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WOODINVILLE ATHLETIC CLUB

Recent modifications to the parking layout and new differences between field and plan elevations, necessitated some changes to the original retaining wall design. E3RA has worked with Sierra Construction and Earth Consultants to evaluate and to develop a cost effective, risk-minimised solution for the retaining wall.

This issue arose when initial field layouts of the walls indicated that the wall would be too close to the eastern property line to allow the geometry assumed by original design for the Terraforce wall. At the corner of the wall adjacent the southernmost parking space on the northeast side of the lot, installation of the recommended 20 feet (6m) of grid would have resulted in the need to excavate onto neighbouring property – an unacceptable condition. Reduction of the grid lengths to the 8 feet (2,5m) available, given the original parking configuration, reduced the static factor of safety against slope/wall failure to an unacceptable level of 1.15. Therefore, after completion of a number of engineering analyses of different slope/wall/rockery configurations and a meeting among the parties named above, the following changes were agreed to (Responsible party in parentheses):

- The eastern rockery can be as high as 18 – 20-feet (5,5m-6m) and will be extended northward to the jog in the cut, replacing the Terraforce wall (Earth Consultants).
- The parking spaces in the northeast corner of the site will be moved to the northwest so that additional room is available for a Terraforce wall in the critical corner (Sierra Construction).
- The grid length behind the Terraforce wall in the critical corner can be reduced to 10 feet (3m), provided that the lowest 10 feet (3m) of the wall is backfilled with controlled density fill. (E3RA)

The parties discussed that the calculated static factor of safety for the Terraforce wall using Earth Consultants' recommended soil parameters is 1.22. Given the fact that existing cuts are standing on site which would predict much higher soil strength parameters, the parties agreed that the true static factor of safety was likely higher, although the seismic factor of safety might still be unacceptably low by conventional means of calculation. The owner is able to accept the factors of safety under this wall/rockery configuration and understands that in an earthquake scenario, some damage might occur to the wall and /or rockeries, but that significant damage would not be expected.

Wall details: Long -106m > High - 6,5m to 11m > Geogrid length - 3m to 7,5m > Geogrid spacing - 600mm,
Wall angle - 70°



Project - Woodinville Athletic Club. WA.
Consultants - Earth Consultants and E3RA, Inc.
Contractor - Sierra Construction.