" to "low" slab (See attached SK-2, Section 10/ S4.10). The transition step is shown in section 10/S4.10 as monolithic and without a construction joint(s). A review of the structural PT layout plan S105PT-B and the post tension shop drawings indicates the uniform tendons to be continuous through the slab step transition and extending west to the opposite end of the garage, approximately 80 feet (See attached SK-2 and 3).

In our recent discussions and a review of the photographs we found that the tendons across the transition zone are missing, resulting in discontinuity of the post tension reinforcing across the slab step and the ability of the slab to span to beyond the transition slab step. Additionally, it appears from the photographs that a horizontal construction joint was placed at the step transition, with no shear transfer mechanism. A 2-inch recess was observed from the underside of the remaining 5th level slab. (See attached SK-4 and Photo).

We anticipate that the uniform tendons, which extend west from the existing beam line along grid GA have also been compromised or relaxed, and that is why we requested reshoring to extend west to the edge of the next slab drop from the collapsed area.

We hope you find this information useful. Please contact our office should you have any questions or need additional information regarding this matter.

Respectfully,
Henderson Rogers Structural Engineers, LLC

Madison H. Henderson, P.E.
Principal

Cc: Ralph Martin (BLT); Vivek Gurjar, PE (HRSE); Ben Downing, PE (DCE)

Encl: SK-1 thru SK-4; Photograph

02.09.2022

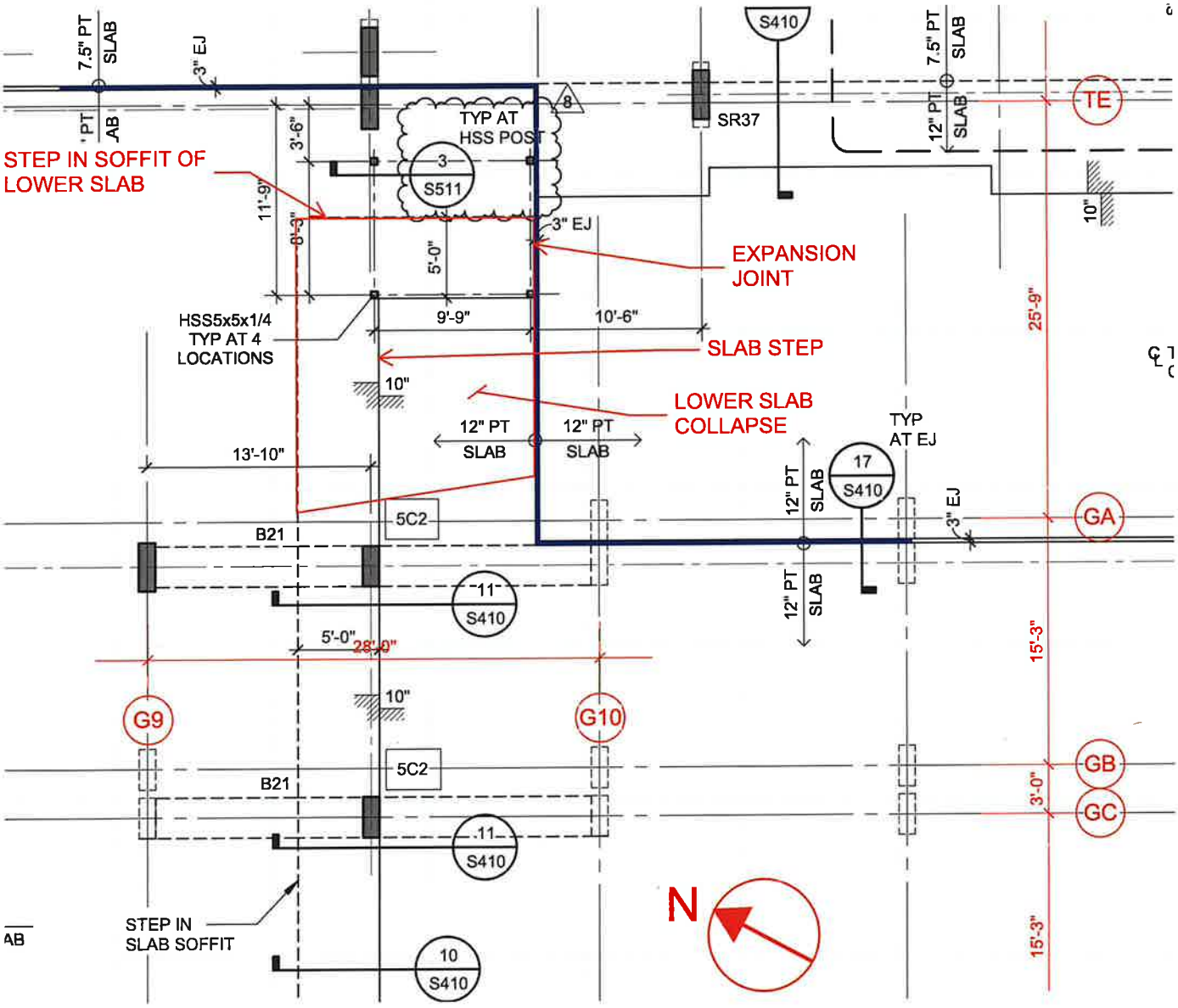
HENDERSON ROGERS
structural engineers

Project Name: THE ALLURE **Project No:**

Project Manager/Engineer: MH/VG

Date: 02/09/2022 **Sheet No:**

SK-1



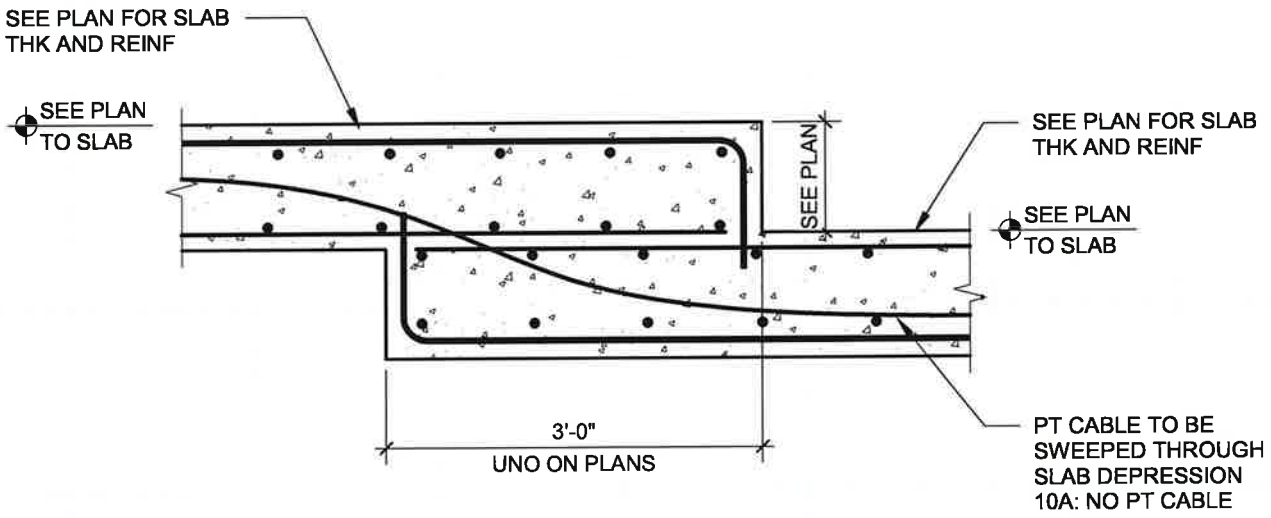
HENDERSON ROGERS
structural engineers

Project Name: THE ALLURE Project No:

Project Manager/Engineer: MH/VG

Date: 02/09/2022 Sheet No:

SK-2



10 10A SECTION

3/4" = 1'-0"

S410

HENDERSON ROGERS
structural engineers

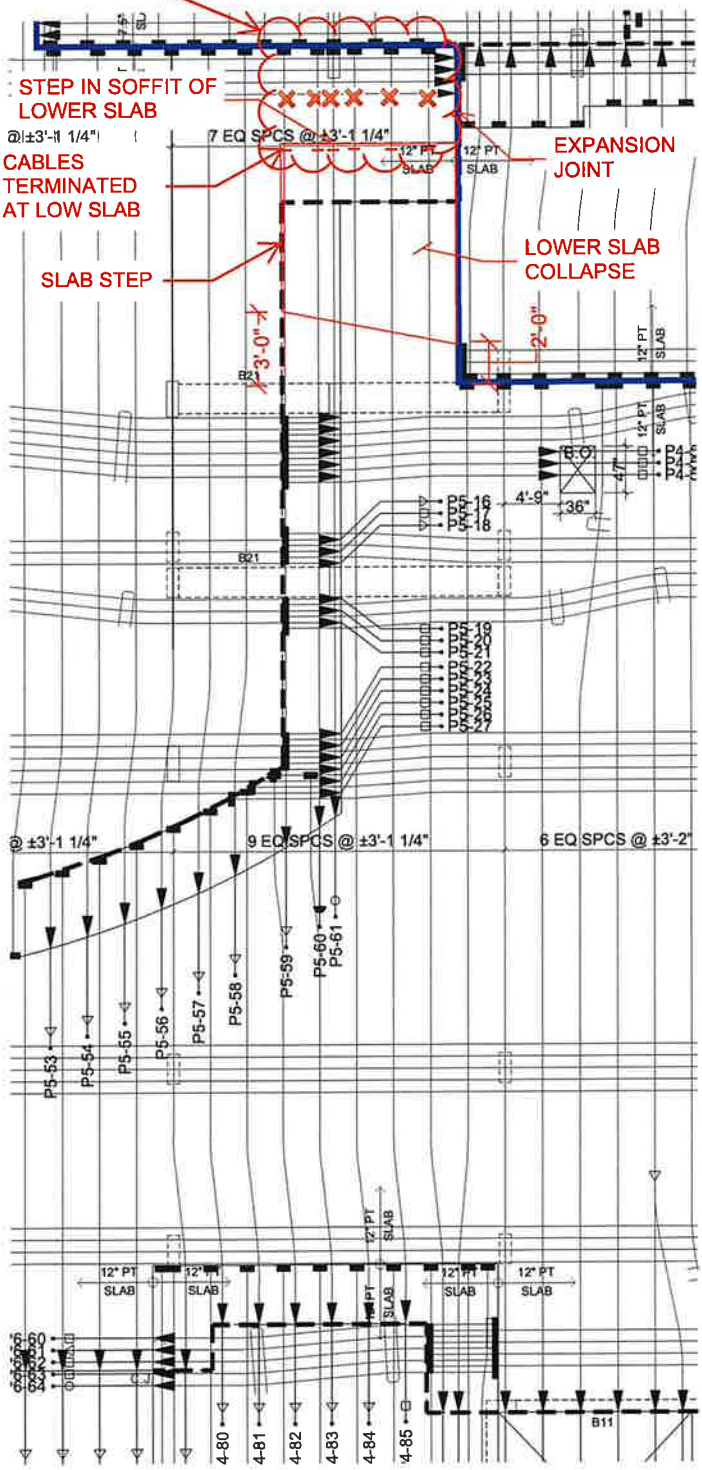
Project Name: THE ALLURE **Project No:**

Project Manager/Engineer: MH/VG

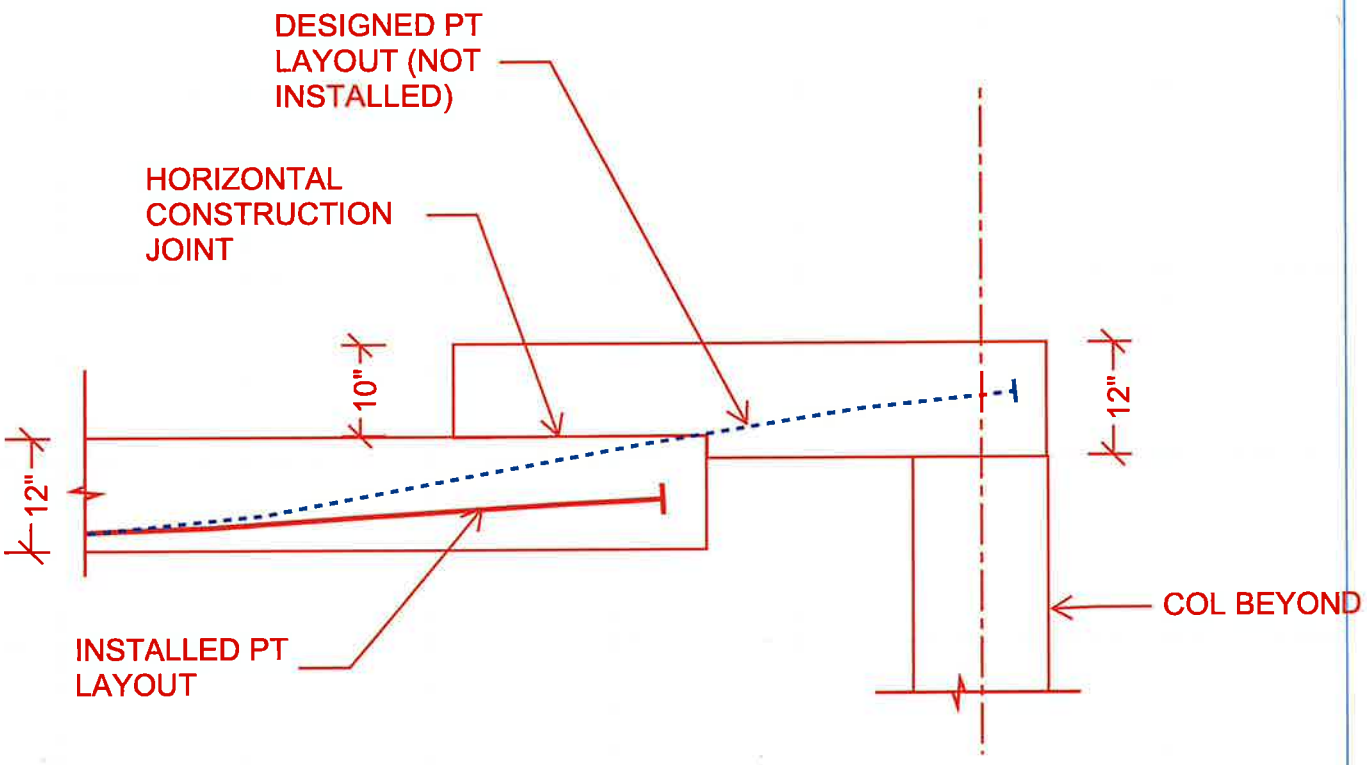
Date: 02/09/2022 **Sheet No:**

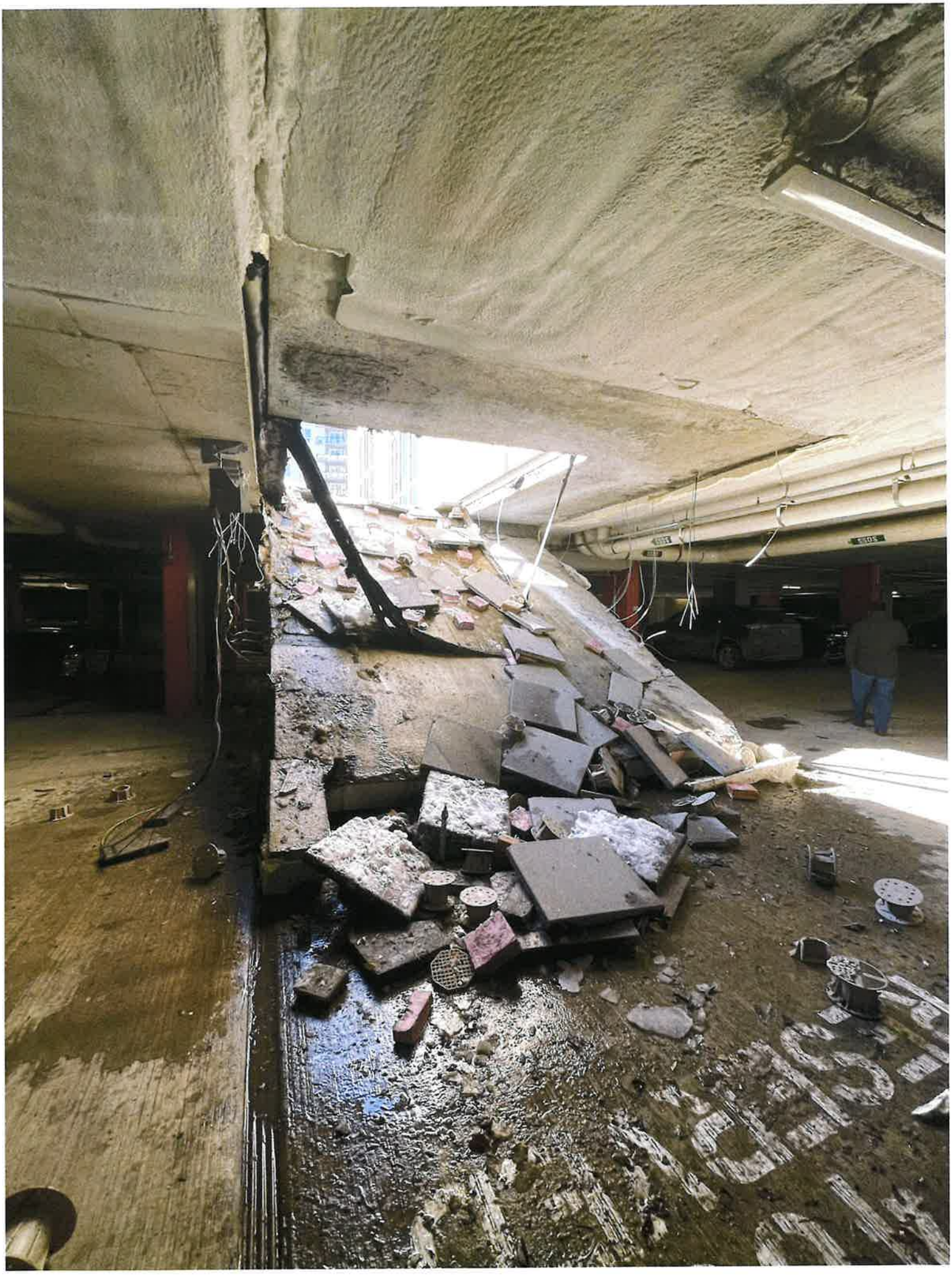
SK-3

CABLES NOT CONTINUED TO THE EDGE OF EXPANSION JOINT



SK-4


DESIGNED PT LAYOUT (NOT INSTALLED)
HORIZONTAL CONSTRUCTION JOINT
10"
12"
12"
INSTALLED PT LAYOUT
COL BEYOND



Appendix E

Wiss, Janney, Elstner Associates, Inc.
2 Trap Falls Road, Suite 502
Shelton, Connecticut 06484
203.944.9424 tel
www.wje.com

February 13, 2022
Revised 2/15/2022
Louis Casolo, P.E.
Engineering Department
City of Stamford
888 Washington Blvd, 7th Floor
Stamford, CT 06904

Harbor Points- The Allure- Local Slab Failure Progress Report
WJE No. 2022.0759

Dear Mr. Casolo:

Per the request of the City of Stamford, CT, Wiss, Janney, Elstner Associates, Inc. (WJE) has reviewed the partial collapse of the 5th floor amenity deck at the Allure, which is located within the Harbor Points development in Stamford, CT. WJE performed a site visit on February 5, 2022 to review the in-situ, undisturbed condition of the partially collapsed concrete deck. Following our visit, WJE was asked to review and provide comments on the February 9, 2022 letter entitled "Harbor Points- The Allure: Opinion of Causation- Local Slab Failure" and its attachments issued by Henderson Rogers (HR) who is the engineer of record (EOR) for the building. The following letter contains our initial comments on the provided information.

BACKGROUND AND DESCRIPTION OF STRUCTURE

The Allure in Stamford, CT is a 22-Story residential structure that was built circa 2019. The first 4 levels of the building contain a parking garage and the west side of the 5th level is an amenities plaza deck. The structure typically utilizes a post-tensioned (PT), flat plate framing system and has overall dimensions of approximately 500 ft. north/south by 250 ft. east/west, however there are beams supporting the slab at some locations. The 5th floor amenities slab is typically 12" thick and column spacings vary from 17 ft. to 28 ft. in both directions.

On February 1, 2022 a partial collapse of the 5th floor amenities level occurred. The collapsed area is approximately 20 ft. east/west by 15 ft. north/south and bound within column lines G9/G10 and TE/GA (Figures 1 & 2). The section of slab that collapsed is adjacent to a transition zone where there is a 10" step in the slab along the north and east sides. At the south edge of the collapsed area there is an expansion joint (Figure 2). The step in the slab allows for the installation of waterproofing and pavers at the topside of the amenities deck. The original design drawings indicate that the east/west spanning PT at this area was to be continuous through the slab step and the concrete slab construction was to be monolithic (Figure 3).

WJE reviewed the HR report in which they indicate that the cause of the collapse is a result of the discontinuity of the PT across the slab step and that a horizontal construction joint was placed within the step transition with no shear transfer mechanism resulting in inadequate slab support. The report also indicates that the PT shop drawings show the tendons as continuous.

WJE was provided with the following drawings for review:

- S105B- 5th Floor Plan dated 4.20.2018 issued for construction by EDI International, P.C.
- S105PT-B 5th Floor Plan- PT dated 4.20.2018 issued for construction by EDI International, P.C.
- PT-2.10- 5th Floor Tendon Layout dated 7.2.2018 issued for approval, not for construction by CCL. No submittal stamp was provided on the drawings from the EOR.

OBSERVATIONS

WJE visited the site on February 5, 2022 to review the partially collapsed slab. The following conditions were noted:

- The partially collapsed 5th level slab is confined to a 20 ft by 15 ft. portion of the lower slab at column lines G9/G10 and TE/GA. There is a crack in the west end of the slab in the failure area approximately 3 ft. east of the face of the north-south spanning B21 beam at column line GA and the east end of the collapsed portion of the slab is resting on the 4th floor level (Figure 4 & 5).
- The PT is not continuous as shown in the design and shop drawings at the slab step. The live (stressing) end anchorages were observed at the east end of the collapsed slab (Figure 6)
- There is a construction joint at the step in the slab at this location there is no reinforcement crossing the joint and the concrete is not roughened (Figure 7).
- Review of the failure plane indicates that there doesn't appear to be any steel in the lower slab located higher than approximately 1-3 in. above the bottom of the slab (Figure 8 and 9).
- WJE utilized a ground penetrating radar device to identify the PT tendons and mild reinforcing in the east/west direction of the partially collapsed slab. Starting from the north end of the slab, the first band is approximately 14.5 in. from the edge and the next two bands are spaced at approximately 36 in. and 43 in. on center. This results in an approximately 83.5 in. section of the south end of the slab that does not have any tendons (Figure 10). Furthermore, WJE used a GPR to identify the tendons at the remaining west lower slab. The existing 3 bands of tendons span over the existing B21 beam at the GA column line and continue west. Due to spray foam insulation on the ceiling, WJE was not able to verify if there are additional tendons to the south outside of the failure area as none were visually observed at the failure plane. (Figure 11). See drawings in Appendix A.
- It is also noted that an additional north-south spanning beam exists between column line T12/T13 along GD that is not shown in the design or shop drawings provided to WJE (Figure 12).
- Since the tendons were observed to be anchored in the lower slab and not continuous across the step, it is unclear to WJE how the upper slab in reinforced or supported(Figure 13).

DISCUSSIONS & RECOMMENDATIONS

Based on our initial review we agree that the likely cause of the collapse is associated with the lack of continuous PT and inadequate support at the slab step between the upper and lower slab. The as-built condition results in a 20 ft. cantilevered slab span east of column line GA. This is a change to the structural system that doesn't appear in either the provided original design drawings or PT shop drawings. If it was

not documented on the shop drawings that were reviewed and approved by the EOR, the special inspector should have issued a non-conformance report for this condition and it should have been reviewed by the Engineer of Record or corrected by the Contractor. Prior to demolition of the collapsed area, WJE, on behalf of the City of Stamford Building Department has the following initial questions for the design/construction team.

- The design drawings and PT shop drawings provided to WJE to date, do not show the as-built condition at the step in the slab. Was this condition identified the special inspector as not conforming to the design? Was the EOR or PT Specialty Engineer aware of this condition? At any point was a sketch provided or reviewed by the EOR or PT Engineer for this change? Can you provide the specific special inspection reports for this location?
- The construction documents show both a top mat and bottom mat of conventional reinforcement within the PT slab with bars in both directions. In the area of the collapse there is no top steel. Is there supposed to be a top mat of reinforcement? Was this missing steel identified by the special inspector prior to concrete placement? Can you provide the specific special inspection reports for this location? In the event the top steel is missing, how do you plan to identify and assess the extent of the non-confirming steel?
- Is the identified PT layout correct in the area of the collapsed slab? Are there only supposed to be 3 groups of tendons? The drawings seem to indicate that the tendons should be equally spaced at approximately 3 ft. on center which would indicate that 1 additional band of tendons should have been provided in this area. For the remaining portion of the lower slab that spans west to the exterior wall, is the correct post tensioning layout provided or is a band of tendons missing? If missing, how do you plan to further assess this condition? Can you provide the specific special inspection reports for this location?
- Did the design team specify the beam between column line T12/T13 along GD that is not shown in the provided drawings? There are not details for it in the provided shop drawings. Provide documentation showing the design revisions adding the beam and reason that this change was made.
- What is the geometry (layout, drape, anchorage conditions) of the PT at the upper slab at the east end of the collapse? Is there a sketch or modified drawings for this area since the PT is not continuous? Have calculations been done to show this is sufficient in the new cantilevered arrangement?
- Could the contractor provide a description of the construction sequence of the 5th floor amenity slab?
- Please provide any other relevant information to the design, construction and inspection in this area.

This letter is based on our initial review of the provided information. Additional comments or requests may be made as additional information becomes available.

Sincerely,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.

