



Robert  
**Bird**  
Group

# Overland Flow Assessment & Stormwater Management Report 2B-6 Hassall Street Parramatta

**Issue: A- Development Application**

3<sup>rd</sup> April 2019

Prepared For: CHARTER HALL LIMITED

Project No.: 18570C

Document No.: 18570-CH RPT-SWMP-190403



[illegible]

REVIEWER:



Reviewer of Issue / Amendment  
Signing for and on behalf of  
**Robert Bird Group Pty Ltd**

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## 1.0 Introduction

### 1.1 Executive Summary

This report has been prepared by Robert Bird Group (RBG) and is submitted to the City of Parramatta Council. This report is to accompany a Development Application (DA) for a mixed-use tertiary educational and commercial development at 2B-6 Hassall Street, Parramatta.

This stormwater management report summarises the stormwater drainage design for the proposed development site and its connections to existing networks for point of discharge. Stormwater Quality management and Stormwater Management Strategy has also been incorporated within this report. All design of stormwater infrastructure including detention tanks and treatment devices has been carried out by Floth Pty.Ltd.

Other associated reference information, standards and inputs, a description of the existing site and the proposed works, discussion on the pre- and post- development catchment analysis has also been discussed within this report.

### 1.2 Site Description

The site is located at 2B-6 Hassall Street, in the City of Parramatta locality. The proposed development area is currently occupied by three allotments of land that comprises of a two-storey structure, a three-storey low residential apartment and a vacant lot in between the two lots to provide a partition. The site is approximately 62m long and 48m wide, is located between Hassall Street to the south and Station Street to the west. The project area is on a flat topography at the crest of Hassall Street.



Figure 1-1: Project Extents



### 1.3 Standards and Design reference information

The project team has consulted with City of Parramatta Council during Pre-DA stage. City of Parramatta Council require that the stormwater design is carried out in accordance with the City of Parramatta Development Control Plan (DCP) 2011, Interim Floodplain Management Plan and Stormwater Drainage Guideline.

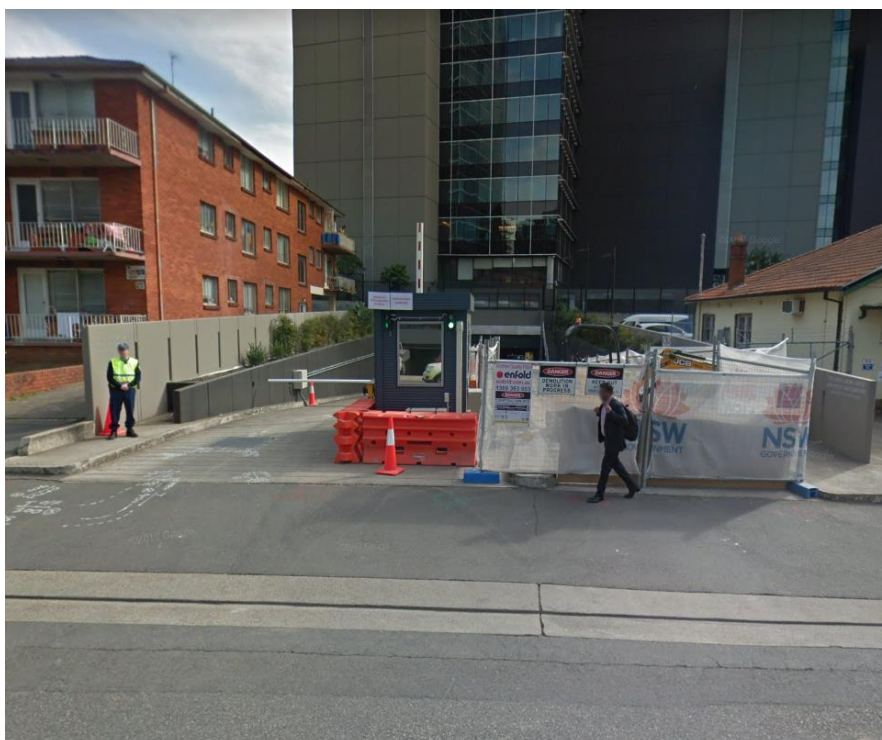
Other reports from City of Parramatta which have been reviewed in the preparation of this reports are:

