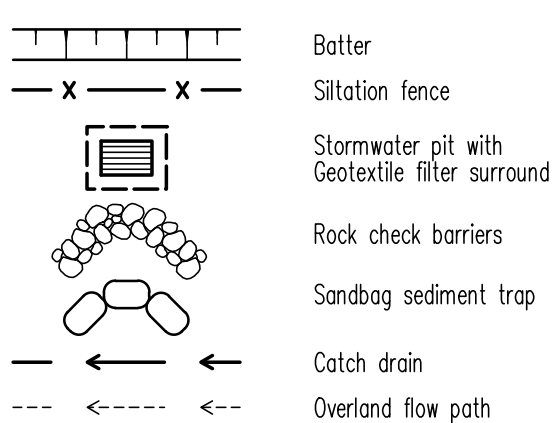


EROSION AND SEDIMENT CONTROL LEGEND



EROSION AND SEDIMENT CONTROL NOTES

1. All work shall be generally carried out in accordance with:
 - (A) Local authority requirements,
 - (B) EPA - Pollution Management Plan for urban stormwater,
 - (C) LANDCOM NSW - Managing Urban Stormwater: Soils and Construction (Blue Book)
2. Erosion and sediment control is to be provided for the whole of the works. Should the Contractor stage these works in the design may be required to be modified.
 - The erosion and sediment control plan shall be implemented and adopted to meet the varying situations as work on site progresses.
3. Maintain all erosion and sediment control devices to the satisfaction of the supervising authority.
4. When stormwater pits are constructed prevent site runoff entering the pits unless pit fences are erected around pits.
5. Minimise the area of sites being disturbed at any one time.
6. Control all stockpiles of material to prevent soil erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
7. All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
8. Control water from upstream of the site such that it does not cause any disturbance to the site.
9. All construction vehicles shall enter and exit the site via the temporary construction/entry/exit.
10. All vehicles leaving the site shall be cleaned and inspected before leaving the site.
11. Maintain all stormwater pits and pits clear of debris and sediment. Install stormwater system and clean out after each storm event.
12. Maintain all erosion and sediment control devices after each storm event.

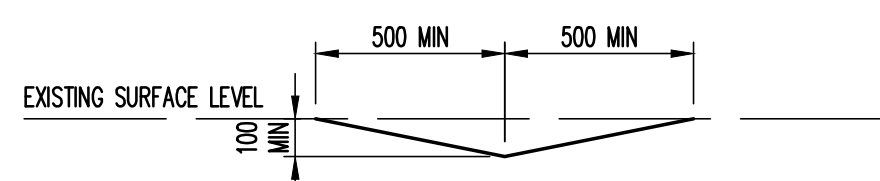
Sequence Of Works

1. Prior to commencement of excavation the following soil management devices must be installed.
- 1.1. Construct silt fences below the site and across all potential runoff sites.
- 1.2. Construct temporary construction entry/exit and divert runoff to suitable control systems.
- 1.3. Construct measures to divert upstream flows into existing stormwater system.
- 1.4. Construct sedimentation traps/basins including outlet control and overflow.
- 1.5. Construct turf lined swales.
- 1.6. Provide sandbag sediment traps upstream of existing pits.
- 1.7. Construct geotextile filter pit surround around all proposed pits as they are constructed.
2. In the construction of pavement provide sand bag kerb inlet sediment traps around pits.
3. Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

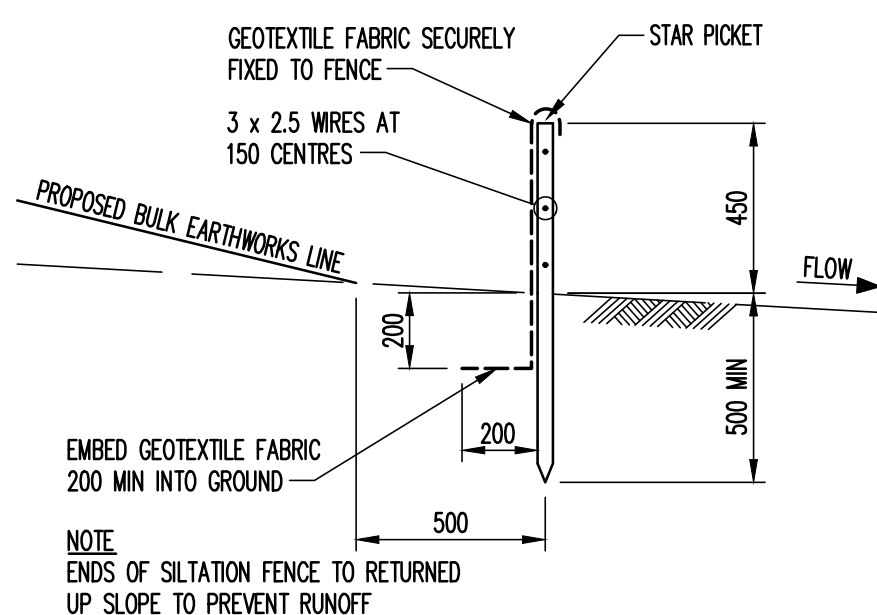
COUNCIL EROSION AND SEDIMENT CONTROL NOTES

1. Sediment, includes, but is not limited to, clay, silt, sand, gravel, silt, mud, cement, and ceramic waste.
2. The ESDP/SMP and its associated erosion and sediment control measures shall be constantly monitored, reviewed, and modified as required to correct deficiencies. Council has the right to request changes if, in its opinion, the measures that are proposed or have been installed are inadequate to prevent pollution.
3. Prior to any activities onsite, the responsible person(s) is to be nominated. The responsible person(s) shall be responsible for the erosion and sediment control (ESC) measures onsite. The name, address and 24 hour contact details of the person(s) shall be provided to Council in writing. Council shall be advised within 48 hours of any changes to the responsible person(s), or their contact details, in writing.
4. At least 14 days before the natural surface is disturbed in any stage, the contractor shall submit to the Certifier, a plan showing ESC measures for that Stage. The degree of design detail shall vary based on the extent of the area to be disturbed.
5. At any time during onsite works, the contractor shall be able to demonstrate that adequate capacity exists for sediment capture and treatment in onsite erosion and sediment control measures for the whole site.
6. No site works shall commence prior to the approval of the detailed engineering design. Its implementation shall be supervised by personnel with appropriate qualifications and/or experience in the construction of ESC sites.
7. The approved SMP shall be available on-site for inspection by Council officers while work activities are occurring.
8. All ESC measures shall be appropriate for the Sediment Type(s) of the soils onsite, in accordance with The Blue Book (Managing Urban Stormwater – Soils and Construction, Landcom, 2004), or other current recognised industry standard for erosion and sediment control for Australian conditions. This includes sediment traps and lining of channels.
9. Adequate site data, including soil data from a NATA approved Laboratory, shall be obtained to allow the preparation of an appropriate SMP, and allow the selection, design and specification of required ESC measures.
10. The SMP shall clearly state that no land-disturbing activities on the site shall occur until all perimeter ESC measures, sediment basins, and associated sediment drainage controls, have been constructed and are fully operational, in accordance with current best practice ESC. This is unless such clearing is required for the purpose of installing such measures, in which case only the minimum clearing required to install such measures shall occur.
11. Additional ESC measures shall be implemented, and a revised SMP is to be submitted and approved to the certifier (within five (5) business days of any such amendments) in the event that:
 - (i) there is a high probability that serious or material environmental harm may occur as a result of sediment leaving the site; or
 - (ii) the implemented works fail to achieve Council's water quality objectives specified in these conditions; or
 - (iii) site conditions significantly change; or
 - (iv) site inspections indicate that the implemented works are failing to achieve the 'objective' of the SMP.
12. A copy of any amended SMP shall be forwarded to an appropriate Council officer, within five (5) business days of any such amendments.
13. All office facilities and operational activities shall be located such that any effluent, including approved water, can be totally contained and treated within the site.
14. All reasonable and practicable measures shall be taken to ensure stormwater runoff from access roads and stabilised entry/exit systems, drains to an appropriate sediment control device.
15. All works shall be carried out in accordance with the approved SMP (as amended from time to time) unless circumstances arise where:
 - (i) compliance with the SMP would increase the potential for environmental harm as assessed by an authority recognised by Council; or
 - (ii) circumstances change during construction and those circumstances could not have been foreseen; or
 - (iii) Council or its representative determines that the implementation of the SMP is occurring as a result of a land-disturbing activity. In either case, the person(s) responsible may be required to take additional, or alternative protective action, and/or undertake reasonable restoration works within the timeframe specified by the Council.
16. The Applicant shall ensure an adequate supply of ESC, and appropriate pollution clean-up materials are available on-site at all times.
17. Sediment deposited off site as a result of on-site activities shall be collected and the area cleaned/rehabilitated as soon as reasonable and practicable.
18. Concrete waste and chemical products, including petroleum and oil-based products, shall be prevented from entering any inland or external water body, or any external drainage system, excluding those on-site water bodies specifically designed to contain and/or treat such material. Appropriate measures shall be installed to trap these materials onsite.
19. Brick, tile or masonry cutting shall be carried out on a pervious surface (e.g. grass or open soil), or in such a manner that any resulting sediment-laden runoff is prevented from discharging into a gully, drain or water. Appropriate measures shall be installed to trap these materials onsite.
20. Newly sealed hard-stand areas (e.g. roads, driveways and car parks) shall be swept thoroughly as soon as practicable after sealing/surfacing to minimise the risk of components of the surfacing compound entering stormwater drains.
21. Stockpiles of erodible material shall be provided with an appropriate protective cover (synthetic or organic) if the materials are likely to be stockpiled for more than 10 days.
22. Stockpiles, temporary or permanent, shall not be located in areas identified as no-go zones (including, but not limited to, restricted access areas, buffer zones, or areas of non-disturbance) on the ESDP/SMP.
23. Bulk tree clearing and grubbing of the site shall be immediately followed by specified temporary erosion control measures (e.g. temporary grassing or mulching) prior to commencement of each stage of construction works.
24. Trees and vegetation cleared from the site shall be mulched onsite with the same material.
25. Appropriate measures shall be undertaken to control any dust arising from the mulching of vegetation onsite.
26. Priority shall be given to the prevention, or at least the minimisation, of soil erosion, rather than the trapping of displaced sediment. Such a clause shall not reduce the responsibility to apply and maintain, at all times, all necessary sediment control measures.
27. Measures used to control wind erosion shall be appropriate for the location and present soil erosion, at all times, including working hours, weekends, public holidays, and during any other shutdown periods.
28. The application of liquid or chemical-based dust suppression measures shall ensure that sediment-laden runoff resulting from such measures (e.g. runoff of excess water) does not create a traffic or environmental hazard.
29. All temporary earth banks, flow diversion systems, and sediment basin embankments shall be machine-compacted, seeded and mulched within ten (10) days of formation for the purpose of establishing a vegetative cover, or lined appropriately.
30. Prior to the controlled discharge (e.g. de-watering activities from excavations and sediment basins) of any water from the site during construction, the following water quality objectives shall be achieved:
 - a) total suspended solids (TSS) to a maximum 50mg/L;
 - b) turbidity measured in NTUs maximum of 60 NTU;
 - c) water pH between 6.5 and 8.5 unless otherwise required by the Council; and
 - d) EC levels no greater than background levels.
31. Prior to the issuing of a Construction Certificate, the Site Manager shall obtain the relevant approvals from the relevant organisations to discharge treated water from any existing basins. Once approved, it may include but not be limited to, Hunter Water, and Council.
32. Prior to any forecast weather event likely to result in sediment runoff on the site, any existing detention basins/traps shall be dewatered to provide sufficient capacity to capture sediment laden water from the site prior to the weather event.
33. Any sediment laden water captured onsite shall be treated to ensure it will achieve Council's water quality objectives specified in these conditions, prior to its release from the site. A sample of the water to be treated shall be kept onsite in a clear container with the sample date recorded on it.
34. No Aluminium based products may be used treat turbid water (flocculating/coagulants) onsite without the prior written permission from an appropriate Council Officer. The applicant shall have a demonstrated ability to use such products correctly and without environmental harm to prior any approval.
35. The chemical agent (flocculating/coagulants) used in Type D and Type F basins to treat turbid water captured in the basin shall be applied in concentrations sufficient to achieve Council's water quality objectives, specified in these conditions, within the 5-day rainfall depth used to calculate the capacity of the basin, after or rainfall event.
36. All manufacturer's instructions shall be followed for the use of any chemicals/agents used onsite, except where approved by the responsible person or an appropriate Council Officer.
37. Sufficient quantities of chemicals/agents to treat turbid water (flocculating/coagulants) shall be placed such that water entering the basin/sediment trap mixes with the chemical/agents and is carried into the basin/trap.
38. Any basin shall be dewatered as soon as practical, once water captured in the basin achieves Council's water quality objectives, specified in these conditions.
39. Sufficient quantities of chemicals/agents to treat turbid water (flocculating/coagulants) shall be securely stored on-site to provide for at least three complete treatments of all basins.