John Cocca, P.E.
Associate Principal & Project Manager

Figure 1- Partially Collapsed 5th Level Slab. Looking East to West

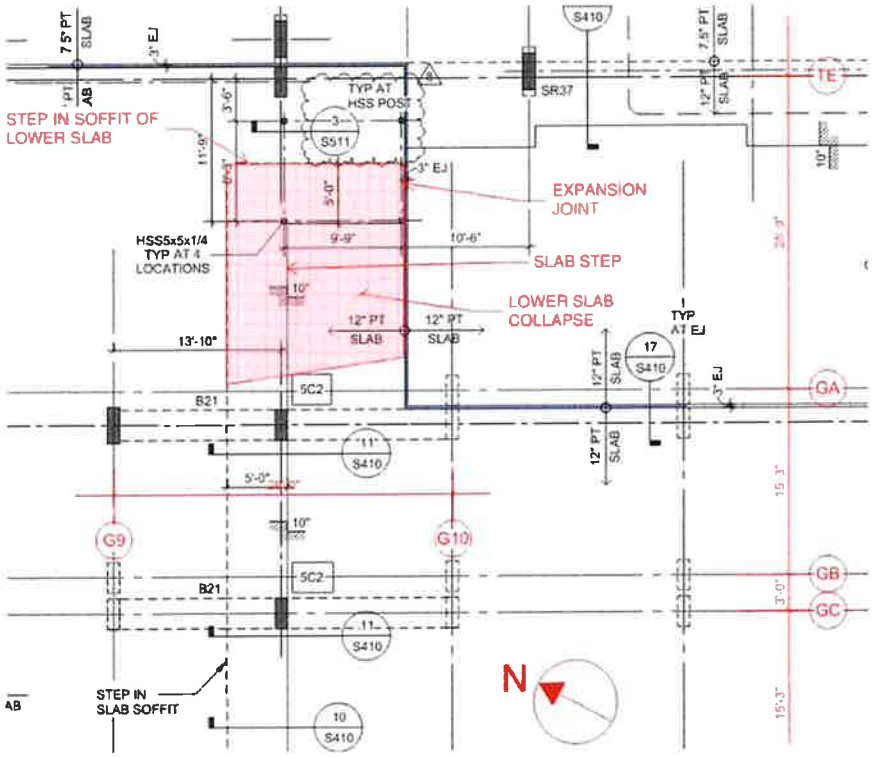


Figure 2- Partial Floor Plan from HR Report

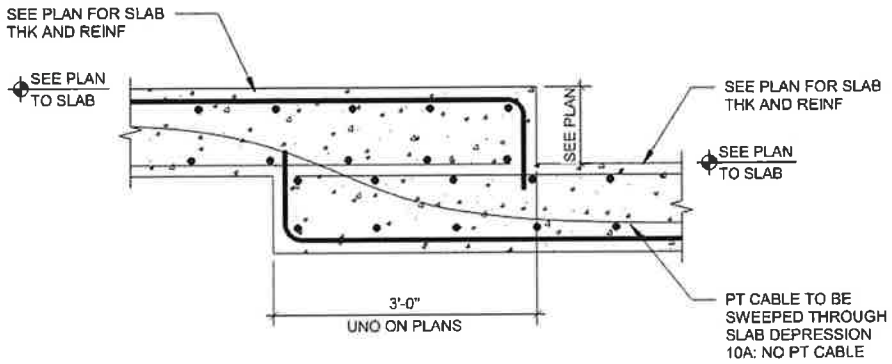


Figure 3- PT Step Detail from Original Drawings and HR Report

Figure 4- Partially Collapsed Slab looking West

Figure 5- Shear Failure at West End. Note B21 Beam. Collapsed Area looking South

Figure 6- Live End Anchorages at East End of Lower Collapsed Slab

Figure 7- Construction Joint Between Upper and Lower Slab. East End of Collapsed Slab

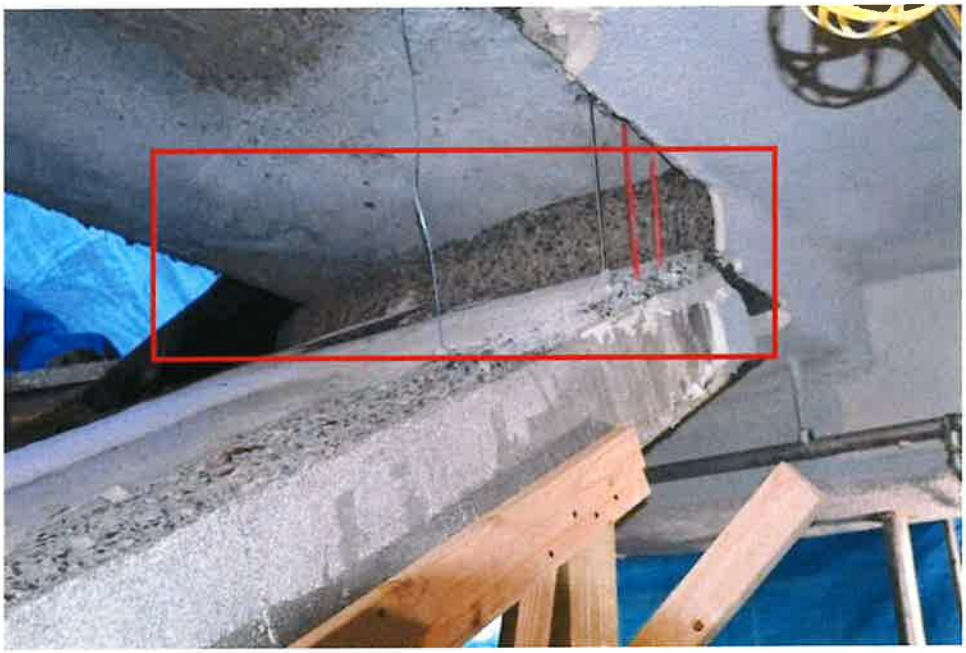


Figure 8- No top reinforcement at failure plane Northwest Portion of Collapsed Slab

Figure 9- No Top Steel Crossing Failure Plane Looking North to South at West Failure Plane

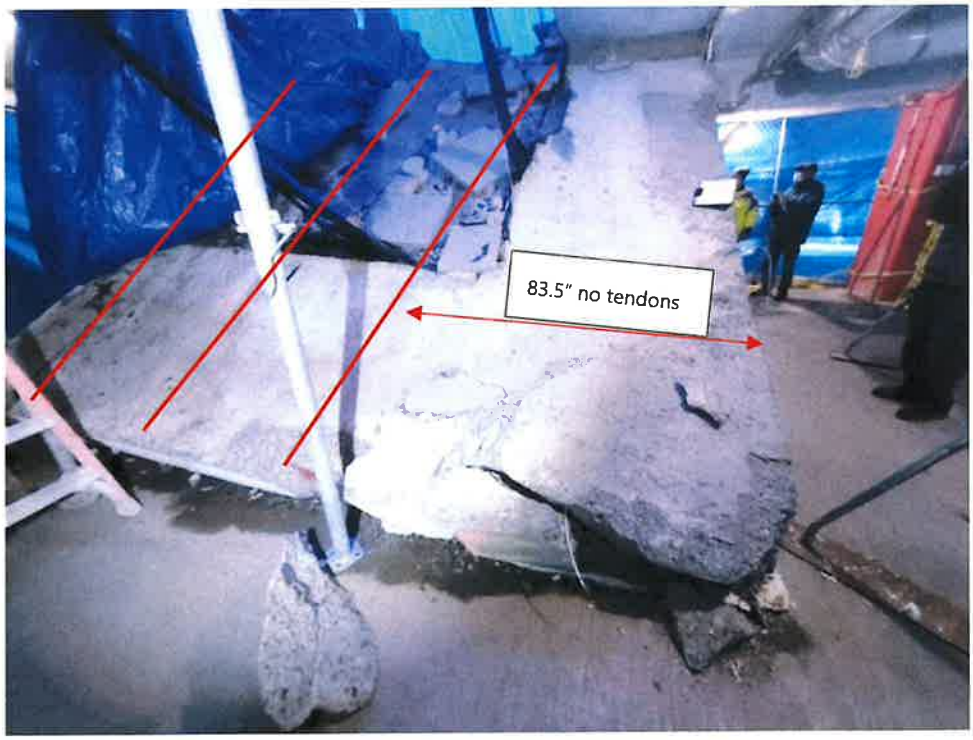


Figure 10- PT Layout at Slab Looking East to West

Figure 11- Lower Slab to West of Collapsed Portion. 83.5 in. area with No Tendons in Collapsed Area. Cannot Scan Cause of Insulation.

Figure 12- Added Beam Not Shown in Drawings at Line GD

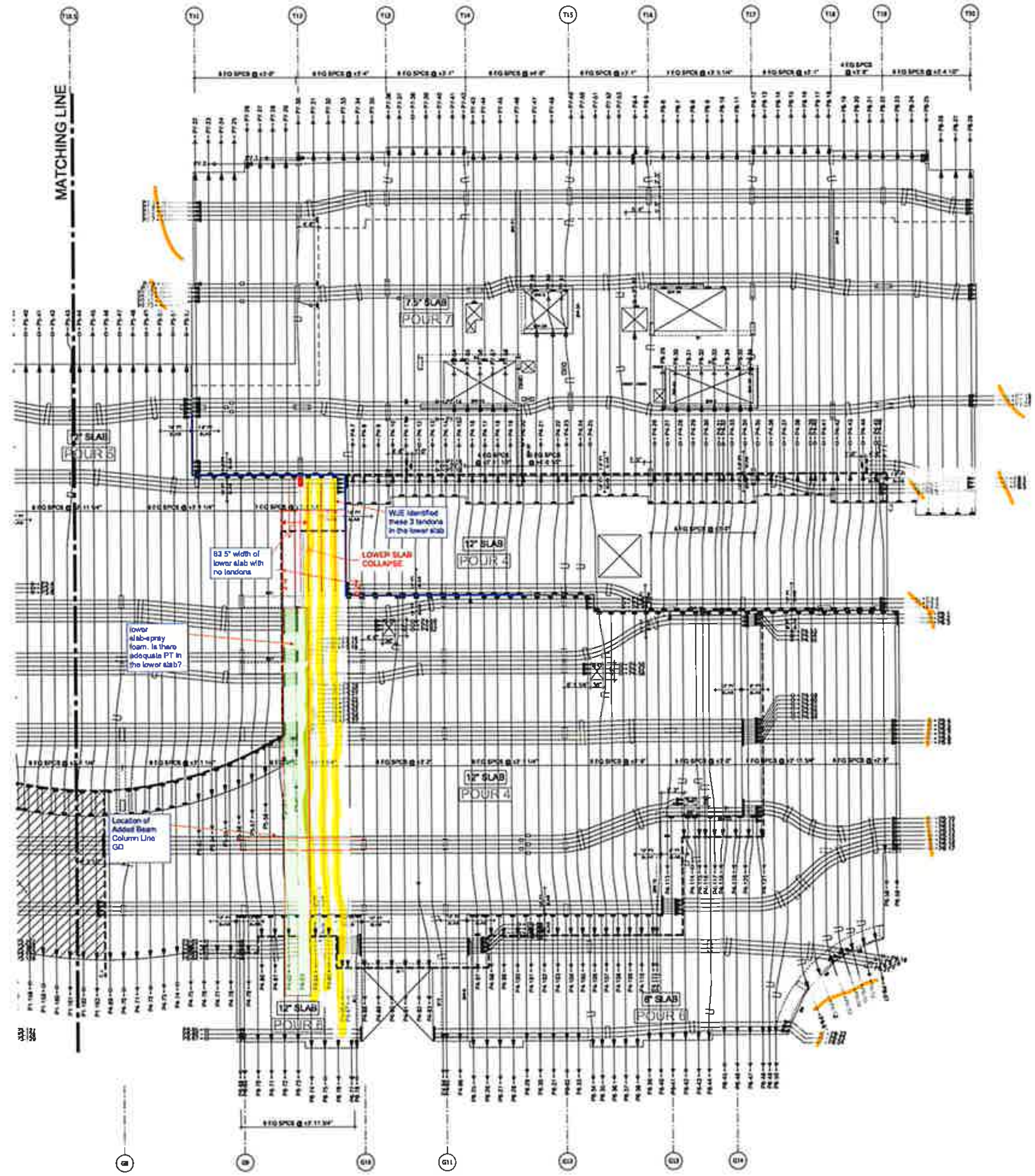
Figure 13- Upper Slab Reinforcement in the Area of the Collapsed Slab is Unknown.

Appendix A

5TH FLOOR TENDON CHART

[illegible]

(PLEASE SEE PREVIOUS SHEET FOR TENDON CHART PART 1)



SLAB TENDON LAYOUT - 5TH FLOOR (SLAB THICKNESS 7 1/2" U.N.O.)

SCALE: 3/32"=1'-0"

NOTES:
1 - REFER TO DETAIL 13/PT-1.01 FOR ALL TENDONGS SWEEP AROUND OPENINGS.
2 - STRESSING TAIL TO BE A MAXIMUM OF 18". REFER TO DETAIL 3/PT-1.01.
3 - E O R TO VERIFY CONSTRUCTION JOINT LOCATIONS.
4 - E O R TO VERIFY SLAB TENDON LAYOUT.

FOR APPROVAL
NOT FOR CONSTRUCTION

ENCAPSULATED
(ENCAPSULATED ANCHORS)

TENDON LAYOUT LEGEND:

TENDON TYPE:

TENDON LAYOUT NOTES:

PTI POST-TENSIONING INSTITUTE — Certified Plant

SUBMITTAL

No	Date	Description	Drawn	Checked
1	06/06/18	FOR APPROVAL	OO/CMS	FOU/SN
2	07/02/18	FOR APPROVAL	OO/PA	FOU/SN

CLIENT:
BAKER CONCRETE CONSTRUCTION

CONTRACT DRAWINGS:
- Issue : SUPERSTRUCTURE BID SET
- Date : 02/23/18

PROJECT:
HARBOR POINT
BLOCK P4-P5
STAMFORD, CT

DRAWING TITLE:
5TH FLOOR
SLAB TENDON LAYOUT

DRAWING REFERENCE:
S105PT-A & S105PT-B

PT DRAWING #:
PT-2.10

Appendix F

HENDERSON ROGERS
structural engineers

February 15, 2022

Mr. Tim Yahn
Managing Director of Construction
Building and Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

RE: Harbor Points-The Allure: Response to WJE Letter
850 Pacific Street, Stamford CT

Dear Tim:

Please see below responses to the comments/questions noted in the "Discussions & Recommendations" section of the letter issued by WJE, dated 2/15/2022.

- The as-built condition of the step does not appear to conform with the structural drawings and PT shop drawings, and the Engineer-of-Record (EOR) was not notified by the special inspector about this non-conformance. The EOR was not aware of this condition, and no sketches/drawings/calculations were provided to the EOR for review. No, we do not have special inspection reports for this area, as they were not provided to the EOR for review.
- For clarification, there is only supposed to be a #4 size rebar mat at the bottom of the slab in each direction. Additional top bars are provided at column locations in each direction. No, the EOR was not notified of any missing steel reinforcement prior to concrete placement, and we do not have special inspection reports for this location. Slab assessment for missing steel will be conducted in Phase 2 of the Work Plan.
- No, the as-built condition of the PT layout does not appear to conform with the structural drawings and PT shop drawings. No, there should be six (6) bundles of PT cables extending from low slab into the high slab at the step and anchoring at the expansion joint. Slab assessment for missing PT cables will be conducted in Phase 2 of the Work Plan. EOR was not notified by the special inspector about the non-conformance, and we do not have special inspection reports for this area.
- There was a beam mark "B21" at the questioned location shown on drawings dated "02.23.2018", and this beam was designed to support a column for the fitness club roof. The column and beam were both removed from the "IFC" drawings dated "04.20.2018", Sheet "S105.B", because of architectural changes. However, it appears that the concrete beam (B21) was constructed per drawings dated "02.23.2018".
- Presently, we do not know the geometry (cable layout, drape and anchorage) for the upper slab condition. No, we are not aware of any sketch addressing this change that was submitted to the EOR for review and no calculations have been provided to the EOR.
- Engineer-of-record does not have a copy of pour sequence for the level 5 slab.

- We have attached mild steel reinforcement plans from the structural drawings and the rebar submittals.

We hope you find this information useful. Please contact our office should you have any questions or need additional information regarding this matter.

Respectfully,
Henderson Rogers Structural Engineers, LLC

Madison H. Henderson, P.E.
Principal

Cc: Ralph Martin (BLT); Vivek Gurjar, PE (HRSE); Ben Downing, PE (DCE)

Encl: Mild steel reinforcement plans; Rebar Submittal

Appendix G

Wiss, Janney, Elstner Associates, Inc.
2 Trap Falls Road, Suite 502
Shelton, Connecticut 06484
203.944.9424 tel
www.wje.com

February 18, 2022

Louis Casolo, P.E.
Engineering Department
City of Stamford
888 Washington Blvd, 7th Floor
Stamford, CT 06904

Harbor Points- The Allure- Local Slab Failure Demolition Application
WJE No. 2022.0759

Dear Mr. Casolo:

Per the request of the City of Stamford, CT (City), Wiss, Janney, Elstner Associates, Inc. (WJE) has reviewed the "Harbor Points- The Allure- Phased Remedial Action Plan" issued by Henderson and Rogers Structural Engineers (HR) dated February 5, 2022. The purpose of this document is to obtain a permit from the City of Stamford to revise the existing shoring layout to allow the garage to be partially occupied, and to demolish and remove the existing partially collapsed portion of the 5th floor amenity deck. The following letter contains our comments on the provided information.

BACKGROUND AND DESCRIPTION OF STRUCTURE

On February 1, 2022 a partial collapse of the 5th floor post-tensioned (PT) cast-in-place amenities level slab occurred. The collapsed area is approximately 20 ft. east/west by 15 ft. north/south and bound within column lines G9/G10 and TE/GA. (Figures 1 & 2). Immediately following the collapse, temporary shoring was provided both beneath the collapsed portion of the slab to stabilize it, as well as along the remaining de-tensioned east/west span between column lines G9/G10 and GF and GA.

On February 5, 2022, HR submitted a demolition and shoring plan to the City in order to obtain a permit to remove the existing partially collapsed slab.

The submission consists of the following:

- Reshoring design calculations submitted by Baker Concrete Construction (BCC) dated 2.4.2022
- A Level 5 Reshore Layout Drawings, HP-L5-R-1 dated 2.4.2022
- A work plan entitled "Harbor Point, Block P4-P5, 850 Pacific Street, Stamford, Connecticut Work Plan for Remedial Action Level 5 Slab"
- A Letter from EDM entitled: "Emergency Investigation of Floor Failure Harbor Point, Block P4-P5, 850 Pacific Street, Stamford, Connecticut
- A Letter from HR entitled: "Harbor Points The Allure- Local Slab Failure at Amenities Deck 850 Pacific Street, Stamford, CT.
- A drawing entitled 5th Floor Slab Tendon Layout, from the PT shop drawings, indicating the PT strands to be de-tensioned.

The proposed scope within this submittal consists of the following:

- Revise the existing shoring to allow for the basement, and Levels 1-3 of the garage to be re-opened. This is accomplished by installing shoring beams at the underside of the 5th floor level to span the drive isles and reshoring to grade. Barriers will be installed to prevent vehicles from hitting the temporary shores.
- Once the shoring is modified, the three existing bands of tendons in the collapsed portion of the slab will be exposed from the topside of the 5th floor slab adjacent to the collapsed area to relieve any remaining tension. The existing partially collapsed slab will then be demolished using remote controlled machines.

DISCUSSIONS & RECOMMENDATIONS

Based on our review, we offer the following recommendations regarding the proposed shoring and demolition submission.

- WJE takes no issue with the proposed modified shoring layout which spans the drive isles The City may want to review the protection around the shoring prior to allowing occupancy into the garage.
- The proposed demolition procedures outlined seem acceptable, however, WJE recommends that during this demolition, all the required information be gathered in the event that the partially collapsed slab and material properties need to be further analyzed by any party involved. This would include gathering the following information:
  - Take 6 concrete cores.
  - Take samples of the existing conventional reinforcement and existing PT strands.
  - Have an engineer on-site during demolition to develop a layout of the conventional reinforcement and PT including spacing, cover, bar size and drape.

If you have any questions, please feel free to contact us.

Sincerely,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.

John Cocca, P.E.
Associate Principal & Project Manager

Appendix H

>>> PEOPLE . HONOR . GRIT .
BAKER
CONCRETE CONSTRUCTION
expect more

CORPORATE OFFICE
900 North Garver Road · Monroe, OH 45050
Phone: 513.539.4000 · Fax: 513.539.4251

CAROLINA OFFICE
8916 Crump Road, Suite A · Pineville, NC 28134
Phone: 704.967.8110

www.bakerconcrete.com · Toll Free: 800.539.2224

Demolition Plan for Collapsed Level 5 Slab

Harbor Point, Block P4-P5, 850 Pacific Street, Stamford, Connecticut

The purpose of this plan is to provide a detailed process to remove the collapsed 5th Level slab at the Allure (P4-P5) building in Stamford CT. The previously submitted Remedial Work Plan dated February 4, 2022, is attached. The items outlined in Phase 1 – Preliminary Shoring and Safety and Phase 2, a. Slab Stabilization are complete. This plan provides further detailed plans to address Phase 2, b. Slab Removal.

Demolition Process Overview

1. Install additional shoring and bracing to the collapsed slab as shown in the attached Baker drawing HP-L5-F-1 prior to starting the demolition process.
2. Safeguard the remaining area on the 5th Level Amenity Deck to ensure no one can access the area to be detention.
3. A representative from Henderson Rogers and the designated Special Inspection Firm will be present to collect six (6) concrete cores from the slab prior to demolition. Samples from the existing conventional reinforcement and existing post tension strands (PT) will be collected and measurements taken to prepare an as-built drawing showing the layout of the reinforcement and PT including spacing, cover, bar size, and drape. (See attached WJE Letter dated February 18, 2022.)
4. Workers in the demolition zone will wear appropriate personal protective equipment including but not limited to hard hats, safety glasses and/or face shields, reflective vests, hard soled boots, hearing protection, and N-95 respirators.
5. At the start of each work shift, the workers will be briefed on the locations of exits and a rally point in the event of unforeseen events that may jeopardize the workers safety.
6. Provide access ports in ceiling of the town home Unit 426 to allow visual inspection of the stressing ends of the above tendons. (This unit is to remain unoccupied during the demolition process)
7. Expose the ends of PT tendons P4-84, 85 and 86 at the base of the collapsed slab and cut the exposed tendons using either a side wheel grinder, chop saw, or an acetylene torch. The cutting process should be in a manner that allows the tendons to yield (elongate) prior fully severing the tendon to mitigate an abrupt release of tension.
8. When the cutting of tendons or reinforcement, a dedicated fire watchman with a fire extinguisher will be present.
9. Starting on the top of the north side of the collapsed section, crush the concrete using a remote-controlled demo robot (See attached brochure). Remove the concrete in approximately 4'-5' sections across the width of the collapse slab. (See the attached HP-L5-F-1 drawing)
10. Water will be applied to the slab as the demolition progresses to minimize dust. Water will be kept from reaching the expansion joint to prevent the water from leaking onto parking levels below.
11. Concrete debris will be loaded into power buggies to transport the debris to the Basement Level. (See attached brochure) The debris will be moved from the site periodically, no less than one time per day, to an off-site location.

CORPORATE OFFICE
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12. At the completion of the demolition the area will remain safeguarded on Level 4 and Level 5 to prevent unauthorized access.
13. The schedule duration for the above will take approximately 8 to 10 days from the issuance of the demolition permit.

Attachments:

Attachment 1: Baker Remedial Work Plan dated February 4, 2022 (with attachments)

Attachment 2: Baker Drawing HP-L5-F-1 dated February 17, 2022

Attachment 3: WJE Letter dated February 18, 2022

Attachment 4: Brochure for Remote Control Robot – Husqvarna DXR 300 & DCR 100

Attachment 5: Brochure for Whiteman Power Buggies

Appendix I

Wiss, Janney, Elstner Associates, Inc.
2 Trap Falls Road, Suite 502
Shelton, Connecticut 06484
203.944.9424 tel
www.wje.com

February 18, 2022
Revised February 23, 2022

Louis Casolo, P.E.
Engineering Department
City of Stamford
888 Washington Blvd, 7th Floor
Stamford, CT 06904

Harbor Points- The Allure- Special Inspection Questions
WJE No. 2022.0759

Dear Mr. Casolo:

Per the request of the City of Stamford, CT, Wiss, Janney, Elstner Associates, Inc. (WJE) has reviewed the "Harbor Points- The Allure- Response to WJE Letter" issued by Henderson and Rogers Structural Engineers (HR) dated February 15, 2022. The purpose of this was to respond to the comments/questions noted in the "Discussions & Recommendations" section of our report entitled: "Harbor Points- The Allure- Local Slab Failure Progress Report" dated February 15, 2022.

Based on our review of the responses, we have the following follow-up questions and comments for your review.

- HR indicates they were never notified about the non-conformance in the post-tensioning (PT) installation in the area of the partial collapse. This would either indicate that it was missed by the special inspector and the contractor built something that he had no shop drawings or details for, or that non-conformance items were not communicated to the Engineer of Record (EOR) or corrected by the contractor. Based on this, how is HR planning to ensure to the city, that there are not other areas that are either incorrectly constructed or missing required elements?
- HR indicates that they do not have the special inspection reports for the level 5 slab in the area of the collapse and that the reports were: "not provided to the EOR for review." Based on the attached: "Statement of Special Inspections" HR signed off as the Special Inspections Coordinator. This role consists of managing and coordinating the required special inspection and testing program as well as collecting reports from the inspection and testing agencies. It should also be noted that the attached version of the statement of special inspections, is only partially completed and is missing the information associated with the superstructure. Also attached, is the May 18, 2020 letter issued by HR to the City of Stamford Building Official indicating that "Based on the progress reports submitted for the tests and observations, the work requiring special inspection was, to the best of my knowledge, in conformance with the structural permitted construction plans and specifications and the approved workmanship provisions of the Building Code." Can HR provide the progress reports that were reviewed to make this determination?

- Can HR provide the proposed work plan to assess the slab for missing steel and PT cables as outlined in the letter February 15, 2022 letter?
- What is the construction of the added B21 beam that is in place? It doesn't exist on the shop drawings. Structurally, is everything sufficient with this beam?
- What is the proposed path forward for testing and analyzing the existing upper slab section that remains in place adjacent to the collapse area but is not constructed in accordance with the approved shop drawings?

If you have any questions, please feel free to contact us.

Sincerely,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.

John Cocca, P.E.
Associate Principal & Project Manager

Appendix J

HENDERSON ROGERS
structural engineers

February 22, 2022

Mr. Tim Yahn
Managing Director of Construction
Building and Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

RE: Response: Harbor Points-The Allure-Special Inspection Questions
850 Pacific Street, Stamford CT

Dear Tim:

We received the above referenced letter on February 21,2022, written by Wiss, Janney, Elstner (WJE) and addressed to the City of Stamford, dated February 18, 2022. The letter states that there are follow up questions to the comments/ questions noted in the Discussions and Recommendations section of the report entitled "Harbor Points-The Allure-Response to WJE Letter" issued by our office and dated February 15, 2022. WJE comments from the letter and our respective responses are stated below.

WJE Comment: HR indicates they were never notified about the non-conformance in the post-tensioning (PT) installation in the area of the partial collapse. This would either indicate that it was missed by the special inspector and the contractor built something that he had no shop drawings or details for, or that the non-conformance items were not communicated to the Engineer of Record (EOR) or corrected by the contractor. Based on this, how is HR planning to ensure the city, that there are not other areas that are either incorrectly constructed or missing required elements?

HRSE: We have been re-reviewing all of the inspection reports, PT and mild steel shop drawings, and the recently received pour sequence document, correspondence, and photographs from Baker Concrete. We intend to publish locations for review with the City of Stamford and/ or their Engineering or technical representative, as well as the Design, Development, and Construction teams where we find potential discrepancies or where additional testing may be required to determine or verify as-built conditions.

WJE Comment: HR indicates that they do not have the special inspection reports for the level 5 slab in the area of collapse and that the reports were "not provided to the EOR for review". Based on the attached "Statement of Special Inspections" HR signed off as the Special Inspections Coordinator. This role consists of managing and coordinating the required special inspection and testing program as well as collecting reports from the inspection and testing agencies. It also should be noted that the attached version of the statement of specially inspections is only partially completed and is missing information associated with the

superstructure. Also attached is the May 18, 2020, letter issued by HR to the City of Stamford Building Official indicating that "Based on the progress reports submitted for tests and observations, the work requiring special inspection was, to the best of my knowledge, in conformance with the structural permitted construction plans and specifications and the approved workmanship of the Building Code." Can HR provide the progress reports to make this determination?

HRSE: From the information recently submitted by Baker Concrete for the Pour Sequence at Level 5 and in the area of the collapse, we developed a Rebar Inspection Plan derived from the information collected in the inspection reports and Pour Sequence Plan. The Grid call outs for the areas inspected by the special inspector are not exact and do not overlap the impacted area, but it appears the slabs completely around the impacted area have been inspected. We have included both Baker Concrete pour sequence plan our Rebar Inspection Plan as well as the applicable inspection reports for WJE review.

It is our opinion that we have performed the duties of Special Inspections Coordinator (SPC) responsibly and per the intent of the Statement of Inspection letter, including requests for missing or delayed inspection/ testing reports and managing and maintaining an organized folder/ document filing system for both. We have well over 1,100 progress reports, which are organized and filed as they were during construction, and which will be submitted to WJE's review and record. Additionally, we have included the Statement of Inspections version for the superstructure, which WJE is apparently not in possession of. Note, from the Statement of Special Inspections, "The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Official and RDP in Responsible Charge." The Contractor is responsible for managing and scheduling all inspections and tests on site per the construction schedule as identified in the Statement of Special Inspections. The SPC is not responsible for managing or scheduling the inspections.