- Stormwater and OSD documentation DA checklist
- Development Engineering Design Guidelines 2018
- Upper Parramatta River Catchment Trust (UPRCT) On Site Detention Handbook 2005
- Upper Parramatta River Catchment Trust (UPRCT) Calculation Sheet V9
- Stormwater Disposal Policy
- AS 3500 National Plumbing Code Part 3 – Stormwater Drainage
- Australian Rainfall and Runoff 2016
- Blue Book (Landcom 2004)

## 2.0 Flooding and Freeboard levels

Based on City of Parramatta flood maps, (Refer to Appendix D), the subject site is not located within any of the Low, Medium and High flood zones.

Consultation with council's Senior Development Engineer (Andrew Rofail) has occurred and we have been advised that freeboard is not required as the development is outside of the floodplain. This advice also appears consistent with neighbouring properties such as 10 Hassall street.



*Figure 2-1 10 Hassall Street Basement entrance, with no freeboard*

RBG have completed an upstream and local catchment review along Hassall street to assess whether any external overland flow paths may impact the development. It was found that the proposed development is located at the crest of Hassall Street and that the adjoining roads (Station Street and Charles Street) fall away from the development. Hence the project is not impacted by any significant external overland flow paths.

Based on the above RBG the design provides a minimum vehicle clearance of 225mm between kerb invert and property line. This effective freeboard consists of a 150mm kerb and a 2.5% cross fall along the pedestrian footpath.

### 3.0 Proposed Stormwater Quantity Strategy

#### 3.1 Existing Catchment Analysis

Based on the survey it is evident that the existing structures within the site are currently discharging into the kerb inlets on Hassall Street. No stormwater pits have been detected on site from the survey information provided.

#### 3.2 Proposed Stormwater Catchment Analysis

The majority of the runoff from the development is to be captured and detained by an on-site detention (OSD) system using gravity flow. This system is comprised of rainwater gutters, inlets, pipes and pits.

In accordance with Council standards, Floth has designed the OSD system to cater for all storm durations up to and including the 1% Annual Exceedance Probability (AEP).

This section aims to summarise the approach implemented within the project.

|   |                    |
|---|--------------------|
| Total Catchment area                      | 2647m <sup>2</sup> |
| Area of Site Draining to OSD              | 2456m <sup>2</sup> |
| Residual Site Area (lot Area – Roof Area) | 880m <sup>2</sup>  |
| Area Bypassing Storage                    | 191m <sup>2</sup>  |
| Area Bypassing / Residual Site Area %     | 21.7%              |

#### 3.3 Proposed On-site Detention

The proposed OSD design follows the City of Parramatta guidelines. The OSD sizing has been calculated using the “On-Site Detention Calculation Sheet for Upper Parramatta River Catchment HED Secondary Outlet” Spreadsheet, provided by the City of Parramatta.

A key set up to this design has been implementing the City of Parramatta’s recent approach to combined OSD’s and WSUD devices. That is by designing a separate chamber for the WSUD device, capable of treating and holding the flow from a 3-month storm. Refer to Appendix C for drawings by Floth.

A summary of the design is shown below.

|                     |                    |
|---------------------|--------------------|
| WSUD chamber volume | 9.58m <sup>3</sup> |
| OSD Total Volume    | 120m <sup>3</sup>  |
| Site Discharge      | 28.21L/s           |

## 4.0 Stormwater Quality Management

A proprietary water quality treatment system has been utilised to ensure that the development improves the quality of stormwater leaving the site the project. Floth has modelled the proposed treatment Train performance using the computer software "MUSIC". Refer to Appendix C for MUSIC model provided by Floth.

The projects approach to water quality urban design has been summarised below.

