



Pentablock Retaining Wall

205 x 405 x 165

Project No. CGX9294

Structural Drawings

DRAWING LIST		REV
N1	NOTESHEET 1	A
S1	RETAINING WALL DETAILS	A

GENERAL NOTES

1.

All work and materials shall be in accordance with the drawings, the specification, and current relevant australian standards, the building code of australia and other statutory requirements
2.

These drawings shall be read in conjunction with the architectural and other consultants’ drawings, the specification and all other written instructions that are issued during the course of the works.
3.

The builder shall confirm all relevant dimensions before commencing construction/fabrication.
4.

All discrepancies shall be referred to the architect/engineer for clarification before proceeding. notify the architect/engineer of all variations arising from the clarification of the discrepancy before proceeding with the works.
5.

Refer to architectural drawings for dimensions not noted on the engineering drawings
6.

Do not scale drawings.
7.

All dimensions are in millimetres or metres unless noted otherwise (u.n.o.).
8.

No substitutions shall be made without the written approval of the engineer.Engineering approval is NOT an authorisation for an extra/variation.
9.

The builder shall maintain the works in a safe, stable condition and ensure that no part is over-stressed during construction.
10.

All props and formwork to a beam or slab shall be removed before any masonry is constructed on that beam or slab.
11.

All non load bearing walls shall be constructed 20mm clear of slab and beam soffits u.n.o.
12.

The engineer accepts no responsibility for the works unless the works are inspected and approved by the engineer during construction.
13.

A minimum of 48 hours notice is required for all engineering inspections u.n.o.
14.

The structural works have been designed for the following Live Loads and criteria:

LOADS	Area	Live Loads (KPa)
Retaining Wall		5.0
Soil Density		19 KN/m³

LOAD CRITERIA

Wind

Design Wind Class	N2		
Region	A	Topographic Class	T1
Terrain Category	3	Shielding	FS

15.

These plans have been prepared for the exclusive use of the client and for the purpose described to Chadwick Grimmond. Any other persons who uses or relies on these plans without Chadwick Grimmond's written consent does so at their own risk and NO responsibility is accepted for such use and or reliance.

FOUNDATIONS AND FOOTINGS

1.

Work and materials must comply with AS2870 & AS3798.
2.

All excavations shall be inspected on site and the engineer notified immediately if conditions other than those described in the soil report are encountered.
3.

Footings shall be founded in at the depths shown on the drawings or, at the same depth of existing footings.
4.

The site has been assumed as class **M** in accordance with AS2870.
5.

Strip footings are to be founded in original undisturbed ground with an allowable bearing pressure of **100** kpa.
6.

Pad footings are to be founded in original undisturbed ground with an allowable bearing pressure of **100** kpa.
7.

Foundation material shall be inspected and approved before lying membranes, fixing reinforcement or ordering concrete.

REINFORCED MASONRY

1.

All work and materials shall be in accordance with AS3700.
2.

Masonry units shall be solid or hollow as detailed and have a characteristic unconfined compressive strength of
(a) 30 mpa for bricks
(b) 15 mpa for concrete blocks.
3.

Mortar to clay masonry shall consist of 1 cement, ¼ hydrated lime, 3 well graded sand. cavity grout shall consist of 1 cement, 2 ½ sand, 1 ½ 10mm aggregate.
4.

There shall be a minimum of 15mm cover of grout around all reinforcement.
5.

Masonry shall be laid with full head and bed mortar joints. Mortar fins shall not protrude into cavity grout space.
6.

The two skins of masonry shall be bonded together with heavy duty masonry ties at maximum 600 centres.
7.

Clean out ports shall be provided for each pour by leaving out two units at the bottom of each section to be grouted. During work, mortar fins and any other material shall be removed from the cavity grout space. The ports shall be sealed with similar masonry units after inspection and before grouting.
8.

The reinforced cavity shall be not less than 75mm in width. u.n.o.
9.

Mortar shall cure for at least three days before pouring cavity grout.
10.

Cavity grout shall be placed by pumping or other approved method and shall be placed before initial set occurs, and in no case more than 12 hours after water is added.
11.

Cavity grouting shall be done in lifts not exceeding 900mm per 12 hour period and rodded into position.
12.

Mortar to reinforced block work shall be M3 (1:5).
13.

Reinforcing bars shall be placed before or during the block laying.
14.

Provide full height vertical control joints in wall at maximum 6m centres u.n.o.
15.

Reinforcement, including starter bars and wall ties, shall be hot dipped galvanized u.n.o.

CONCRETE

1.

All work and materials shall be in accordance with AS3600.
2.

