

Figure 2. Details on page A8.1 showing a curb for detail 22 and no curb for detail 23. Note: it is unclear where detail 23 is cut through the plaza, as there were no detail bugs found on the plan or section drawings for detail 23.

Inside the hallway, to the east side of the trash room (see Figure 1), the floor is damaged reportedly from heavy wheeled carts. It appears the damage may have occurred due to moisture damage to the wood framing and sheathing below the floor cavity as a result of water entry under the floor from the plaza.

To the west of the trash room there is a stairwell with an access door at the base of a wall. Inside the access door the floor was cut out and water stains were visible on the slab below the wood framing that supports the floor.

At the north side of the stairs in the center of the plaza, and adjacent elevators, there is a concrete wall that appears to have been placed over the topping slab. This wall has weeps underneath, which SSI reported were clogged when the overburden was removed to expose the base of the wall. The wall creates a “bathtub” area that holds water from rainfall. Within the bathtub area

there are large chiller lines that penetrate the topping slab and structural slab and continue into the basement below. Water reportedly leaks around these chiller line penetrations during periods of rainfall.

Slope of the topping slab on the plaza was observed to be towards the center of the plaza, with an area drain south of the elevators (see Figure 1 for approximate location). It is unknown if the drain is a two-stage drain assembly, that drains both the surface of the topping slab and at the level of the waterproofing.

There is evidence of what appears to be epoxy injection in the ceiling of the food bank.

Discussion/Repair Options

At the perimeter edges of the plaza, there should be a concrete curb to form a bathtub to turn waterproofing up against. Detail 23 (Figure 2) shows the framed wall extended below the topping slab. This is poor construction practice and will result in deteriorated framing/sheathing once the waterproofing ages and no longer provides protection. This condition appears to be the cause of water under the floor of the Heritage House.

The edge of the slab should be constructed similar to Detail 23 (Figure 2), with a continuous concrete curb placed at the edge. In addition, waterproofing should extend up onto the framed wall and where exposed above topping slab should be covered with stainless steel flashing. See Figure 3, below.

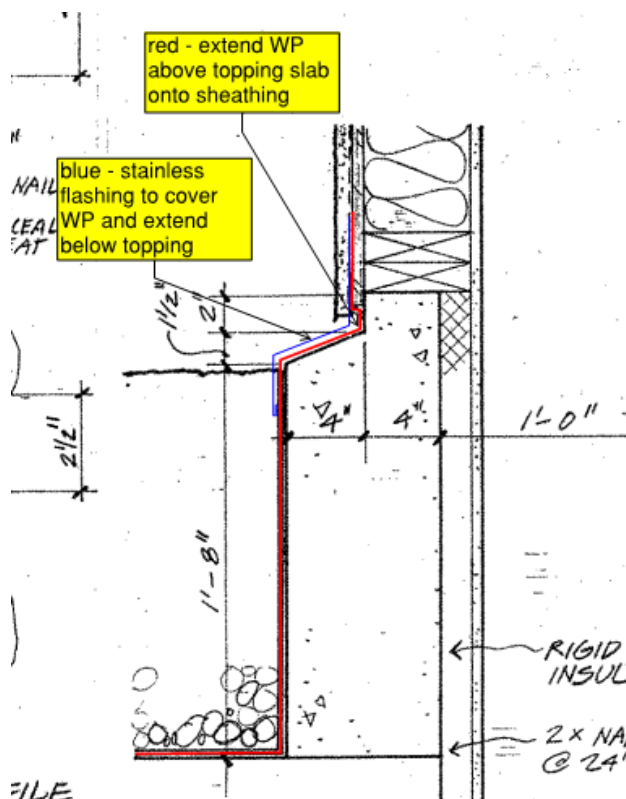


Figure 3. Suggested waterproofing detail showing waterproofing extending above topping slab onto sheathing behind stucco, covered with stainless steel flashing.

