Appendix I

Technical Memorandum: 100 Forrest Street Proposed Work Plan

built on firm foundations

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Re: 100 Forrest St. Proposed Work Plan
Garfield Avenue Remediation
Jersey City, NJ
MRCE File 11972A

The following details recent events and a proposed Work Plan at the above referenced property regarding the leaking west wall of 100 Forrest St. Refer to our May 11, 2017 letter and earlier correspondence on the subject property for prior chronology of events.

Remediation for the Forrest St. phase commenced in March, 2017, continued through April and into May, and has progressed to within about 20-ft. west of the 100 Forrest St. building working west to east. Heavy rains on multiple days in March, April and May resulted in water leaking in through the previously patched cracks as was previously documented.

On Thursday, May 18, 2017 Entact placed a plastic liner over the ground surface west of the 100 Forrest St. exterior wall and weighted it down with sand bags in efforts to test if minimizing stormwater infiltration from rain events prevented water from leaking into the space, as shown on the photograph below.

On the same day, Entact tested the roof drain system by pumping water into two existing roof drains and observing the flow exit the pipe at its designed discharge location without knowledge or observation of any leakage into the space.

Our Ms. Ari Eslaminejad inspected and documented both tasks, standing inside the building space during the roof drain water testing of the roof drain piping.

Since placement of the plastic liner, 0.6" of rain fell on May 22 and May 25, plus more than 1.3" on June 17 and 19th. No leakage was reported to have occurred during these rain events which is promising and supports our recommendation to provide a more permanent surface seal in this area.

We propose the following path forward as described in this Work Plan.

1) Maintain the Temporary Plastic until Restoration in this area: Entact will maintain the plastic liner in its current configuration to the extent practical until surface restoration occurs in this area which is scheduled for late June/early July. Surface restoration will include placement or replacement of asphalt or a similarly or equally semi-impervious surficial protective layer immediately west of this area, so the plan would be to extend the surface restoration to the building line.

2) Tap or Drill Three ¼" to 2/3" diameter weep holes in the base of the interior wall below previous cracks: We recommend drilling 3 small diameter holes 4" up from the base of the interior wall (midpoint of the lower-most row of exposed block above the floor slab) to assure there is no existing stored water within the wall, and to prevent or minimize the opportunity for water pressure to build up within the block wall during future rain events. If water should be visibly observed to flow from these holes, they would be opened up to ½" or 1" diameter drain holes and connected to drain pipes which would discharge or carry the leaked water to a working storm drain or sump system at a location to be determined.

   The draining of water from the base of the wall should prevent water from filling the wall cavities above this level assuming any void spaces within the typically hollow block wall are inter-connected, and therefore prevent any leakage from the existing cracks. Note water was observed flowing in through the cracks as high as about 8-ft above the floor slab. Should the lower courses of concrete block be observed to be filled with grout or concrete or otherwise solid, we would probe the wall and drill those 3 drain holes at the lowest elevation where the wall is deemed to be hollow or contain void spaces within the concrete block matrix. This is seen as a contingency to sealing the surface layer outside the building, but one which has value of reducing the risk of water pressure building up inside the wall in the event the surface seal is not 100% effective at preventing water infiltration.

3) Regrade and seal: We propose to more permanently replace the plastic liner described in step 1 above with surficial scraping and regrading the ground surface west of the northwest corner of the building, installing and securing a liner and demarcation layer to an existing concrete apron which currently runs the length of the building facade, and backfilling and/or placing a surface seal to shed stormwater away from this point of entry. Should the concrete apron be too difficult to protect in place, it would be removed and replaced in kind to between 4" thick minimum and 6" thick maximum. As stated above, improving the existing seal at the ground surface minimizes the amount of stormwater that leaks into the ground at this location or immediately upland from it. This should deter stormwater from entering the wall, and thus alleviate the leakage potential.

   We recommend surficial scraping and regrading be performed to slope the ground surface away from the west edge of the building on a 10% slope which drops 1-ft vertically every 10-ft of horizontal distance (commonly noted as 10H:1V) for a minimum of 7-ft horizontally from the building. The existing truck route accessing the rear or north side of the buildings runs about 10-ft away from the building at the point where leakage has been observed. A liner and orange demarcation (snow fence material) would be placed as a seal above that newly graded surface to shed stormwater away from the building. It would be affixed to the back side of the concrete apron. Beyond about 7-ft from the building, Dense Graded Aggregate (DGA) to the thickness shown on AECOM design drawings with a minimum of 4" of asphalt is proposed to be placed above the liner layer to restore the drivable roadway area to current existing grade. Within about

7-ft of the building line and separated using a curb or other demarcation fence line to guide vehicular traffic, a different surficial treatment would be applied. We recommend a concrete composite material such as "concrete cloth GCCM" by Milliken Infrastructure, or equal, photographed below from their website. This material would be placed on top of a minimal thickness of DGA placed and compacted using only light-weight walk-behind tampers to form a secondary surficial barrier against stormwater infiltration, as it would shed stormwater west away from the building wall ultimately allowing it to drain south to Forrest St.

Deformation and vibration monitoring of the west wall of 100 Forrest St. will be active during this work, and modifications to means and methods may be necessary based on data trends recorded as the work progresses. It is possible that the 7-ft buffer zone recommended above may have to extend to 10-ft or more based on data recorded. The Contractor should include provisions to perform the work within 7 to 10-ft of the building using hand-excavation methods and utilizing jack-hammers and shovels and hand tampers or walk-behind vibratory plate compactors as opposed to larger and heavier equipment more traditionally used in earthwork and paving tasks.

Conclusion

As there has not been any further cracking or deformation movement of the west wall since at least November, 2016, if not prior, we believe this is the best solution. At this time we are not recommending trying to seal or reseal the inside face of the wall cracks as we believe it best to try to remove the source of the problem rather than block the water and allow it to seek another path.

Very truly yours,

MUESER RUTLEDGE CONSULTING ENGINEERS

Joel L. Volterra, PE

cc: PPG, LeClairRyan

Attachments

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