Additionally, we have the close-out/ completion letters from both Coastal Materials Testing Lab, LLC dated May 12, 2020, and that from Down To Earth Consulting Solutions dated March 3, 2018 (File No. 0004-001.00) which state the elements inspected were found to be in compliance and with no discrepancies.

WJE: Can HR provide the proposed work plan to assess the slab for missing steel and PT cables as outlined in the letter?

HRSE: Subsequent this week's completion of our review,as stated in the first paragraph response of this letter, we will determine the areas that require testing and determining missing steel.

WJE: What is the construction of the added B21 beam that is in place? It doesn't exist on the shop drawings. Structurally, is everything sufficient with this beam?

HRSE: The concrete beam is 2'-6" W x 2'-0" D and designed to be reinforced with 8-#10 bars bottom and 6-#10 top bars. The reinforcing for the area was inspected by Coastal Materials,

Inspection Report #190 and #191, dated 08/16/2018 and 08/17/2018, respectively. We analyzed the beam and found the beam to be structurally sufficient for support of the applicable area of the Level 5 deck.

WJE: What is the proposed path forward for testing and analyzing the upper slab section that remains in place adjacent to the collapse area but is not constructed in accordance with the approved shop drawings.

HRSE: Additionally testing will be provided to assist in determining the as-built reinforced condition of the remaining slab. If through testing, the as-built conditions cannot be sufficiently and accurately determined and analyzed, a new structural design, which will potentially add new support members below the area will be executed.

Respectfully,
Henderson Rogers Structural Engineers, LLC

Madison H. Henderson, P.E.
Principal

Encl:
Cc: Ralph Martin (BLT); Bruce Yahn (BLT); Donn McGinnis (Baker); Vivek Gurjar, PE (HRSE); Ben Downing (DCE)

Appendix K

Statement of Special Inspections

Project: *P4/P5*

Location: *0 Washington Boulevard #P4*

Owner: *Strand/BRC Group LLC*

Design Professional in Responsible Charge: *Henderson and Rogers Structural Engineers, LLC*

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Special Inspection Coordinator and the identity of other approved agencies to be retained for conducting these inspections and tests. This *Statement of Special Inspections* encompass the following disciplines:

☒ Structural ☐ Mechanical/Electrical/Plumbing

☐ Architectural ☐ Other: _____

The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Official and the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge.

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: *Monthly* or ☐ per attached schedule.

Prepared by:

Madison(Matt) H. Henderson
(type or print name) 111123

Signature 02/27/2018 Date

Design Professional Seal

Owner's Authorization:

Signature Date

Building Official's Acceptance:

Signature Date

Schedule of Inspection and Testing Agencies

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- ☒ Soils and Foundations
- ☒ Cast-in-Place Concrete
- ☐ Precast Concrete
- ☒ Masonry
- ☒ Structural Steel
- ☐ Cold-Formed Steel Framing
- ☐ Spray Fire Resistant Material
- ☐ Wood Construction
- ☐ Exterior Insulation and Finish System
- ☐ Mechanical & Electrical Systems
- ☐ Architectural Systems
- ☐ Special Cases

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. **Special Inspection Coordinator**	*Henderson and Rogers Structural Engineers*	*2603 Augusta Drive, Suite 800, Houston, TX - 77057 Main - 7134305800, Email - vgurjar@hendersonrogers.com*
2. Inspector	*Coastal Materials Testing Lab, LLC*	*10 Hart Street, West Haven, CT 06516, Main - 2036915966*
3. Inspector		
4. Testing Agency		
5. Testing Agency		
6. Other		

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Quality Assurance Plan

Quality Assurance for Seismic Resistance

Seismic Design Category	*B*
Quality Assurance Plan Required (Y/N)	*Y*

Description of seismic force resisting system and designated seismic systems:
Reinforced concrete shear walls

Quality Assurance for Wind Requirements

Basic Wind Speed (3 second gust)	*120 mph*
Wind Exposure Category	*C*
Quality Assurance Plan Required (Y/N)	*N*

Description of wind force resisting system and designated wind resisting components:
Reinforced concrete shear walls

Statement of Responsibility

Each contractor responsible for the construction or fabrication of a system or component designated above must submit a Statement of Responsibility.

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

PE/SE	Structural Engineer – a licensed SE or PE specializing in the design of building structures
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.

International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

Exterior Design Institute (EDI) Certification

EDI-EIFS	EIFS Third Party Inspector

Other

_____ _____

Soils and Foundations

Item	Agency # (Qualif.)	Scope
1. Shallow Foundations	*PE/GE*	*Inspect soils below footings for adequate bearing capacity and consistency with geotechnical report.* *Inspect removal of unsuitable material and preparation of subgrade prior to placement of controlled fill*
2. Controlled Structural Fill	*PE/GE*	*Perform sieve tests (ASTM D422 & D1140) and modified Proctor tests (ASTM D1557) of each source of fill material.* *Inspect placement, lift thickness and compaction of controlled fill.* *Test density of each lift of fill by nuclear methods (ASTM D2922)* *Verify extent and slope of fill placement.*
3. Deep Foundations	*PE/GE*	*Inspect and log pile driving operations. Record pile driving resistance and verify compliance with driving criteria.* *Inspect piles for damage from driving and plumbness.* *Verify pile size, length and accessories.* *Inspect installation of drilled pier foundations. Verify pier diameter, bell diameter, lengths, embedment into bedrock and suitability of end bearing strata.*
4. Load Testing	*PE/GE*	*NA*
4. Other:		

Cast-in-Place Concrete

Item	Agency # (Qualif.)	Scope
1. Mix Design	*ACI-CCI ICC-RCSI*	*Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design.*
2. Material Certification	*ACI-CCI, ICC-RCSI*	*Verify reinforcing steel materal tags from supplier on site match approved mill certificates*
3. Reinforcement Installation	*ACI-CCI ICC-RCSI*	*Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters*
4. Post-Tensioning Operations	*ICC-PCSI*	*Inspect placement, stressing, grouting and protection of post-tensioning tendons. Verify that tendons are correctly positioned, supported, tied and wrapped. Record tendon elongations.*
5. Welding of Reinforcing	*AWS-CWI*	*Visually inspect all reinforcing steel welds. Verify weldability of reinforcing steel. Inspect preheating of steel when required.*
6. Anchor Rods		*Inspect size, positioning and embedment of anchor rods. Inspect concrete placement and consolidation around anchors.*
7. Concrete Placement	*ACI-CCI ICC-RCSI*	*Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.*
8. Sampling and Testing of Concrete	*ACI-CFTT ACI-STT*	*Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064).*
9. Curing and Protection	*ACI-CCI ICC-RCSI*	*Inspect curing, cold weather protection and hot weather protection procedures.*
10. Other: *Adhesive anchorage for rebar and anchor bolts to concrete*		*Inspect size, location, spacing and embedment of dowel/bolts. Verify correct adhesive used and dowel/bolts installed per the requirements of the ICC Reports: Hilti HY-150: ER-5193 and Hilti HVA:ER-5369*

Masonry

Required Inspection Level: ☐ 1 ☒ 2

Item	Agency # (Qualif.)	Scope
1. Material Certification	*PE*	*Review of material certification*
2. Mixing of Mortar and Grout	*ICC-SMSI*	*Inspect proportioning, mixing and retempering of mortar and grout.*
3. Installation of Masonry	*ICC-SMSI*	*Inspect size, layout, bonding and placement of masonry units.*
4. Mortar Joints	*ICC-SMSI*	*Inspect construction of mortar joints including tooling and filling of head joints.*
5. Reinforcement Installation	*ICC-SMSI* *AWS-CWI*	*Inspect placement, positioning and lapping of reinforcing steel.* *Inspect welding of reinforcing steel.*
6. Grouting Operations	*ICC-SMSI*	*Inspect placement and consolidation of grout. Inspect masonry clean-outs for high-lift grouting.*
7. Weather Protection	*ICC-SMSI*	*Inspect cold weather protection and hot weather protection procedures. Verify that wall cavities are protected against precipitation.*
8. Evaluation of Masonry Strength	*ICC-SMSI*	*Test compressive strength of mortar and grout cube samples (ASTM C780).* *Test compressive strength of masonry prisms (ASTM C1314).*
9. Anchors and Ties	*ICC-SMSI*	*Inspect size, location, spacing and embedment of dowels, anchors and ties.*

Structural Steel

Item	Agency # (Qualif.)	Scope
1. Fabricator Certification/ Quality Control Procedures ☒ Fabricator Exempt	*AWS/AISC-SSI ICC-SWSI*	*Review shop fabrication and quality control procedures.*
2. Material Certification	*AWS/AISC-SSI ICC-SWSI*	*Review certified mill test reports and identification markings on wide-flange shapes, high-strength bolts, nuts and welding electrodes*
3. Bolting	*AWS/AISC-SSI ICC-SWSI*	*Inspect installation and tightening of high-strength bolts. Verify that splines have separated from tension control bolts. Verify proper tightening sequence. Continuous inspection of bolts in slip-critical connections.*
4. Welding	*AWS-CWI* *ASNT*	*Visually inspect all welds. Inspect pre-heat, post-heat and surface preparation between passes. Verify size and length of fillet welds.* *Ultrasonic testing of all full-penetration welds.*
5. Shear Connectors	*AWS/AISC-SSI ICC-SWSI*	*Inspect size, number, positioning and welding of shear connectors. Inspect suds for full 360 degree flash. Ring test all shear connectors with a 3 lb hammer. Bend test all questionable studs to 15 degrees.*
6. Structural Details	*PE/SE*	*Inspect steel frame for compliance with structural drawings, including bracing, member configuration and connection details.*
7. Metal Deck	*AWS-CWI*	*Inspect welding and side-lap fastening of metal roof and floor deck.*

Instructions – Preparation of the Statement of Special Inspections

1. Who Prepares the Form:
   The program of inspection and testing for a project should be prepared by the Registered Design Professional (RDP) that is in responsible charge of the building system requiring inspections and testing. The Structural Engineer of Record (SER) should prepare the sections required for the structural elements such as foundations, concrete, structural steel, etc. The Architect and MEP Engineer of Record should prepare the corresponding sections of the SSI for the building systems that they are responsible for. For further explanation, please refer to the "Guide to Special Inspections and Quality Assurance".

2. The Front Page:
   2-1. At the top of the page indicate the project name and location as they appear on the Contract Documents, provide the Owner's name (individual, private company, municipality, government agency, etc.), and indicate the Design Professional In Responsible Charge. This should be the RDP in responsible charge of the building systems for which this Statement of Special Inspections is being prepared. See explanation in item 1 above.
   2-2. Next, read the first paragraph and check the box below indicating the discipline(s) that this SSI will encompass (Structural, Architectural, Mechanical/Electrical/Plumbing, or Other).
   2-3. After reading the remaining paragraphs, the RDP must indicate the frequency of "Interim Reports" required from the Special Inspection Coordinator for the project. This can be indicated directly on the page, i.e. "weekly", or the adjacent box can be checked to attach a more specific schedule.
   2-4. Near the bottom of the page, the RDP must print, sign, and date the form, and stamp the form with their professional seal in the box provided.
   2-5. The Owner or Owner's agent must sign and date the front page after the SSI has been completed by the RDP.
   2-6. The Building Official must sign and date the form upon acceptance.

3. Page 2 – Schedule of Inspection and Testing Agencies:
   3-1. The top of the page lists all of the categories of building systems with a box next to each. The RDP must check the boxes for <u>only</u> the building systems that are going to be covered in this SSI. A completed inspection program page must be attached for each building system that is checked off. (See instruction #5 below.)
   3-2. The chart below is where the members of the Special Inspection Program are listed. Their names, addresses, telephone numbers, and emails should be filled out in the appropriate boxes. If the Inspectors and Testing Agencies have not been determined yet, the RDP can fill in the boxes with "To Be Determined".

4. Page 3 – Quality Assurance Plan:
   4-1. The RDP must review sections 1705 and 1706 in Chapter 17 of the IBC to determine if the project requires a Quality Assurance Plan for the seismic force and wind force resisting systems and components.
   4-2. The RDP must indicate whether or not a Quality Assurance Plan is required by filling in the information requested on the page. It is only necessary to provide descriptions

of the seismic and wind force resisting systems if it is determined that a Quality Assurance Plan is required.

5. Inspection Program Pages For Each Building System:
   5-1. There is a page attached for each building system where the RDP identifies the inspection requirements of each system. Fill out the pages for only the building systems included in this SSI. Do not include blank pages for building systems not covered under this SSI.
   5-2. Indicate the inspection or testing firm (Agency #) that will perform each inspection task. The Agency # is the number listed next to the Inspector or Testing Laboratory on the chart on page 2 of the SSI.
   5-3. Indicate the required qualifications of the Inspector for each inspection. A list of qualifications of Inspectors and testing technicians is provided on page 4 of the SSI for reference. The RDP may require additional qualifications beyond the ones listed if they feel it is appropriate. Suggested qualifications have been included for consideration. The RDP must determine what qualifications are appropriate for the particular project and confirm that the selected agency employs individuals with the specified qualifications.
   5-4. The scope of each inspection must be filled in by the RDP. The editable text provided in italics reflects the code mandated minimum inspection requirements designated in section 1704 of IBC Chapter 17. The editable text does not include the inspections requirements for seismic and wind resisting systems listed in sections 1705 through 1708. The RDP must determine if the project falls under the requirements of sections 1705 to 1708 and add the required inspections to the building systems. The final scope of the inspections required for the project must be determined by the RDP.
   5-5. Descriptions of all inspections must include the required frequency of each inspection or test.

HENDERSON ROGERS
structural engineers

May 18, 2020

Building Official
City of Stamford
Code Enforcement Division/Structural Inspections
Stamford, CT
Attn: Chief Structural Inspector

RE: Building and Land Technology
1 Elmcroft Road-Stamford, CT
HRI No: 13-17015-00
CO Stamford Permit No: B-17-782

Dear Sir or Madam,

In accordance with Chapter 17, "Structural Tests and Inspections" of the 2012 International Building Code, special inspections services were provided for the above referenced project for the following portions of the work that required special inspections and which Coastal Materials Testing Lab, LLC and Down to Earth Consulting, LLC (DTE)were employed to test and observe:

Deep Foundations (by DTE), Cast in Place Concrete, Reinforcing Steel, Masonry Walls, Post-Tensioning, Structural Steel, Welding and Bolted Connections

Based on the progress reports submitted for the tests and observations, the work requiring special inspection was, to the best of my knowledge, in conformance with the structural permitted construction plans and specifications and the approved workmanship provisions of the Building Code. If there are any questions regarding this letter please contact us at 713-430-5800.

Sincerely,
Henderson Rogers Structural Engineers, LLC

5/18/2020

Madison "Matt" H. Henderson, P.E.
Principal

CC:
P:\13\2017\13-17015-00 - Harbor Point Blocks P4 & P5\1-Admin\1-Correspondence\CO Stamford Letter-Harbor Point P4_P5.docx

Coastal Materials Testing Lab, LLC

10 Hart Street West Haven, CT 06516 • Tel (203) 691-5966 • Fax (203) 691-5238

www.coastalmaterialstesting.com

May 12th, 2020

Building and Land Technology
1 Elmcroft Road, Suite 500
Stamford, CT 06902

RE: Building P4-P5 (Permit #B-17-782)
Stamford, CT

To Whom it May Concern:

This letter is to certify that all testing and inspection per the Statement of Special Inspection for the above project have been completed , All reports up to date were reviewed and found in compliance with the Project Specifications with no discrepancies to report.

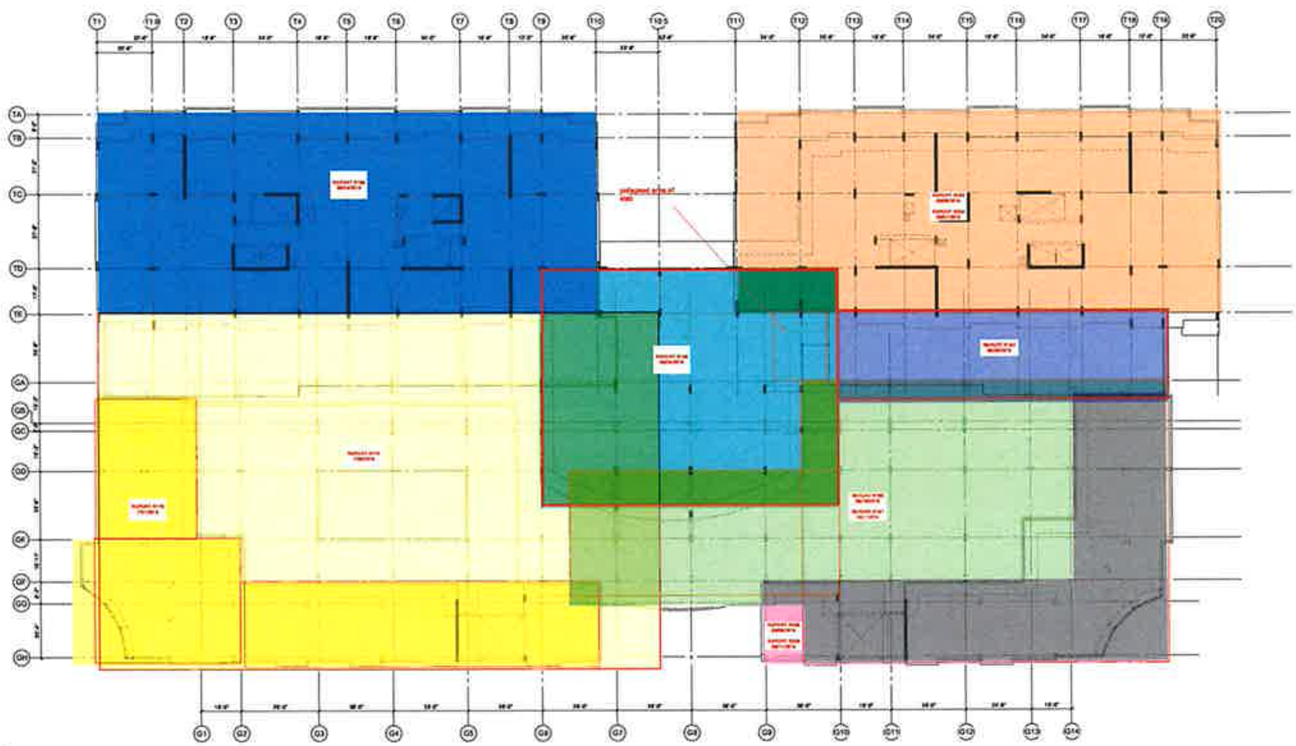
Items covered: Concrete, reinforcing Steel, Soils, Masonry, Post-tensioning, Perimeter Light Gauge Steel Framing, and Structural Steel

Respectfully submitted

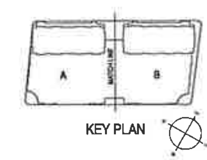
Coastal Materials Testing Lab, LLC

Sami Hajjar, PE

Appendix L



1 5TH FLOOR PLAN - OVERALL



EDI International, PC

BUILDING & LAND TECHNOLOGY

CIVIL 1

REDNISS & MEAD

Henderson Rogers Structural Engineers

COLLECTIVE DESIGN ASSOCIATES, LLC

FUSS & O'NEILL, INC

FRANK A. SABATINI, PE

HARBOR POINT

HARBOR POINT
BLOCK P4-P5
STAMFORD, CT

PROJECT NO: 17130.000

5TH FLOOR PLAN - OVERALL

S105

Coastal Materials Testing Lab, LLC

10 Hart Street West Haven, CT 06516 • Tel (203) 691-5966 • Fax (203) 691-5238

www.coastalmaterialstesting.com

Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 07/20/2018

Report No.: R 172

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: 3rd to 4th level columns at TB/T20, TC/T20, TD/T20, TE/T20, TB/T19, TC/T19, TD/T19, TA/T18, TC/T18
3rd to 4th level walls along G12.8, from GE to GF, along GE, from G12.8 to G14
Slab on deck at 5th level between TE & GH and T1 & G7.8

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R60-1 to R60-12	Gerdau	11/29/17	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.
R70-01 to R70-11	Gerdau	11/28/17	2	01/17/18	
R05A-01 to R05A-08	Gerdau	04/11/18	1	06/12/18	
R05B-01 to R05B-14	Gerdau	04/12/18	1	06/11/18	

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Area ready for concrete placement

Superintendent notified of findings: X **Yes** ____ **No**

Coastal Materials Testing Lab, LLC

10 Hart Street West Haven, CT 06516 • Tel (203) 691-5966 • Fax (203) 691-5238

www.coastalmaterialstesting.com

Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 07/31/2018

Report No.: R 179

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: Slab on deck at 5th level between GA.5 & GE and GE and T1 & G1, between GE & GH and T0.5 & G2, Between GF & GH and G2 & G6.8
4th to 5th level Columns at TD/T11, TE/T11 and TD/T12

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R60-1 to R60-12	Gerdau	11/29/17	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.
R70-01 to R70-11	Gerdau	11/28/17	2	01/17/18	
R05B-01 to R05B-14	Gerdau	04/12/18	1	06/11/18	

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Also checked rebar at 5th to 6th level walls along T8, from TB to TC, along T8, from TD to TE, Columns at TA/T9, TB/T9, TC/T9, TD/T9, TE/T9, TB/T10, TC/T10, TD/T10, TE/T10, TD/T10.5 and TE/T10.5
Area ready for concrete placement

Superintendent notified of findings: X **Yes** ____ **No**

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Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 08/16/2018

Report No.: R 190

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: 6th to 7th level column at GA/G6, GA/G7, 4th to 5th level crash wall along TD, from T11 to T13.5
Slab on deck at 5th level between G6.5 & G9.5 and GD & GG, between GA & GH and G9.5 & T19
(Bottom Mat only)

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R60-1 to R60-12	Gerdau	11/29/17	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.
R70-01 to R70-11	Gerdau	11/28/17	2	01/17/18	
R05B-01 to R05B-14	Gerdau	04/12/18	1	06/11/18	

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Area ready for concrete placement

Superintendent notified of findings: X **Yes** ____ **No**

Coastal Materials Testing Lab, LLC

10 Hart Street West Haven, CT 06516 • Tel (203) 691-5966 • Fax (203) 691-5238

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Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 08/17/2018

Report No.: R 191

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: Slab on deck at 5th level between G6.5 & G9.5 and GD & GG, between GA & GH and G9.5 & T19
4th to 5th level column at TB/T11, TC/T11, TD/T11, TB/T12, TC/T12, TD/T12, TB/T13, TB/T14, TE/T14, TC.5/T13.5, wall along T14.5, from TB to TC, between TD & TE and T13.5 & T14.5

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R60-1 to R60-12	Gerdau	11/29/17	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.
R70-01 to R70-11	Gerdau	11/28/17	2	01/17/18	
R05B-01 to R05B-14	Gerdau	04/12/18	1	06/11/18	

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Area ready for concrete placement

Superintendent notified of findings: X **Yes** ____ **No**

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Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 08/20/2018

Report No.: R 192

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: Slab on deck at 5th level between TE & GA.5 and T12.5 & T19
4th to 5th level column TB/T16, TC/T16, TC.5/T16, TE/T16, TB/T17, TC.5/T17, TE/T17, wall along T18,
From TB to TC and TD to TE

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R60-1 to R60-12	Gerdau	11/29/17	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.
R70-01 to R70-11	Gerdau	11/28/17	2	01/17/18	
R05C-01 to R05C-09	Gerdau	04/11/18	N/A	N/A	

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Area ready for concrete placement

Superintendent notified of findings: X **Yes** ____ **No**

Coastal Materials Testing Lab, LLC

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Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 08/24/2018

Report No.: R 195

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: Slab on deck at 5th level between TD & GD.5 and G6 & G9.8
7th to 8th level column at TB/T1.6, TC/T1.6, TD/T1.6, TE/T1.6, TB/T3, TC/T3, TC.5/T3, TE/T3, TB/T4, TE/T4, TB/T5, TC/T5, TB/T6, TE/T6, TC.5/T7, walls between TC & TC.5 and T6.5 & T7, along TD, from T6 to T7

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R60-1 to R60-12	Gerdau	11/29/17	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.
R70-01 to R70-11	Gerdau	11/28/17	2	01/17/18	
R05B-01 to R05B-14	Gerdau	04/12/18	1	06/11/18	

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Area ready for concrete placement

Superintendent notified of findings: X **Yes** ____ **No**

Coastal Materials Testing Lab, LLC

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Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 09/06/2018

Report No.: R 203

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: 8th to 9th level column at TB/T1, TC/T1, TD/T1, TE/T1, Walls along T2, from TB to TC, along T5, from TD To TE, between TC & TC.5 and T3 & T4, between TC.5 & TD and T3 & T4
Slab on deck at 5th level between TA & TE and T11 & T20 (Bottom Mat only)

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R60-1 to R60-12	Gerdau	11/29/17	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.
R70-01 to R70-11	Gerdau	11/28/17	2	01/17/18	
R05C-01 to R05C-09	Gerdau	04/11/18	N/A	N/A	

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Area ready for concrete placement

Superintendent notified of findings: X **Yes** ____ **No**

Coastal Materials Testing Lab, LLC

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Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 09/07/2018

Report No.: R 204

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: Slab on deck at 5th level between TA & TE and T11 & T20

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R05C-01 to R05C-09	Gerdau	04/11/18	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Area ready for concrete placement

Superintendent notified of findings: X **Yes** ____ **No**

Coastal Materials Testing Lab, LLC

10 Hart Street West Haven, CT 06516 • Tel (203) 691-5966 • Fax (203) 691-5238

www.coastalmaterialstesting.com

Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 09/08/2018

Report No.: R 205

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: 5th to 6th level columns at TD/T11, TE/T11, TB/T12, TC/T12, TD/T12, TE/T12, TB/T13, TC/T13, TD/T13, TE/T13, Walls between TC & TC.5 and T14.5 & T15, along TD, from T13.5 to T14.5, along T14.5, from TD to TE

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R60-1 to R60-12	Gerdau	11/29/17	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.
R70-01 to R70-11	Gerdau	11/28/17	2	01/17/18	
R05B-01 to R05B-14	Gerdau	04/12/18	1	06/11/18	

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Area ready for concrete placement
Also checked rebar for slab on deck at 5th level at town house area between GF & GH and G9 & G14.5,
Between GA.5 & GF and G14 & G14.5 (Top mat was not completed)

Superintendent notified of findings: X **Yes** ____ **No**

Coastal Materials Testing Lab, LLC

10 Hart Street West Haven, CT 06516 • Tel (203) 691-5966 • Fax (203) 691-5238

www.coastalmaterialstesting.com

Client: Building & Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

Date: 09/11/2018

Report No.: R 206

Project: BLT - P4/P5
Stamford, CT

Inspector: Shehzad Ahmad

REINFORCING STEEL INSPECTION REPORT

Location: Slab on deck at 5th level at town house area between GF & GH and G9 & G14.5, between G14 & G14.5 and GA.5 & GF
5th to 6th level columns at TB/T14, TC/T14, TC.5/T13.5, TC.5/T14.5, TB/T15, TD/T15, TB/T16, TC.5/T16,

Drawing No.	Drawings By	Date	Rev. No.	Rev. Date	Comments
R60-1 to R60-12	Gerdau	11/29/17	N/A	N/A	Rebar size, splicing, clearance and spacing complies with specifications.
R70-01 to R70-11	Gerdau	11/28/17	2	01/17/18	
R05B-01 to R05B-14	Gerdau	04/12/18	1	06/11/18	

Grade: 40 ____ 60 X **Welded Wire Fabric** ____ **Size:** ____

Forms Inspected: X **(Forms inspected for cleanliness, alignment, and symmetry only)**

Reinforcing complies with Project Specifications: X **Yes** ____ **No**

Items to be corrected: None

Note: Discrepant items to be re-inspected prior to concrete placement.