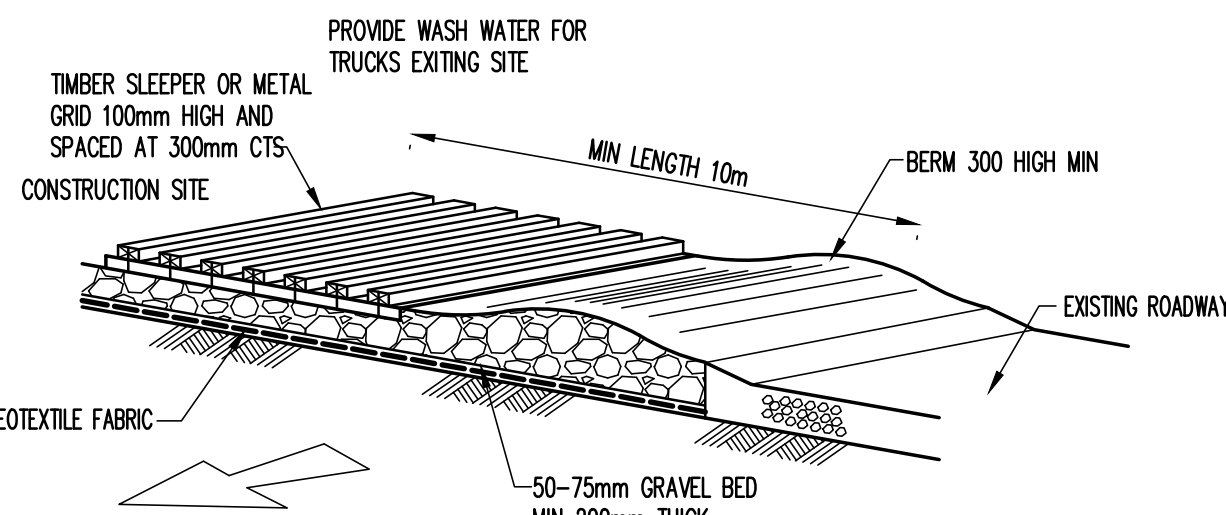
- The Applicant shall ensure that on each occurrence a Type F or Type D spill was not de-watered prior to being surcharged by a following rainfall event, a report is presented to an appropriate Council officer within 5 days identifying the circumstances and proposed amendments, if any, to the basin's operating procedures.
- As-Constructed plans shall be prepared for all constructed Sediment Basins and associated emergency spillways. Such plans shall appropriately verify the basin's dimensions, levels and volumes comply with the approved design drawings. These plans shall be submitted to Council within 14 calendar days of the construction of each basin, if requested by the Certifier, or Council.
- Where more than one stage is to be developed at one time, or before the preceding stage is complete, the sediment basin(s) for these stages shall have sufficient capacity to cater for all area directed to the basin(s).
- All Sediment Basins shall remain fully operational at all times until the basin's design catchment achieves 70% ground coverage, or storm stabilisation acceptable to Council.
- Settled sediment shall be removed as soon as reasonable and practicable from any sediment basin if:
 - a) it is anticipated that the next storm event is likely to cause sediment to settle above the basin's sediment storage zone; or
 - b) the elevation of settled sediment is above the top of the basin's sediment storage zone; or
 - c) the elevation of settled sediment is above the basins sediment marker line.
- Scour protection measures placed on sediment basin emergency spillways shall appropriately protect the spillway chute and its side batters from scour, and shall extend a minimum of 3m beyond the downstream toe of the basin's embankment.
- Suitable all-weather maintenance access shall be provided to all sediment control devices.
- All sediment control devices (other than sediment basins) shall be de-silted and made fully operational as soon as reasonable and practicable after runoff-producing rainfall, or if the sediment retention capacity of the device falls below 75% of the design retention capacity.
- All cut and fill earth batters less than 3m in elevation shall be topped, and grass seeded/hydrated within 10 days of completion of grading in consultation with Council.
- The pH level of topsoil shall be appropriate to enable establishment and growth of specified vegetation prior to initiating the establishment of vegetation.
- Soil amendments shall be added to the soil in accordance with an approved Landscape Plan, Vegetation Management Plan, and/or soil analysis.
- Surface soil density, compaction and surface roughness shall be adjusted prior to seeding/planting in accordance with an approved Landscape Plan, Vegetation Management Plan, and/or soil analysis.
- Procedures for initiating a site shutdown, whether programmed or un-programmed, shall incorporate revegetation of all soil disturbances unless otherwise approved by Council. The stabilisation works shall not rely upon the longevity of non-vegetation erosion control blankets, or temporary soil binders.
- The Applicant shall ensure that appropriate procedures and suitably qualified personnel are engaged to plan and conduct site inspections and water quality monitoring throughout the construction and maintenance phase.
- All ESC measures shall be inspected:
 - a) at least daily (when work is occurring on-site); and
 - b) at least weekly (when work is not occurring on-site); and
 - c) within 24hrs of expected rainfall; and
 - d) within 18hrs of a rainfall event that causes runoff on the site.
- Written records shall be kept onsite of ESC monitoring and maintenance activities conducted during the construction and maintenance periods, and be available to Council officers on request.
- All site monitoring data including rainfall records, dates of water quality testing, testing results and records of controlled water releases from the site, shall be kept in an on-site register. The register is to be maintained up to date for the duration of the approved works and be available on-site for inspection by Council officers on request.
- Sediment basin water quality samples shall be taken at a depth no less than 200mm below the water surface within the basin.
- All environmental incidents shall be recorded in a field log that shall remain accessible to all relevant regulatory authorities on request.
- All materials removed from ESC devices during maintenance, or decommissioning, whether solid or liquid, shall be disposed of in a manner that does not cause any ongoing erosion or pollution hazard.



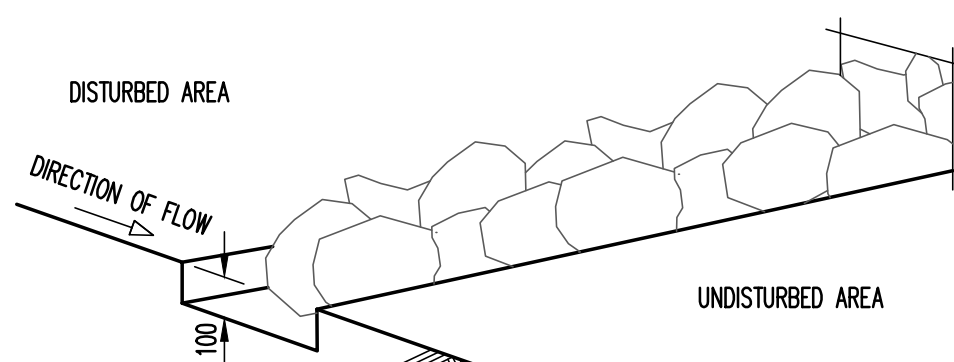
TYPICAL SECTION THROUGH CATCH DRAIN



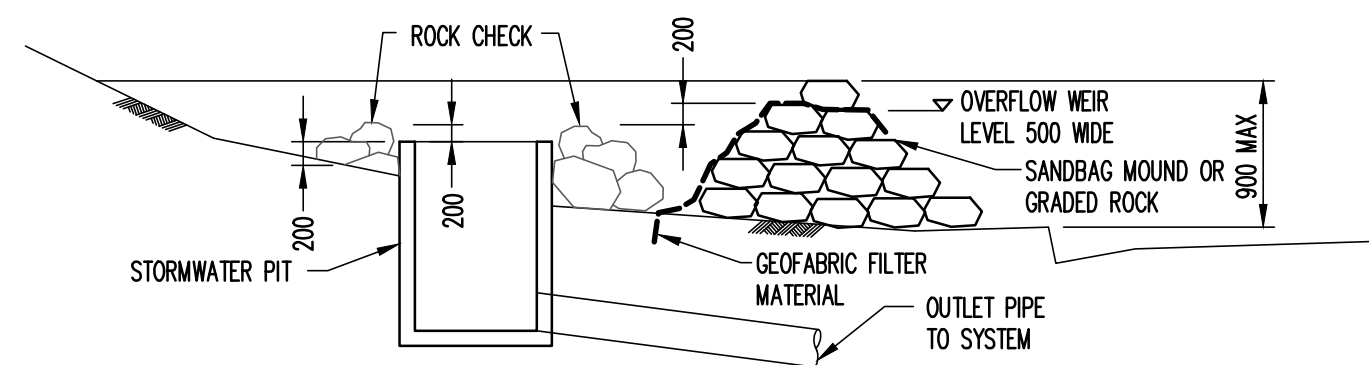
SILTATION FENCE DETAIL



TEMPORARY CONSTRUCTION VEHICLE EXIT



ROCK CHECK SEDIMENT FILTER



SEDIMENTATION TRAP

[illegible]

