RETAINING WALL RECTIFICATION

UNITING WESLEY HEIGHTS, 47 BIRKLEY RD, MANLY

GENERAL

1. These structural drawings shall be read in conjunction with all architectural and other consultants drawings and specifications and with such other written instructions as may be issued during the course of the contract. Any discrepancy shall be referred to the Superintendent before proceeding with the work.

2. All materials and workmanship shall be in accordance with the relevant current Standards Australia Codes and with the Building Code of Australia.

3. All dimensions shown on these structural drawings shall be verified by the Contractor on site. These structural drawings shall not be scaled for dimensions.

4. The method of construction and the maintenance of safety during construction is the responsibility of the Contractor. If any structural element presents difficulty in respect of constructability or safety, the matter shall be referred to the Structural Engineer for resolution before proceeding with the work.

5. During construction the structure shall be maintained in a stable condition and no part shall be overstressed. The design, installation and maintenance of all formwork, temporary propping, bracing and shoring shall be provided by the Contractor to keep the works and excavations stable at all times. The cost of all such work shall be deemed to be included in the Contractors tender.

FOUNDATIONS

1. Strip footings and pad footings have been designed for an allowable bearing pressure intensity of 600 kPa bearing in sandstone.

2. The contractor shall obtain approval from the Superintendent of the foundation material before placing reinforcement or concrete.

3. Footings shall be located centrally under walls and columns unless noted otherwise.

4. Footings shall be constructed and backfilled as soon as possible following excavation to avoid softening or drying out of the foundation material.

CONCRETE

1. All workmanship and materials shall be in accordance with AS 3600 current edition with amendments, except where varied by the contract documents.

2. Concrete Quality:
   Class = Normal
   Slump = 80mm
   Maximum size of aggregate in structural concrete = 20mm U.N.O.
   Cement Type = SL
   Admixtures = nil, unless noted otherwise or approved in writing.

   For concrete cast in contact with ground provide the following additional properties:
   Minimum cement content = 330 kg/m³
   Maximum water/cement ratio = 0.50

   Concrete shall have a characteristic compressive strength at 28 days (f'c) as shown in the following table, unless noted otherwise on the drawings:

ELEMENT	f'c MPa (28 days)
ALL CONCRETE	32

3. Project control testing shall be carried out in accordance with AS 3600.

4. Clear concrete cover in mm to the reinforcement shall be as follows (unless noted otherwise on the drawings):

EXPOSURE CLASSIFI-CATION TO AS3600	CAST AGAINST FORMWORK			CAST AGAINST GROUND	
	INTERIOR	EXTERIOR	CONTACT WITH GROUND	PROTECTED BY MEMBRANE	NO MEMBRANE
A1.				30	
A2.	25	30	30		50
B1.		40			
B2.		45			

   Exposure classification for interior concrete - **N/A**
   Exposure classification for exterior concrete - **B1**

   All reinforcement shall be firmly supported on mild steel plastic tipped chairs, plastic chairs or concrete chairs at not greater than 1 metre centres both ways. Bars shall be tied at alternate intersections. In exposure conditions greater than B1 use only plastic chairs.

5. Concrete sizes shown do not include thicknesses of applied finishes.

6. Depths of beams are given first and include slab thicknesses.

7. For chamfers, drip grooves, reglets, etc., refer to Architects details, maintain cover to reinforcement at these details.

8. No holes, chases or embedment of pipes other than those shown on the structural drawings shall be made in concrete members without the prior written approval of the Superintendent.

9. Construction joints where not shown shall be located to the approval of the Superintendent.

10. The finished concrete shall be a dense homogeneous mass, completely filling the formwork thoroughly embedding the reinforcement and free of stone pockets. All concrete including slabs on ground and footings shall be compacted with mechanical vibrators.

11. Curing of all concrete is to be achieved by keeping surfaces continuously wet for a period of 7 days, and prevention of loss of moisture for a total of 14 days followed by a gradual drying out. Approved sprayed on curing compounds may be used where no floor finishes are proposed. Polythene sheeting or wet hessian may be used if protected from wind and traffic.