It is suggested that the exterior walls of the plaza be temporarily shored, and concrete curbs installed. This work should be part of a re-waterproofing effort of the plaza, including removal of all overburden (topping slab, any insulation, and waterproofing), down to the structural slab. The repair could be performed at the perimeter of the plaza only, by removing approximately 3 feet of the topping slab, but we suspect the existing waterproofing is at the end of its useful life and likely requires full replacement.

Test cuts through the topping slab at the perimeter edge of the plaza would be beneficial to verify the transition details at the perimeter, review the condition of the existing waterproofing, and help verify if the structural slab is sloped.

At the area north of the stairs and elevator, where the concrete wall is placed over the topping slab, and the weep holes were found blocked, short-term, and long-term solutions should be reviewed.

For short-term solutions, we suggest the following:

1. Clean out the weeps at the base of the wall and enlarge them so they are easier to maintain.
2. Seal the chiller line penetrations through the topping slab with a liquid applied waterproofing, such as Tremco 250GC with reinforcing. The waterproofing should seal to the pipes and not the insulation. Remove insulation as necessary and reinstall.
3. Seal the joint at the ends of the concrete wall where it abuts the stairwell wall.
4. Install a row of drainage mat to the north side of the concrete wall and stairwell as part of the work the SSI is performing. The drain mat would be installed below the new playground surfacing and help promote drainage away from the area, as well as help keep the exterior sides of the weep holes open. The drain mat should be turned up the vertical surface at least 4", or just below the height of the playground surfacing. Filter fabric should be integral, or installed, wrapping the top of the drainage mat to prevent debris from migrating into the matrix of the mat.

For long-term solutions, we suggest the following:

1. Remove the overburden (concrete wall, topping slab, waterproofing, and other layers above the structural slab) to expose the structural slab, and then install a new waterproofing membrane over the structural slab. The waterproofing should be a reinforced liquid applied or sheet applied product, such as Siplast Teranap, American Hydrotech 6125 FR, or similar. There should be a protection layer (as appropriate) and drainage mat above the waterproofing. The structural slab should be evaluated for slope to drainage, type of drains, and perimeter edge details prior to proceeding. As indicated above, all perimeter edges should include concrete curbs and no waterproofing should turn up onto sheathing over wood- or steel-framed walls.
2. With the topping slab removed, the chiller lines can be properly sealed at the structural slab level with appropriate reinforced waterproofing.

3. The concrete wall north of the stairwell/elevators would be removed and a new wall installed. This wall could be installed over the structural slab level with proper weeps. The waterproofing would continue under the wall and turn up any reinforcing bar.
4. It should be confirmed that the structural slab slopes to drain or is flat prior to designing the waterproofing assembly.

Photographs taken during the site visit are included at the end of this memo for your review. Note that there are useful notes attached to the photos.

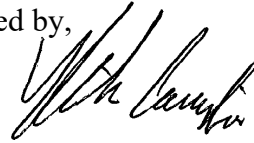
We trust the above discussion has been of assistance. If you have any questions, or if we may be of further service, please do not hesitate to call.

Respectfully,



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Reviewed by,



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Enclosures: Photographs

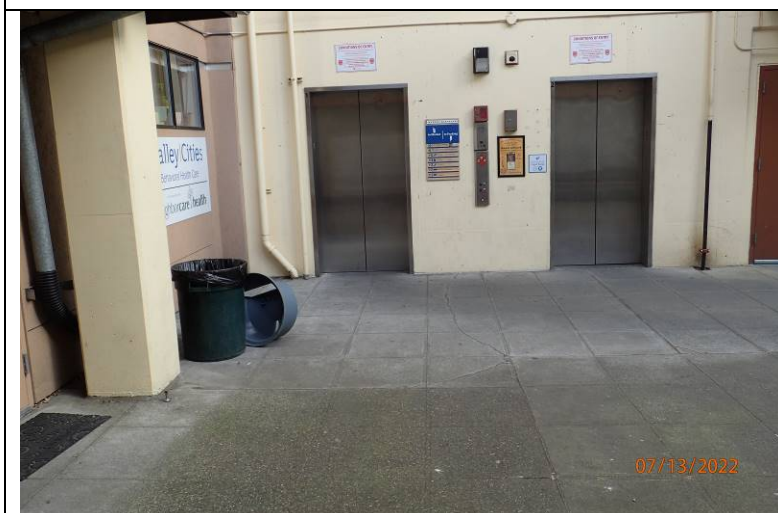
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Photograph 1:
Looking at the north wall of the
Heritage House at plaza level.