Concrete shall have a characteristic compressive strength as follows
UNO:

-footings

f’c = 25 mpa

-slab-on-ground

f’c = 25 mpa

-columns

f’c = 32 mpa

-suspended slabs/beams

f’c = 32 mpa

-mass concrete

f’c = 20 mpa

3.

Concrete shall be cured by an approved method for at least 7 days after placement.

4.

Concrete shall be compacted using mechanical vibration.

5.

Vibration of forms is not acceptable and concrete shall not be spread by vibrating.

6.

Concrete sections shown are minimum sizes and do not include finishes. sizes shall not be reduced in any way or holes formed or made in any member without the approval of the engineer.

7.

Depth of beams are given first and include slab thickness.

8.

Slabs and beams are to be poured together UNO.

9.

Minimum cover (mm) to all reinforcement including fitments shall be as follows, uno:

ELEMENT	SURFACES IN CONTACT WITH GROUND	SURFACES IN INTERIOR ENVIRONMENT	ABOVE GROUND EXTERIOR ENVIRONMENT
-Insitu columns and Pedestals	45	30	40
-Insitu beams	45	20	40
-Footings	50	-	-
-Bored piers	50	-	-
-Slab on ground	50	25	40
-Suspended slab	45	20	40
-Insitu walls	45	25	30
-Precast*	40	30	30
-Underpinning	40	40	10

*(Refer to precast details)

10.

Reinforcement is shown diagrammatically and not in true projection.

11.

Symbols on the drawing for reinforcement are as follows:

SL

- hard drawn deformed grade 550 steel wire reinforcing fabric to AS4671.

N

- grade 500 mpa deformed reinforcing bars to AS4671.

R

- grade 250 mpa plain reinforcing bars to AS4671.

S

- structural grade deformed bars to AS4671.

W

- hard drawn steel wire reinforcing wire to AS4671.

TM

- hard drawn steel trench mesh to AS4671.

12.

All reinforcement and inserts shall be supported and held in the design location by approved chairs, spacers or ties. bar chairs shall be placed at minimum 1000 centres in two directions, UNO

13.

Welding and threading of reinforcement is not permitted without the approval of the engineer.

14.

Reinforcement shall be evenly distributed over the widths shown uno.

15.

Provide 2 no. N12 x 1200 diagonally across re-entrant corners of slabs, tied under top fabric.

16.

At slab edges including construction and other joints at least one reinforcing bar or fabric wire shall be located parallel to and within 75 of the slab edge.

17.

Construction joints shall be properly formed and used only where approved or permitted by the engineer.

18.

Sawn joints shall be made at a time appropriate to the concrete mix and climatic conditions - generally within 10 and 20 hours of placing the concrete.

19.

Stripping of forms and removal of formwork shall take place in accordance with a procedure agreed with the engineer.

20.

Concrete must be separated from supporting brick work by two layers of a suitable debonding membrane.

21.

Suspended slabs shall be given an upward mid span camber of 3mm per 1000mm. beams shall be cambered as shown on drawings.

22.

Splices in reinforcement shall be made in the positions shown on the drawings or as otherwise approved by the engineer.

23.

Holding down bolts shall be supplied to the concretor for casting into the concrete and shall be installed in accordance with the steel holding down bolt plan supplied by steel fabricator.

MASONRY

1.

All work and materials shall be in accordance with AS3700
2.

Bricks shall have a characteristic unconfined compressive strength of 30 Mpa u.n.o.
3.

Blocks shall have a characteristic unconfined compressive strength of 15 Mpa u.n.o.
4.

Mortar shall consist of 1 cement, 1 hydrated lime, 6 well graded sand unless required otherwise by AS3700.
5.

Load bearing masonry shall have full bed joints, uno.
6.

Masonry ties for cavity walls shall be medium duty classification spaced at not more than 600 centres vertically and horizontally. Additional ties shall be placed adjacent to lateral supports, control joints and around openings at a spacing of not more than 300, and located not more than 300 from the line of support, control joint or perimeter of opening.
7.

Masonry shall be tied to columns at 400 maximum vertical centres.
8.

New masonry shall be tied into existing using medium duty ties at 400 maximum vertical centres along all vertical edges and at 600 maximum horizontal centres u.n.o.
9.

All cavities below ground level shall be mortar or grout filled.
10.

Vertical control joints shall comply with technical note No 61 published by the Cement and Concrete Association of Australia Cement and shall be located as described in that publication or as shown on the architectural drawings. Joints shall be kept free of non-compressible material. control joint spacing shall not exceed 6m uno.
11.

Non load bearing walls shall be kept 20mm clear of the underside of floors and shelf angles.
12.

All steelwork projecting into cavities shall be hot dipped galvanised u.n.o.
13.

