Karpen, Brian (CI-StPaul)
Sent: Wednesday, August 14, 2013 11:42 AM
To: Ubl, Stephen (CI-StPaul); Magner, Steve (CI-StPaul)
Cc: Cervantes, Ricardo (CI-StPaul); Humphrey, Robert (CI-StPaul); Schroeder, Greg (CI-StPaul); Bloom, Jim (CI-StPaul)
Subject: Wells St - Retaining Walls

Steve:

This morning I was able to get to the site of what has been referred to as "People's Park" on the down slope from Wells St towards the Bruce Vento trail and observe the state of the retaining walls in question. From the appearances and discussion with yourself and Steve Magner many of these walls have been in place for some time. The majority of construction is small rubble blocks (less than a foot in size), some salvaged brick and some larger commercial concrete blocks (2'-3' in size). All of these walls have been constructed as "rubble retaining walls" which is to say have no grout, likely no foundation, and rely on proper sloping and keying between the various blocks to resist the lateral earth pressure behind.

As I stated it appears that most of these walls have been in place for some time as there is much vegetation growing on top of the terraces, in and through the walls. It is likely that this vegetation aids in holding the walls together and preventing erosion. The major dangers with this sort of retaining wall would be erosion either over the top, through or underneath of the walls, undermining and/or washing away portions of the wall. Due to the time of year, weather of late and the state of the vegetation I did not observe any evidence of this occurring and would guess that the immediate danger of catastrophic overall or localized failure is low. However, these walls likely require regular maintenance, especially during the spring melt, to ensure the stability of the walls and terracing. A more detailed assessment, likely by a geotechnical engineer, would be required to determine the long term overall safety of these walls.

Though the danger of large scale collapse seems low there are some obvious issues with these walls if the public is to be allowed on, below or near them:

1) There are in some cases larger pieces of art on or suspended above these walls, if there was to be a localized issue with a wall losing some of the rubble material these objects could topple.

2) If an individual was to attempt to climb the face of these walls they could easily losing pieces of rubble causing them to fall or bring some of the wall down on top of themselves.

3) There is some evidence of localized displacement within a few of the walls that is evidence of improper maintenance and initial collapse (see "Rubble top displacement.jpg" attached).

4) In one case there is a terrace that has been created with the larger concrete blocks, this wall shows evidence of displacement that I would characterize as a failure of the wall (see "Large Block Displacement.jpg attached). It is hard to speculate how long this portion of wall will hold as the large size of the block is likely keying them together creating a sort of arching action.

However, with continually freeze thaw and differences in earth pressure due to water run off or erosion through the wall this will become more and more unstable leading to collapse.

5) Similarly there is a portion of actual CMU that has cracked and displaced (see CMU - Cracking and Displacement.jpg and CMU Zoom.jpg attached), over time this will worsen and lead to collapse of this wall and the terrace above.

This summary is not meant to be indicative of a comprehensive assessment of the stability of this property, if these terraces are to remain I would recommend that an engineer familiar with this sort of retention system be brought in to do a complete assessment and provide recommendations to ensure the stability of the terraces and various slopes. Further, areas of existing failure should be stabilized and repaired, and suspended objects should be anchored properly.

Please let me know if you have any questions or would like further clarification.

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