Remarks: Also checked 5th to 6th level columns at TE/T16, TB/T17, TC/T17, TD/T18, TE/T17, TC.5/T17, TD/T18, TB/T19, TC/T19, TD/T19, TE/T19, TB/T20 and TC/T20
Area ready for concrete placement, refer to report dated 09/08/2018 top mat completed

Superintendent notified of findings: X **Yes** ____ **No**

Appendix M

Coastal Materials Testing Lab, LLC

10 Hart Street West Haven, CT 06516 • Tel (203) 691-5966 • Fax (203) 691-5238

www.coastalmaterialstesting.com

March 25th, 2022

Building and Land Technology
1 Elmcroft Road, Suite 500
Stamford, CT 06902

RE: Building P4-P5 (Permit #B-17-782)
Stamford, CT

To Whom it May Concern:

This letter is to inform you that Coastal Materials Testing Performed the reinforcing inspections at the above mentioned project per the Statement of Special Inspections; these inspections included the verification of the reinforcing steel and the post tensioning tendons for layout, profile, bundling and monitoring and recording the stressing operations. Inspections were conducted per the approved shop drawings only provided by the concrete contractor.

Respectfully submitted

Coastal Materials Testing Lab, LLC

Sami Hajjar, PE

Appendix N

Summary of GPR Investigation of Concrete Structure

Prepared For: Baker Concrete

Prepared By:
Scott Viapiano
Scott.Viapiano@gprsinc.com
Project Manager -New York City
201-401-3209

March 31, 2022

March 31, 2022

Baker Concrete
Attn: Brian Wilkerson
Site: 850 Pacific St. Stamford, CT

We appreciate the opportunity to provide this report for our work completed on March 30, 2022.

PURPOSE

The purpose of the project was to determine the structural components of the slab such as spacing and depth of reinforcing, specifically Post Tension Cables, within a specified area in the Rec Room and a hallway of the building.

EQUIPMENT

- **Concrete Scanning GPR Antenna**. This GPR antenna is handheld and rolls over the surface. The antenna needs a reasonably smooth, unobstructed surface for scanning and is not able to scan within 2"-4" of obstructions such as walls and metal tracks unless they are removed prior to our work. The data is displayed on a screen during the scanning and marked on the surface in real time. The total depth achieved can be as much as 18" or more with this antenna but can vary widely depending on the types of materials being scanned through and other factors such as the spacing of the reinforcing and/or moisture content. Depth accuracy depends on the ability to obtain an accurate depth calibration for the concrete. No harmful radiation is emitted and the work can be performed at any time with people in close proximity. For more information, please visit: Link

- **1600 MHz GPR Antenna.** The antenna is approximately 6"x9" and rolls over the surface. The antenna needs a reasonably smooth, unobstructed surface for scanning so we would not be able to scan within 3" of obstructions such as walls and metal tracks unless they are removed prior to our work. The data is displayed on a screen during the scanning and marked on the surface in real time. GPR works by sending pulses of energy into a material and recording the strength and the time required for the return of the reflected signal. Reflections are produced when the energy pulses enter into a material with different electrical properties from the material it left. The strength of the reflection is determined by the contrast in signal speed between the two materials. The total depth achieved can be as much as 18" or more with this antenna but can vary widely depending on the conductivity of the materials and other factors such as the spacing of the reinforcing. ***No harmful radiation is emitted and the work can be performed at any time with people in close proximity***.

  2000 MHz GPR Antenna. The antenna is only approximately 4"x3.5" and rolls over the surface. The antenna needs a reasonably smooth, unobstructed surface for scanning so we would not be able to scan within 1.75" of obstructions such as walls and metal tracks unless they are removed prior to our work. The data is displayed on a screen during the scanning and marked on the surface in real time. GPR works by sending pulses of energy into a material and recording the strength and the time required for the return of the reflected signal. Reflections are produced when the energy pulses enter into a material with different electrical properties from the material it left. The strength of the reflection is determined by the contrast in signal speed between the two materials. The total depth achieved can be as much as 18" or more with this antenna but can vary widely depending on the conductivity of the materials and other factors such as the spacing of the reinforcing. ***No harmful radiation is emitted and the work can be performed at any time with people in close proximity***.

PROCESS

The process begins by using GPR to collect initial scans throughout the area. These scans are used to calibrate the equipment and determine the type of slab, reinforcing patterns, maximum depth penetration, and any other potential limitations. Each location is then scanned in a grid pattern with the spacing and collection of scans being dependent on the information that is needed for the project. Relevant scan examples were saved and will be provided in this report.

LIMITATIONS

Please keep in mind that there are limitations to any subsurface investigation. The equipment may not achieve maximum effectiveness due to conditions in the concrete or soil such as moisture content, age of the concrete, reinforcing size and spacing, and a variety of other factors. Depths are dependent on many factors so depth accuracy can vary throughout a site and should be treated as estimates only. No subsurface investigation or equipment can provide a complete image of what lies below. Our results should always be used in conjunction with as many methods as possible such as consulting existing plans and drawings, visual inspection of above-ground features, drilling or cutting, etc.

FINDINGS

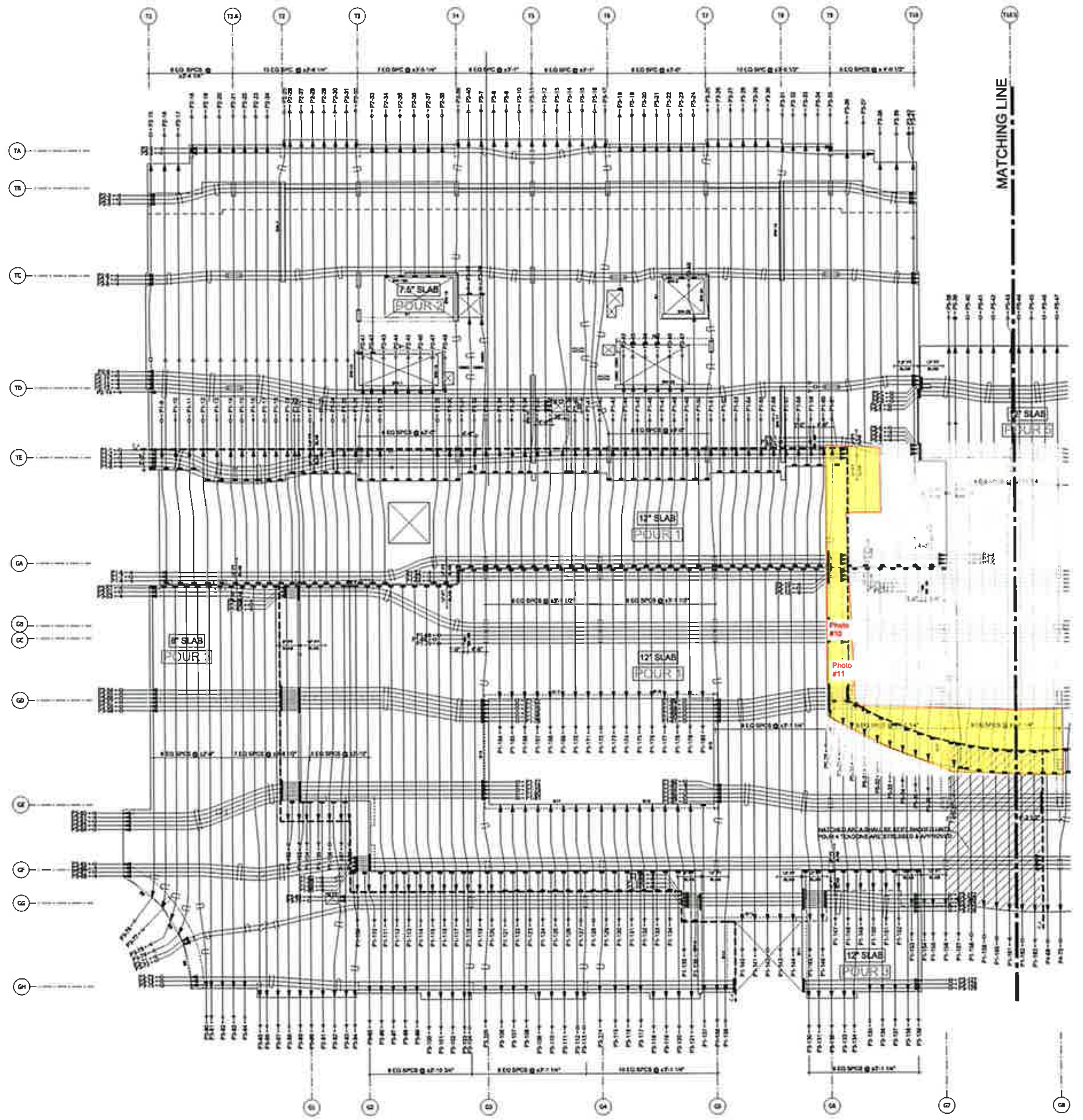
The slab scanned was a reinforced concrete slab containing post tension cables per the contract drawings provided by the client. The average depth of the scanned areas were 10-12 inches in thickness. After performing a GPR concrete analysis, I did find post tension running all throughout the rec room. The post tension I was finding and marking on the ground was consistent with the PT cable map that was provided by the client. I found that the uniform PT cables running long ways has 3-foot pattern spacing, and I also found the banded PT cables running laterally with the columns as it shows on the map. I did not find any PT cable in the hallway near where the hole in the patio area is. I only found rebar reinforcing in that carpeted area where the expansion joint is.

Please reference the attached post tension shop drawings provided by the client which highlights the approximate areas where the scanning was performed.

The following pages will provide photos and further explanation of our findings.

5TH FLOOR TENDON CHART					ELONGATION (in.)	
DESIGNATION	STRANDS #	LENGTH	TYPE	COLOR CODE	△1	△2
P1-01	6	81'-0"	→	ORANGE GOLD	6 3/8	-
P1-02 to P1-04	15	172'-0"	↔	GOLD PURPLE WHITE	12 5/8	-
P1-05	3	81'-0"	→	ORANGE GOLD	6 3/8	-
P1-06 to P1-09	15	168'-0"	↔	GOLD BROWN RED	12 3/8	-
P1-09 to P1-20	85	33'-0"	→	YELLOW GOLD GREEN	2 4/8	-
P1-21 to P1-41	70	28'-0"	→	WHITE RED	2	-
P1-42 to P1-44	10	96'-0"	→	RED BROWN	7 4/8	-
P1-45 to P1-47	15	141'-0"	↔	GOLD GREEN GOLD	11	-
P1-68	4	93'-0"	→	RED BLACK	7 3/8	-
P1-69	4	94'-0"	→	RED GREEN	7 3/8	-
P1-70	4	93'-6"	→	RED BLACK	7 3/8	-
P1-71 to P1-76	24	52'-0"	→	YELLOW WHITE	4	-
P1-77 to P1-81	18	51'-0"	→	YELLOW GOLD	4	-
P1-82 to P1-86	18	306'-0"	↔	BLACK PINK GREEN	13 3/8	13 5/8
P1-88 to P1-89	18	34'-0"	→	BLACK GREEN	2 4/8	-
P1-90	4	36'-0"	→	BLACK BROWN	2 5/8	-
P1-91	4	37'-0"	→	BLACK PURPLE	2 5/8	-
P1-92 to P1-93	8	217'-0"	↔	WHITE GOLD PURPLE	8 3/8	13 6/8
P1-94 to P1-97	15	235'-0"	↔	WHITE BLACK YELLOW	9 3/8	12 2/8
P1-98 to P1-101	14	36'-0"	→	BLACK BROWN	2 4/8	-
P1-102 to P1-106	22	58'-0"	→	YELLOW ORANGE	4 5/8	-
P1-108 to P1-117	26	78'-0"	→	PURPLE BROWN	6	-
P1-118 to P1-120	8	80'-0"	→	ORANGE PINK	6 2/8	-
P1-121 to P1-134	43	22'-0"	→	YELLOW GOLD BLACK	1 5/8	-
P1-135 to P1-136	8	26'-0"	→	WHITE RED	2	-
P1-137	2	46'-0"	→	GREEN BROWN	3 5/8	-
P1-138	3	104'-0"	→	GOLD PINK GREEN	8 5/8	-
P1-139	2	104'-0"	→	GOLD PINK GREEN	8 2/8	-
P1-140 to P1-146	22	87'-0"	→	ORANGE PURPLE	6 7/8	-
P1-147 to P1-148	6	47'-0"	→	GREEN PURPLE	3 5/8	-
P1-149	2	46'-0"	→	GREEN BROWN	3 5/8	-
P1-150	2	45'-0"	→	GREEN YELLOW	3 4/8	-
P1-151	3	43'-0"	→	GREEN BLACK	3 3/8	-
P1-152	3	42'-0"	→	GREEN WHITE	3 2/8	-
P1-153	3	60'-0"	→	YELLOW GOLD YELLOW	3 4/8	-
P1-154	3	45'-0"	→	GREEN BLACK	3 3/8	-
P1-155	3	47'-0"	→	GREEN WHITE	3 2/8	-
P1-156	3	47'-0"	→	GREEN GOLD	3 5/8	-
P1-157 to P1-163	25	40'-0"	→	GREEN PINK	3	-
P1-164 to P1-182	52	32'-0"	→	BLACK WHITE	2 3/8	-
P2-01	3	188'-0"	↔	GOLD YELLOW ORANGE	12 2/8	-
P2-02	2	188'-0"	↔	GOLD BROWN ORANGE	13 2/8	-
P2-03 to P2-06	10	189'-0"	↔	GOLD ORANGE RED	14 7/8	-
P2-08 to P2-11	20	190'-0"	↔	GOLD RED PINK	15	-
P2-12 to P2-13	6	100'-0"	↔	YELLOW WHITE GOLD	7 7/8	-
P2-14	3	99'-0"	↔	YELLOW WHITE PINK	7 7/8	-
P2-15 to P2-17	10	77'-0"	→	PURPLE YELLOW	6 1/8	-
P2-18	3	80'-0"	→	ORANGE PINK	6 2/8	-
P2-19 to P2-24	17	82'-0"	→	ORANGE WHITE	6 4/8	-
P2-25	3	84'-0"	→	ORANGE GREEN	6 5/8	-
P2-26 to P2-31	18	82'-0"	→	ORANGE WHITE	6 4/8	-
P2-32	2	52'-0"	→	YELLOW BLACK	4	-
P2-33	2	51'-0"	→	YELLOW GOLD	4	-
P2-34 to P2-38	10	37'-0"	→	YELLOW GOLD GREEN	2 5/8	-
P2-39	3	84'-0"	→	ORANGE GREEN	6 5/8	-
P2-40	3	38'-0"	→	BLACK ORANGE	2 7/8	-
P2-41 to P2-46	22	24'-0"	→	WHITE GREEN	1 6/8	-
P3-01	2	28'-0"	→	WHITE BROWN	1 7/8	-
P3-02	4	27'-0"	→	WHITE PURPLE	2	-
P3-03	2	26'-0"	→	WHITE BROWN	1 7/8	-
P3-04 to P3-06	14	29'-0"	→	WHITE RED	2	-
P3-07	2	38'-0"	→	BLACK ORANGE	2 7/8	-
P3-08 to P3-16	23	82'-0"	→	ORANGE WHITE	6 4/8	-
P3-17	2	84'-0"	→	ORANGE GREEN	6 5/8	-
P3-18	3	36'-0"	→	BLACK BROWN	2 4/8	-
P3-19 to P3-21	8	49'-0"	→	GREEN RED	3 7/8	-
P3-22 to P3-24	8	33'-0"	→	YELLOW GOLD GREEN	2 4/8	-
P3-25	2	83'-0"	→	ORANGE YELLOW	6 5/8	-
P3-26 to P3-30	10	82'-0"	→	ORANGE WHITE	6 4/8	-
P3-31	2	81'-0"	→	ORANGE GOLD	6 3/8	-
P3-32 to P3-35	8	78'-0"	→	PURPLE RED	6 2/8	-
P3-36 to P3-37	4	102'-0"	→	GOLD PINK WHITE	8	-
P3-38 to P3-40	6	98'-0"	→	PINK	7 7/8	-
P3-41	2	100'-0"	→	GOLD	7 7/8	-
P3-42 to P3-47	16	24'-0"	→	WHITE GREEN	1 6/8	-
P3-48	2	41'-0"	→	GREEN GOLD	3 2/8	-
P3-49	2	38'-0"	→	BLACK RED	2 5/8	-
P3-50	2	38'-0"	→	BLACK RED	2 6/8	-
P3-51 to P3-58	34	37'-0"	→	BLACK PURPLE	2 5/8	-
P3-59 to P3-64	19	40'-0"	→	GREEN YELLOW	3 4/8	-
P3-65 to P3-66	14	61'-0"	→	BROWN GOLD	4 6/8	-
P3-68 to P3-70	7	88'-0"	→	ORANGE RED	7	-
P3-71	3	129'-0"	→	GOLD WHITE RED	10	-
P3-72	4	138'-0"	→	GOLD WHITE ORANGE	11	-
P3-73 to P3-75	12	134'-0"	→	GOLD BLACK GREEN	10 4/8	-
P3-76	2	77'-0"	→	YELLOW GOLD ORANGE	6	-
P3-77	2	90'-0"	→	ORANGE PINK	6 5/8	-
P3-78	3	82'-0"	→	ORANGE BLACK	6 4/8	-
P3-79	3	88'-0"	→	ORANGE BROWN	6 5/8	-
P3-80 to P3-84	11	99'-0"	→	PINK	7 5/8	-
P3-85 to P3-87	8	101'-0"	→	GOLD PINK GOLD	8	-
P3-88 to P3-91	11	48'-0"	→	GREEN ORANGE	3 6/8	-
P3-92	4	48'-0"	→	GREEN RED	3 5/8	-
P3-93	3	48'-0"	→	GREEN ORANGE	3 6/8	-
P3-94	3	31'-0"	→	BLACK GOLD	2 2/8	-
P3-95 to P3-99	16	30'-0"	→	BLACK PINK	2 2/8	-
P3-100 to P3-104	19	32'-0"	→	BLACK WHITE	2 3/8	-
P3-105 to P3-108	11	30'-0"	→	BLACK PINK	2 2/8	-
P3-109 to P3-113	17	32'-0"	→	BLACK WHITE	2 3/8	-
P3-114 to P3-117	12	30'-0"	→	BLACK PINK	2 2/8	-
P3-118 to P3-121	12	32'-0"	→	BLACK WHITE	2 3/8	-
P3-122 to P3-129	28	30'-0"	→	BLACK PINK	2 2/8	-
P3-130	3	32'-0"	→	BLACK WHITE	2 3/8	-
P3-131 to P3-133	8	31'-0"	→	BLACK GOLD	2 3/8	-
P3-134	3	32'-0"	→	BLACK WHITE	2 3/8	-
P3-135 to P3-139	14	30'-0"	→	BLACK PINK	2 2/8	-
P4-01 to P4-06	23	127'-0"	→	GOLD WHITE PURPLE	10	-
P4-07 to P4-24	48	29'-0"	→	WHITE RED	2	-
P4-25 to P4-31	28	37'-0"	→	YELLOW GOLD GREEN	2 3/8	-
P4-32	3	32'-0"	→	BLACK WHITE	2 3/8	-
P4-33 to P4-39	29	37'-0"	→	YELLOW GOLD GREEN	2 3/8	-
P4-40	2	32'-0"	→	BLACK WHITE	2 3/8	-
P4-41 to P4-45	20	33'-0"	→	YELLOW GOLD GREEN	2 3/8	-
P4-46	4	32'-0"	→	BLACK WHITE	2 3/8	-
P4-47 to P4-49	10	77'-0"	→	PURPLE BLACK	5 5/8	-
P4-50 to P4-52	12	24'-0"	→	WHITE GREEN	1 6/8	-
P4-53 to P4-55	10	118'-0"	→	YELLOW WHITE PURPLE	9	-
P4-56 to P4-58	12	77'-0"	→	PURPLE WHITE	5 5/8	-
P4-59 to P4-61	12	117'-0"	→	YELLOW WHITE YELLOW	8 7/8	-
P4-62	4	117'-0"	→	YELLOW WHITE BROWN	8 7/8	-
P4-63	6	118'-0"	→	YELLOW WHITE ORANGE	9	-
P4-64	4	117'-0"	→	YELLOW BLACK PINK	8 2/8	-
P4-65 to P4-68	15	36'-0"	→	BLACK BROWN	2 4/8	-
P4-69	6	42'-0"	→	GREEN PINK	3	-
P4-70	4	41'-0"	→	GREEN GOLD	3	-
P4-71	5	40'-0"	→	GREEN PINK	3	-
P4-72 to P4-75	14	41'-0"	→	GREEN GOLD	3 2/8	-
P4-76	3	47'-0"	→	GREEN WHITE	3 5/8	-
P4-77	3	48'-0"	→	GREEN BLACK	3 5/8	-
P4-78	3	43'-0"	→	GREEN YELLOW	3 4/8	-
P4-79	3	46'-0"	→	GREEN BROWN	3 5/8	-
P4-80	3	44'-0"	→	YELLOW GOLD YELLOW	3 5/8	-
P4-81	3	45'-0"	→	GREEN YELLOW	3 5/8	-
P4-82 to P4-83	8	47'-0"	→	GREEN PURPLE	3 5/8	-
P4-84 to P4-85	7	108'-0"	→	GOLD PINK ORANGE	8 4/8	-

(PLEASE SEE NEXT SHEET FOR TENDON CHART PART 2)



SLAB TENDON LAYOUT - 5TH FLOOR (SLAB THICKNESS 7 1/2" U.N.O.)

SCALE: 3/32"=1'-0"

APPROVED FOR CONSTRUCTION

ENCAPSULATED
(ENCAPSULATED ANCHORS)

NOTES:
1 - REFER TO DETAIL 13/PT-1.01 FOR ALL TENDONGS SWEEP AROUND OPENINGS.
2 - STRESSING TAIL TO BE A MAXIMUM OF 18". REFER TO DETAIL 3/PT-1.01.
3 - E.O.R TO VERIFY CONSTRUCTION JOINT LOCATIONS.
4 - E.O.R TO VERIFY SLAB TENDON LAYOUT.

SUBMITTAL

No	Date	Description	Drawn	Checked
1	06/06/18	FOR APPROVAL	DO/CMS	FOUSN
2	07/02/18	FOR APPROVAL	DO/PA	FOUSN
3	7/12/18	FOR CONSTRUCTION	AK	FOUSN

