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12 October 2017

MR. SCOTT DUPRE
Project Manager
PUBLIC FACILITIES DEPARTMENT
26 Court Street 10th Floor
Boston, Massachusetts 02108

PROJECT: CLOUGHERTY POOL FILTER ROOM
331 Bunker Hill Avenue Charlestown, Massachusetts

Dear Mr. Dupre:

At your request, we are forwarding this letter of our meeting at the Clougherty Pool site and our discussions with yourself and representatives of BCYF in attendance. Mr. Jim Balmer of Boston Building Consultants (Structural Engineers) was also in attendance. The focus of the meeting was the conditions of the existing filter room and the pipe tunnel which runs around the perimeter and between both the lap and diving pools.

Site, mechanical, electrical, plumbing and pool system engineering reviews were not included as part of this meeting or review.

Upon your review, should you have any questions or require further information, do not hesitate to give me a call. If the City believes that a meeting to review this report may be more productive, we are certainly available for such a meeting.

Sincerely,

Paul A. Johnson
Architect

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516 East Second Street
Unit 29
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[redacted]

12 October 2017

GENERAL

Based upon previous information provided by to this office by PFD, the pools, filter room and bathhouse building were constructed in 1949 with the most recent renovations being completed in 1988.

REVIEW OF EXISTING CONDITIONS at FILTER ROOM

The existing filter room, pipe tunnels and the pool basin walls were generally reviewed with all areas exhibiting evidence of water intrusion and resulting deterioration of concrete, concrete spalls, corrosion of reinforcing steel, and metal components, equipment, fittings and piping.

The pools were drained and shutdown for the season during our site visit, but it seems highly likely that areas of the filter room and associated pipe tunnels have leaks from various sources when the pool is in operation.

The filter room has minimal, if any ventilation, and when the pool is in operation the general environment is one of humid, chlorine laden water and moisture.

The existing pool equipment (e.g. filter tanks, water heaters, equipment supports) exhibit corrosion to varying extents. It was also noted that existing cast iron pool drain piping in the pipe tunnels has some corrosion. The piping in the filter room seems to have been generally replaced with PVC piping, however, some fittings were noted to have been installed with metal fasteners which, in some cases, has rusted and cracked the flanges of the PVC fittings.

In the pipe tunnels, the concrete haunch at the pool gutter locations, exhibit relatively consistent efflorescence at the perimeter of the top of the basin wall suggesting leakage through the perimeter gutters of the pools. The expansion joints at the ceiling in the pipe tunnels consistently exhibit deterioration and spalling of concrete edges from leakage of the waterproofing of the pool deck above.

At the lap pool, it was also noted that the concrete gutter edge has notches in the top of concrete gutter predominantly at the deeper end of the pool. It was not clear if these notches were by design or modified at a later time, perhaps in an effort to increase skimming of the pool surface.

We refer to the attached letter report by Boston Building Consultants for their review of the structural conditions in the filter rooms and associated pipe tunnels.

GENERAL REVIEW OF EXISTING CONDITIONS at BATHHOUSE

The bathhouse was not the focus of our meeting, however, we briefly walked through parts of this building. The bathhouse includes toilets, showers and changing rooms. It was noted that the spaces may be underutilized, the upper floor and deck are not accessible, and the building does not have a fire alarm system.

Spalling of existing interior and exterior materials were noted in some areas, as noted in the attached Boston Building Consultants letter report.

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12 October 2017

SUMMARY of REVIEW

Although the focus of this site meeting was limited, in addition to the recommendations included in the attached structural engineer's report, we would recommend that the following be enacted in the short term:

1. Increase ventilation in the filter room.
2. Check and repair all equipment supports and hangers.
3. Check and repair all piping and conduit supports and hangers.
4. Check all tanks for corrosion and repair/replace as necessary.
5. Replace all fasteners at pool piping fasteners, and replace all cracked PVC fittings.
6. Pressure test of pool system and piping. Repair items identified by testing.

The above recommendations are considered as temporary measures in the interest of safety. We would also suggest that the City have the mechanical, electrical, plumbing and pool filtration systems reviewed by appropriate engineers related to the existing conditions and recommendations.

In closing, it is clear that the building and site warrant a comprehensive plan for restoration or reconstruction to address the multiple issues to be addressed for the future of the facility.

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October 12, 2017

Mr. Paul Johnson
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Re: **Clougherty Pool – Charlestown – Pump Room**

Dear Paul:

At your request, I met with you, Scott Dupre, and BCYF staff at the Clougherty Pool on Wednesday, October 4th, to review conditions at the facility. The primary concerns were related to the condition of the five, 12" by 12", reinforced concrete columns within the filter room, located at the north end of the site, adjacent to the diving pool. The facility was constructed in the late 1940's.

The filter room is about at the same elevation as the bottom of the diving pool. Leaks thru the pool deck slab and thru the pool walls runs down the corridors adjacent to the diving and lap pools, and accumulates in the filter room. Conditions are very humid, and with the pool chemicals, conducive to corroding the reinforcing steel within the concrete.

The five columns within filter room each support approximately 200 square feet of pool deck, on the north side of the diving pool. The pool deck is constructed of a one-way structural slab, with a topping slab, supported by concrete beams framing to the interior column, by the diving pool wall, and by the north foundation wall. Estimated column load is approximately 50 kips.

These columns exhibit large spalls, cracks and full height splitting, caused by corrosion of the reinforcing steel and subsequent rust jacking of the concrete. The capacity of these columns is severely compromised. (See attached photo)

At the underside of the deck slab between the lap and diving pools, there is some spalling of the concrete soffit at the bottom reinforcing steel and legs of the slab bolsters supporting the reinforcing. This was caused by minimal concrete cover over the reinforcing, and the very humid conditions within the space below the pool deck.

At the south end of the site is a two story bath house, containing locker rooms and showering facilities. The interior conditions are generally good, but there are locations where the underside of the floor slab has been repaired, and there is evidence of cracking and continued loosening of previous repairs.

At the exterior, the exposed concrete framing is also generally good. However, there are locations where the reinforcing steel has corroded, and cracked or spalled the concrete surface. This happens predominantly at corners and soffits over openings. Some of these have been previously repaired, and the repairs are now failing, probably due to poor preparation of the substrate before applying the repair mortar. (See attached photo)

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Recommendations

To allow the facility to be used for one more season, I recommend the following measures be done to stabilize potentially dangerous conditions:

1. The ends of the concrete beams in the filter room should be shored. The shores should be located on both the north and south sides of the columns. The shores should be designed for an assumed column load of at least 50 kips. The shores should be supported on a timber grillage on the existing concrete floor slab. At some locations, due to adjacent equipment, the shoring will require additional framing to bridge over in place equipment. The shoring should be designed and installed by a specialty company that does this type work.

2. The underside of the deck slab between the lap pool and the diving pool appears adequate for another season. However, it should be monitored and checked weekly for additional spalls.

3. At the bath house, where the underside of the concrete floor slabs were previously patched, the soundness of the patch and its adhesion to the substrate should be checked by lightly sounding with a hammer to locate hollow areas and voids. Any loose area should be removed and properly repaired.

4. At the building exterior, loose concrete, at either new spalls, or previously repaired spalls, should be removed wherever there is public access below. Proper repairs, including fully exposing the reinforcing at spalls, sand blasting to remove all corrosion, applying corrosion inhibitors, and applying a suitable repair mortar, will have to be made at some point, possibly as part of a larger facility restoration or re-constructions project.

These should be considered temporary stop gap measures. If you have any questions regarding our findings, please call.

Sincerely,
Boston Building Consultants

James Balmer, P.E.
Vice President

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