

FAR Structures Ltd

Consulting Structural Engineers

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F.A.O. Ryan Williams
Priority

Our Ref: 25004/AR/01

22nd January 2025

Dear Ryan,

Ref: Structural Inspection of Boundary Retaining Wall at Queens Road, Twynyrodyn, Merthyr Tydfil, CF47 0HE

I write to confirm my site inspection at the above on Wednesday 15th January 2025.

The purpose of my visit was to inspect the existing random stone boundary retaining wall and to establish its structural integrity and to note deformations.

An inspection of the retaining wall was carried out from ground level.

No intrusive tests were carried out during our on-site inspection.

No responsibility can be held for elements which were not visible or exposed at the time of the inspection.

Observations

A random stone boundary retaining wall exists along the northern boundary of the former Ysgol Santes Tudful School, Queens Road, Twynyrodyn, Merthyr Tydfil.

The stone retaining wall has a maximum retained height of 3.50m and diminishes in height as the wall travels south, along Queens Road.

The stone retaining wall is split into two lengths by a wide set of stone steps with side buttress walls. An addition stone buttress wall is located to the left of the access steps. Please refer to Photographs 1 and 2 in Appendix A.

With reference to Photograph 2, ground levels are higher at the right hand side of the access steps when compared to the left hand side lower ground levels. It is not known whether ground levels have been previously raised to aid the stability of the right and length of retaining wall.

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The stone retaining wall at the right hand side of the access steps continues in a straight line to the corner of the site. Please refer to Photographs 3 and 4 in Appendix A. A large tree exists to the right of the access steps and can be seen in Photograph 3. The retained height reduces as the retaining wall travels to the corner of the proposed development site.

A closer inspection of the left hand length of stone retaining wall, between the northern corner of the development site and stone access steps, confirms a significant forward lean in the retaining wall of more than 150mm. Ivy has also embedded itself into stone jointing. Please refer to Photographs 5 and 6 in Appendix A.

Stonework is cracked and has suffered from significant forward displacements at various locations along this section of retaining wall. Please refer to Photographs 7, 8 and 9 in Appendix A.

No drainage weep holes exist along the left length of retaining wall.

A stone buttress wall exists to the left of the stone access steps. Stonework has been constructed on an incline. Open jointing in this section of stonework is evident. Please refer to Photographs 10 and 11 in Appendix A.

The length of stone retaining wall between the buttress wall and stone steps has also suffered from lateral distortion and has a significant forward lean. Please refer to Photograph 12 in Appendix A.

With reference to Photographs 13, 14, 15 and 16, stone buttress walls exist either side of the access steps. Open jointing in stonework is noted. Stonework has been constructed on an incline. No structural cracking or lateral distortion noted to buttress walls.

The stone retaining wall at the right of the access steps is approximately 3.50m in height. Two drainage weep holes have been provided and can be seen in Photographs 17 and 18 in Appendix A. This length of retaining wall has been constructed with a slight backwards lean. No evidence of structural cracking or lateral distortion is noted along the right length of stone retaining wall.

A large tree exists near the right hand retaining wall and is evident in Photograph 18 in Appendix A. No structural damage or cracking is noted within the stonework construction directly opposite this tree.

As this length of retaining wall travels south towards the western corner of the development site, the retained height is reduced. Please refer to Photographs 19 and 20 in Appendix A. Some open jointing is noted in localized areas.

Some damage is noted to capping stones at the top of the retaining wall. Please refer to Photograph 21 in Appendix A.

A square stone pillar exists at the site boundary corner. Some open jointing within the stonework is noted here. Please refer to Photograph 22 in Appendix A.

A small retaining wall exists along the remainder of Queens Road and appears structurally stable. Please refer to Photograph 23 in Appendix A.

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Recommendations

Based on our visual inspection of the random stone boundary retaining wall, we would recommend remedial works be carried out in order to rectify and stabilize the retaining wall.

Due to the amount of distortion and lateral forward movement confirmed in the left hand length of retaining wall, we would recommend this length of wall, between the corner of the development site and stone access steps, be carefully taken down and a new retaining wall designed and constructed at this location.

It is likely the bottom of the retaining wall along the left hand side of the access steps match levels on the right hand side of the access steps. Ground levels were very likely raised previously to try and stabilize this length of retaining wall.

To confirm retaining wall founding levels, we would recommend a narrow trial pit using a back excavator with 300mm wide bucket.

Although the left hand length of retaining wall has considerable movement noted, it is not in any immediate danger of collapse but remedial works to stabilize this wall is considered necessary when a new development is planned at the upper levels.

With regards the right hand length of retaining wall, we consider this length of retaining wall to be in a structurally stable condition at the time of our inspection. No structural movement or significant cracking is noted.

One recommendation in relation to the right hand length of retaining wall is to provide 100mm diameter drainage weepholes at 1500mm centres along the length of wall to prevent excess pore water pressure building up within the retained soils and allow ground water to seep out.

Also, remedial works to wall capping stones to ensure all capping stones are securely bedded onto the top of the retaining wall.

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I trust the above comments are of assistance. However, should you have any queries or require any additional information, please do not hesitate to get back in touch.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'A Robbins', written over a light blue horizontal line.

Andrew Robbins
Director

For and on behalf of

FAR Structures Ltd
Consulting Structural Engineers



Photograph 1: View of random stone boundary retaining wall to left of access steps.



Photograph 2: View of access steps and stone buttress adjacent retaining wall.



Photograph 3: View of random stone boundary retaining wall to right of access steps



Photograph 4: View of right hand length of retaining wall with diminishing retained height.



Photograph 5: Retaining wall to right of access steps has a significant forward lean in excess of 150mm.



Photograph 6: Ivy has embedded itself into wall joints.



Photograph 7: Open jointing is noted within the right hand section of retaining wall.



Photograph 8: Inspection shows displaced stonework approximately 50mm out of line at various locations.



Photograph 9: Another view showing displaced stonework at upper levels of retaining wall.



Photograph 10: View of left stone buttress (left side).



Photograph 11: View of left stone buttress (right side).



Photograph 12: View of leaning section of retaining wall in between left buttress and access steps.



Photograph 13: View from side of access steps show ground levels raised against the retaining wall.



Photograph 14: Open jointing noted to random stone side walls of access steps.



Photograph 15: View of right hand side wall of access steps. Open jointing noted.



Photograph 16: Ground levels on the right side of the access steps are lower than the left side.



Photograph 17: Retaining wall is approximately 3.50m high at its maximum. Right side retaining wall appears structurally stable with no sign of cracking, open jointing or lateral distortion.



Photograph 18: 2no. drainage weep holes are evident just to the right of the access steps. No evidence of damaged to the retaining wall from tree roots.



Photograph 19: No other drainage weep holes are provided. Right hand retaining wall appears in a stable condition at the time of our inspection.



Photograph 20: Another view of right hand length of random stone boundary retaining wall. Retaining wall along this length appears in a stable condition at the time of or inspection.



Photograph 21: Minor damage noted to coping stones along the top of the retaining wall.



Photograph 22: View at retaining wall corner. Some open jointing but otherwise structurally stable.



Photograph 23: View of small front retaining wall along Queens Road.