SEDIMENT BASIN SIZING

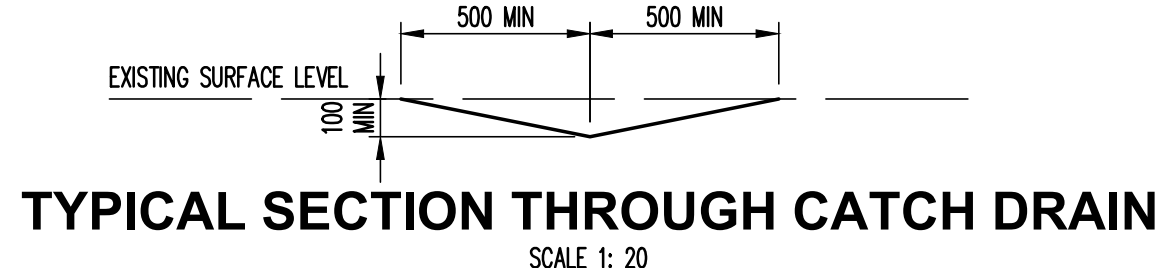
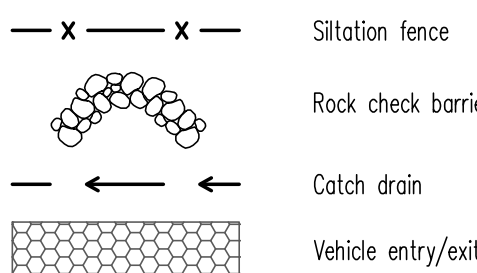
- Sediment basins have been sized in accordance with (A) LANDCOM NSW - Managing Urban Stormwater: Soils and Construction ("Blue Book").
- Soil type D
- Construction likely to be greater than 6 months therefore R (y %e, 5 day) = 85% = 38.9mm (Using Newcastle rainfall data)
- Corresponding runoff coefficient $C_v = 0.64$
- Construction separated into two zones due to channel zone
 - Western Site Area = 0.96 Ha
 - Eastern Site Area = 0.99 Ha
- Settling Zone (SZ) Basin Volume for D type soil (Western Site)
 - $SZ_{\text{west}} = 10 \times C_v \times A \times R$
 $SZ_{\text{west}} = 10 \times 0.64 \times 0.96 \times 38.9$
 $SZ_{\text{west}} = 240m^3$
- Sediment Storage Zone (SSZ) Basin Volume for D type soil (Western Site)
 - $SSZ_{\text{west}} = SZ_{\text{west}} \times 0.5 = 240m^3 \times 0.5 = 120m^3$
- Total Western Site Area Volume = $SZ_{\text{west}} + SSZ_{\text{west}} = 360m^3$
- Settling Zone (SZ) Basin Volume for D type soil (Eastern Site)
 - $SZ_{\text{east}} = 10 \times C_v \times A \times R$
 $SZ_{\text{east}} = 10 \times 0.64 \times 0.99 \times 38.9$
 $SZ_{\text{east}} = 246m^3$
- Sediment Storage Zone (SSZ) Basin Volume for D type soil (Eastern Site)
 - $SSZ_{\text{east}} = SZ_{\text{east}} \times 0.5 = 246m^3 \times 0.5 = 123m^3$
- Total Eastern Site Area Volume = $SZ_{\text{east}} + SSZ_{\text{east}} = 369m^3$

WATER QUALITY TESTING REQUIREMENTS

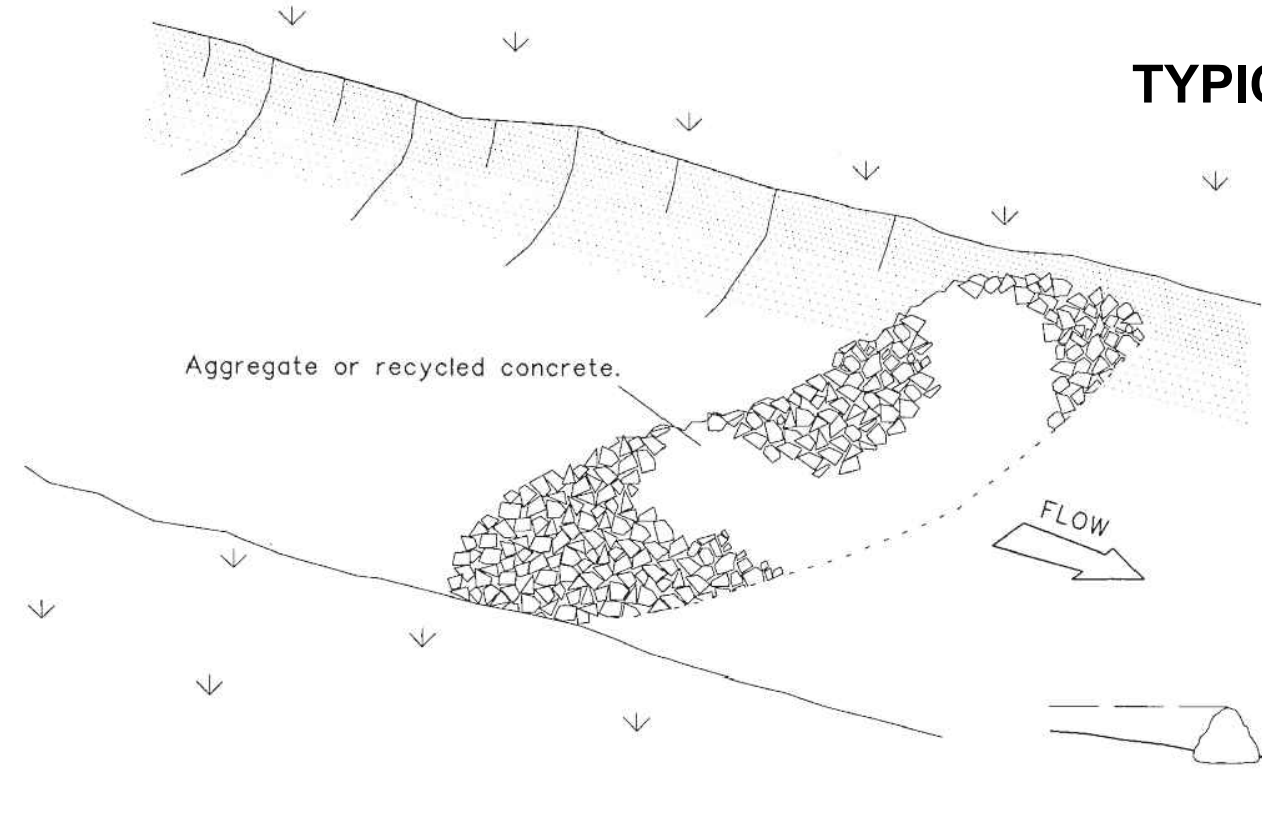
Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environmental consultant outlining the following:

- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system. This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.

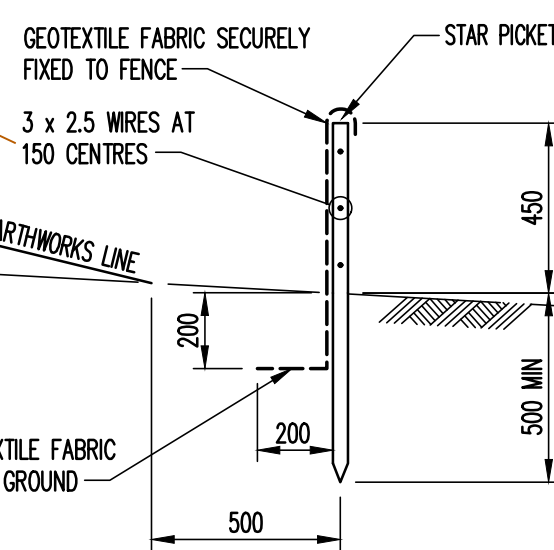
EROSION AND SEDIMENT CONTROL LEGEND



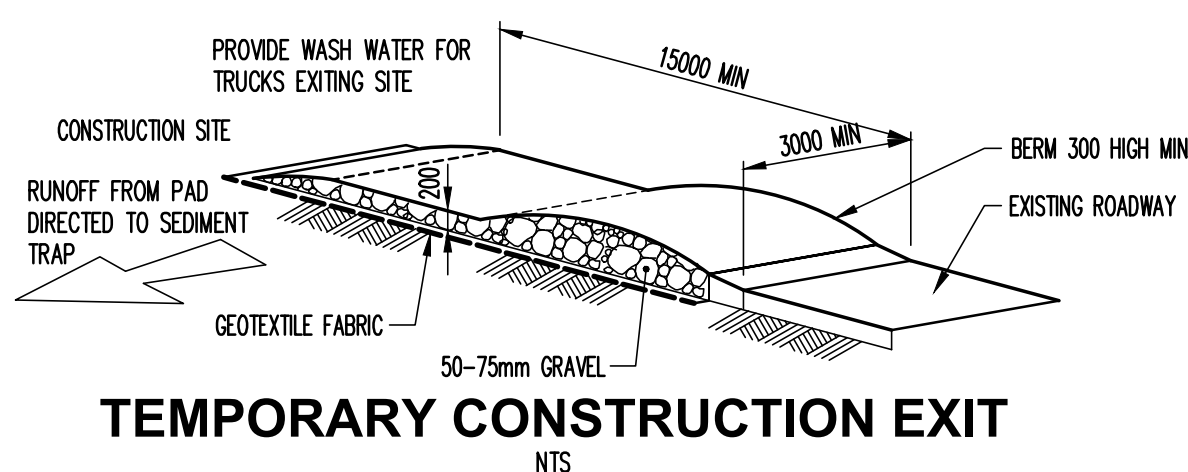
Rock Check Dam



Spacing of check dams along centreline and scour protection below each check dam to be specified on SWMP/ESCP