12. Construction support propping is to be left in place where needed to avoid overstressing the structure due to construction loading. No masonry or partition walls are to be constructed on suspended levels until all propping is removed and the member has absorbed its dead load deflection.

13. The Superintendent shall be given 48 hours notice for reinforcement inspection and concrete shall not be delivered until final approval obtained.

14. Conduits, pipes etc., shall only be located in the middle one third of slab depth and spaced at not less than 3 diameters. Pipes or conduits shall not be placed within the cover to the reinforcement.

15. Reinforcement symbols:
    S Denotes Grade 230 S Hot Rolled Deformed Bars to AS 1302
    N Denotes Grade 500 N Deformed Bars to AS 4671
    R Denotes Grade 230 R Hot Rolled Plain Bars to AS 1302
    SL,RL,L Denotes Grade 500 L Deformed Ribbed Welded Mesh to AS 4671
    The figures following the symbol are the number of millimetres in the bar diameter. The figures following the mesh symbol SL,RL,L is the reference number for mesh to AS 4671.

16. Reinforcement is represented diagrammatically and not necessarily in true projection.

17. Splices in reinforcement shall be made only in positions shown or otherwise approved in writing by the Superintendent. Laps shall be in accordance with AS 3600 and not less than 1.25 times the development length for each bar.

18. Mesh reinforcement shall have splices made so that the overlap, measured between the outermost transverse wires of each sheet of mesh, is not less than the spacing of those wires plus 50mm.

CONCRETE CONT.

19. Welding of reinforcement shall not be permitted unless shown on the structural drawings or approved by the Superintendent.

20. Joggles to bars shall be 1 bar diameter over a length of 12 bar diameters U.N.O.

21. Bundled bars shall be tied together at 30 bar diameter centres with three wraps of tie wire.

22. Where transverse tie bars are not shown provide N12 at 400mm distribution bars unless noted otherwise. Splice distribution bars 500mm where necessary and provide 500mm splice length with main bars unless noted otherwise.

23. All dowels placed in joints in concrete slabs shall be placed within the following tolerances:
    Level +/- 1 degree
    Line +/- 1 degree
    Position +/- 5mm

24. Sliding bearing strips supporting concrete slabs shall be composed of two layers of 0.4mm thick galvanised steel plate with an intermediate layer of grease (unless noted otherwise). The strips shall be the same width as the bearing surface.

CHEMICAL AND MASONRY ANCHORS

1. All anchors shall be subject to the approval of the Superintendent and conform to the requirements of AS/NZS 5131.

2. Chemical anchors shall consist of a threaded mild steel rod of the size nominated on the drawings embedded in and chemically bonded to the concrete. The chemicals used shall be such that they do not detrimentally affect the surrounding concrete. The rod shall be hot dip galvanised. U.N.O.

3. Masonry anchor sizes given on the structural drawings refer to the bolt diameter required.

4. All anchors shall be capable of developing a working load capacity in shear and tension of at least 80% of the maximum permissible values for the threaded rod or bolt size nominated.

5. All anchors shall be installed in strict accordance with the manufacturers recommendations.

6. Holes drilled for anchors shall not penetrate reinforcement in suspended concrete slabs, beams, columns and walls . Any holes which are found to clash with such reinforcement shall be relocated as necessary and the initial hole shall be patched to the approval of the Superintendent.

7. Chemical anchors drilled into concrete shall use minimum M16 bolts (galvanised) with "HILTI HIT-RE 500 V3" or "HILTI HIT-HY 200 V3" epoxy mortar (or approved equivalent) unless noted otherwise.