At vertical control joints provide masonry flexible anchors mfa 3/3 (a) at 600 centres installed in accordance with the manufacturer's recommendations together with a suitable backing rod and flexible sealant applied to unpainted surfaces.
14.

Where walls about the underside of horizontal or raking members (slabs, steel or concrete beams) provide masonry flexible anchors type mfa 4 every third perpend and fixed to the structural member with ramset 6 dia. head drive pins or similar. Provide 10mm closed cell polyethylene foam backing rod between wall and member.
15.

Where masonry walls intersect structural members (steel or concrete) provide masonry flexible anchors mfa 7 at 600 centres embedded in the masonry wall and fixed to member with 6 dia. head ramset drive pins. mfa 7 ties shall be 200mm long x 50mm turndown. Ties to outer skin shall incorporate a drip groove.
16.

For walls with a cavity greater than 80mm, provide masonry flexible anchors 'anchor-ties' at 430 vertical and 600 horizontal centres.
17.

Concrete beams and slabs shall be separated from supporting brickwork by 2 layers of malthoid or similar approved membrane on top of mortar levelling screed.
18.

Builder shall provide details and procedures of needle and propping to openings in masonry walls for approval before work commences.

SITE WORKS AND SITE MAINTENANCE

1.

Adequate drainage shall be provided to prevent water ponding or collecting adjacent to the works.
2.

Trenches under or adjacent to the works shall be backfilled with compacted clay or concrete.
3.

Trenches parallel to the edge of a structure shall be offset a distance at least equal to the depth of the trench excavation.
4.

Roof gutters, downpipes, stormwater and sewerage drainage shall be maintained to prevent overflows. any leaks shall be promptly repaired.
5.

The planting of trees and large shrubs and general site maintenance shall comply with the requirements of AS2870 and CSIRO publication sheet "BTF16 Foundation Maintenance and Footing Performance – a Homeowners Guide." It is the builders responsibility to ensure that the owner is informed of these requirements.

A	FIRST ISSUE	21/012/22
Rev	Description	Date



Chadwick
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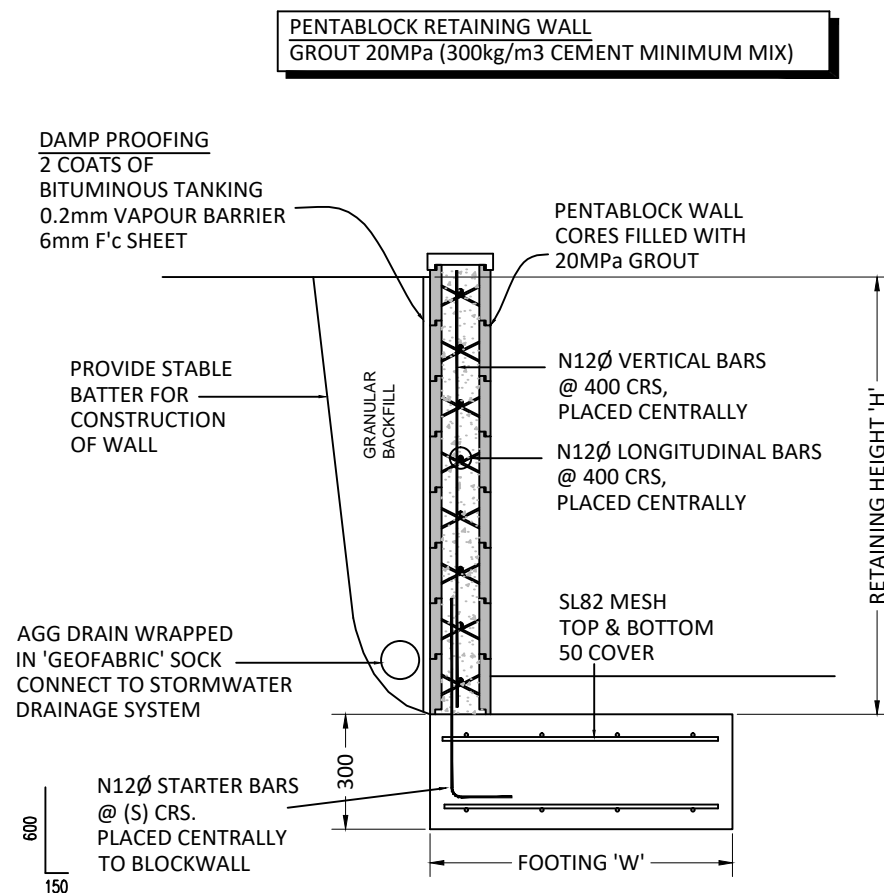
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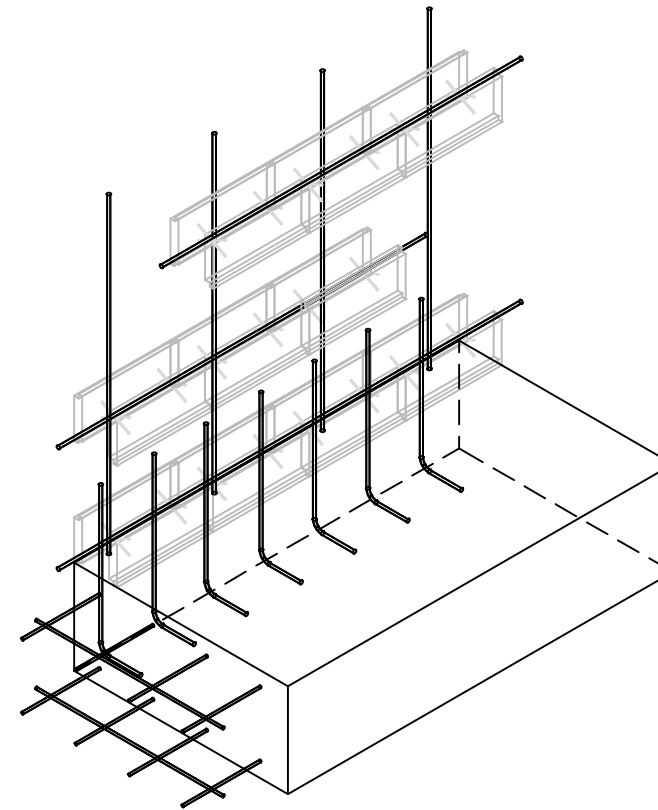
Project
Pentablock Retaining Wall Generic Design 205 x 405 x 165
Client
Pentablock