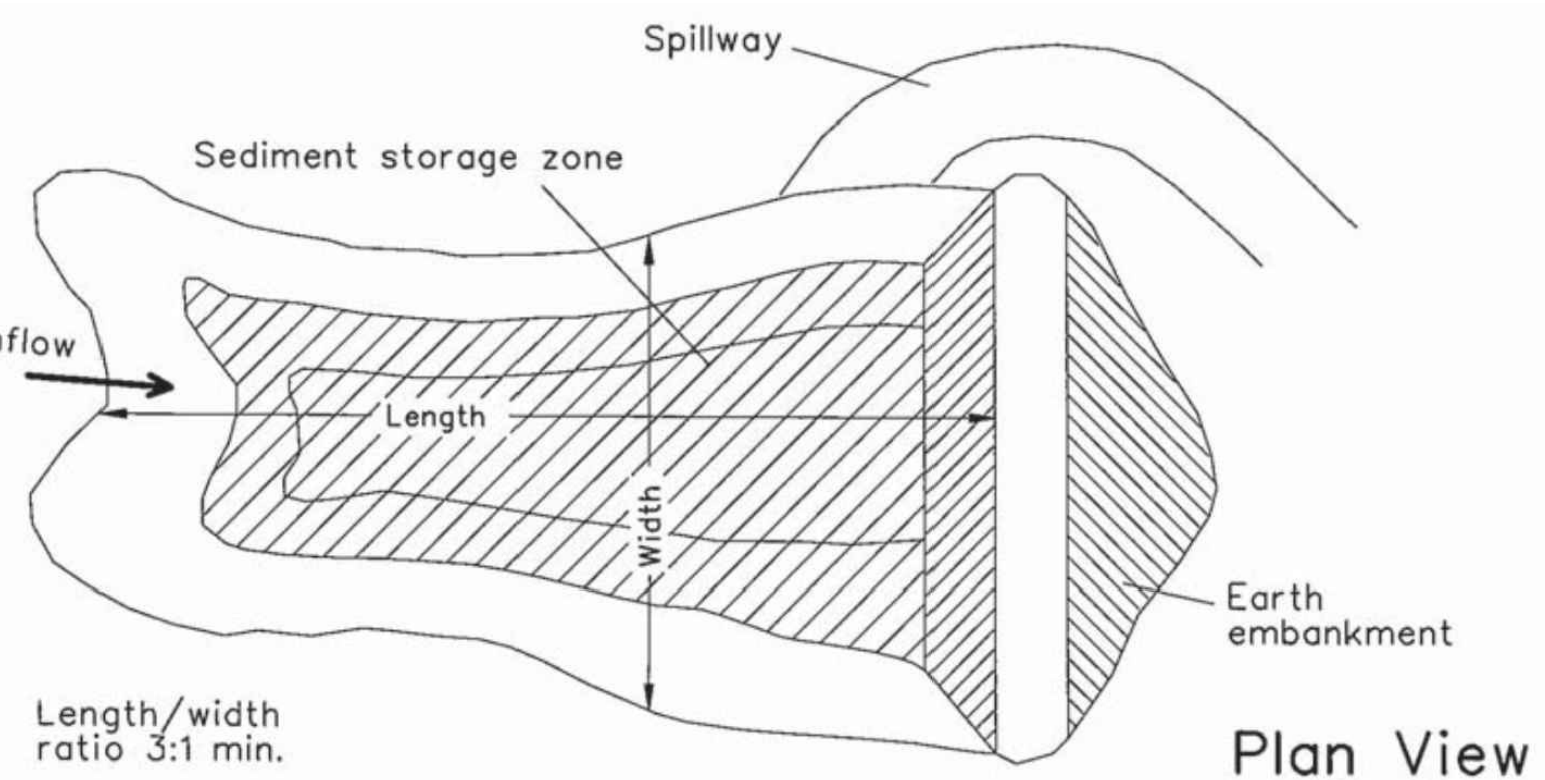


SILTATION FENCE DETAIL
SCALE 1: 20



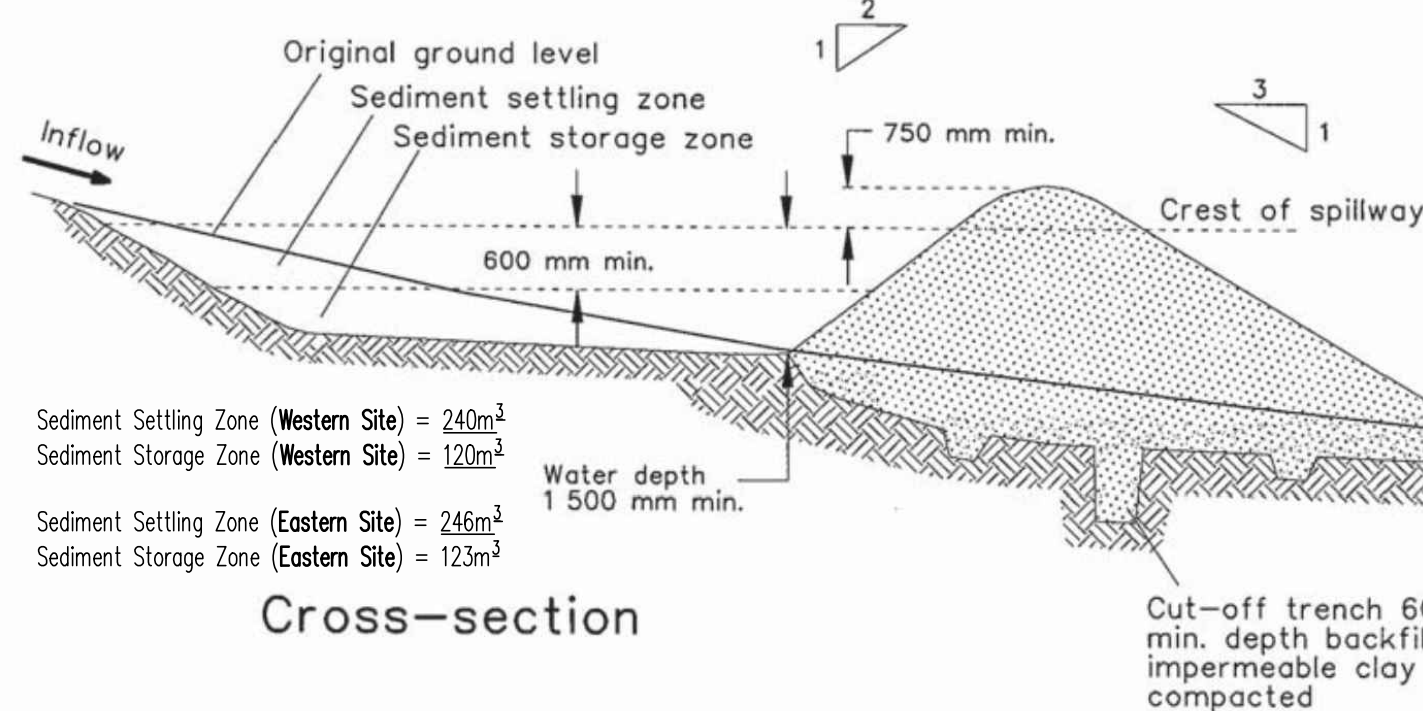
TEMPORARY CONSTRUCTION EXIT
NTS

Earth Basin - Wet

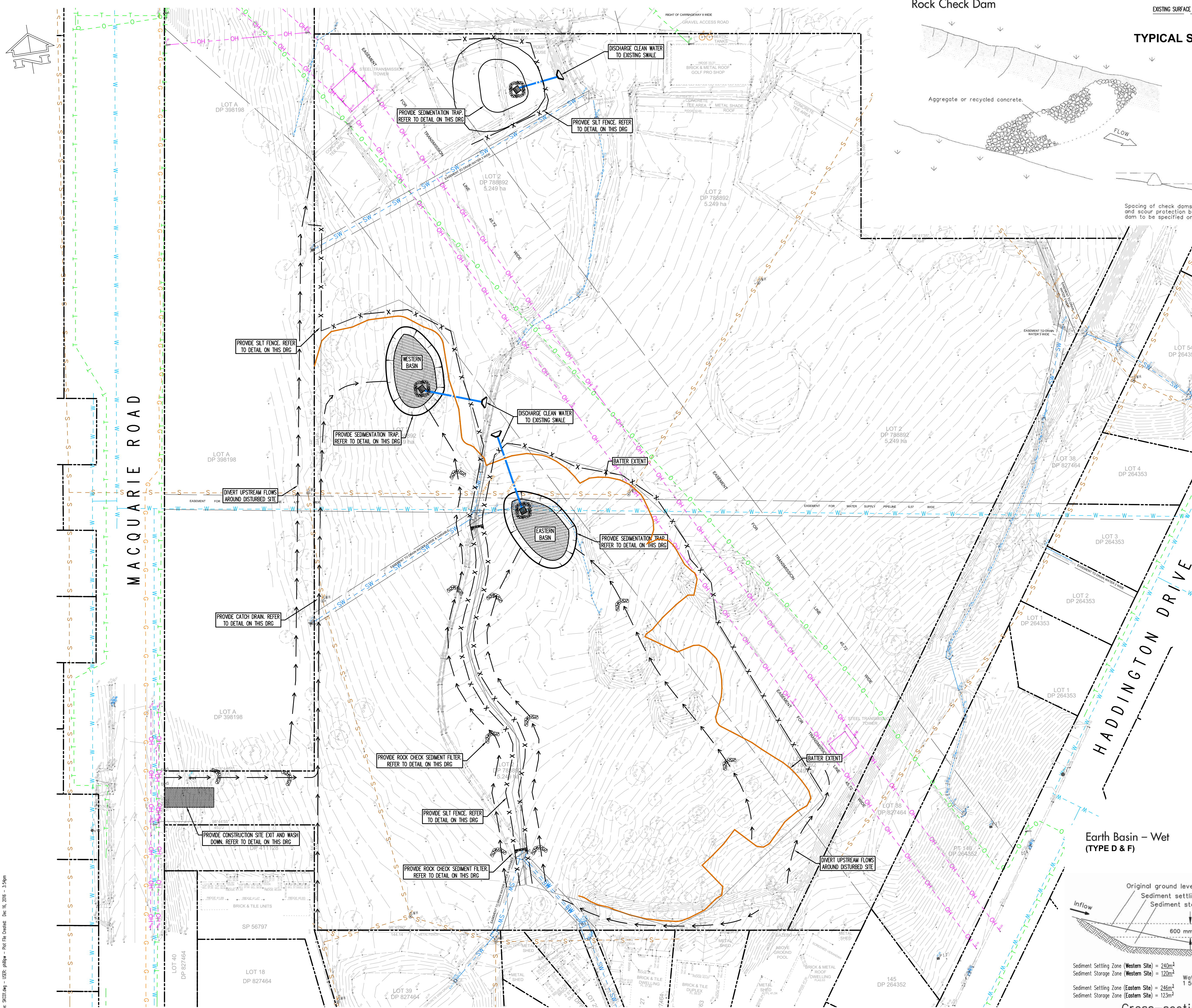


Plan View

Earth Basin - Wet (TYPE D & F)