CLIENT: BAKER CONCRETE CONSTRUCTION

CONTRACT DRAWINGS:
- Issue : SUPERSTRUCTURE 80 SET
- Date : 02/23/18

PROJECT: HARBOR POINT BLOCK P4-P5 STAMFORD, CT

DRAWING TITLE: 5TH FLOOR SLAB TENDON LAYOUT

DRAWING REFERENCE: S105PT-A & S105PT-B

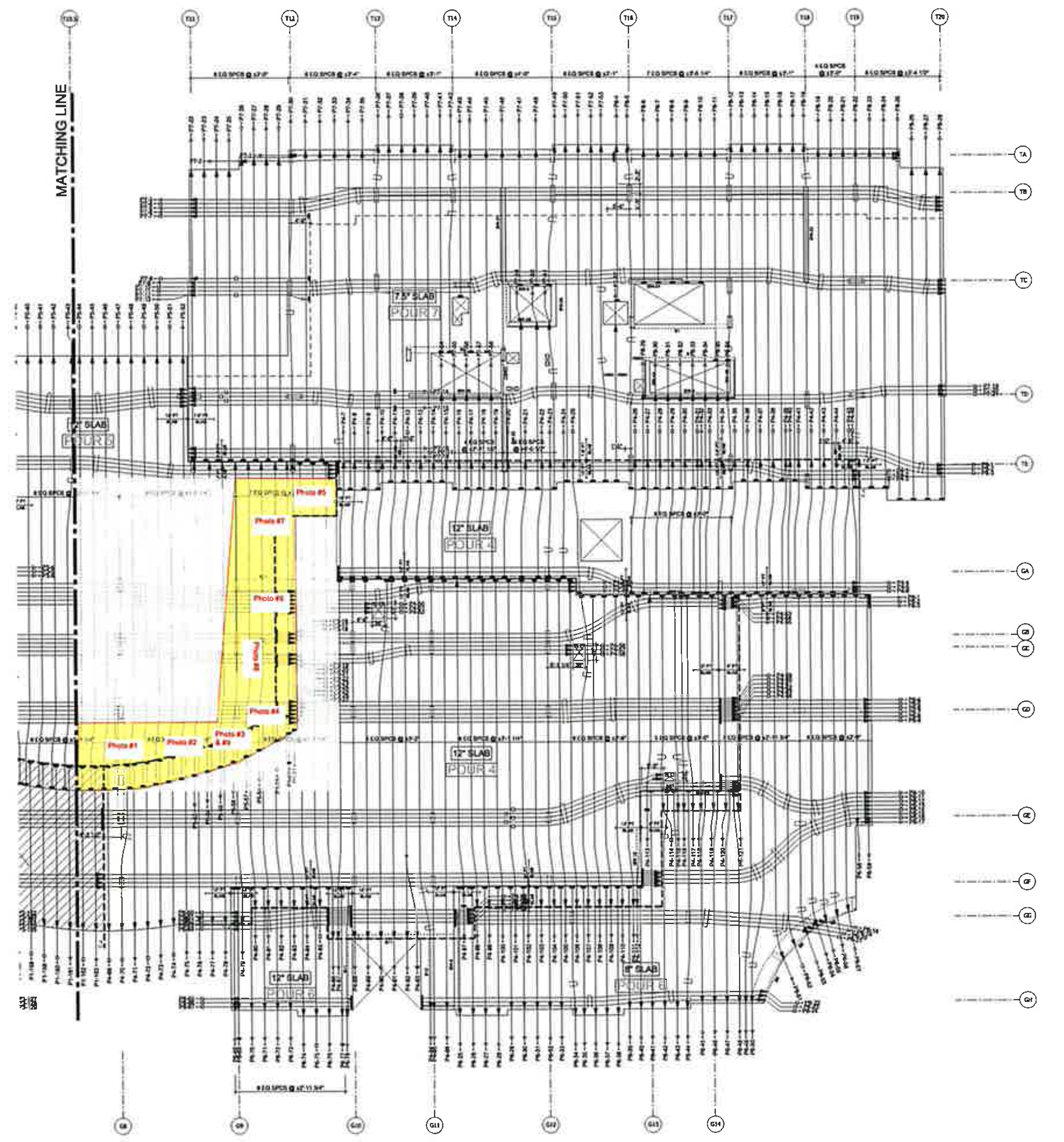
PT DRAWING #: PT-2.09

pti POST-TENSIONING INSTITUTE CERTIFIED PLANT

5TH FLOOT TENDON CHART					ELONGATION (in.)	
DESIGNATION	STRANDS #	LENGTH	TYPE	COLOR CODE	Δ1	Δ3
[illegible]	[illegible]	[illegible]	→	YELLOW WHITE ORANGE	[illegible]	-
[illegible]	[illegible]	[illegible]	→	ORANGE PURPLE	[illegible]	-
[illegible]	[illegible]	[illegible]	→	GOLD PINK GREEN	[illegible]	-
[illegible]	[illegible]	[illegible]	→	ORANGE PINK	[illegible]	-
[illegible]	[illegible]	[illegible]	→	PURPLE BROWN	[illegible]	-
[illegible]	[illegible]	[illegible]	→	YELLOW BLACK	[illegible]	-
[illegible]	[illegible]	[illegible]	→	YELLOW GOLD	[illegible]	-
[illegible]	[illegible]	[illegible]	→	ORANGE BROWN	[illegible]	-
[illegible]	[illegible]	[illegible]	→	PINK	[illegible]	-
P5-13	[illegible]	[illegible]	→	PURPLE YELLOW	[illegible]	-
P5-14	[illegible]	[illegible]	→	PURPLE BROWN	[illegible]	-
P5-15	[illegible]	[illegible]	→	PURPLE YELLOW	[illegible]	-
P5-16 to P5-27	[illegible]	[illegible]	→	PINK	[illegible]	-
P5-28	[illegible]	[illegible]	→	BLACK PURPLE	[illegible]	-
P5-29	[illegible]	[illegible]	→	BLACK RED	[illegible]	-
P5-30	[illegible]	[illegible]	→	GREEN PINK	[illegible]	-
P5-31	[illegible]	[illegible]	→	GREEN WHITE	[illegible]	-
P5-32	[illegible]	[illegible]	→	GREEN BLACK	[illegible]	-
P5-33	[illegible]	[illegible]	→	GREEN YELLOW	[illegible]	-
P5-34	[illegible]	[illegible]	→	GREEN BROWN	[illegible]	-
P5-35	[illegible]	[illegible]	→	GREEN PURPLE	[illegible]	-
P5-36	[illegible]	[illegible]	→	GREEN ORANGE	[illegible]	-
P5-37	[illegible]	[illegible]	→	YELLOW PINK	[illegible]	-
P5-38 to P5-40	[illegible]	[illegible]	→	GOLD PINK GREEN	[illegible]	-
P5-41	[illegible]	[illegible]	→	GOLD PINK YELLOW	[illegible]	-
P5-42 to P5-43	[illegible]	[illegible]	→	GOLD PINK YELLOW	[illegible]	-
P5-44	[illegible]	[illegible]	→	GOLD PINK YELLOW	[illegible]	-
P5-45 to P5-46	[illegible]	[illegible]	→	GOLD PINK YELLOW	[illegible]	-
P5-47	[illegible]	[illegible]	→	GOLD PINK BROWN	[illegible]	-
P5-48	[illegible]	[illegible]	→	GOLD PINK YELLOW	[illegible]	-
P5-49	[illegible]	[illegible]	→	GOLD PINK YELLOW	[illegible]	-
P5-50	[illegible]	[illegible]	→	GOLD PINK GREEN	[illegible]	-
P5-51	[illegible]	[illegible]	→	GOLD PINK GREEN	[illegible]	-
P5-52	[illegible]	[illegible]	→	GOLD PINK BLACK	[illegible]	-
P5-53	[illegible]	[illegible]	→	PURPLE BROWN	[illegible]	-
P5-54	[illegible]	[illegible]	→	PURPLE YELLOW	[illegible]	-
P5-55	[illegible]	[illegible]	→	PURPLE GREEN	[illegible]	-
P5-56	[illegible]	[illegible]	→	PURPLE BLACK	[illegible]	-
P5-57	[illegible]	[illegible]	→	PURPLE WHITE	[illegible]	-
P5-58	[illegible]	[illegible]	→	PURPLE PINK	[illegible]	-
P5-59	[illegible]	[illegible]	→	BROWN ORANGE	[illegible]	-
P5-60	[illegible]	[illegible]	→	YELLOW GOLD PURPLE	[illegible]	-
P5-61	[illegible]	[illegible]	→	BROWN YELLOW	[illegible]	-
[illegible]	[illegible]	[illegible]	→	BLACK PURPLE	[illegible]	-
P6-12 to P6-13	[illegible]	[illegible]	→	BLACK RED	[illegible]	-
P6-14 to P6-17	[illegible]	[illegible]	→	BROWN PINK	[illegible]	-
P6-18	[illegible]	[illegible]	→	RED PINK	[illegible]	-
P6-19	[illegible]	[illegible]	→	ORANGE RED	[illegible]	-
P6-20	[illegible]	[illegible]	→	YELLOW GOLD RED	[illegible]	-
P6-21	[illegible]	[illegible]	→	ORANGE BROWN	[illegible]	-
P6-22 to P6-23	[illegible]	[illegible]	→	ORANGE GREEN	[illegible]	-
P6-24	[illegible]	[illegible]	→	ORANGE BLACK	[illegible]	-
P6-25 to P6-28	[illegible]	[illegible]	→	BLACK GOLD	[illegible]	-
P6-29 to P6-33	[illegible]	[illegible]	→	BLACK PINK	[illegible]	-
P6-34 to P6-38	[illegible]	[illegible]	→	BLACK WHITE	[illegible]	-
P6-39 to P6-40	[illegible]	[illegible]	→	BLACK PINK	[illegible]	-
P6-41 to P6-44	[illegible]	[illegible]	→	YELLOW BLACK	[illegible]	-
P6-45 to P6-48	[illegible]	[illegible]	→	YELLOW WHITE	[illegible]	-
P6-49	[illegible]	[illegible]	→	PINK	[illegible]	-
P6-50	[illegible]	[illegible]	→	PINK	[illegible]	-
P6-51	[illegible]	[illegible]	→	ORANGE RED	[illegible]	-
P6-52	[illegible]	[illegible]	→	ORANGE BROWN	[illegible]	-
P6-53	[illegible]	[illegible]	→	ORANGE BLACK	[illegible]	-
P6-54	[illegible]	[illegible]	→	ORANGE GOLD	[illegible]	-
P6-55	[illegible]	[illegible]	→	ORANGE PINK	[illegible]	-
P6-56	[illegible]	[illegible]	→	PURPLE ORANGE	[illegible]	-
P6-57	[illegible]	[illegible]	→	YELLOW GOLD ORANGE	[illegible]	-
P6-58 to P6-59	[illegible]	[illegible]	→	YELLOW BROWN	[illegible]	-
P6-60 to P6-73	[illegible]	[illegible]	→	BLACK PINK	[illegible]	-
P6-74 to P6-77	[illegible]	[illegible]	→	BLACK GOLD	[illegible]	-
P6-78	[illegible]	[illegible]	→	BLACK WHITE	[illegible]	-
P7-01	[illegible]	[illegible]	↔	GOLD GREEN ORANGE	[illegible]	[illegible]
P7-02	[illegible]	[illegible]	↔	GOLD BROWN PINK	[illegible]	[illegible]
P7-03 to P7-06	[illegible]	[illegible]	→	GOLD ORANGE WHITE	[illegible]	-
P7-07 to P7-08	[illegible]	[illegible]	→	WHITE RED	[illegible]	-
P7-09 to P7-12	[illegible]	[illegible]	→	GOLD ORANGE BLACK	[illegible]	-
P7-13	[illegible]	[illegible]	→	BLACK PINK	[illegible]	-
P7-14 to P7-16	[illegible]	[illegible]	→	YELLOW PINK	[illegible]	-
P7-17	[illegible]	[illegible]	→	YELLOW GOLD	[illegible]	-
P7-18	[illegible]	[illegible]	→	YELLOW PINK	[illegible]	-
P7-19 to P7-21	[illegible]	[illegible]	→	GOLD ORANGE GREEN	[illegible]	-
P7-22 to P7-25	[illegible]	[illegible]	→	PURPLE GOLD	[illegible]	-
P7-26 to P7-29	[illegible]	[illegible]	→	PURPLE GREEN	[illegible]	-
P7-30	[illegible]	[illegible]	→	PURPLE BROWN	[illegible]	-
P7-31 to P7-32	[illegible]	[illegible]	→	PURPLE YELLOW	[illegible]	-
P7-33	[illegible]	[illegible]	→	ORANGE BLACK	[illegible]	-
P7-34 to P7-35	[illegible]	[illegible]	→	ORANGE WHITE	[illegible]	-
P7-36	[illegible]	[illegible]	→	ORANGE GREEN	[illegible]	-
P7-37 to P7-40	[illegible]	[illegible]	→	ORANGE WHITE	[illegible]	-
P7-41 to P7-42	[illegible]	[illegible]	→	YELLOW PINK	[illegible]	-
P7-43	[illegible]	[illegible]	→	BLACK BROWN	[illegible]	-
P7-44 to P7-45	[illegible]	[illegible]	→	GREEN RED	[illegible]	-
P7-46	[illegible]	[illegible]	→	ORANGE WHITE	[illegible]	-
P7-47 to P7-48	[illegible]	[illegible]	→	YELLOW GOLD GREEN	[illegible]	-
P7-49	[illegible]	[illegible]	→	BLACK GREEN	[illegible]	-
P7-50 to P7-53	[illegible]	[illegible]	→	ORANGE WHITE	[illegible]	-
P7-54	[illegible]	[illegible]	→	YELLOW GOLD BLACK	[illegible]	-
P7-55 to P7-58	[illegible]	[illegible]	→	WHITE GREEN	[illegible]	-
P7-59 to P7-61	[illegible]	[illegible]	→	GREEN GOLD	[illegible]	-
P7-62	[illegible]	[illegible]	→	BLACK RED	[illegible]	-
P8-01	[illegible]	[illegible]	→	WHITE BROWN	[illegible]	-
P8-02	[illegible]	[illegible]	→	WHITE PURPLE	[illegible]	-
P8-03	[illegible]	[illegible]	→	WHITE BROWN	[illegible]	-
P8-04	[illegible]	[illegible]	→	BLACK ORANGE	[illegible]	-
P8-05	[illegible]	[illegible]	→	ORANGE GREEN	[illegible]	-
P8-06 to P8-10	[illegible]	[illegible]	→	YELLOW GOLD GREEN	[illegible]	-
P8-11	[illegible]	[illegible]	→	YELLOW WHITE	[illegible]	-
P8-12	[illegible]	[illegible]	→	YELLOW BLACK	[illegible]	-
P8-13 to P8-17	[illegible]	[illegible]	→	ORANGE WHITE	[illegible]	-
P8-18	[illegible]	[illegible]	→	ORANGE GREEN	[illegible]	-
P8-19 to P8-24	[illegible]	[illegible]	→	ORANGE BLACK	[illegible]	-
P8-25	[illegible]	[illegible]	→	ORANGE YELLOW	[illegible]	-
P8-26 to P8-28	[illegible]	[illegible]	→	ORANGE GOLD	[illegible]	-
P8-29 to P8-30	[illegible]	[illegible]	→	WHITE GREEN	[illegible]	-

(PLEASE SEE PREVIOUS SHEET FOR TENDON CHART PART 1)

TENDON CHART NOTES:
1. LENGTH ON TENDON CHART DOES NOT INCLUDE STRESSING TAIL LENGTH.



SLAB TENDON LAYOUT - 5TH FLOOR (SLAB THICKNESS 7 1/2" U.N.O.)

SCALE: 3/32"=1'-0"

NOTES:
1 - REFER TO DETAIL 13/PT-1.01 FOR ALL TENDONGS SWEEP AROUND OPENINGS.
2 - STRESSING TAIL TO BE A MAXIMUM OF 18". REFER TO DETAIL 3/PT-1.01.
3 - E.O.R TO VERIFY CONSTRUCTION JOINT LOCATIONS.
4 - E.O.R TO VERIFY SLAB TENDON LAYOUT.

APPROVED FOR CONSTRUCTION

ENCAPSULATED
(ENCAPSULATED ANCHORS)

TENDON LAYOUT LEGENDS:

TENDON TYPE

TENDON LAYOUT NOTES:

No.	Date	Description	Drawn	Checked
1	06/26/18	FOR APPROVAL	OO/CMS	FOU/SN
2	07/02/18	FOR APPROVAL	OO/FA	FOU/SN
3	7/12/18	FOR CONSTRUCTION	AK	FOU/SN

SUBMITTAL

CLIENT: BAKER CONCRETE CONSTRUCTION

CONTRACT DRAWINGS:
- Issue: SUPERSTRUCTURE 50 SET
- Date: 02/22/18

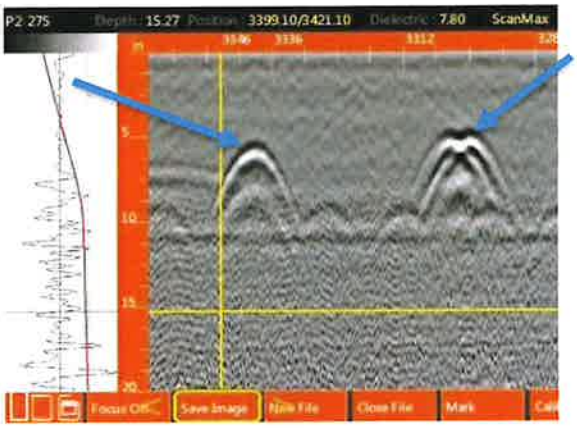
PROJECT: HARBOR POINT BLOCK P4-P5 STAMFORD, CT

DRAWING TITLE: 5TH FLOOR SLAB TENDON LAYOUT

DRAWING REFERENCE: S105PT-A & S105PT-B

PT DRAWING #: PT-2.10

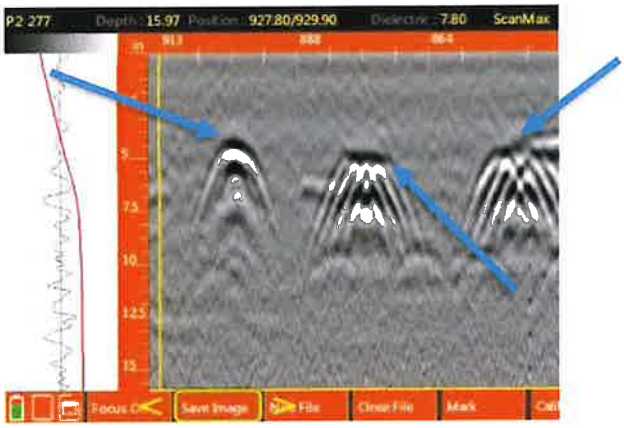
pti POST-TENSIONING INSTITUTE
Certified Plant



GPR data screenshot of PT cables found in the rec room. The depth scale is on the left and the distance of the scan is across the top, forming a cross section view of the subsurface. The arrows point to the multiple pieces of PT cable that are present.

Photo 1

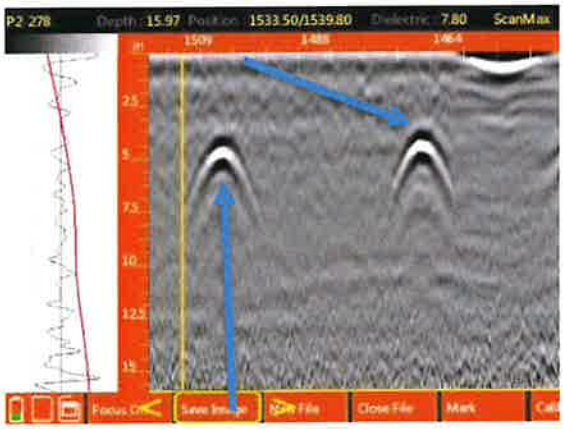
Photo of the rec room floor. Pictured above is some of the scanned area where PT cables were found. All PT cables were marked in blue tape



GPR data screenshot of more PT cables found in the rec room. All arrows point to PT cables

Photo 2

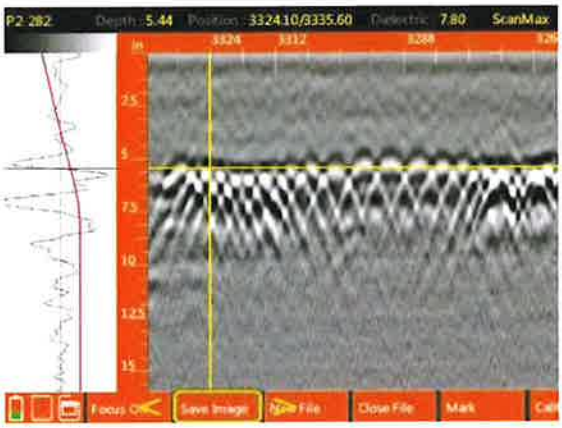
Photo of the rec room floor. Pictured above is another of the scanned area where PT cables were found. All PT cables were marked in blue tape



GPR data screenshot of more PT cables found in the rec room. All arrows point to PT cables

Photo 3

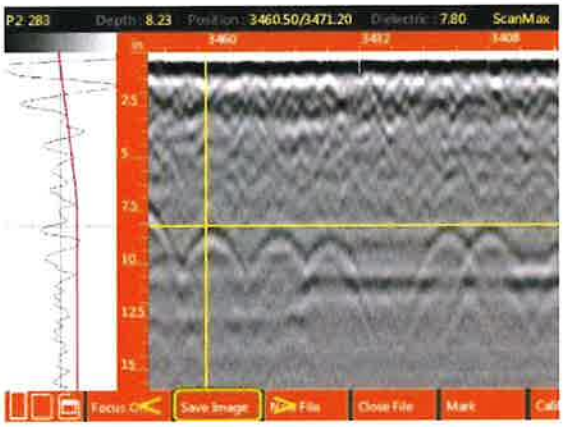
Photo of the rec room floor. Pictured above is another of the scanned area where PT cables were found. All PT cables were marked in blue tape



GPR data screenshot of the lateral PT cables bunches that ran through the columns in the rec room. All those reactions are PT cables at 5" depth

Photo 4

Pictured above is one of those lateral PT bunches that run through the column. All PT cables were marked in blue tape



GPR data screenshot of the carpeted hallway area near the expansion joint. No PT cables were found in this area. The reactions in this data screenshot above are rebar only.

Photo 5

Pictured above is the area near the expansion joint where no PT cables were found.

Photo 6

Pictured above are more lateral PT bunches that run through the column. All PT cables were marked in blue tape

Photo 7

Pictured above is another area in the rec room where more PT was found. All PT is marked in blue tape

Photo 8

Pictured above is another area in the rec room showing the lateral PT bunches along with the long PT cables. All PT is marked in blue tape

Photo 9

Pictured above is another area in the rec room showing the long PT cables spaced evenly at approximately 3'.

Photo 10

Pictured above is another area in the rec room where more PT was found. All PT is marked in blue tape

Photo 11

Pictured above is another area in the rec room where more PT was found. All PT is marked in blue tape

CLOSING

GPRS, Inc. has been in business since 2001, specializing in underground storage tank location, concrete scanning, utility locating, and shallow void detection for projects throughout the United States. I encourage you to visit our website (www.gprsinc.com) and contact any of the numerous references listed.

GPRS appreciates the opportunity to offer our services, and we look forward to continuing to work with you on future projects. Please feel free to contact us for additional information or with any questions you may have regarding this report.

Signed,

Scott Viapiano
Project Manager —New York City

GPRS

Direct: 201-401-3209

Scott.Viapiano@gprsinc.com

www.gprsinc.com

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June 7, 2022

Tim Yahn
Building and Land Technology
1 Elmcroft Road, Suite 500
Stamford, CT 06902

Re: Harbor Point Allure Block P4-P5

Dear Tim;

At your request, we have completed the Non-Destructive Testing (NDT) as required by the replacement and repair permit. The NDT was performed by GPRS using GPR scanning methods over a period of three days. We have attached a report we received from GPRS indicating their findings were consistent with the PT drawings we provided. GPRS marked the underside of the slab showing the PT tendon location and distance from the bottom of the slab. The areas scanned are shown on the attached drawings.

The following is a summary of the scans and our observations:

1. Level 5 Area 1:
    a. This area is between gridlines GE-GD and G5-G6 adjacent to the pool structure.
    b. The pool wall, piping, and electrical conduit made some of the areas inaccessible.
    c. Uniform tendons are marked parallel to G5 and G6.
        i. A total of eight (8) tendon locations are marked between the column lines plus one tendon location on gridline G6.
        ii. The spacing between the tendon locations vary from 25 1/2" to 49 1/2" measured at the center of the bay. The average spacing is approximately 36 3/8".
        iii. The distance from the bottom of the slab to the tendon groups are marked on the slab soffit and vary from 8" at the gridlines GE and GD to 1" in the center of the bay.
    d. The banded tendons are marked at gridlines GE and GD.
        i. A total of five (5) tendon locations are marked parallel to gridline GE and six (6) tendon locations are marked parallel to GD. The tendon groups sweep inward toward the center of the bay as they get closer to the pool wall. The tendon groups are spaced approximately 10" to 12" apart.
        ii. The distance from the bottom of the slab to the tendon groups are marked on the slab soffit. The highest locations measured 8" near gridline G6 to 6" near the face of the pool slab. The lowest locations measured 2" approximately 8'0" from the face of the pool wall near gridline GD and 6'-3" from the face of the pool wall near gridline GE.

CORPORATE OFFICE
900 North Garver Road • Monroe, OH 45050
Phone: 513.539.4000 • Fax: 513.539.4251

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8916 Crump Road, Suite A • Pineville, NC 28134
Phone: 704.967.8110

www.bakerconcrete.com • Toll Free: 800.539.2224

2. Level 5 Area 2:
    a. This area is between gridlines GE-GD and G12-G12 near the top of the ramp on Level 4.
    b. Uniform tendons are marked parallel to G5 and G6.
        i. A total of ten (10) tendon locations are marked.
        ii. The spacing between the tendon locations varies from 32" to 52 1/2" measured at the center of the bay. The average spacing is approximately 37 5/8".
        iii. The distance from the bottom of the slab to the tendon groups are marked on the slab soffit and vary from 9" at the gridlines GE and GD to 1" near the center of the bay.
    c. Banded tendons are marked at gridlines GE and GD.
        i. A total of 5 tendon locations are marked parallel to gridline GE and 6 tendon locations are marked parallel to GD. The tendon groups are spaced approximately 10" to 12" apart.
        ii. The distance from the bottom of the slab to the tendon groups are marked on the slab soffit. The highest locations measured 8" near the face of the columns G11 and G12. The lowest locations measured 2.5" near the center of the bay.
3. Level 4 Area 3 and Level 1 Area 4:
    a. These areas are located between the expansion joint along gridline TE to the middle of the bay between gridline TE and GA and from the column at TE-T12 to the expansion joint parallel with gridline G10.
    b. Uniform tendons are marked parallel to gridline TE.
        i. At each level, there are three (3) lines of uniform tendons between gridline TE and the expansion joint parallel with gridline G10.
        ii. The distance from the bottom of the slab to the tendon groups marked on the slab soffit varies from approximately 3" at the expansion joint to 1" near the center of the bay.
    c. Banded tendons are marked parallel to the expansion joint along gridline TE.
        i. At each level, there are three (3) lines of tendons marked parallel to the expansion joint at gridline TE spaced from 10" to 12" apart.
        ii. The distance from the bottom of the slab to the tendon groups marked on the slab soffit varies from 3" to 4" along the length of the tendons.

Given the GPR scanning is based on the operator's interpretation of the readings, the depths and locations are approximate. However, we believe the scans of these areas confirm the PT is installed as intended on the structural drawings.

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Please feel free to contact me should you have any questions.

Sincerely,

BAKER CONCRETE CONSTRUCTION, INC.

Donn McGinnis, PE
Design Assist Manager

CORPORATE OFFICE
900 North Garver Road • Monroe, OH 45050
Phone: 513.539.4000 • Fax: 513.539.4251

CAROLINA OFFICE
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Phone: 704.967.8110

www.bakerconcrete.com • Toll Free: 800.539.2224

Job Summary

Job Date : 5/10/2022

Customer	Baker Concrete Construction A/P	**Phone Number**	(513) 615-3399

Billing Address	City	State	Zip
900 N. Garver Rd	Monroe	OH	45050

Job Details

Jobsite Location	850 PACIFIC ST
City	STAMFORD
State	CT

WA Number	350596
Job Num	10903
PO Num	10903

Lead Technician	VIAPIANO, SCOTT	**Phone**	201-401-3209	**Email**	scott.viapiano@gprsinc.com

Thank you for using GPRS on your project. We appreciate the opportunity to work with you. If you have questions regarding the results of this scanning, please contact the lead GPRS technician on this project.

EQUIPMENT USED

The following equipment was used on this project:

- Underground Scanning GPR antenna. Typically capable of detecting objects up to 8' deep or more in ideal conditions but maximum effective depth can vary widely and depends on site and soil conditions. Depth penetration is most commonly limited by moisture and clay/conductive soils. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors.
- Electromagnetic Pipe and Cable Locator. Detects electromagnetic fields. Used to actively trace conductive pipes and tracer wires, or passively detect power and radio signals traveling along conductive pipes and utilities. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors.

Work Performed

Ground Penetrating Radar Systems performed the following work on this project:

Concrete Analysis

The scope of work included scanning designated areas to gather data to assist in analysis of the concrete.
The data collected at each area includes:

- 4 areas were scanned on ceilings.
- Perform GPR concrete analysis for presence of PT cable spacing and patterns throughout several areas on the ceiling of the parking garage.
- The effective depth of GPR will vary throughout a site depending on a variety of conditions such as roofing material, moisture content, amount of reinforcing steel, etc. At this site, the maximum effective GPR depth was approximately 10-11 inches.

Job Summary

Job Date : 5/10/2022

- After performing concrete analysis over four separate areas on the ceiling of the parking garage on the fourth floor the third floor and the first floor I was able to find PT cables using my GPR. I also found of rebar but the client did not need rebar to be marked. But there was substantial amount of rebar in the correct spacing that the drawings provided. I found PT cable using my GPR and I was able to distinguish the difference between PT cable and rebar through my extensive training and also my many years of work experience. I found the PT spacing to be very consistent and even as it shown in the drawings that were provided to me. I was also able to find the bunches of PT cable in between the columns using my GPR and the same as the Map provides. I found the PT cable at varying Depths and the PT cable definite definitely draped down as you went towards the middle of the columns. PT cable was found at depths of 1 inches in the middle of the columns and 8 to 10 inches as you were at the columns. All PT cable is marked in red with the words PT. Please keep off all of our marks by at least 2 inches. thank you

Pictures

Utility Limitations

TERMS & CONDITIONS

https://www.gp-radar.com/legal/terms-conditions?utm_source=jobsummary&utm_medium=referral

SIGNATURE

Contact Name

Brian Wilkerson (513) 615-3399 WilkersonB@BakerConcrete.com

Job Summary

Job Date : 5/10/2022

SUBSURFACE INVESTIGATION METHODOLOGY

SIM

POWERING THE INDUSTRY STANDARD

Proper training, multiple technologies, and a field-tested methodology are the key to a successful utility locate, concrete scan, and video pipe inspection. GPRS is a master of all three components by utilizing the SIM Specification.

TRAINING

The industry standard recommends 8 hours as a minimum for training and 60 hours practicing GPR to become certified NDT Level I in Ground Penetrating Radar. In contrast, SIM requires 320 hours of mentorship in the field prior to 80 hours of classroom/hands-on training.

In addition, the classroom training reinforces what a technician learns in the field. This classroom setting also allows them to go deeper into the technical aspects and knowledge needed to perform their jobs at the highest level.