Designed
JG
Drafted
JG
Checked
JG
Approved
JG

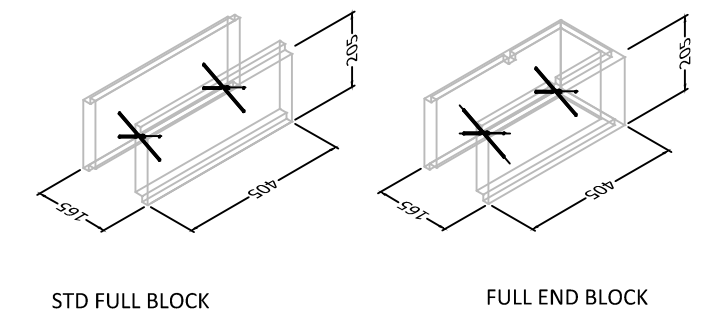
Drawing				
NOTESHEET 1				
If in Doubt, then Ask. No Problems, Only Solutions				
Date	Scale	Project	Dwg	Rev
Dec 22	A3 @ 1:100	CGX9294	N1	A



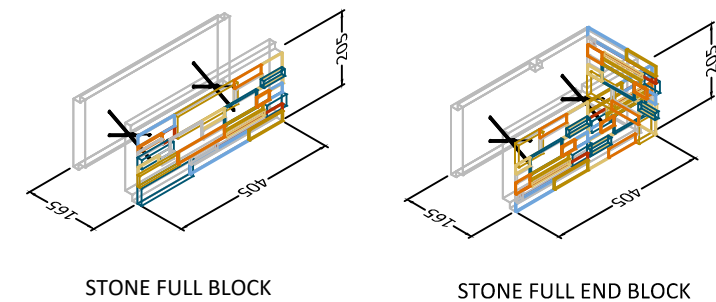
TYPICAL PENTABLOCK RETAINING WALL



EXPLODED VIEW OF CONSTRUCTION
TYPICAL REINFORCING STEEL LAYOUT DIAGRAM



STANDARD CONCRETE FINISH



STONE CLAD FINISH

PENTA BLOCK RETAINING WALL SCHEDULE		
RETAINING HEIGHT (H)	STARTER BARS CRS (S)	FOOTING WIDTH (W)
800	N12Ø BARS @ 400 CRS	550
1000	N12Ø BARS @ 400 CRS	700
1200	N12Ø BARS @ 400 CRS	900
1400	N12Ø BARS @ 200 CRS	950
1600	N12Ø BARS @ 200 CRS	1100
1800	N12Ø BARS @ 150 CRS	1200

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Project	Pentablock Retaining Wall Generic Design 205 x 405 x 165
Client	Pentablock

Designed JG
Drafted JG
Checked JG
Approved JG

Drawing Retaining Wall Details				
If in Doubt, then Ask. No Problems, Only Solutions				
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