Cross-section



File Name: 3001.dwg - User: pldw - Plot File Created: Dec 16, 2016 - 1:34pm

B1		0	1	2	3	4	5	6	7	8	9	10		
P6	ISSUE FOR DA	KH	KH	09.11.16										
P5	ISSUE FOR DA	KH	PW	15.07.16										
P4	ISSUE FOR DA	KH	PW	29.04.16										
P3	ISSUE FOR DA	KH	PW	25.06.15										
P2	ISSUE FOR DA	KH	KH	05.06.15										
P1	PRELIMINARY	KH	PK	19.05.15	P7	ISSUE FOR DA								
Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date

Client
 Level 2, 447 Kent Street
Sydney NSW 2000 Australia
T: 1300 426 666
HammondCare
An independent Christian charity

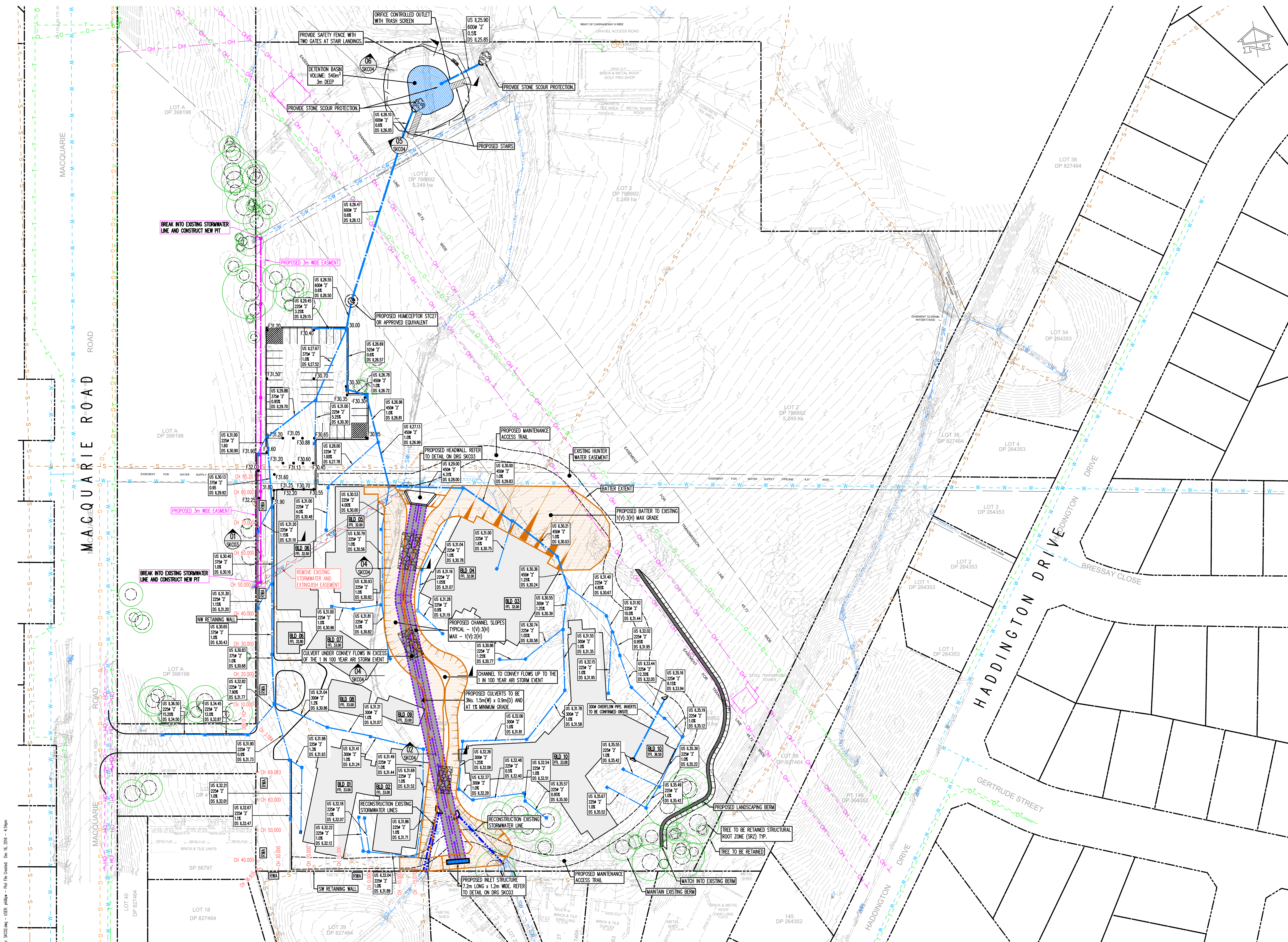
Architect
 79 Myrtle Street
Chippendale Sydney NSW 2008 Australia
T: +61 2 9311 8222
F: +61 2 9311 8200
AJ+C
ALLEN JACK+COTTIER

TaylorThomsonWhitting
Consulting Engineers
48 Chandon Street St Leonards NSW 2065
T: +61 2 9430 7288 F: +61 2 9430 3146 ttw@ttw.com.au
Taylor Thomson Whitting (NSW) Pty Ltd A.C.N. 113 978 377

Project
HAMMONDCARE AGED CARE HOME CARDIFF
158 MACQUARIE ROAD CARDIFF

Sheet Subject
EROSION AND SEDIMENT CONTROL PLAN

Scale: B1
1:500 UNO
Job No: 141125
Plot File Created: Dec 16, 2016 - 3:54pm
Drawn: PW
Authorised: Revision: P7
Drawing No: SKC01



B1 0 1 2 3 4 5 6 7 8 9 10

[illegible]