EQUIPMENT

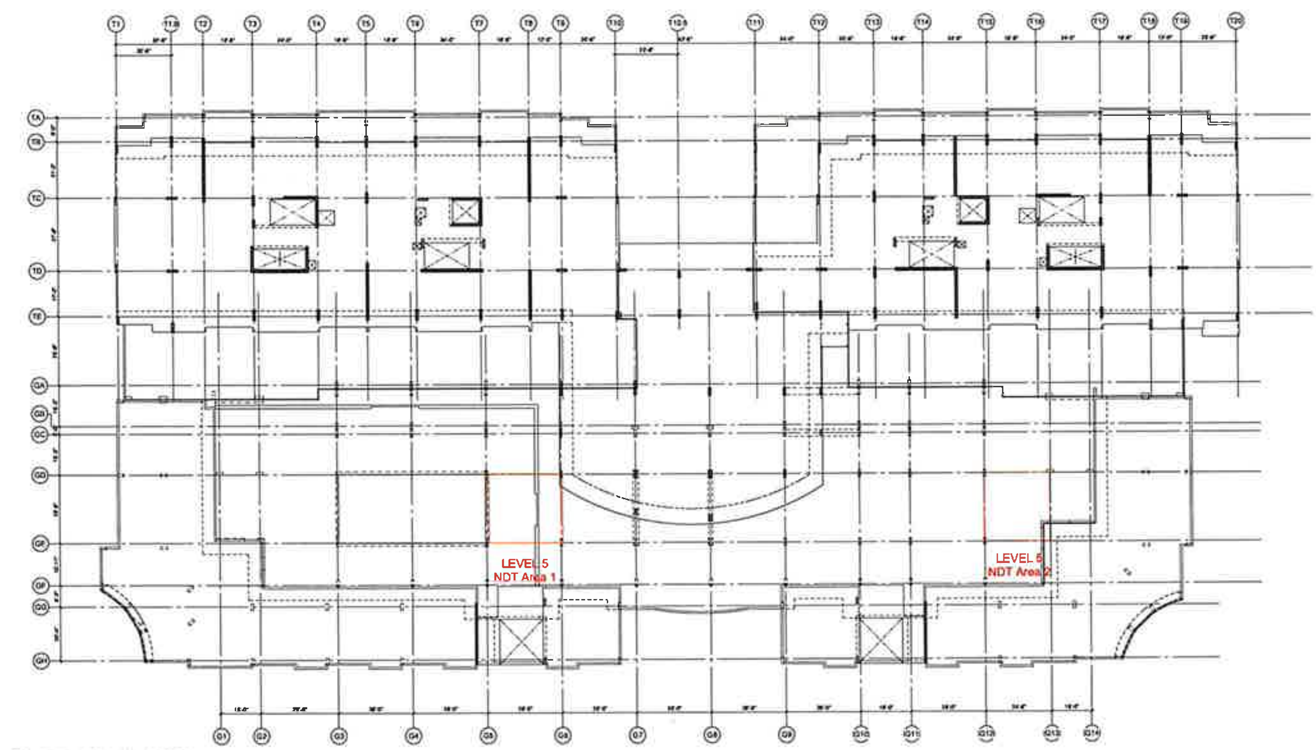
Subsurface Investigation Methodology (SIM) requires multiple technologies to be used in an investigation. With any investigation, more data points yield the best outcome. When SIM qualified technicians locate a subsurface target such as a pipe, utility, or reinforcing with more than one technology, it confirms the accuracy of the locate. This redundancy also reduces the likelihood of missing a buried target. Redundant results bear more data points; by locating pipes and other targets with different methods utilizing each tool's strengths and weaknesses, technicians reduce the risk of missing key site information.

METHODOLOGY

The SIM specification is a tested process that allows technicians to acquire accurate and repeatable results. SIM is similar to a machine that requires multiple gears, all working in unison for it to function properly. One of the most critical gears and steps in the SIM process is the repeated methodology that technicians must know for each project.

A solid, repeatable methodology guarantees that a concrete scanning, utility locating, or video pipe inspection job can be performed by a seasoned professional but also by a new-to-the-business technician. When the SIM methodology is followed, it allows technicians to achieve the same results regardless of their experience in the field.

SIMSPEC.ORG



1 5TH FLOOR PLAN - OVERALL

EDI International, PC

BUILDING & LAND TECHNOLOGY

CIVIL 1

REDNISS & MEAD

Henderson Rogers Structural Engineers

COLLECTIVE DESIGN ASSOCIATES, LLC

FUSS & O'NEILL, INC.

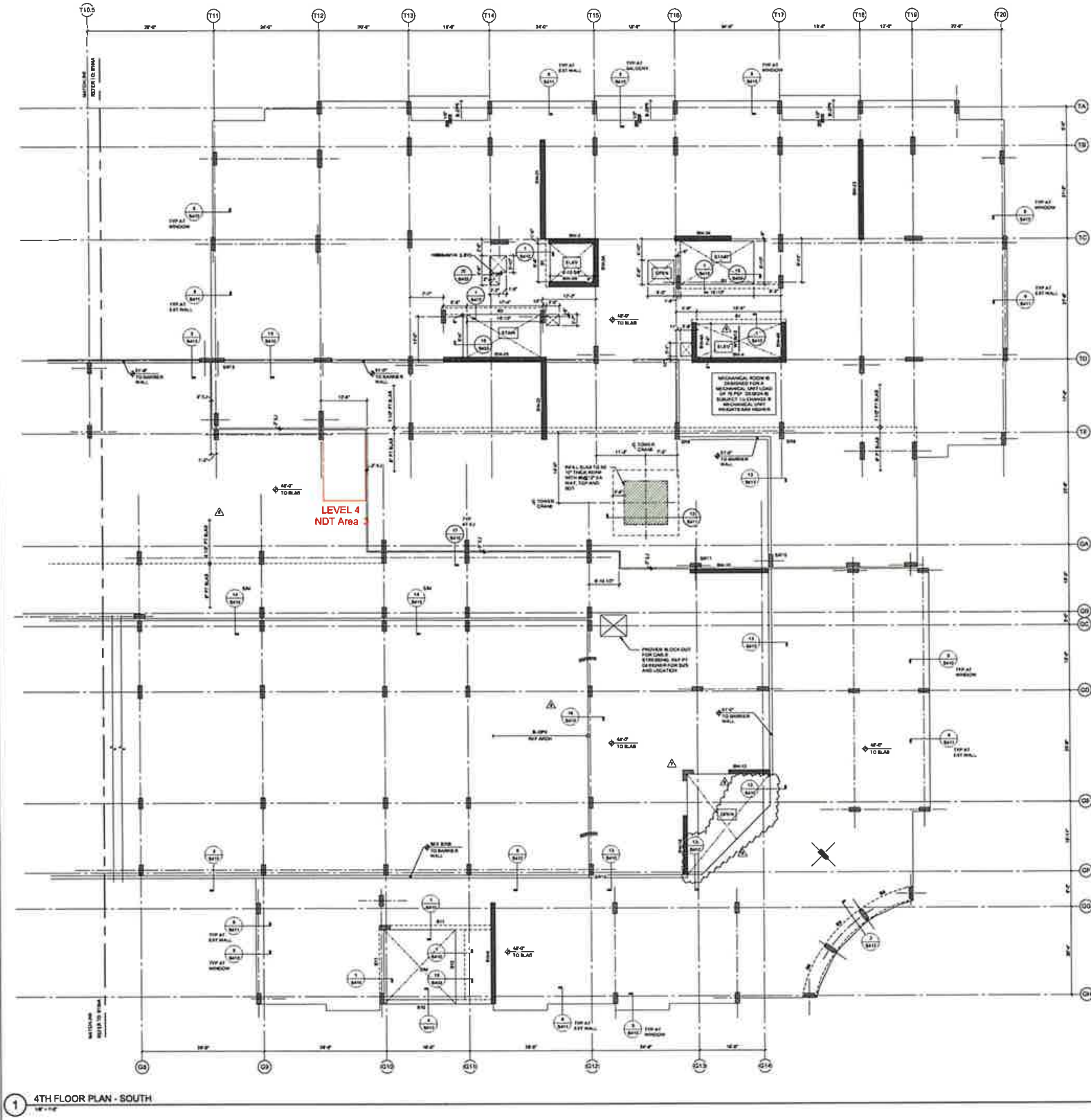
FRANK A. SABATINI, PE

HARBOR POINT
BLOCK P4-P5
STAMFORD, CT

PROJECT NO. 17130.000

5TH FLOOR PLAN - OVERALL

S105



1 4TH FLOOR PLAN - SOUTH

FLOOR FORMING PLAN NOTES

1. REFER TO GENERAL NOTES SHEET FOR CONCRETE COMPRESSIVE STRENGTH AND ADDITIONAL RELATED INFORMATION.
2. NOT ALL PENETRATIONS THROUGH THE FLOOR STRUCTURE ARE SHOWN ON THE PLANS. CONTRACTOR SHALL COORDINATE THE NUMBER, SIZE AND LOCATIONS OF ALL PENETRATIONS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS. REFER TO TYPICAL DETAILS FOR FRAMING AROUND PENETRATIONS.
3. CONTRACTOR TO VERIFY ALL SLAB EDGES, STAIR AND ELEVATOR OPENINGS DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.
4. PROVIDE 3-#4x4'-0" ADDITIONAL SLAB REINFORCEMENT AT ALL RE-ENTRANT CORNERS.
5. SLAB THICKNESSES ARE NOTED ON PLANS.
6. TOP OF SLAB ELEVATIONS ARE NOTED ON PLANS.
7. SEE ARCHITECTURAL DRAWINGS FOR EXTENT AND DIMENSIONS OF RAISED OR DEPRESSED SLAB AREAS, SLOPES AND DRAINS.
8. NOTATION "C1", FOR EXAMPLE ON PLAN DENOTES CONCRETE COLUMNS. SEE COLUMN SCHEDULE ON SHEET S405 FOR ADDITIONAL INFORMATION.
9. NOTATION "SW1", FOR EXAMPLE ON PLAN DENOTES SHEAR WALL 1. SEE SHEAR WALL SCHEDULE ON SHEET S405, S406, OR S407 FOR ADDITIONAL INFORMATION.
10. CONTRACTOR TO COORDINATE LOCATION OF INTERIOR NON LOAD BEARING MASONRY WALLS WITH ARCHITECTURAL DRAWINGS.
11. NOTATION "SR1", FOR EXAMPLE ON PLAN DENOTES STUD RAILS, SEE STUD RAIL SCHEDULE ON SHEET S404 FOR ADDITIONAL INFORMATION.
12. BEGIN THE POST-TENSIONING OPERATIONS ONLY AFTER TESTS OR READING HAVE INDICATED THAT THE CONCRETE IN THE MEMBERS HAS ATTAINED A COMPRESSIVE STRENGTH OF NO LESS THAN 3000 PSI.
13. ALL ELEVATED SLABS TO BE 7 5" THICK TWO WAY PT SLABS, UNLESS NOTED OTHERWISE ON PLANS.
14. NOTATION "B1", FOR EXAMPLE ON PLAN DENOTES CONCRETE BEAMS. SEE BEAM SCHEDULE FOR ADDITIONAL INFORMATION.
15. WHEN THE COMPRESSIVE STRENGTH OF CONCRETE IN A COLUMN OR SHEAR WALL IS GREATER THAN 1.4 TIMES THAT SPECIFIED FOR THE FLOOR SYSTEM DETAILS 17 & 18 ON S403 SHALL APPLY.
16. ALL PLANTERS SHOULD BE FILLED WITH ENGINEERED SOIL WITH A MAXIMUM DENSITY OF 90 PCF.
17. CONTRACTOR TO REFERENCE ARCHITECTURAL DIMENSION CONTROL PLANS DRAWINGS FOR SLAB EDGES NOT SHOWN ON STRUCTURAL DRAWINGS.

EDI International, PC

OWNER: BUILDING & LAND TECHNOLOGY

CIVIL: CIVIL 1

SURVEYOR: REDNISS & MEAD

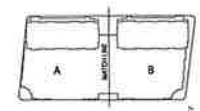
STRUCTURAL: Henderson Rogers Structural Engineers

MEP: COLLECTIVE DESIGN ASSOCIATES, LLC

FUSS & O'NEILL, INC.

FRANK A. SABATINI, PE

HARBOR POINT
BLOCK P4-P5
STAMFORD, CT

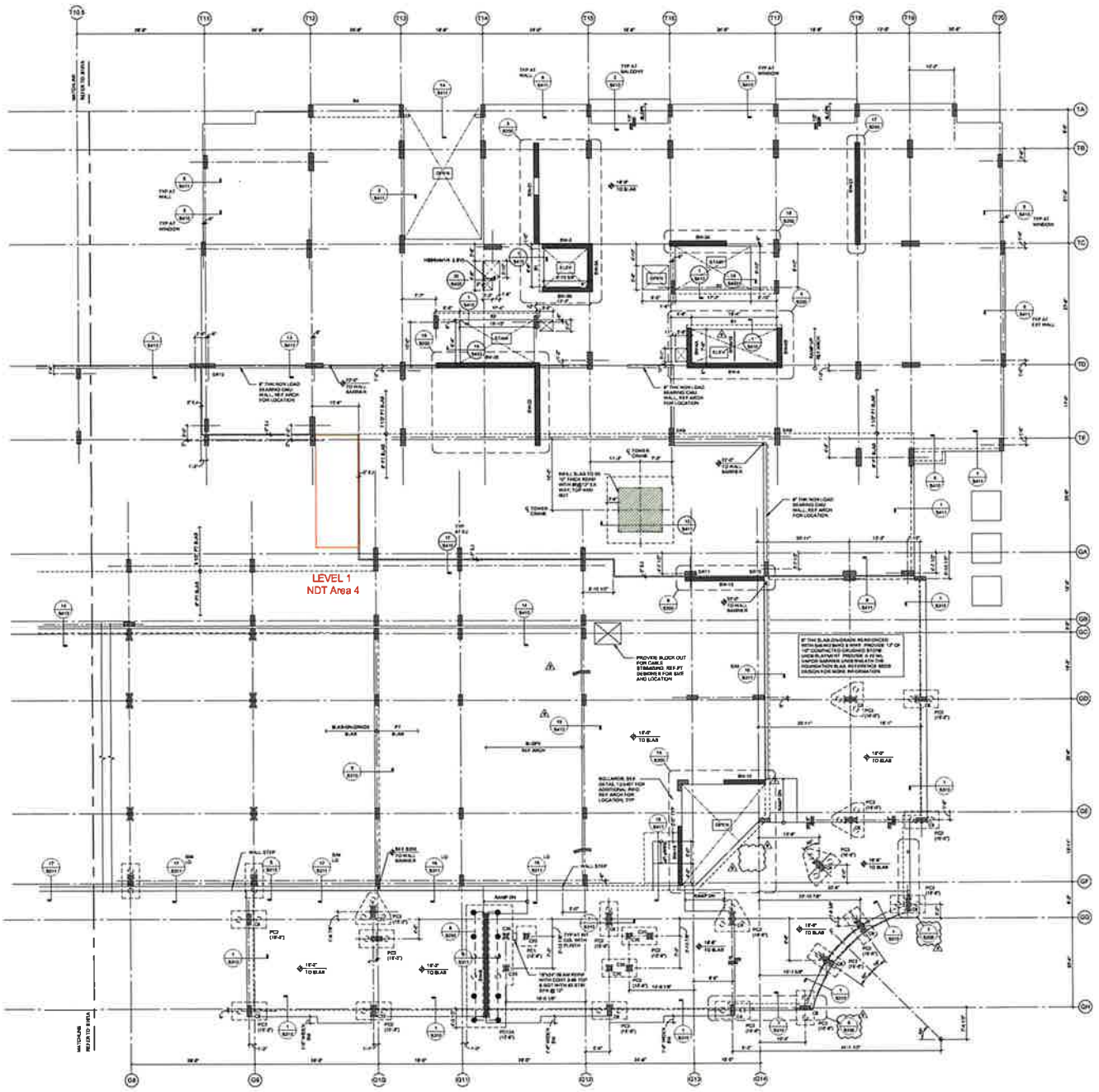


KEY PLAN

PROJECT NO: 17130.000
ISSUED: BUILDING PERMIT
ISSUED DATE: 01-23-2018

DRAWING TITLE: 4TH FLOOR PLAN

S104B



1 1ST FLOOR / COMMONS PARK GROUND FLOOR PLAN - SOUTH

FOUNDATION PLAN NOTES:

1. ALL ELEVATIONS NOTED ON PLANS ARE WITH RESPECT TO MEAN SEA LEVEL, ELEVATION OF 0'-0" FOR EXAMPLE, ELEVATION OF 8'-0" REPRESENTS 08' (FEET) ABOVE MSL ELEVATION OF 2'-0"
2. ALL FOOTINGS SHALL BE CENTERED UNDERNEATH THE WALL OR COLUMN THEY SUPPORT, UNLESS NOTED OTHERWISE ON PLANS. WHERE TWO COLUMNS ARE SUPPORTED ON A SINGLE FOOTING, FOOTING SHALL BE CENTERED ON THE GEOMETRIC CENTROID OF THE TWO COLUMNS
3. REFER TO GEOTECHNICAL REPORT AND SPECIFICATIONS FOR SITE PREPARATION.
4. CONTRACTOR TO VERIFY ALL SLAB EDGE, STAIR AND ELEVATOR OPENINGS DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.
5. REFER TO MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR SLAB PENETRATIONS AND UNDERGROUND UTILITIES
6. PROVIDE 2-#5 @ 18" ADDITIONAL SLAB REINFORCEMENT AT ALL RE-ENTRANT CORNERS & OPENINGS REFER TO DETAIL 19/S201 FOR ADDITIONAL INFO
7. SEE GENERAL NOTES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
8. FINAL GRADE VARIES, SEE CIVIL GRADING PLANS
9. CONTRACTOR TO VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AND REPORT ANY DISCREPANCIES TO ARCHITECT AND ENGINEER PRIOR TO CONSTRUCTION.
10. SEE ARCHITECTURAL DRAWINGS FOR EXTENT AND DIMENSIONS OF RAISED OR DEPRESSED SLAB AREAS, SLOPES AND DRAINS.
11. NOTATION "C1", FOR EXAMPLE ON PLAN DENOTES SCHEDULED CONCRETE COLUMNS, SEE COLUMN SCHEDULE ON SHEET S005 FOR ADDITIONAL INFORMATION.
12. NOTATION "PC1", FOR EXAMPLE ON PLAN DENOTES SCHEDULED PILE CAP, SEE PILE CAP SCHEDULE ON SHEET S004 FOR ADDITIONAL INFORMATION
13. NOTATION "SW1", FOR EXAMPLE ON PLAN DENOTES SCHEDULED SHEAR WALL, SEE SHEAR WALL SCHEDULE ON SHEET S005 FOR ADDITIONAL INFORMATION
14. REFER TO GENERAL NOTES SHEET FOR CONCRETE COMPRESSIVE STRENGTH AND ADDITIONAL RELATED INFORMATION
15. SEE SHEET S005 FOR PILE CAP PARTIAL PLANS.
16. FOUNDATION SHALL BE CONSTRUCTED ON PILES AND FOOTING HAVING A MINIMUM FACTORED LOAD CAPACITY AS SHOWN ON THE DRAWINGS. NO SPREAD SHALL BE FOUNDED IN THE MEDIUM COMPACT SAND AND GRAVEL STRATUM. FOR ADDITIONAL INFORMATION SEE GEOTECHNICAL REPORT BY DR CLARKSON WELTI P.C DATED FEBRUARY 15, 2017
17. FINAL DESIGN OF THE PRESSURE INJECTED FOOTING (PIF) SHALL BE BY THE FOUNDATION CONTRACTOR.
18. WATER TABLE LEVEL FOR THE BUILDING SITE IS APPROXIMATED AT 0'-0". WATER PROOFING SHOULD BE PROVIDED FOR ELEVATOR PITS, SUMP PITS, ETC., EXTENDED BELOW THIS WATER TABLE.

LEGEND

- DENOTES A TENSION PIP, SEE PILE CAP LAYOUT FOR TENSION VALUE
- PC4 (0'-0") — DENOTES PILE CAP, SEE SCHEDULE ON SHEET S004
- DENOTES TOP OF PILE CAP
- DENOTES COLUMN SIZE, SEE SCHEDULE ON SHEET S005
- CMU WALL, SEE PLAN FOR THK AND REINF
- BASE PLATE, SEE BASE PLATE SCHEDULE

FLOOR FRAMING PLAN NOTES:

1. REFER TO GENERAL NOTES SHEET FOR CONCRETE COMPRESSIVE STRENGTH AND ADDITIONAL RELATED INFORMATION.
2. NOT ALL PENETRATIONS THROUGH THE FLOOR STRUCTURE ARE SHOWN ON THE PLANS. CONTRACTOR SHALL COORDINATE THE NUMBER, SIZE AND LOCATIONS OF ALL PENETRATIONS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS. REFER TO TYPICAL DETAILS S108 FRAMING AROUND PENETRATIONS
3. CONTRACTOR TO VERIFY ALL SLAB EDGE, STAIR AND ELEVATOR OPENINGS DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.
4. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL SLAB DEPRESSIONS AT ALL RE-ENTRANT CORNERS
5. SLAB THICKNESS ARE NOTED ON PLANS
6. TOP OF SLAB ELEVATIONS ARE NOTED ON PLANS
7. SEE ARCHITECTURAL DRAWINGS FOR EXTENT AND DIMENSIONS OF RAISED OR DEPRESSED SLAB AREAS, SLOPES AND DRAINS
8. NOTATION "C1", FOR EXAMPLE ON PLAN DENOTES CONCRETE COLUMNS, SEE COLUMN SCHEDULE ON SHEET S005 FOR ADDITIONAL INFORMATION
9. NOTATION "SW1", FOR EXAMPLE ON PLAN DENOTES SHEAR WALL 1, SEE SHEAR WALL SCHEDULE ON SHEET S005, S006, S007 FOR ADDITIONAL INFORMATION
10. CONTRACTOR TO COORDINATE LOCATION OF INTERIOR NON LOAD BEARING MASONRY WALLS WITH ARCHITECTURAL DRAWINGS.
11. NOTATION "SW1", FOR EXAMPLE ON PLAN DENOTES 8"X20'-8"A.S.D. SHEAR WALL, SEE S005 AND SCHEDULE ON SHEET S005 FOR ADDITIONAL INFORMATION
12. SEE SHEET S108 FOR FURTHER DETAILS AT FLOOR OPENINGS
13. CONTRACTOR TO VERIFY LOCATION OF ALL FLOOR PENETRATIONS WITH ARCHITECTURAL DRAWINGS. THE CONCRETE IN THE MASONRY WALL SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF NO LESS THAN 3000 PSI.
14. ALL SLAB NOTED AS SLAB TO BE 7.5" THICK TWO-WAY PT SLAB, UNLESS NOTED OTHERWISE ON PLANS
15. NOTATION "S1", FOR EXAMPLE ON PLAN DENOTES CONCRETE BEAMS, SEE BEAM SCHEDULE FOR ADDITIONAL INFORMATION
16. WHEN THE COMPRESSIVE STRENGTH OF CONCRETE IN ALCOVES ON SHEAR WALL IS GREATER THAN 1.4 TIMES THAT SPECIFIED FOR THE FLOOR SYSTEM DETAIL S 17 & 18 ON SHEET S108 SHALL APPLY
17. ALL PLANTERS SHOULD BE FILLED WITH ENGINEERED SOIL WITH A MAXIMUM DENSITY OF 90 PCF
18. CONTRACTOR TO REFER TO ARCHITECTURAL DRAWINGS FOR SLAB FINISHES NOT SHOWN ON STRUCTURAL DRAWINGS

KEY PLAN

EDF International, PC

BUILDING & LAND TECHNOLOGY

CIVIL 1

SURVEYS
REDNISS & MEAD

STRUCTURAL
Henderson Rogers Structural Engineers

MEP
COLLECTIVE DESIGN ASSOCIATES, LLC

SOILS
FUSS & O'NEILL, INC.

PM/C
FRANK A. SABATINI, PE

HARBOR POINT
BLOCK P4-P5
STAMFORD, CT

04/04/19

NO.	DATE	ISSUE
1	8-31-18	PLANNING REVIEW SET
2	9-21-18	PLANNING REVIEW SET 2
3	10-12-18	PLANNING SUBMISSION
4	3-4-19	PLANNING SUBMISSION

PROJECT NO. 1F130 000
ISSUED: BUILDING PERMIT
ISSUED DATE: 01-03-2019

DRAWING TITLE
1ST FLOOR PLAN

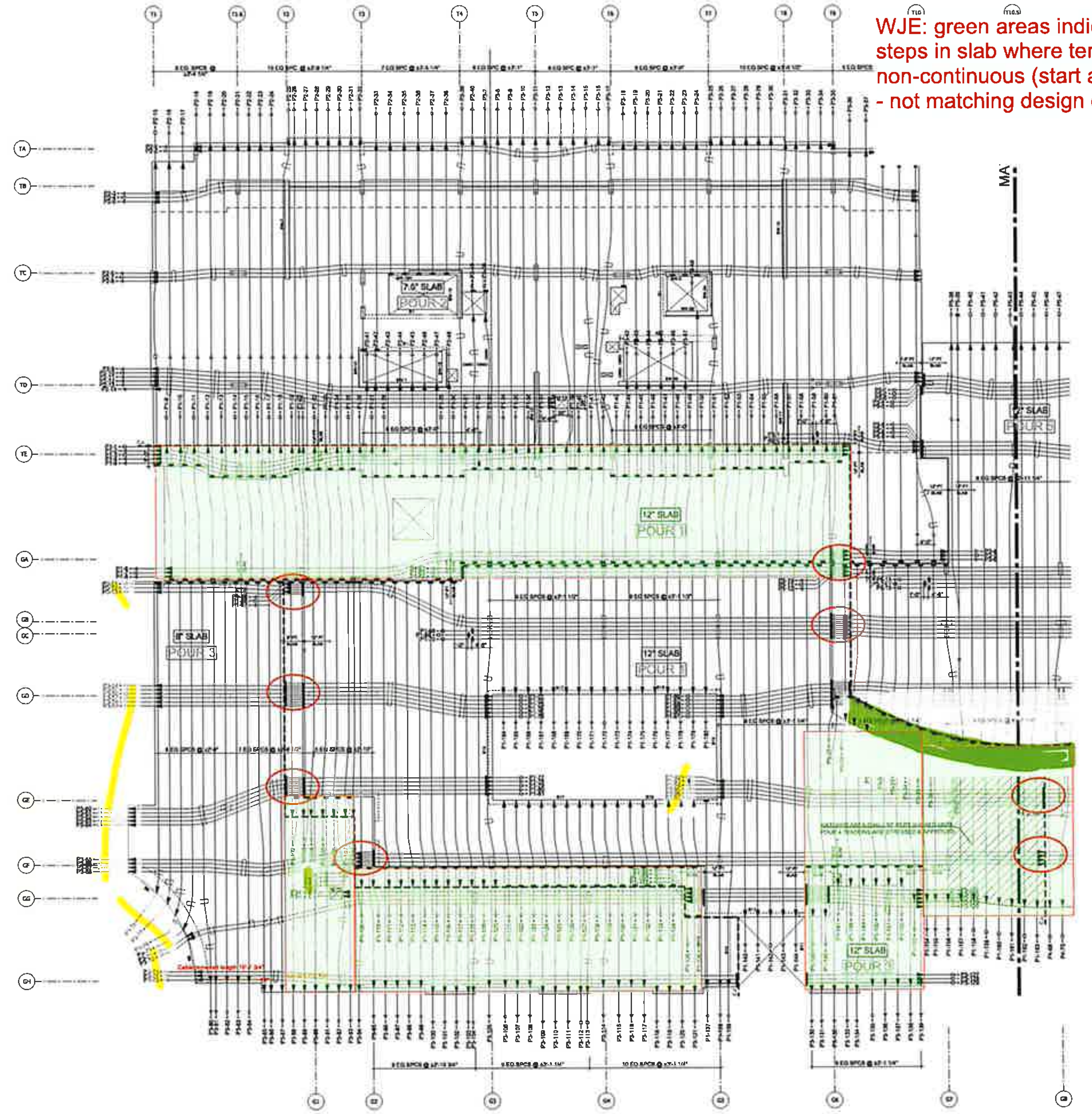
DRAWING NO. S101B

Appendix O

5TH FLOOR TENDON CHART					ELONGATION (in.)	
DESIGNATION	STRANDS #	LENGTH	TYPE	COLOR CODE	Δ1	Δ2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

(PLEASE SEE NEXT SHEET FOR TENDON CHART PART 2)

TENDON CHART NOTES:
1 - LENGTH ON TENDON CHART DOES NOT INCLUDE STRESSING TAIL LENGTH.



SLAB TENDON LAYOUT - 5TH FLOOR (SLAB THICKNESS 7 1/2" U.N.O.)

SCALE: 3/32"=1'-0"

NOTES:
1 - REFER TO DETAIL 13/PT-1.01 FOR ALL TENDONGS SWEEP AROUND OPENINGS.
2 - STRESSING TAIL TO BE A MAXIMUM OF 18". REFER TO DETAIL 3/PT-1.01.
3 - E.O.R TO VERIFY CONSTRUCTION JOINT LOCATIONS.
4 - E.O.R TO VERIFY SLAB TENDON LAYOUT.