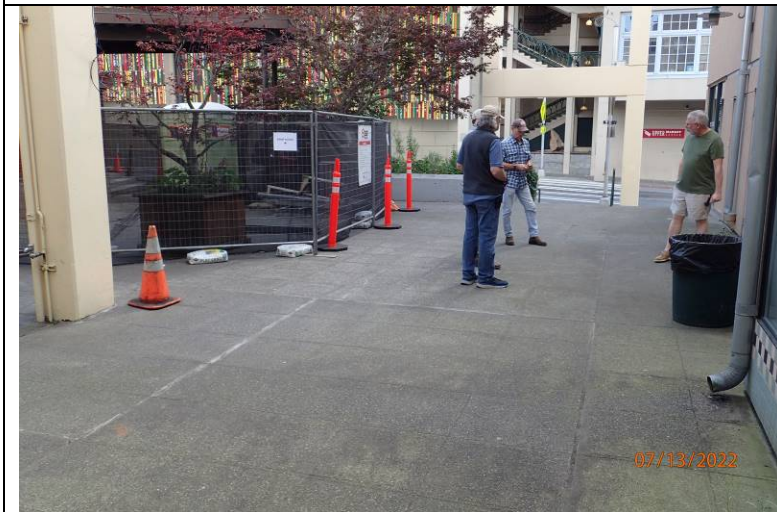
Photograph 2:
Main entry to the Heritage House
at the southwest corner of the
plaza, looking south.



Photograph 3:
Looking north at the elevator at the
west side of the plaza.



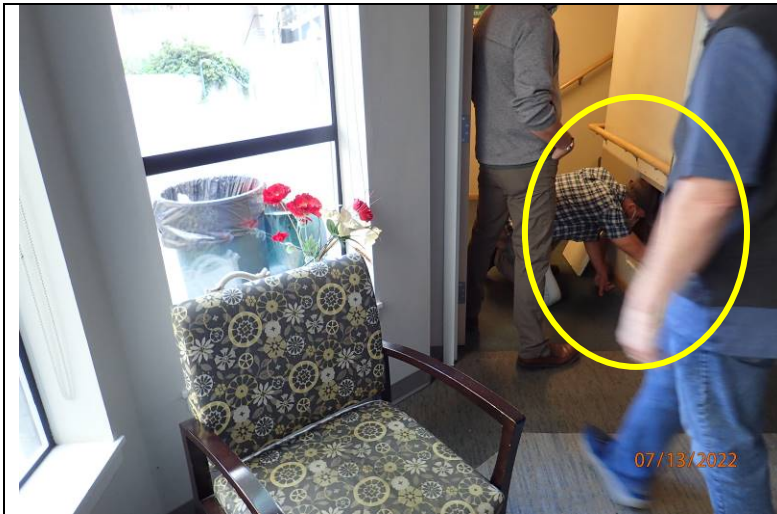
Photograph 4:
Looking north and east at the
elevator shaft and area of
construction at the north by SSI.



Photograph 5:
Looking east towards Western
Avenue and the area of
construction at the north end
by SSI.



Photograph 6:
Area of construction by SSI,
showing form work for new
concrete walls.



Photograph 7:
Inside the Heritage House, looking
in an access panel that has a cut
out in the floor at Stairwell B



Photograph 8:
Looking inside the access area in
Stairwell B. Note the water stains
on the concrete substrate below the
wood framed floor. Water entry
has occurred under the wood
framed flooring on the lid of the
garage below.