Architect

AJ+C
ALLEN JACK+COTTIER

79 Myrtle Street
Chippendale Sydney
NSW 2008 Australia

T: +61 2 9311 8222
F: +61 2 9311 8200

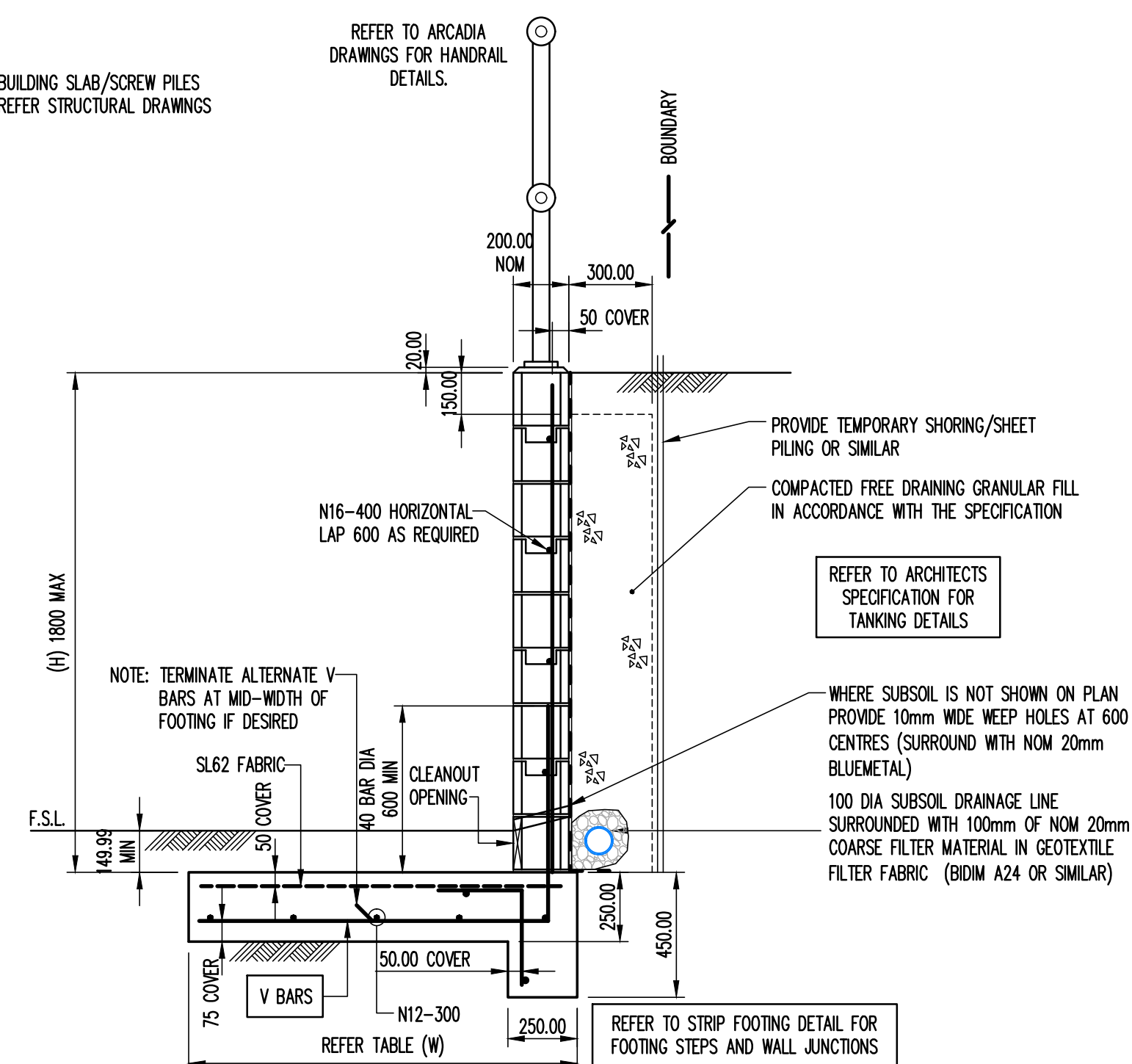
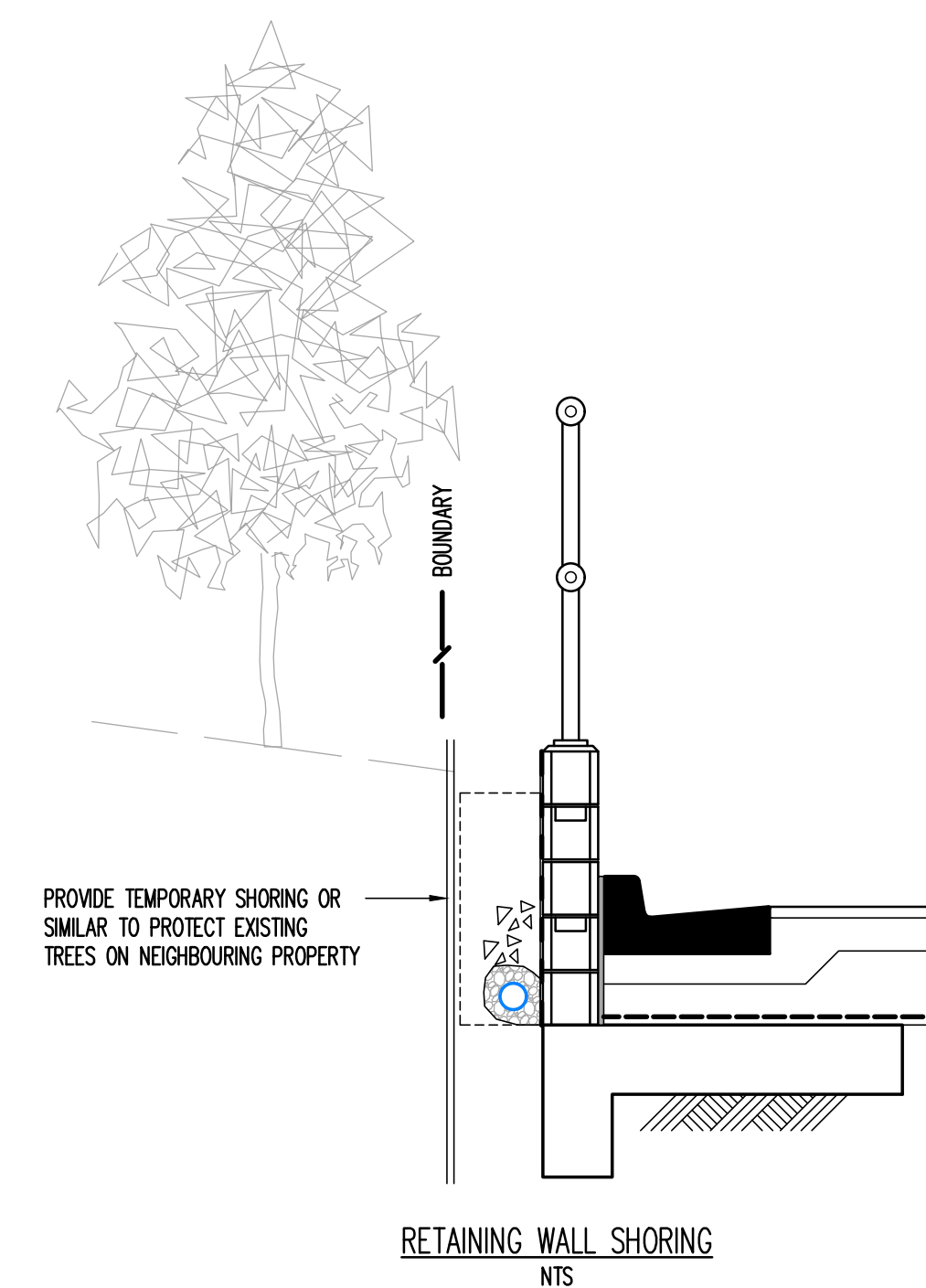
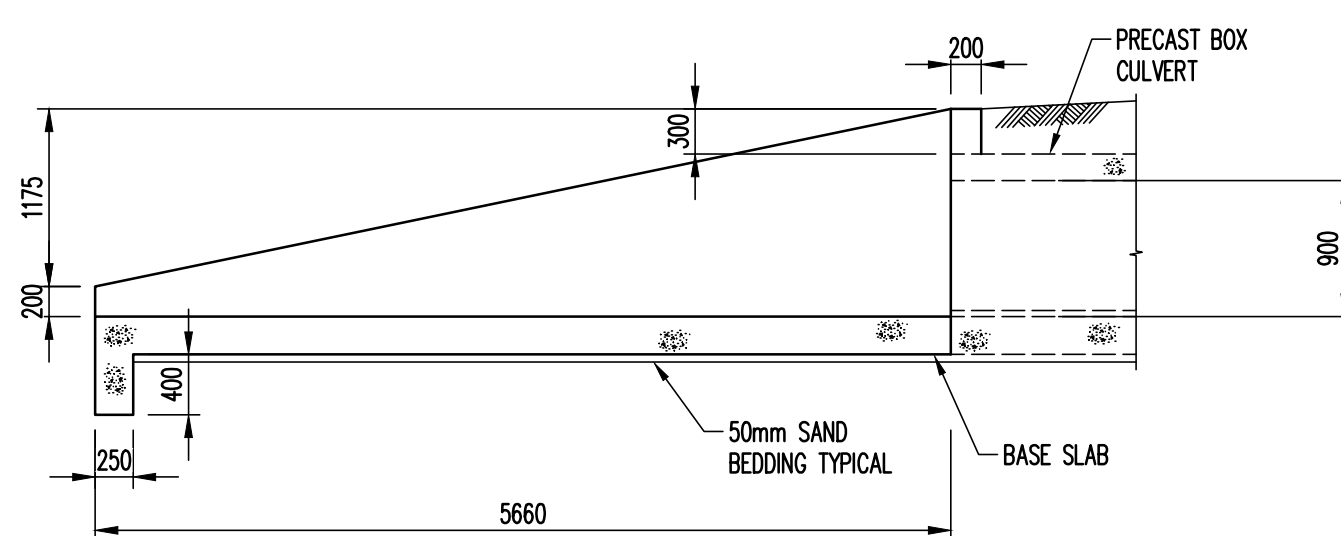
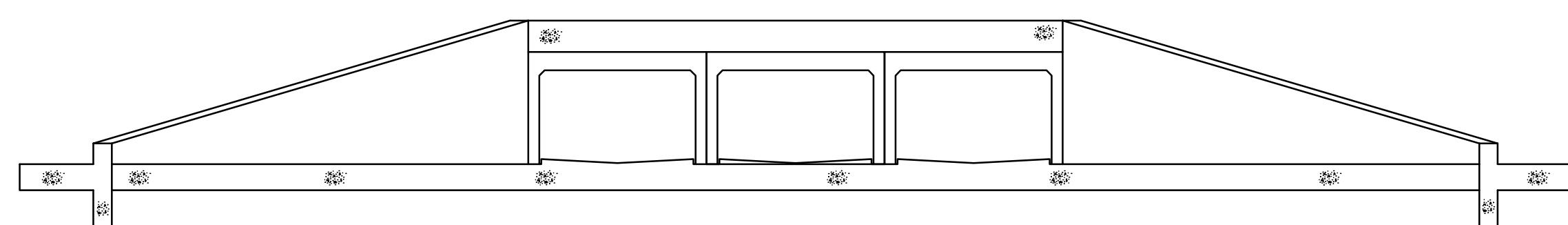
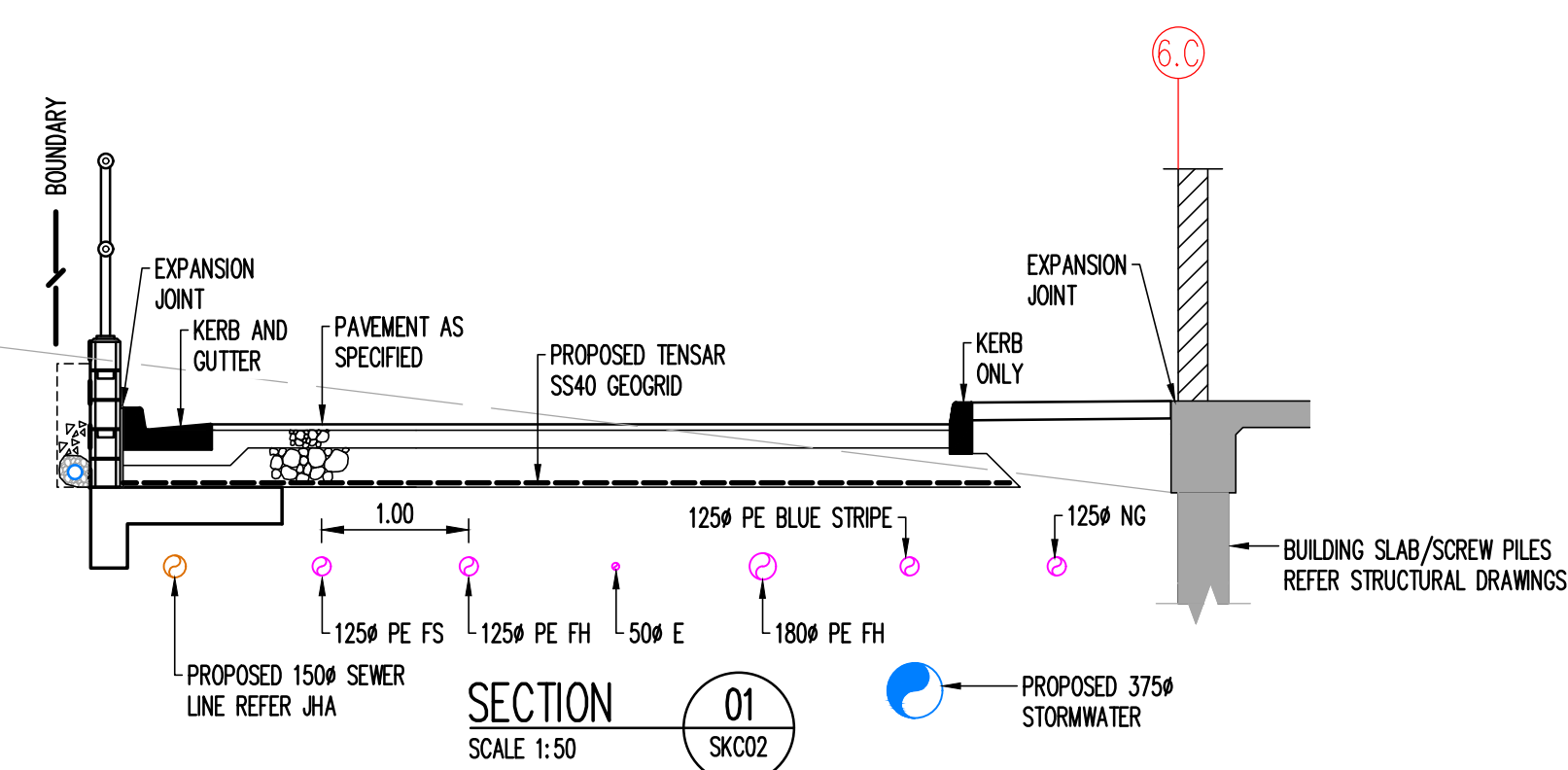
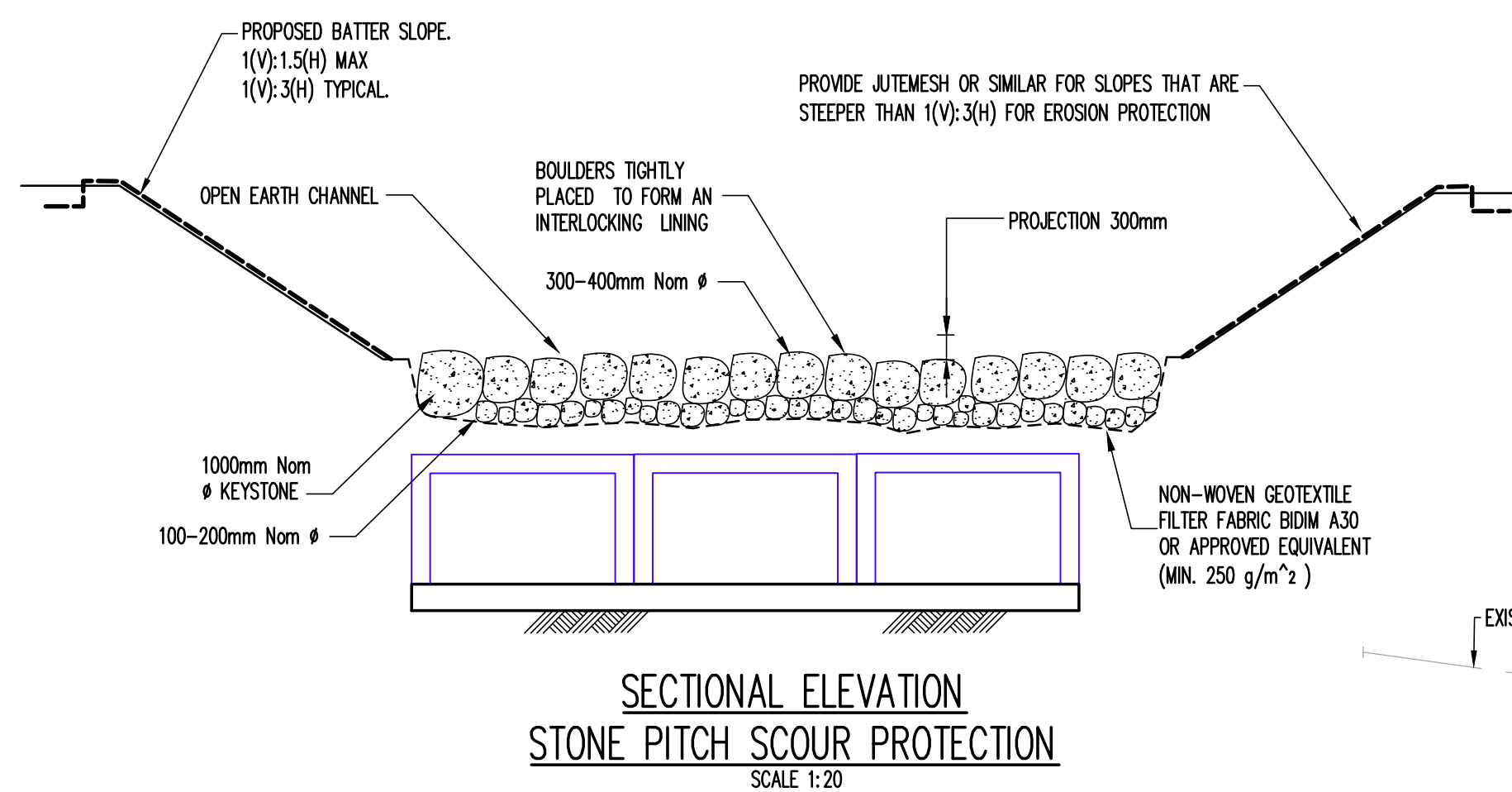
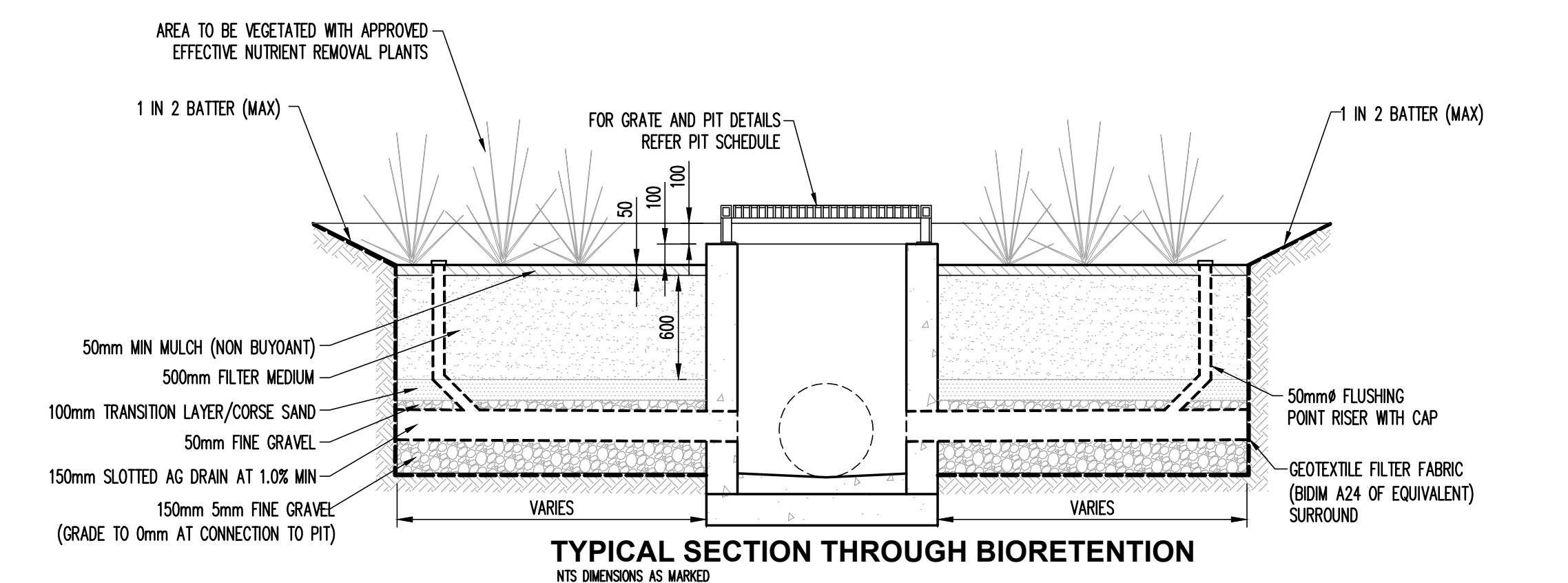
Project