APPROVED FOR CONSTRUCTION

ENCAPSULATED
(ENCAPSULATED ANCHORS)

TENDON LAYOUT LEGENDS

TENDON TYPE

TENDON LAYOUT NOTES

SUBMITTAL				
No.	Date	Description	Drawn	Checked
1	06/06/18	FOR APPROVAL	DO/CMS	FOUSIN
2	07/02/18	FOR APPROVAL	DO/PA	FOUSIN
3	7/12/18	FOR CONSTRUCTION	AK	FOUSIN

CLIENT: BAKER CONCRETE CONSTRUCTION

CONTRACT DRAWINGS:
- Issue : SUPERSTRUCTURE 80 SET
- Date : 02/23/18

PROJECT: HARBOR POINT BLOCK P4-P5 STAMFORD, CT

DRAWING TITLE: 5TH FLOOR SLAB TENDON LAYOUT

DRAWING REFERENCE: S105PT-A & S105PT-B

PT DRAWING #: PT-2.09

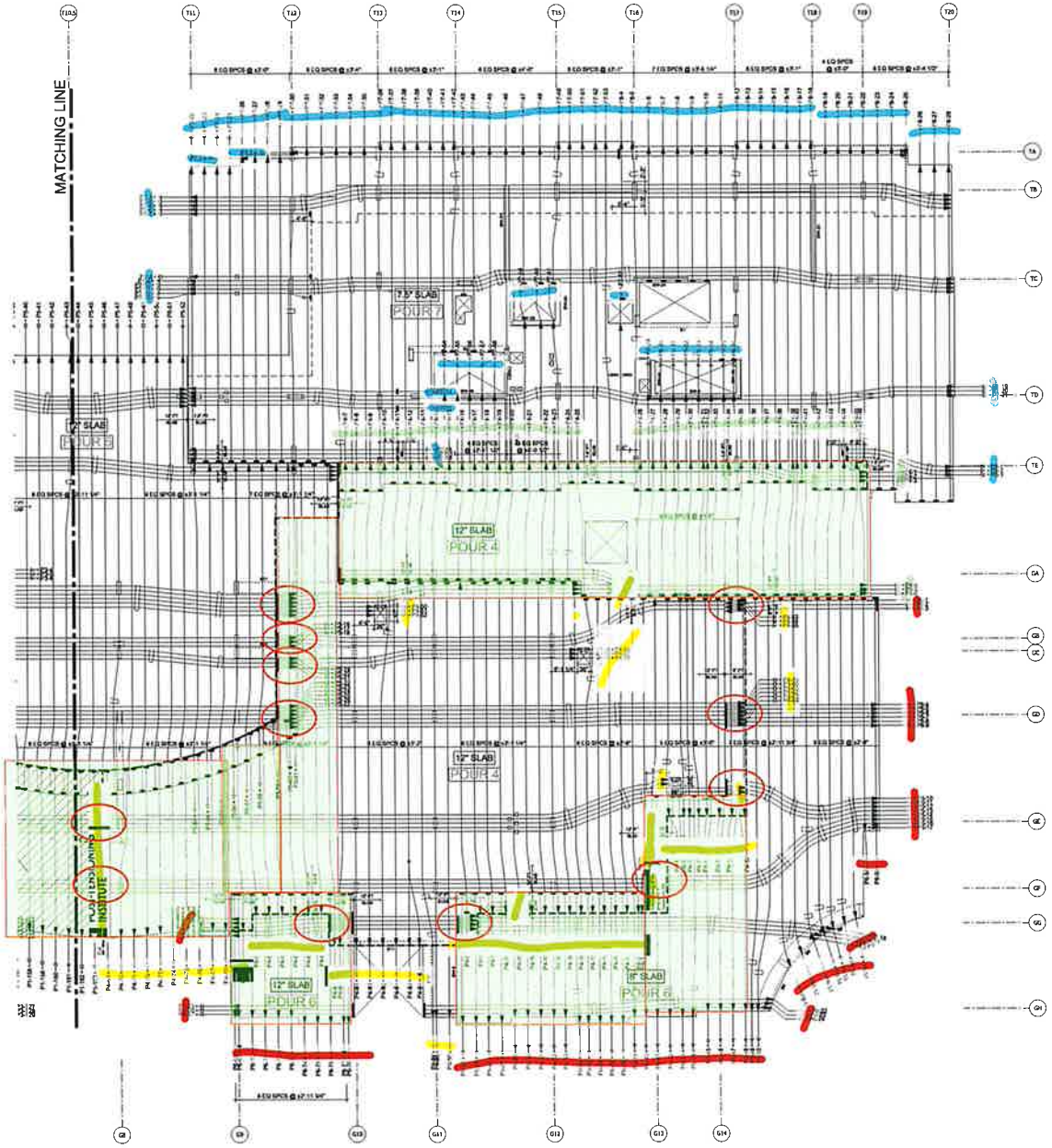
PTI POST-TENSIONING INSTITUTE CERTIFIED PLANT

ccl

5TH FLOOR TENDON CHART					ELONGATION (in.)	
DESIGNATION	STRANDS #	LENGTH	TYPE	COLOR CODE	Δ1	Δ2
P4-96	1	114'-0"	⟷	YELLOW WHITE ORANGE	0	-
P4-97 to P4-99	19	97'-0"	⟷	ORANGE PURPLE	6.1/8	-
P4-98 to P4-98	8	104'-0"	⟷	GOLD PINK GREEN	6.3/8	-
P4-97 to P4-106	27	80'-0"	⟷	ORANGE PINK	6.2/8	-
P4-107 to P4-112	15	74'-0"	⟷	PURPLE BROWN	6	-
P4-113 to P4-121	28	53'-0"	⟷	YELLOW BLACK	4	-
P5-01 to P5-05	20	51'-0"	⟷	YELLOW GOLD	4	-
P5-06 to P5-09	14	84'-0"	⟷	ORANGE BROWN	6.5/8	-
P5-10 to P5-12	10	88'-0"	⟷	PINK	7.1/8	-
P5-13	4	75'-0"	⟷	PURPLE YELLOW	5.7/8	-
P5-14	4	74'-0"	⟷	PURPLE BROWN	6	-
P5-15	4	75'-0"	⟷	PURPLE YELLOW	5.7/8	-
P5-16 to P5-27	68	99'-0"	⟷	PINK	7.5/8	-
P5-28	3	97'-0"	⟷	BLACK PURPLE	7.4/8	-
P5-29	3	98'-0"	⟷	BLACK RED	7.7/8	-
P5-30	3	42'-0"	⟷	GREEN PINK	3	-
P5-31	3	42'-0"	⟷	GREEN WHITE	3.1/8	-
P5-32	3	43'-0"	⟷	GREEN BLACK	3.3/8	-
P5-33	3	45'-0"	⟷	GREEN YELLOW	3.4/8	-
P5-34	3	46'-0"	⟷	GREEN BROWN	3.5/8	-
P5-35	3	47'-0"	⟷	GREEN PURPLE	3.3/8	-
P5-36	3	48'-0"	⟷	GREEN ORANGE	3.6/8	-
P5-37	3	97'-0"	⟷	YELLOW PINK	7	-
P5-38 to P5-42	7	104'-0"	⟷	GOLD PINK GREEN	6.2/8	-
P5-43	1	105'-0"	⟷	GOLD PINK YELLOW	6.2/8	-
P5-43 to P5-43	2	105'-0"	⟷	GOLD PINK YELLOW	6.3/8	-
P5-44	1	106'-0"	⟷	GOLD PINK YELLOW	6.2/8	-
P5-45 to P5-48	7	106'-0"	⟷	GOLD PINK YELLOW	6.2/8	-
P5-47	4	106'-0"	⟷	GOLD PINK BROWN	6.5/8	-
P5-48	3	106'-0"	⟷	GOLD PINK YELLOW	6.2/8	-
P5-49	3	106'-0"	⟷	GOLD PINK YELLOW	6.2/8	-
P5-50	3	105'-0"	⟷	GOLD PINK GREEN	6.2/8	-
P5-51	3	104'-0"	⟷	GOLD PINK GREEN	6.2/8	-
P5-52	3	103'-0"	⟷	GOLD PINK BLACK	6	-
P5-53	3	75'-0"	⟷	PURPLE BROWN	6	-
P5-54	3	73'-0"	⟷	PURPLE YELLOW	5.7/8	-
P5-55	3	74'-0"	⟷	PURPLE GREEN	5.7/8	-
P5-56	3	73'-0"	⟷	PURPLE BLACK	5.6/8	-
P5-57	3	72'-0"	⟷	PURPLE WHITE	5.5/8	-
P5-58	3	70'-0"	⟷	PURPLE PINK	5.4/8	-
P5-59	3	69'-0"	⟷	BROWN ORANGE	5.3/8	-
P5-60	3	68'-0"	⟷	YELLOW GOLD PURPLE	5.3/8	-
P5-61	2	66'-0"	⟷	BROWN YELLOW	5	-
P6-01 to P6-09	34	37'-0"	⟷	BLACK PURPLE	2.6/8	-
P6-10 to P6-13	15	36'-0"	⟷	BLACK RED	2.7/8	-
P6-14 to P6-17	14	62'-0"	⟷	BROWN PINK	4.6/8	-
P6-18	4	68'-0"	⟷	RED PINK	7	-
P6-19	3	68'-0"	⟷	ORANGE RED	7	-
P6-20	3	68'-0"	⟷	YELLOW GOLD RED	6.7/8	-
P6-21	4	66'-0"	⟷	ORANGE BROWN	6.5/8	-
P6-22 to P6-23	8	64'-0"	⟷	ORANGE GREEN	6.3/8	-
P6-24	4	63'-0"	⟷	ORANGE BLACK	6.1/8	-
P6-25 to P6-28	11	31'-0"	⟷	BLACK GOLD	2.3/8	-
P6-29 to P6-33	15	30'-0"	⟷	BLACK PINK	2.1/8	-
P6-34 to P6-39	13	32'-0"	⟷	BLACK WHITE	2.3/8	-
P6-39 to P6-40	3	33'-0"	⟷	BLACK PINK	2.3/8	-
P6-41 to P6-44	11	53'-0"	⟷	YELLOW BLACK	4	-
P6-45 to P6-48	11	52'-0"	⟷	YELLOW WHITE	4	-
P6-49	5	99'-0"	⟷	PINK	7.1/8	-
P6-50	5	98'-0"	⟷	PINK	7.1/8	-
P6-51	5	84'-0"	⟷	ORANGE RED	7	-
P6-52	3	84'-0"	⟷	ORANGE BROWN	6.5/8	-
P6-53	3	83'-0"	⟷	ORANGE BLACK	6.3/8	-
P6-54	3	81'-0"	⟷	ORANGE GOLD	6.3/8	-
P6-55	3	80'-0"	⟷	ORANGE PINK	6.2/8	-
P6-56	3	78'-0"	⟷	PURPLE ORANGE	6	-
P6-57	2	77'-0"	⟷	YELLOW GOLD ORANGE	6	-
P6-58 to P6-58	4	58'-0"	⟷	YELLOW BROWN	4.3/8	-
P6-60 to P6-73	44	30'-0"	⟷	BLACK PINK	2.1/8	-
P6-74 to P6-77	11	31'-0"	⟷	BLACK GOLD	2.3/8	-
P6-78	3	32'-0"	⟷	BLACK WHITE	2.3/8	-
P7-01	3	148'-0"	⟷	GOLD GREEN ORANGE	5.5/8	5.5/8
P7-02	2	146'-0"	⟷	GOLD BROWN PINK	7	5.3/8
P7-03 to P7-05	13	152'-0"	⟷	GOLD ORANGE WHITE	14.3/8	-
P7-07 to P7-08	2	38'-0"	⟷	WHITE RED	3	-
P7-09 to P7-12	13	153'-0"	⟷	GOLD ORANGE BLACK	14.4/8	-
P7-13	3	32'-0"	⟷	BLACK PINK	2.1/8	-
P7-14 to P7-16	4	54'-0"	⟷	YELLOW PINK	6	-
P7-17	4	51'-0"	⟷	YELLOW GOLD	4	-
P7-18	4	50'-0"	⟷	YELLOW PINK	6	-
P7-19 to P7-21	12	154'-0"	⟷	GOLD ORANGE GREEN	14.5/8	-
P7-22 to P7-25	11	71'-0"	⟷	PURPLE GOLD	5.3/8	-
P7-26 to P7-29	15	70'-0"	⟷	PURPLE YELLOW	5.3/8	-
P7-30	3	78'-0"	⟷	PURPLE BROWN	6	-
P7-31 to P7-32	6	79'-0"	⟷	PURPLE YELLOW	6.1/8	-
P7-33	3	83'-0"	⟷	ORANGE BLACK	6.4/8	-
P7-34 to P7-36	9	82'-0"	⟷	ORANGE WHITE	6.4/8	-
P7-38	3	84'-0"	⟷	ORANGE GREEN	6.5/8	-
P7-37 to P7-40	11	83'-0"	⟷	ORANGE WHITE	6.4/8	-
P7-41 to P7-42	4	50'-0"	⟷	YELLOW PINK	6	-
P7-43	4	34'-0"	⟷	BLACK BROWN	2.4/8	-
P7-44 to P7-46	3	48'-0"	⟷	GREEN RED	3.7/8	-
P7-47	3	47'-0"	⟷	ORANGE WHITE	3.6/8	-
P7-47 to P7-48	6	52'-0"	⟷	YELLOW GOLD GREEN	7.3/8	-
P7-49	3	34'-0"	⟷	BLACK GREEN	2.3/8	-
P7-50 to P7-53	10	82'-0"	⟷	ORANGE WHITE	6.3/8	-
P7-54	3	22'-0"	⟷	YELLOW GOLD BLACK	1.5/8	-
P7-55 to P7-58	12	24'-0"	⟷	WHITE GREEN	1.5/8	-
P7-59 to P7-61	3	47'-0"	⟷	GREEN GOLD	3.2/8	-
P7-62	3	36'-0"	⟷	BLACK RED	2.7/8	-
P8-01	3	20'-0"	⟷	WHITE BROWN	2	-
P8-02	3	21'-0"	⟷	WHITE PURPLE	2	-
P8-03	3	28'-0"	⟷	WHITE BROWN	2	-
P8-04	3	34'-0"	⟷	BLACK ORANGE	2.3/8	-
P8-05	3	34'-0"	⟷	ORANGE GREEN	2.3/8	-
P8-06 to P8-10	13	35'-0"	⟷	YELLOW GOLD GREEN	2.3/8	-
P8-11	3	42'-0"	⟷	YELLOW WHITE	3	-
P8-12	2	43'-0"	⟷	YELLOW BLACK	3	-
P8-13 to P8-17	15	62'-0"	⟷	ORANGE WHITE	4.6/8	-
P8-18	5	64'-0"	⟷	ORANGE GREEN	4.3/8	-
P8-19 to P8-24	17	63'-0"	⟷	ORANGE BLACK	4.3/8	-
P8-25	2	60'-0"	⟷	ORANGE YELLOW	4.1/8	-
P8-26 to P8-28	8	61'-0"	⟷	ORANGE GOLD	4.3/8	-
P8-29 to P8-30	23	34'-0"	⟷	WHITE GREEN	1.5/8	-

(PLEASE SEE PREVIOUS SHEET FOR TENDON CHART PART 1)

TENDON CHART NOTES:
1 - LENGTH ON TENDON CHART DOES NOT INCLUDE STRESSING TAIL LENGTH.



SLAB TENDON LAYOUT - 5TH FLOOR (SLAB THICKNESS 7 1/2" U.N.O.)
SCALE: 3/32"=1'-0"

NOTES:
1 - REFER TO DETAIL 13/PT-1.01 FOR ALL TENDONGS SWEEP AROUND OPENINGS.
2 - STRESSING TAIL TO BE A MAXIMUM OF 18". REFER TO DETAIL 3/PT-1.01.
3 - E.O.R TO VERIFY CONSTRUCTION JOINT LOCATIONS.
4 - E.O.R TO VERIFY SLAB TENDON LAYOUT.

APPROVED FOR CONSTRUCTION

ENCAPSULATED
(ENCAPSULATED ANCHORS)

TENDON LAYOUT LEGENDS:
TENDON TYPE
TENDON LAYOUT NOTES:

POST-TENSIONING INSTITUTE
CERTIFIED BY PTI

SUBMITTAL

No.	Date	Description	Drawn	Checked
1	06/06/18	FOR APPROVAL	DO/CMS	FOUSH
2	07/6/2018	FOR APPROVAL	DO/PA	FOUSH
3	7/12/2018	FOR CONSTRUCTION	AK	FOUSH

CLIENT:
BAKER CONCRETE CONSTRUCTION

CONTRACT DRAWINGS:
- Issue : SUBSTRUCTURE SET
- Date : 02/23/18

PROJECT:
HARBOR POINT
BLOCK P4-P5
STAMFORD, CT

DRAWING TITLE:
5TH FLOOR
SLAB TENDON LAYOUT

DRAWING REFERENCE:
S105PT-A & S105PT-B

PT DRAWING #:
PT-2.10

Appendix P

HENDERSON ROGERS
structural engineers

March 21, 2022

Mr. Tim Yahn
Managing Director of Construction
Building and Land Technology
1 Elmcroft Road – Suite 500
Stamford, CT 06902

RE: Response: Harbor Points-The Allure-Special Inspection Questions-WJE Comment 1
850 Pacific Street, Stamford CT

Dear Tim:

This letter is a follow up to our previous response letter dated February 22, 2022. In response to the first paragraph comment from the Wiss, Janney, Elstner (WJE) letter dated February 18, 2022, we stated the following:

We have been reviewing all of the inspection reports, PT and mild steel shop drawings, and the recently received pour sequence document, correspondence, and photographs from Baker concrete. We intend to publish locations for review with the City of Stamford and/ or their Engineering or technical representative, as well as the Design, Development, and Construction teams where we find potential discrepancies or where additional testing may be required to determine or verify as-built conditions.

We have completed a thorough review and analysis of the existing conditions based on additional reviews of the shop drawings, test reports, photographs, recently developed pour sequences, and technical discussions with Baker Concrete and their post tension Engineer/ Supplier, CCL.
From our review, we discovered that the post tension Engineer, CCL modified the original design intent shown on the Construction Documents at the stepped plaza deck. Instead of running the tendons continuous through the step, they were terminated at the upper and lower slab faces, similar to (but not the same) as the collapsed slab area. This modification altered the design and behavior from a continuous flat plate spanning between columns to a cantilevered slab, with opposing ends of the cantilever occurring at the step.

Upon discovery, we contacted CCL to ask if the modification was intentional, as we had not been notified of the change. Simultaneously, we developed a new post-tension analysis model of the entire garage roof and plaza deck, implementing our understanding of the as-built conditions. CCL's subsequent response to our inquiry revealed that the modified design was not their intent, so we requested that they engineer and develop a separate model for comparison.

The two (2) models reflecting the as-built conditions were completed and reviewed thoroughly last week by our firm and CCL. The results of the models were very close; however, in one of the models we found a slight overstress in three (3) isolated locations when subjected to the code prescribed superimposed live loads. As a result, we have engineered a design for a new concrete beam to be added along Grid G9, between Grids GD and GE and a design to strengthen the two (2) beams at Grids G7 and G8, between GD and GE. With the new beam addition and the strengthening of the two (2) existing

beams, the code prescribed limit states for both models are satisfied. Each model, a plan, and details for entire garage deck will be submitted to the City of Stamford and WJE for review.

As previously mentioned, we have completed our overall review of the plaza deck and garage. Based on the information collected, including photographs, inspection reports, shop drawings, pour sequence documents, and correspondence, it is our opinion that the design and construction discrepancies stated in this letter are limited to the radial step that occurs on the plaza deck. We have photographs and inspection reports to confirm the general construction and reinforcing layout of the as-built conditions in several locations, but we recommend that the radial stepped section be scanned to confirm what we modeled and designed per Sheet S105D. A complete scan of all exposed surfaces of the plaza deck is not reasonable in our opinion, based on what we discovered from our review.

We hope that you find this information useful and believe this response should satisfy the outstanding response stated in the WJE letter. Please contact our office should you have any questions or need additional information.

Respectfully,
Henderson Rogers Structural Engineers, LLC

Madison H. Henderson, P.E.
Principal

03/21/2022

Cc: Ralph Martin (BLT); Bruce Yahn (BLT); Donn McGinnis (Baker); Vivek Gurjar, PE (HRSE); Ben Downing (DCE)

Appendix Q

City of Stamford, CT

04/28/2022

B-22-322

Engineering approval

Building Permit

Status: Complete

Assignee: Louis Casolo

Became Active: 03/15/2022

Completed: 04/27/2022

Applicant

Carla Catanzaro
ccatanzaro@bltoffice.com
1 Elmcroft Road
Suite 500
stamford , ct 06902
2036441554

Location

850 PACIFIC STREET Unit P 4&5
Unit P 4&5
STAMFORD, CT 06902

Owner:

HPP-FOUR LLC
PO BOX 110295 STAMFORD, CT 06911-0295

Comments

Louis Casolo, Apr 27, 2022 at 10:16am

These are the engineering conditions of approval:

- Applicant to provide WJE with copies of all shop drawings being transmitted for repairs and copies of all exchanges in the shop drawing submittal process between the contractor and designer of record with comments and approvals.
- Applicant to provide a repair project schedule to WJE
- The applicant is responsible for coordinating the following: 1.Prior to the start of construction, WJE will attend a kick-off meeting with the team to go over the schedule and work plan. 2. During construction, WJE will perform site visits prior to the pouring of all concrete to confirm that the installation is completed in accordance with the design drawings and shop drawings.
- Applicant to provide WJE with all certification letters of approval following the construction repair from the design engineer of record (HRSE) and from the special inspectors that the work was completed per the approved plans.
- Applicant shall complete all scanning of slabs as previously requested by WJE that have not yet been completed.

The final version of the calculations and drawings approved by WJE are dated April 15, 2022 and are attached to this permit.

Appendix R

Wiss, Janney, Elstner Associates, Inc. (WJE) has completed a peer review of the five analytical models that make up the Level 5 slab at the Harbor Points project in Stamford, CT. This peer review was focused particularly on slab steps and how they were modified analytically to reflect recently discovered as-built conditions regarding the termination of post-tensioning anchorages. The five models were all constructed using the commercial software ADAPT Builder. Our comments and questions are as follows:

1. For slab steps highlighted red in Figure 1, the EOR's analytical approach appeared to be the following: The "upper slab" and "lower slab" were modeled separately. To simulate the support provided by the lower slab, the upper slab was modeled with a concrete wall at the location of the step, and the lower slab was modeled with applied loads (intended to be reactions from the wall) at the same location.

   In the "upper slab" models, the wall was modeled with moment fixity at the slab connection (i.e. moments were not released). However, no applied moments were then transferred to the "lower slab" models (only vertical forces). This is analytically inconsistent and should be resolved.

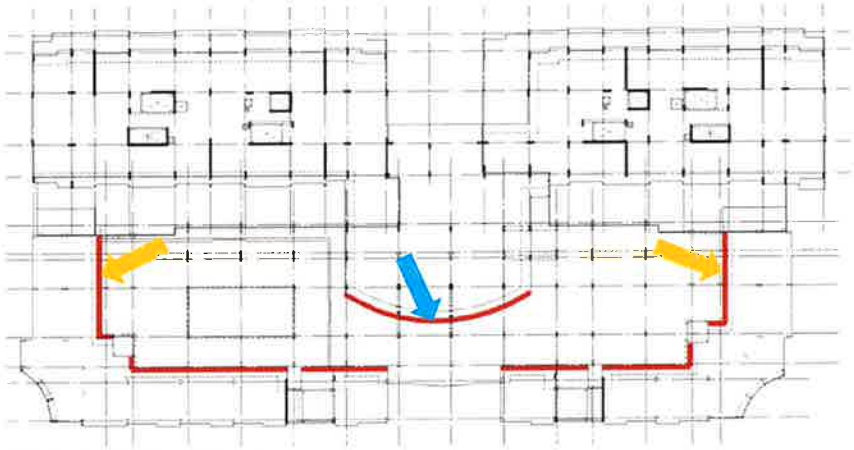


Figure 1. 5th Floor Overall

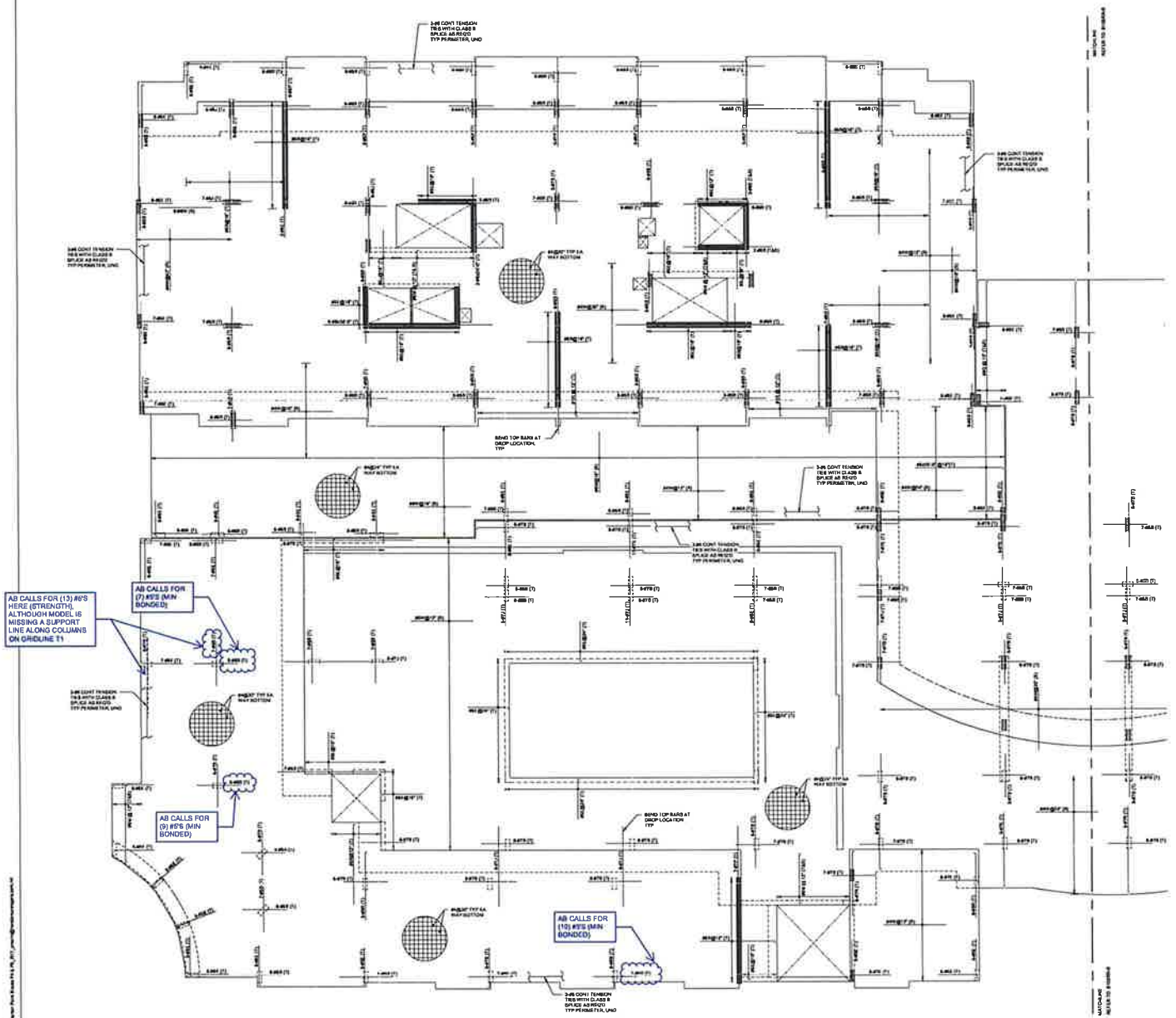
2. As described above, "lower slab" models included applied loads at the location of the step, which were intended to simulate support of the upper slab. At the two slab steps indicated with orange arrows in Figure 1, these loads were not linearly applied as would be expected, but were instead point loads located at column locations only. This load application is not consistent with the "lower slab as a continuous support of the upper slab" analytical concept and should be corrected.