Photograph 9:
Looking north at the damaged
floor to the east of Stairwell B.
Reportedly, the floor caved in
when moving heavy carts over the
surface.



Photograph 10:
Closer view of the damaged floor. It appears the substrate has deteriorated, likely due to moisture within the assembly.



Photograph 11:
Where the pen is placed appears to be the top of a concrete stem wall that separates the plaza from the Heritage House exterior wall. The top of the stem wall is exposed and could allow water under the threshold and into the floor cavity.



Photograph 12:
Looking at the plaza-to-wall transition outside the hallway in the previous photo, further west. Note the downspouts were disconnected from the below grade drain lines and allowed to discharge onto the plaza, which reportedly has reduced leakage into the garage below.



Photograph 13:
Closer view of the previous photo. The substrate below the stucco and above the plaza topping slab appears to be sheathing covered with metal, and not concrete.



Photograph 14:
Looking west along the north wall of the Heritage House. The door in the photo is to the hallway in photos 10 & 11. Note the concrete curb in the left of the photo, which is not present west of the door.



Photograph 15:
Overview of the north elevation of the Heritage House, looking west.



Photograph 16:
Looking west at the north side of the round stairwell structure and elevator shaft structure at the west side of the plaza.



Photograph 17:
The curb in the photo is over the plaza topping slab, it appears, and has weeps at the bottom. The weeps were reportedly clogged and water becomes trapped on the south side of the concrete curb (arrow). Weeps should be cleaned and maintained so they remain open to drain.



Photograph 18:
Sealant knife inserted into open joint between the curb and round structure at the stairs. This joint should be sealed.



Photograph 19:
Looking south at the north end of the plaza and area of work by SSI. The slope of the plaza is to the left (east) and through drainage mat that travels under the concrete stem wall. The drainage mat will be restored and installed under the new finishes over the topping slab visible in this photo. Arrow shows direction of water flow.



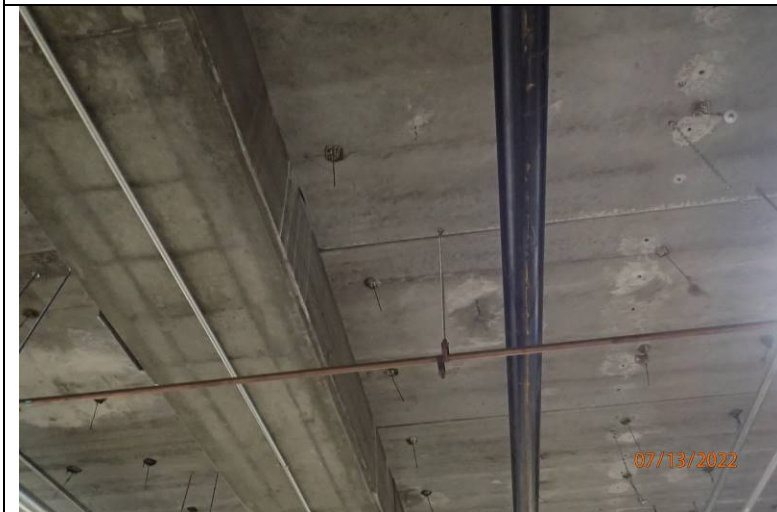
Photograph 20:
Looking south at the concrete stem wall and existing drain mat (circled) found that travels under the wall.



Photograph 21:
Closer view showing the drain mat. We understand this wall will be removed to allow new drain mat installation.



Photograph 22:
Injection performed in the ceiling
of the food bank.



Photograph 23:
What appear to be concrete planks
at the ceiling of the garage.



Photograph 24:
Chiller lines within the
garage/food bank space, below the
north side of the elevators.



Photograph 25:
Closer view of the chiller line
penetrations through the concrete.