HAMMONDCARE AGED CARE
HOME CARDIFF

158 MACQUARIE ROAD
CARDIFF

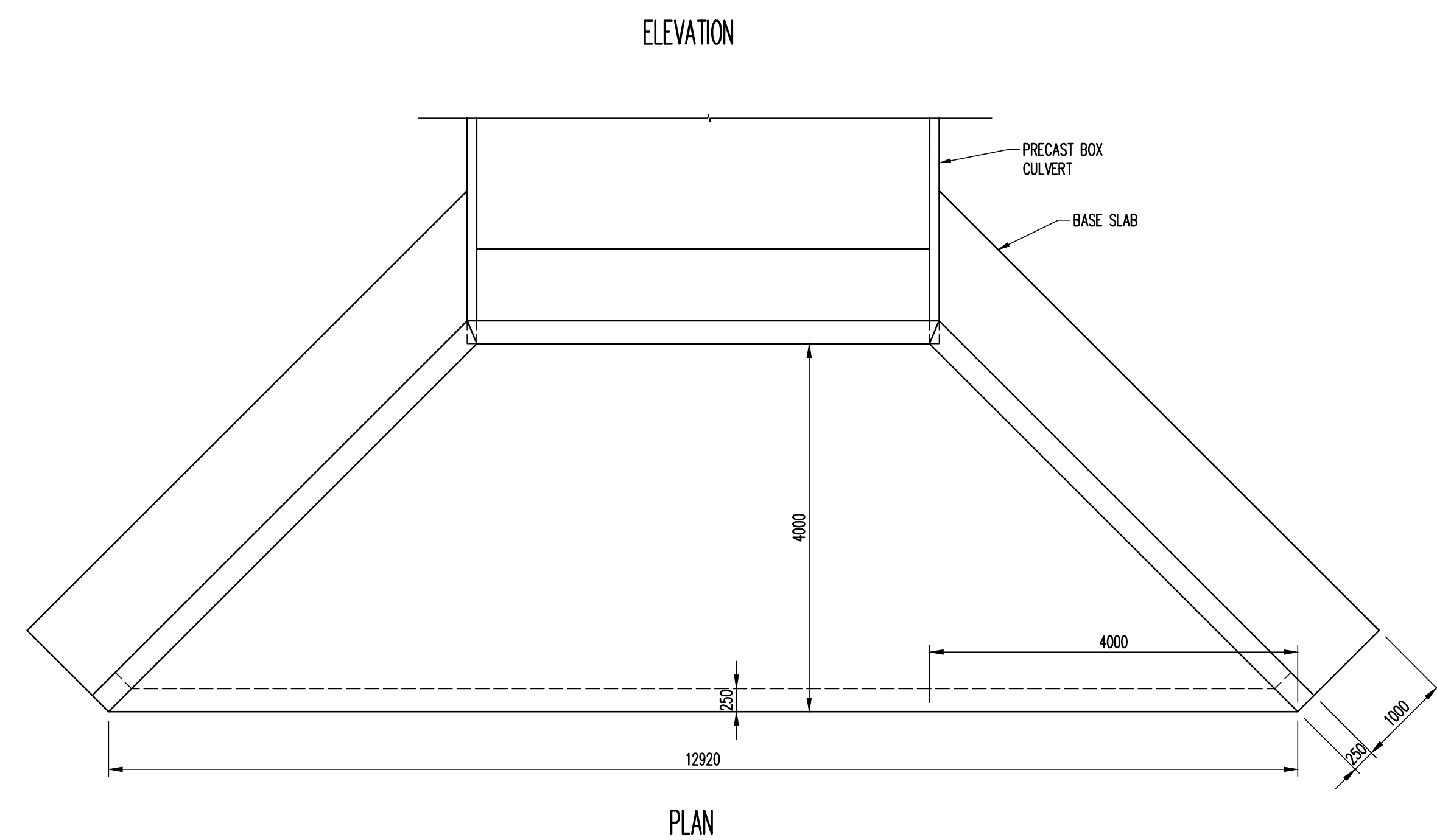
Sheet Subject	STORMWATER PLAN
---------------	-----------------

Scale : B1	Drawn	Authorised
1:500	PK	
Job No	Drawing No	Revision
141125	SKC02	P10
Plot File Created: Dec 16, 2016 - 4:54pm		