   Additionally, the applied point loads along the steps indicated with orange arrows appear somewhat light for the load cases "Roof Live Load" and "Snow Load." For each case, the point load magnitudes (approximately 2 to 3-kips or less) correspond to applied area loads of about 10 pounds per square foot (psf) or less. The design drawings indicate Roof Live Loads of 20 psf and flat roof Snow Loads of 30 psf.

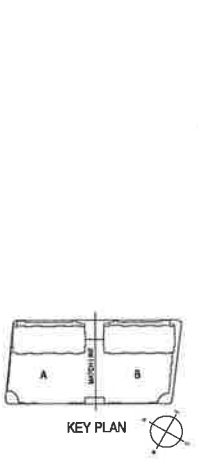
3. Similarly, for the slab step indicated with a blue arrow in Figure 1, the applied loads in the "lower slab" model appear somewhat light. In the "upper slab" model at this location, linear reactions at the slab step "wall support" are approximately 1500-2000 pounds per linear foot (plf) for "Dead Load" and 600-800 plf for "Live Load." In the "lower slab" model, applied reactions are only 1300-1600 plf for "Dead Load" and only 250-350 plf for "Live Load." These discrepancies should be resolved.

4. In all analytical models, concrete slabs were modeled with 28-day compressive strengths (f_c') ranging from 6,700 to 9,000 pounds per square inch (psi), compared to the design strength (indicated on S002) of only 5,000 psi. Please clarify. Are the modeled compressive strengths reflective of construction testing data?

5. While just a "spot check" and not a comprehensive review, we noted seven locations in which ADAPT called for a greater number of top reinforcing bars than is shown on the design drawings. These are indicated on the attached excerpted sheets (S105RR-A and S105RR-B).



1 5TH FLOOR REINFORCEMENT PLAN - NORTH



EDC International, PC
BUILDING & LAND TECHNOLOGY
CIVIL 1
REDNISS & MEAD
STRUCTURAL
Henderson Rogers Structural Engineers
M.E.P.
COLLECTIVE DESIGN ASSOCIATES, LLC
FUSS & O'NEILL, INC.
FRANK A. BARATTA, PE

HARBOR POINT
BLOCK P4-P5
STAMFORD, CT

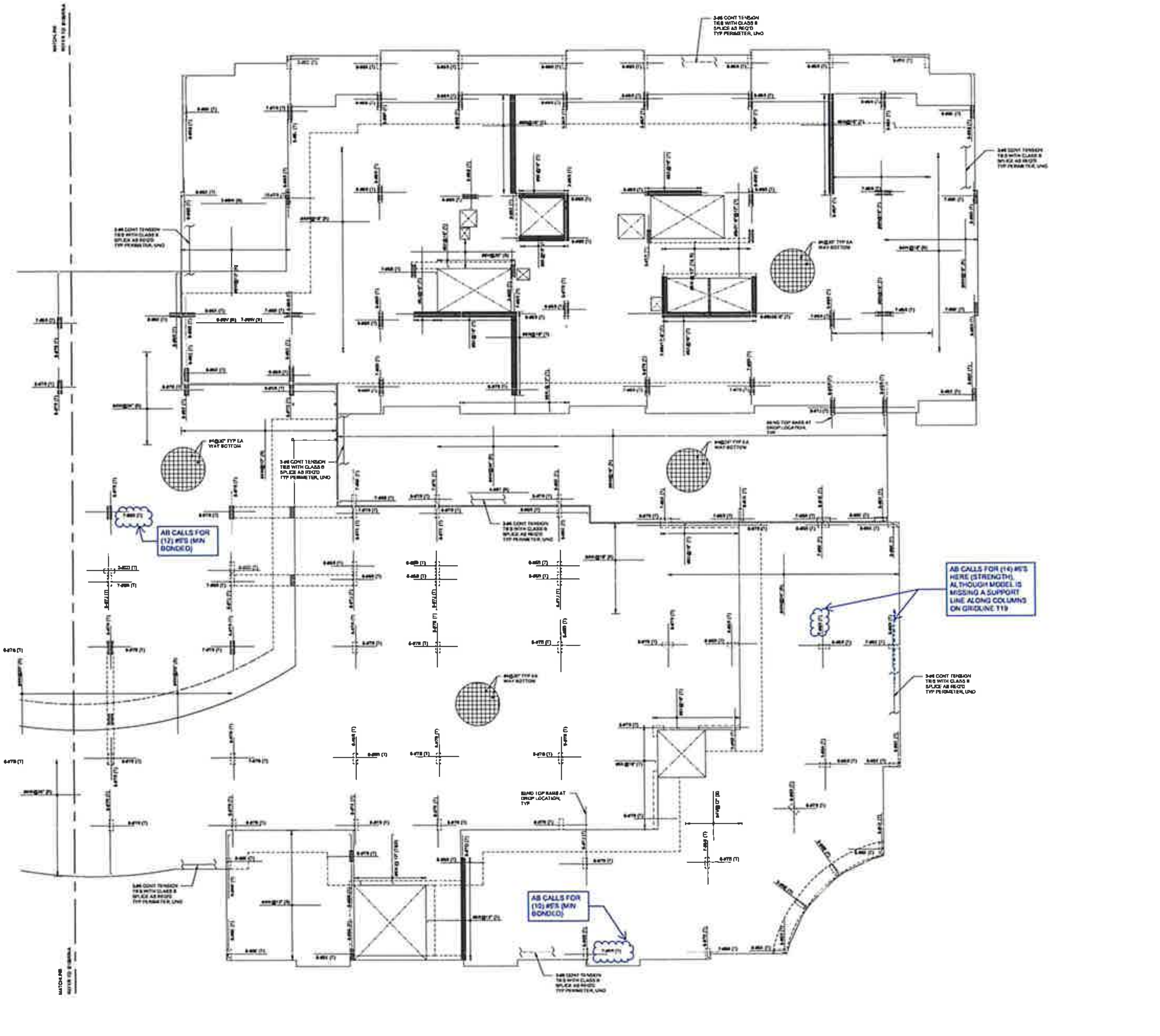
01/24/18

REV | DATE | ISSUE

PROJECT NO: 17130.000
ISSUED TO PERMIT SET
ISSUED DATE: 01/2018

5TH FLOOR PLAN - REINF

S105RR-A



1 5TH FLOOR REINFORCEMENT PLAN - SOUTH

EDI International, PC

OWNER: BUILDING & LAND TECHNOLOGY

CIVIL: CIVIL 1

SURVEYOR: REDNISS & MEAD

STRUCTURAL: Henderson Rogers Structural Engineers

MEP: COLLECTIVE DESIGN ASSOCIATES, LLC

FUSS & O'NEILL, INC.

FRANK A. SABATINI, PE

HARBOR POINT BLOCK P4-P5
STAMFORD, CT

PROJECT NO: 17130 000

5TH FLOOR PLAN - REINF

S105RR-B

Appendix S

HENDERSON ROGERS
structural engineers

August 11, 2022

Mr. John Cocca, P.E.
Associate Principal
WJE Engineers & Architects, P.C.
2 Trap Falls Road, Suite 502
Stamford, CT 06484

RE: Response: Harbor Points-The Allure Stamford Model Review-WJE Comments
850 Pacific Street, Stamford CT

Dear John:

We received the above referenced letter, dated July 22, 2022, with comments from Wiss Janney Elstner (WJE) and addressed to Henderson and Rogers Structural Engineers, LLC (HRSE). The letter requests responses to follow up questions regarding the building design models (Adapt Builder) submitted by our office to WJE for review. WJE's comments and our subsequent responses are attached with this letter.

We hope that you that you find this information useful, and that our responses address all outstanding questions or concerns. Please contact our office should you need any additional information regarding this matter.

Respectfully,
Henderson Rogers Structural Engineers, LLC

Madison H. Henderson, P.E.
Principal

STATE OF CONNECTICUT
MADISON H. HENDERSON
No. 32274
LICENSED PROFESSIONAL ENGINEER

08/11/2022

Cc: Donn McGinnis (Baker); Vivek Gurjar, PE (HRSE)

Wiss, Janney, Elstner Associates, Inc. (WJE) has completed a peer review of the five analytical models that make up the Level 5 slab at the Harbor Points project in Stamford, CT. This peer review was focused particularly on slab steps and how they were modified analytically to reflect recently discovered as-built conditions regarding the termination of post-tensioning anchorages. The five models were all constructed using the commercial software ADAPT Builder. Our comments and questions are as follows:

1. For slab steps highlighted red in Figure 1, the EOR's analytical approach appeared to be the following: The "upper slab" and "lower slab" were modeled separately. To simulate the support provided by the lower slab, the upper slab was modeled with a concrete wall at the location of the step, and the lower slab was modeled with applied loads (intended to be reactions from the wall) at the same location.

   In the "upper slab" models, the wall was modeled with moment fixity at the slab connection (i.e. moments were not released). However, no applied moments were then transferred to the "lower slab" models (only vertical forces). This is analytically inconsistent and should be resolved.

   HRSE: THE MOMENTS WERE NOT RELEASE AT THE LOW SLAB SUPPORT CONDITION, THESE MOMENT VALUES ARE VERY SMALL AS THE UNIFORM CABLES ARE PARALLEL TO THE STEP AND TRANSFER THE FORCE TO THE BANDED CABLE THAT FRAME INTO THE COLUMN.

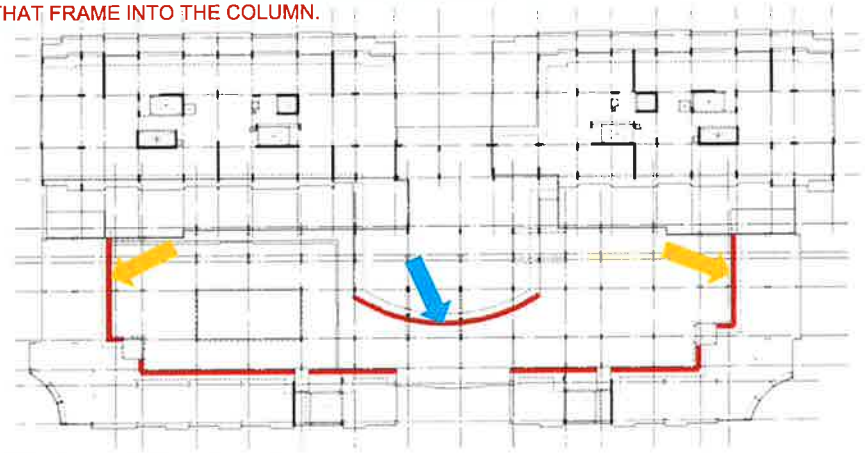


Figure 1. 5th Floor Overall

2. As described above, "lower slab" models included applied loads at the location of the step, which were intended to simulate support of the upper slab. At the two slab steps indicated with orange arrows in Figure 1, these loads were not linearly applied as would be expected, but were instead point loads located at column locations only. This load application is not consistent with the "lower slab as a continuous support of the upper slab" analytical concept and should be corrected.

   HRSE: See attached sheet for explanation.

   Additionally, the applied point loads along the steps indicated with orange arrows appear somewhat light for the load cases "Roof Live Load" and "Snow Load." For each case, the point load magnitudes (approximately 2 to 3-kips or less) correspond to applied area loads of about 10 pounds per square foot (psf) or less. The design drawings indicate Roof Live Loads of 20 psf and flat roof Snow Loads of 30 psf.

   HRSE: See attached sheet for load calculation.

3. Similarly, for the slab step indicated with a blue arrow in Figure 1, the applied loads in the "lower slab" model appear somewhat light. In the "upper slab" model at this location, linear reactions at the slab step "wall support" are approximately 1500-2000 pounds per linear foot (plf) for "Dead Load" and 600-800 plf for "Live Load." In the "lower slab" model, applied reactions are only 1300-1600 plf for "Dead Load" and only 250-350 plf for "Live Load." These discrepancies should be resolved.

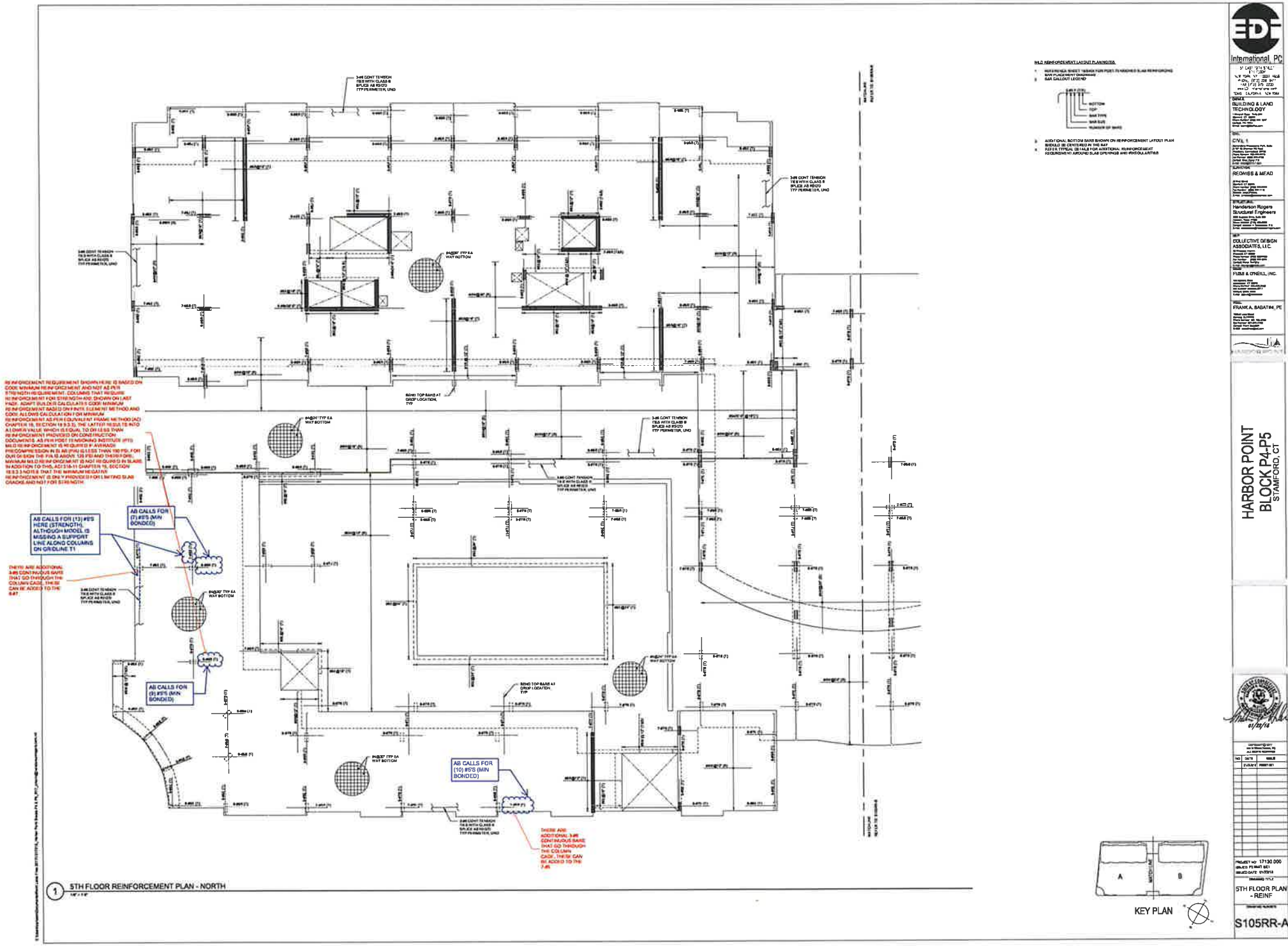
   HRSE: See response to question number 2, a similar concept was applied.

4. In all analytical models, concrete slabs were modeled with 28-day compressive strengths (f_c') ranging from 6,700 to 9,000 pounds per square inch (psi), compared to the design strength (indicated on S002) of only 5,000 psi. Please clarify. Are the modeled compressive strengths reflective of construction testing data?

   HRSE: Construction documents specify concrete compressive strengths for floor framing as 5,000 psi with the understanding that 6,000 psi concrete will be installed to be able to stress the cables at 24 hour break. For checking the existing structure in its as-built condition we have used the lower values for concrete strength from the testing reports. In our professional opinion this is a reasonable inference given that the concrete breaks range from 7,000 to 9,000 psi for in-situ concrete.

5. While just a "spot check" and not a comprehensive review, we noted seven locations in which ADAPT called for a greater number of top reinforcing bars than is shown on the design drawings. These are indicated on the attached excerpted sheets (S105RR-A and S105RR-B).

   HRSE: See attached sheet for comments.



1 5TH FLOOR REINFORCEMENT PLAN - NORTH

M-2 REINFORCEMENT LAYOUT PLAN NOTES

1. REFERENCE SHEET S106RR FOR POST TENSIONED SLAB REINFORCING BAR PLACEMENT DIAGRAMS
2. BAR CALLOUT LEGEND

3. ADDITIONAL BOTTOM BARS SHOWN ON REINFORCEMENT LAYOUT PLAN SHOULD BE CENTERED IN THE BAY
4. REFER TYPICAL DETAILS FOR ADDITIONAL REINFORCEMENT REQUIREMENT AROUND SLAB OPENINGS AND IRREGULARITIES

KEY PLAN

EDI International PC

BUILDING & LAND TECHNOLOGY

CIVIL 1

SURVEYOR: REDNISS & MEAD

STRUCTURAL: Henderson Rogers Structural Engineers

MEP: COLLECTIVE DESIGN ASSOCIATES, LLC.

FUSS & O'NEILL, INC.

FRANK A. BABATINI, PE

HARBOR POINT BLOCK P4-P5
STAMFORD, CT

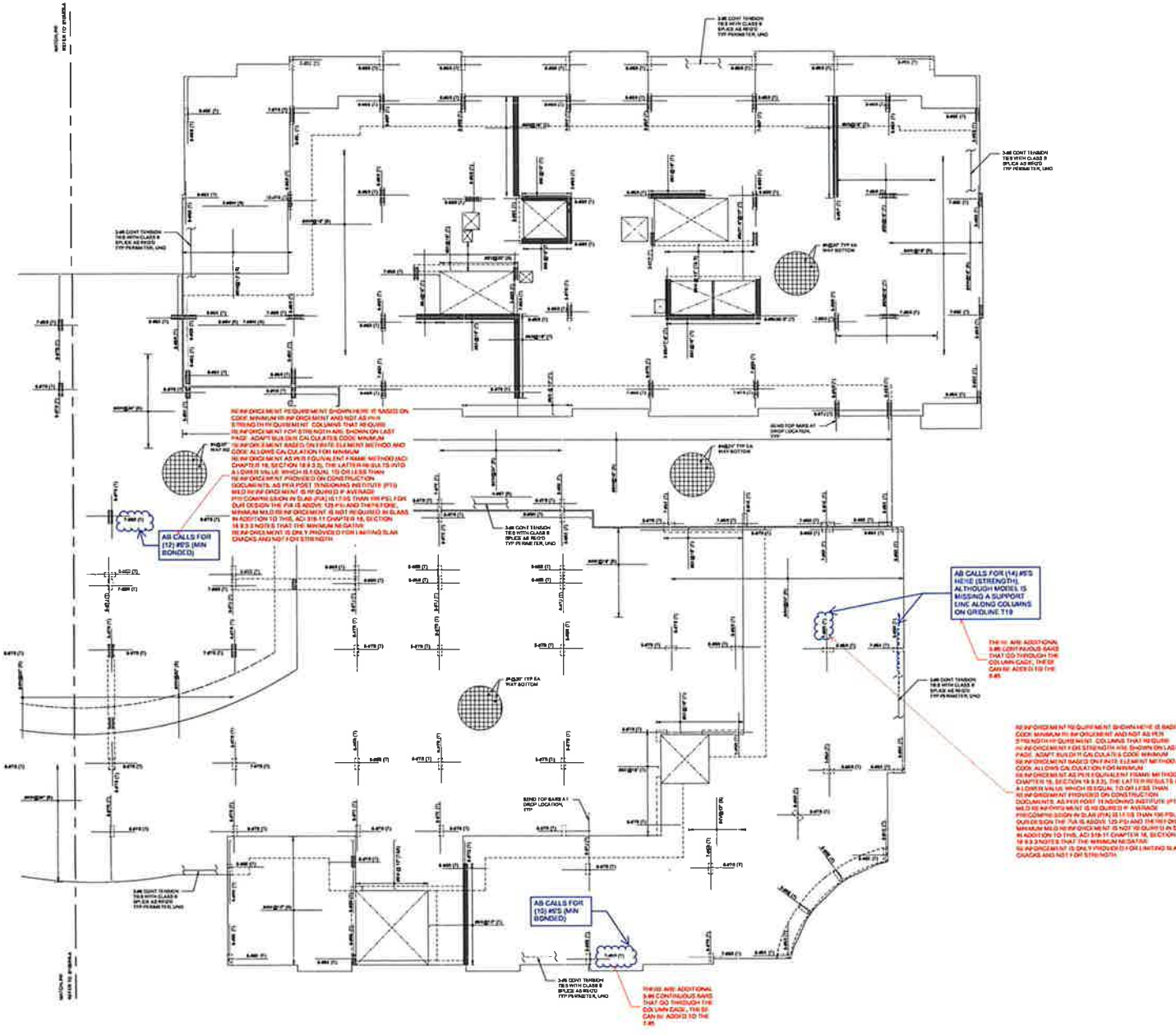
01/24/18

NO	DATE	ISSUE
1	01/24/18	PERMIT SET

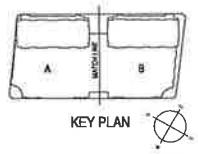
PROJECT NO: 17130.000
ISSUED: PERMIT SET
ISSUED DATE: 01/24/18

DRAWING TITLE: 5TH FLOOR PLAN - REINF

DRAWING NUMBER: S105RR-A



1 5TH FLOOR REINFORCEMENT PLAN - SOUTH



KEY PLAN

EDI International, PC

OWNER:
BUILDING & LAND TECHNOLOGY

CIVIL:
CIVIL 1

SURVEYOR:
REDNISS & MEAD

STRUCTURAL:
Henderson Rogers Structural Engineers

MEP:
COLLECTIVE DESIGN ASSOCIATES, LLC.

FIRE:
FUSS & O'NEILL, INC.

PM:
FRANK A. BARATTA, JR.

HARBOR POINT
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NO	DATE	ISSUE
3	01/25/18	PERMIT SET

PROJECT NO 17130.000
ISSUED PERMIT SET
ISSUED DATE 01/25/18

DRAWING TITLE
5TH FLOOR PLAN - REINF

S105RR-B

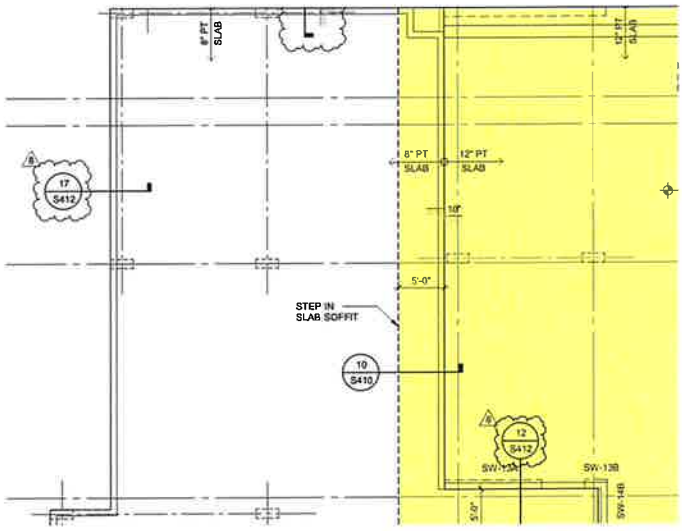
2. Load Distribution and Calculation

2a.

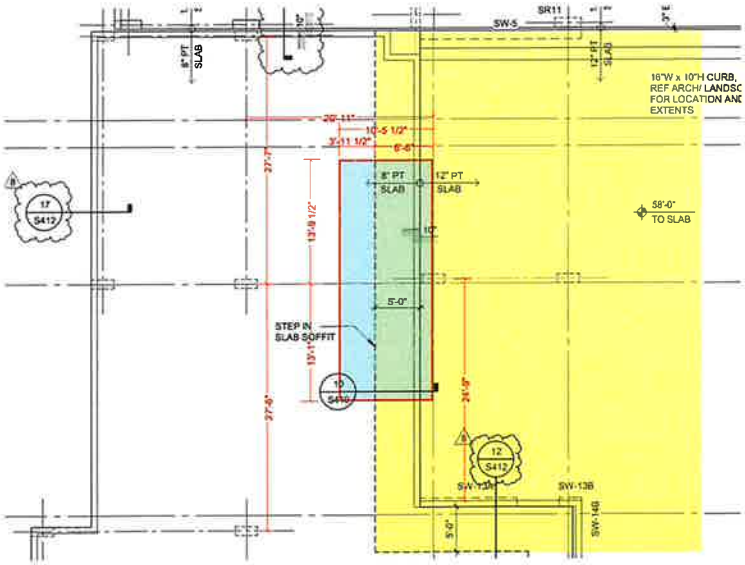
The load distribution assumptions we made are as follows. The uniform tendons in those locations run plan north-south. The uniform tendons are supported by the banded tendons that run east-west. Therefore the uniform tendons carry the load from the slab to the banded tendons and the banded tendons carry the load to the columns. A point load was used to where the banded tendons at the high slab connect to the banded tendons on the low slab.

2b.

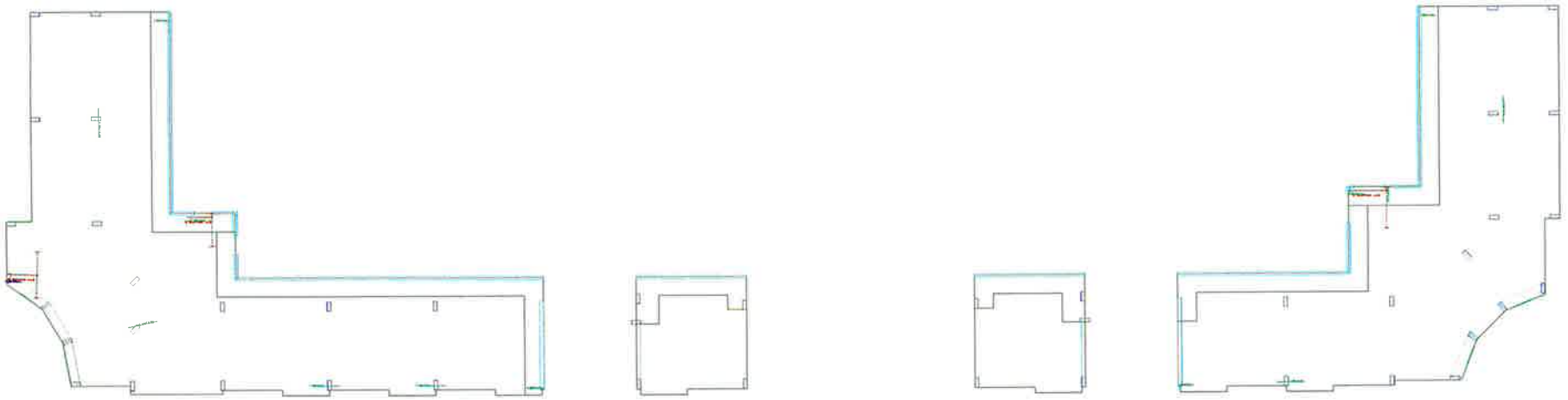
1. An area load (Roof Live & Snow) was applied on the lower slab as shown in with the yellow area:



2. The tributary area for the column at G1/GD on the plan left side of the column is shown by the red box. Since the tributary area overlaps the area load for the roof live and snow load, the load shown in blue was calculated and applied as the point load.



SLAB REINFORCEMENT REQUIREMENT FOR STRENGTH



Column Reactions Plan_Envelope

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