   The minimum edge distance and embedment depth as shown in the following table, unless noted otherwise on the drawings:

BOLT DIAMETER	EDGE DISTANCE (MIN.)	EMBEDMENT DEPTH (MIN.)
M12	85	110
M16	85	125
M20	95	170
M24	100	210

8. Chemical anchors drilled into solid masonry shall use minimum M16 bolts with "HILTI HIT-HY 270" epoxy mortar (or approved equivalent) unless noted otherwise. For chemical anchors drilled into extruded/hollow masonry, "HILTI HIT-SC" sleeve shall be used in conjunction with the epoxy mortar.

   The minimum edge distance and embedment depth as shown in the following table, unless noted otherwise on the drawings:

BOLT DIAMETER	EDGE DISTANCE (MIN.)	EMBEDMENT DEPTH (MIN.)
M12	200	80
M16	200	80
M20	200	80

9. Site testing shall be performed on chemical and mechanical anchors to validate correct installation (proof testing). A minimum test sample population shall be 3 test specimens or 2.5% of the total relevant anchor population, whichever is greater. If a single failure is recorded the minimum test sample shall be increased to 6 test specimens or 5% of the total relevant anchor population, whichever is greater. If 2 or more failures are recorded, all anchors shall be tested.

10. All testing shall be carried out to the requirements of AEFAC Technical Note - Site testing guidlines volume 1 to 4.

MASONRY WALLS

1. All workmanship and materials shall be in accordance with AS 3700. Masonry units shall comply with AS 4455. Wall ties shall comply with AS2699.

2. Walls shown on structural drawings are load-bearing walls, unless noted otherwise. Non load-bearing walls shall be separated from the concrete structure above them with a minimum 20mm thick approved compressible isolation material.

3. No masonry walls which are supported by the concrete structure shall be erected until the formwork has been removed.

4. Masonry walls supporting concrete slabs and beams shall be troweled smooth and separated at the bearing surfaces with the slip material specified in the concrete notes.

5. The minimum compressive strength of clay masonry bricks shall be 27 MPa. Clay masonry bricks shall have a Characteristic Expansion value not exceeding 0.8 mm/m.

6. Concrete masonry blocks shall be of a minimum compressive strength Grade 15 in accordance with AS 4455.

7. Mortar for structural concrete masonry walls shall consist of a 1 part of cement to 0.25 parts of hydrated lime to 3 parts well-graded sand. Mortar for structural brick masonry walls shall consist of 1 part cement to 1 part hydrated lime to 6 parts well-graded sand. All mortar shall conform to requirements of AS 3700. Mortar admixtures shall not be used without the written approval of the Superintendent.

8. No chases or recesses are permitted in load bearing and structural masonry without the written approval of the Superintendent.

9. All load bearing and structural masonry shall be laid on full beds of mortar and all perpends shall be solidly filled with mortar.

10. Provide vertical control joints at 8m maximum centres, and 5m maximum from corners in masonry walls, unless noted otherwise on the drawings. All masonry walls supporting or supported by concrete floors shall be provided with vertical joints to match any control joints in the concrete.

11. Reinforcement for concrete masonry block walls shall be securely tied in position. Provide 20mm grout cover to the reinforcement unless noted otherwise.

12. Core fill grout for concrete masonry blocks shall be in accordance with AS3700 with a minimum characteristic compressive strength of 20 MPa. The grout shall have a slump of 230mm +/- 30mm and the maximum size of aggregate shall be 10mm. Grout shall have a minimum cement content of 300 kg/m3.

13. Concrete masonry walls which are to be grout filled shall have cores cleaned of all mortar protrusions and shall be filled with grout in lifts of not more than 1200mm in height. Core fill grout shall be thoroughly compacted in place by internal vibrators. All cores are to be filled without the formation of voids. Clean-out holes shall be provided in the back-filled side at the base of retaining walls.

14. Unless noted otherwise on the drawings, all masonry walls shall be tied to abutting steel and concrete columns with 38x1.6x300 long crimped galvanised steel straps at maximum 400mm centres vertically. Fix straps to steel columns with 2/No 12 self drilling steel fasteners. Fix straps to concrete columns with 2/"Hilti DBZ" masonry anchors. All fixings shall be installed in strict accordance with the manufacturers instructions. (Alternative fixings may be submitted for approval.)

