

**Appendix E:  
Retaining Wall Investigation**

October 30, 2014

Mr. Landis Graden  
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Subject: **1683-1699 North Ascot Parkway, Retaining Wall Investigation  
 MI1401083.00**

Dear Mr. Graden:

On Thursday, October 23, 2014, John Taylor from our office met Mr. James H. McMasters of Colliers International at the site of the subject project. After a brief meeting, Mr. McMasters left and John visited the subject property. The purpose of the site visit was to observe and evaluate the existing retaining walls and other existing site walls and their surroundings for structural damage, distress, and/or any deficiencies. Our investigation included a site walk and visual survey of the existing retaining walls and other site walls. There are existing retaining walls and masonry screen walls on all sides of the subject property. There is a large Costco Wholesale facility approximately 230 feet to the West and below the west property line retaining wall. We have also reviewed structural drawings (sheets W1 and W2, dated 4/19/05) and structural calculations (dated 3/23/05 and 4/19/05) for retaining wall by PH Structural, Inc.; structural drawings (sheets C1, C2, and C3, dated 11/15/04) and structural calculations (dated 11/19/04 and 01/10/05) for soil retention retaining wall by Soil Retention Designs; and structural drawings (Detail SK6, dated 07/17/06) by All Bay Masonry, Inc.



Figure 1. Site Image (Google Earth)

### Existing Structures:

One retaining wall extends approximately 450 feet along the west property line of the site. It is approximately 15 feet tall at its highest point. There is an additional retaining wall on the North property line that is approximately 200 feet long. It is approximately 6 feet tall at the highest point. Both these walls are dry-stacked concrete block walls that vary in height along their length. There is geotechnical reinforcement fabric (geo-fabric) that is apparent at about 2 feet on center vertically along the height of the wall. There are screen and retaining walls around the remaining sides of the site that vary in height and are approximately 8 feet tall at the highest point. They are reinforced Concrete Masonry Units (CMU) of various styles.

### Observations:

During our site investigation, we did not observe any signs of structural damage or distress, and we did not observe any structural deficiencies at either of the dry stacked concrete block walls. Overall these existing retaining walls appear to be in good condition. In addition, we did not observe any structural deficiencies at the CMU screen and retaining walls. Overall these existing walls also appear to be in good condition.

During our observations, we did note the following:

1. At the Dry Stacked Concrete Walls, we found much vegetation growing out of the spaces between the blocks. It should be determined by the block and geo-grid manufacturer if this condition will compromise the retaining wall system. If this condition is determined to compromise the retaining wall system, the vegetation should be removed (**Figure-2 thru 8**).
2. At a CMU screen wall on the North property line, we found a cracked joint at a corner and a gap at the cap block. This crack will not affect the performance of the wall. The crack should be repaired with cement mortar (**Figure-9 thru 11**).
3. Regarding future development, if new buildings are planned for the site and kept beyond the zone of influence, such as not to surcharge the wall (typical maintaining a clearance of 1 to 2 times the wall height, actual distance to be determined by a geotechnical engineer), the existing retaining walls could remain without strengthening. If the new buildings are within the zone of influence, the existing wall may need to be strengthened, especially if the existing geo-fabric is compromised by new construction.

**Photos.** The following photos were taken during the site walk and visual survey.



**Figure 2. West wall showing vegetation.**



**Figure 3. Vegetation growth @ West wall.**



**Figure 4. West wall near Turner Parkway.**



**Figure 5. West wall showing drain pipes.**



**Figure 6. Soil reinforcing (geo-fabric)**



**Figure 7. Soil reinforcing, spacing at 24" oc, vertically.**



**Figure 8. Low retaining wall with fence.**



**Figure 9. Crack in CMU screen wall.**



**Figure 10. Crack in CMU screen wall.**



**Figure 11. Crack in CMU screen wall.**

**Limitations:**

This report does not express or imply any warranty of the existing structures and was developed based solely on visual observations made during a site visit of the existing walls and review of existing drawings. Our services have been provided at a level consistent with the standard care of engineers in the practice of structural and earthquake engineering.

Best regards,  
Miyamoto International, Inc.

John Taylor  
Senior Associate

Bob Glasgow, S.E.  
Principal

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