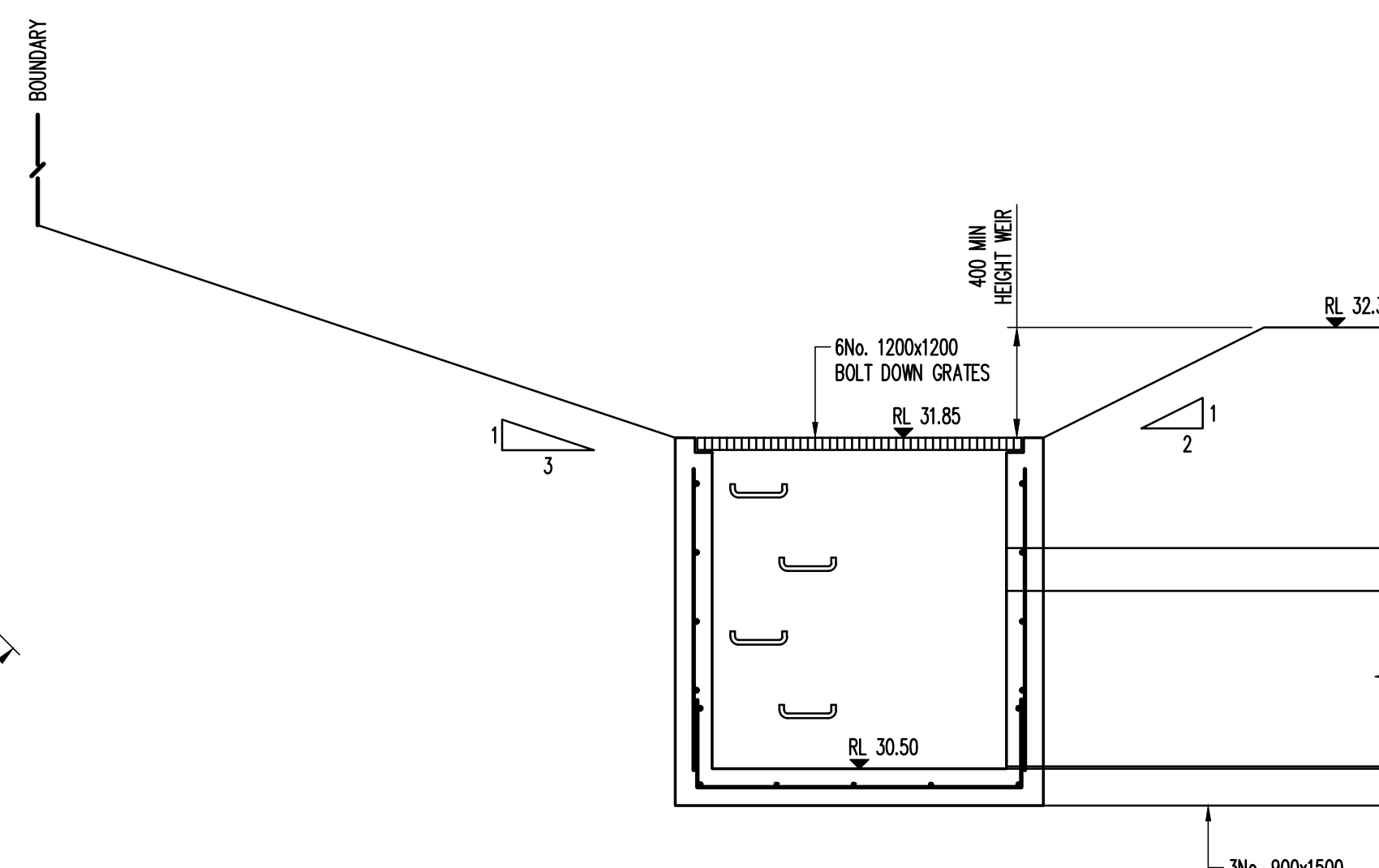


200 WALL - UP TO 1.8m (RWA)

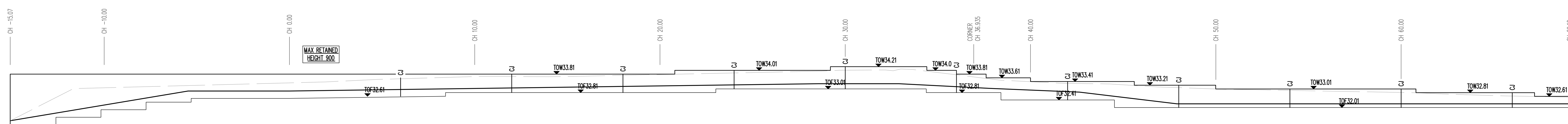
Type	Height (H)	Width (W)	V Bars	X Bars
BW	1000	1150	N12-400	N12-400
BW	1400	1450	N16-400	N16-400
BW	1800	1750	N20-400	N20-400



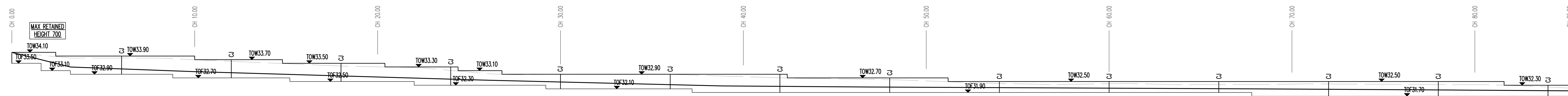
CULVERT HEADWALL DETAIL



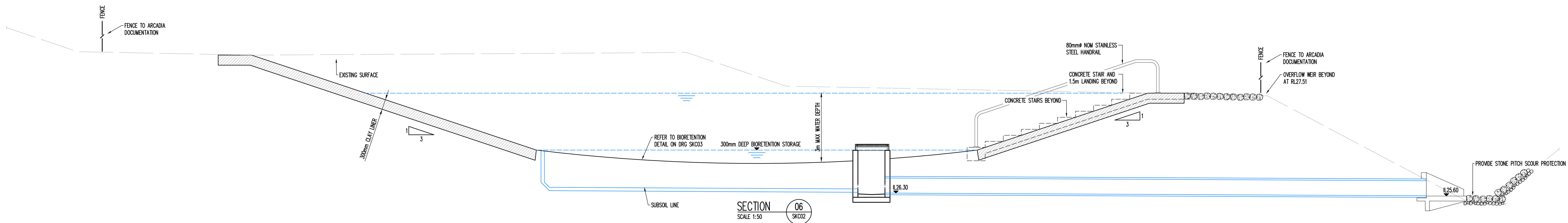
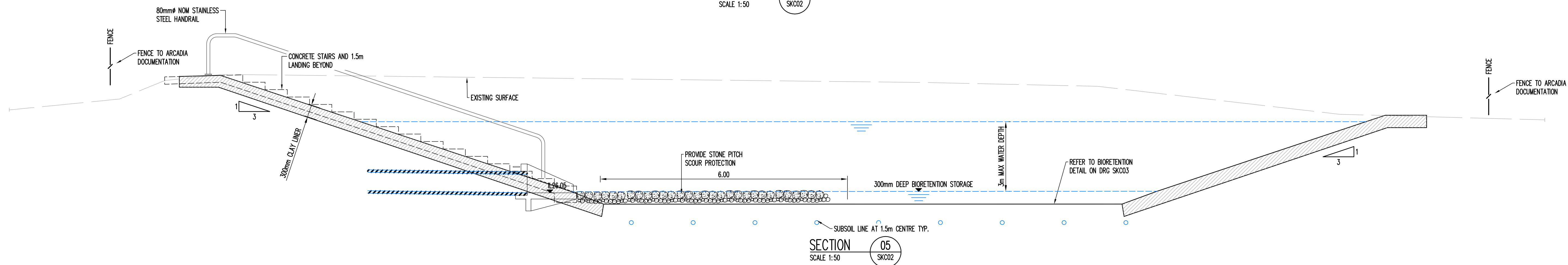
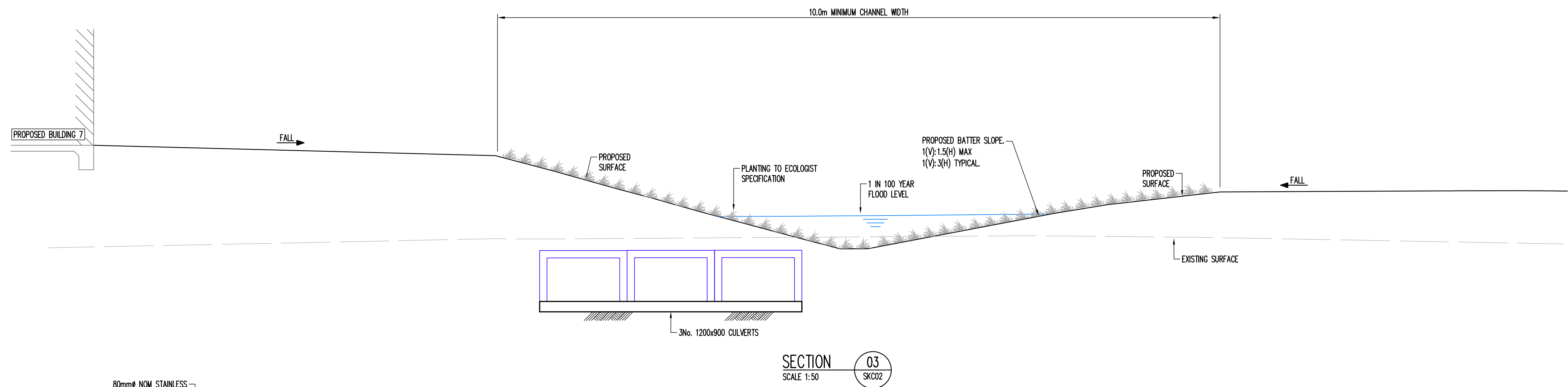
CULVERT INLET STRUCTURE



SW RETAINING WALL (RWA)
SCALE 1: 100



NW RETAINING WALL (RWA)
SCALE 1: 100



\\hammond\SKC04.dwg - U332: gph004 - Plot File Created: Dec 16, 2016 - 5:05pm

B1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
P3	ISSUE FOR DA	KH	PK	16.12.16					
P2	ISSUE FOR DA	KH	PK	02.12.16					
P1	ISSUE FOR DA	KH	FW	09.11.16					

Client

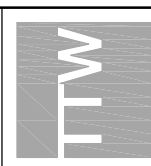
HammondCare
An independent Christian charity

Level 2, 447 Kent Street
Sydney NSW 2000 Australia
T: 1300 426 666

Architect

AJ+C
ALLEN JACK+COTTIER

79 Myrtle Street
Chippendale Sydney NSW 2008 Australia
T: +61 2 9311 8222
F: +61 2 9311 8200


TaylorThomsonWhitting
Consulting Engineers
48 Chandos Street St Leonards NSW 2065
T: +61 2 9450 7288 F: +61 2 9450 3146 ttw@ttw.com.au
Taylor Thomson Whitting (NSW) Pty Ltd A.C.N. 113 579 377

Project
HAMMONDCARE AGED CARE HOME CARDIFF
158 MACQUARIE ROAD CARDIFF

Sheet Subject
SECTIONS SHEET

Scale: B1 Drawn: PK Authorised:
Job No: 141125 Drawing No: SKC04 Revision: P3
Plot File Created: Dec 16, 2016 - 5:05pm