15. Unless noted otherwise on the drawings all masonry walls shall be tied to adjacent parallel steel members with 38 x 1.6 crimped galvanised steel straps at maximum 400mm centres to both the top and bottom of the steel member. The crimped ends of the straps shall be embedded a minimum of 90mm into the mortar joints. Fix straps to steel members with 2/No.12 self drilling steel fasteners installed in strict accordance with the manufacturers recommendations. (Alternative fixings may be submitted for approval).

16. Do not backfill retaining walls until at least 14 days have elapsed after the completion of the grout filling of the walls unless otherwise approved by the Superintendent.

17. Do not backfill retaining walls (other than cantilever walls) until a minimum of seven days have elapsed from the time of completion of the floor construction at the top and bottom of the wall.

18. Backfill to retaining walls shall be a highly permeable granular material. Provide a subsoil drain at the base of the wall connected to the stormwater drainage system unless noted otherwise.

MASONRY FLEXIBLE ANCHORS

1. All anchors shall be subject to the approval of the Superintendent.

2. All anchors shall be manufactured from hot dip galvanised steel plate.

3. All anchors shall permit horizontal and vertical movement in the plane of the wall but shall resist movement in a perpendicular direction to the plane of the wall, unless noted otherwise.

4. The anchors shall have the following minimum lateral working load capacities to resist forces in a perpendicular direction to the plane of the wall:
   - At vertical control joints : 0.30 kN
   - All other anchors : 0.40 kN

DRAWING SCHEDULE

DWG No.	TITLE	SCALE	REVISION
SA.01	CONSTRUCTION NOTES	N/A	A
SB.01	RETAINING WALL PLAN AND DETAILS	AS NOTED	A

ISSUE	DESCRIPTION	APPROVED	DATE
A	DRAWING COMPLETE		15.09.23

ARCHITECT
architectem
ABN 22139 667 889 Nominated Architect Emma Whitworth NSW Reg 6387
1/110 Audley Street, Petersham NSW 2049
PO Box 578 Petersham NSW 2049
T: (02) 9560 9383 M: 0422 947257
E: ewhitworth@architectem.com.au

BIRZULIS ASSOCIATES
CONSULTING STRUCTURAL & CIVIL ENGINEERS
583 DARLING STREET, ROZELLE NSW 2039
tel: (02) 9555 7230 email : office@birzulisassociates.com
www.birzulisassociates.com

PROJECT
RETAINING WALL RECTIFICATION
UNITING WESLEY HEIGHTS,
47 BIRKLEY RD, MANLY

TITLE
CONSTRUCTION NOTES

SCALES	DATE
N/A @ A1	SEPT 2023

DRAWN	DESIGN	VERIFIED	APPROVED
MAG	MG	MG	MG

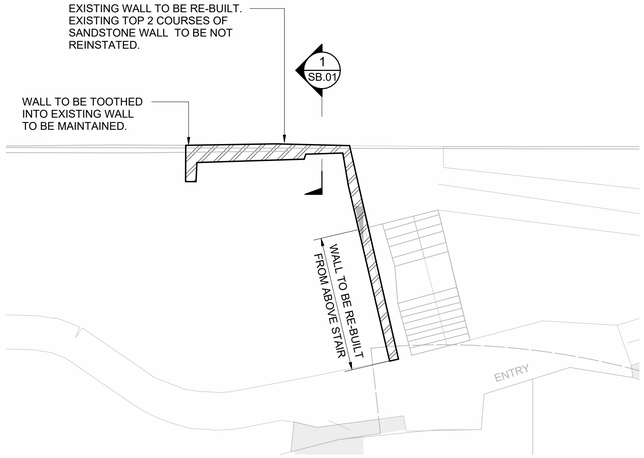
All levels and dimensions are to be checked and verified on site prior to the commencement of any work, making of shop drawings or fabrication of components. Do not scale drawings. Use figured Dimensions.

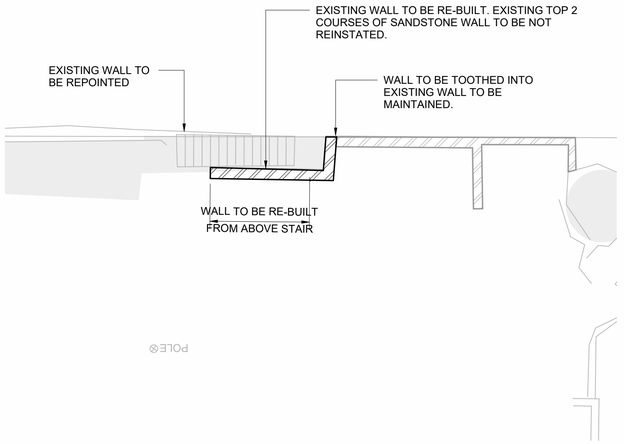
ISSUE	PROJECT No.	DRAWING No.
A	8880	SA.01

15/09/2023 11:54:05 AM

DRAWING NOTE:

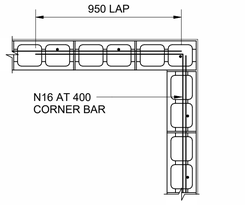
REFER TO DRAWING SA.01 FOR "CONSTRUCTION NOTES"





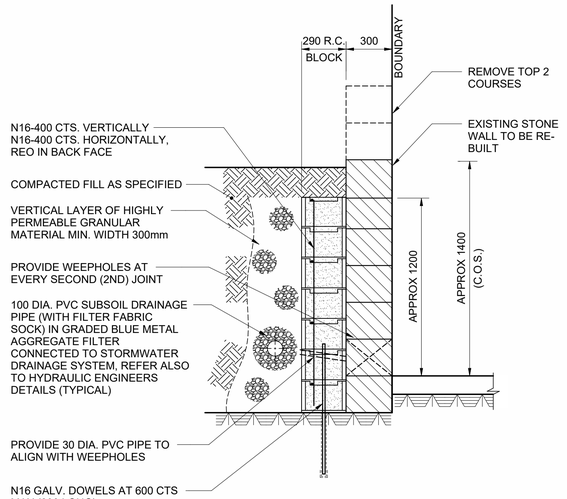
RETAINING WALL PLAN

SCALE 1 : 100



BLOCK RETAINING WALL CORNER DETAIL

SCALE 1:20



290 BLOCK RETAINING WALL DETAILS

SECTION 01 / SB.01

SCALE 1:20

ISSUE	DESCRIPTION	APPROVED	DATE
C	UPDATED DRAWING		08.01.24
B	UPDATED DRAWING		13.10.23
A	DRAWING COMPLETE		15.09.23

ARCHITECT
architectem
ABN 22 237 662 888 - Nominated Architect Emma Whitworth NSW Reg 6387
1/110 Audley Street, Petersham NSW 2049
PO Box 578 Petersham NSW 2049
T: (02) 9560 9383 M: 0422 947257
E: ewhitworth@architectem.com.au

BIRZULIS ASSOCIATES
CONSULTING STRUCTURAL & CIVIL ENGINEERS
583 DARLING STREET, ROZELLE NSW 2039
tel: (02) 9555 7230 email : office@birzulisassociates.com
www.birzulisassociates.com

PROJECT

RETAINING WALL RECTIFICATION

UNITING WESLEY HEIGHTS,
47 BIRKLEY RD, MANLY

TITLE

RETAINING WALL PLAN AND DETAILS

SCALES	DATE
AS NOTED @ A1	SEPT 2023

DRAWN	DESIGN	VERIFIED	APPROVED
MAG	MG	MG	MG

ISSUE	PROJECT No.	DRAWING No.
C	8880	SB.01