### 4.1 Water Quality Train Performance

The Stormwater 360 StormFilter Cartridges system has been proposed and can be installed in the detention tank. The system is effective at removing total suspended solids, total phosphorus, and total nitrogen to reach the reduction targets.

As per Council's recent approach the StormFilter Cartridges have been installed into a separate chamber within the OSD capable of treating a 3-month flow.

A summary of the performance is shown below.

| Pollutant                    | Objective Target | Design Reduction |
|------------------------------|------------------|------------------|
| Gross Pollutant (GP)         | 90%              | 95%              |
| Total Suspended Solids (TSS) | 85%              | 85%              |
| Total Phosphorus (TP)        | 60%              | 86.9%            |
| Total Nitrogen (TN)          | 45%              | 80%              |

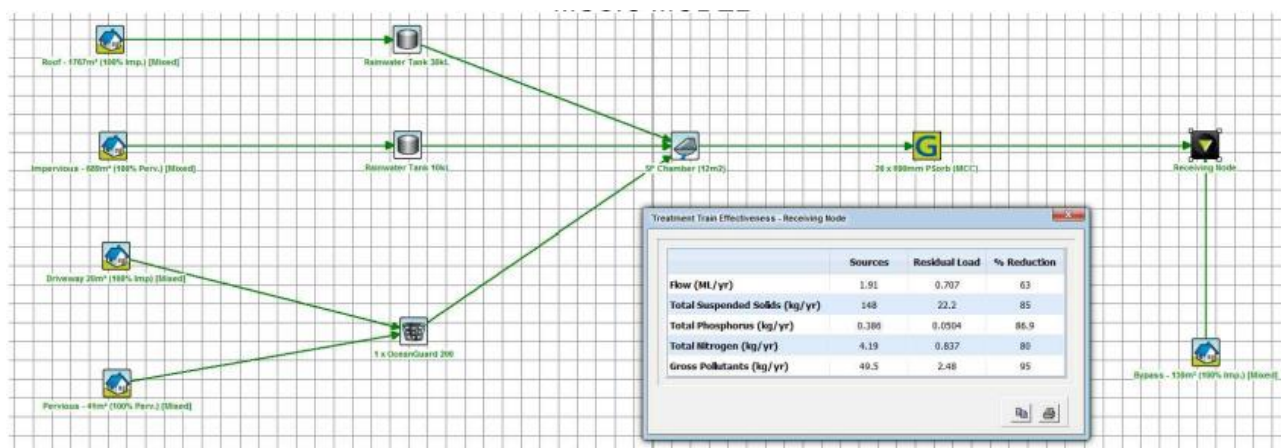


Figure 4-1 MUSIC Modelling Performance

## 5.0 Erosion and Sediment Control

To maintain the water quality during the construction stage, erosion and sediment control measures will be installed. Soil management measures shall follow the Landcom guidelines Managing Urban Stormwater Runoff: Soils and Construction ("Blue Book"), City of Parramatta DCP and Drainage Standards.

The footprint of the basement and above ground structure is such that disturbed soil will only be exposed during excavation of the basement. As such the majority of RBG's erosion and sediment control strategy takes places during the early works and preparation of the site.

RBG's proposed basement drainage strategy during construction consists of the following;

1. The basement rain and groundwater is to be stored and inspected prior to being pumped off site. This is to verify that the water is free of contamination, so its disposal should not contribute to water pollution.
2. To remove water from the work area, the pump intake should be kept as close to the surface of the pool as possible. Floating intakes should be used when the depth of water is sufficient. Care will be taken to avoid pumping from the bottom of ponds, and constant supervision is required during pumping operations to ensure this does not happen.

The following additional erosion and sediment control measure for the development are also required throughout the duration of the project to protect downstream infrastructure.

- Sediment fences around stockpiles and construction zones where soils are exposed;
- Sediment basin with sediment storage volume;
- Sediment protection devices on existing and proposed inlet pits i.e. filter socks; and
- Truck Wash/Shaker Grid at all site access/egress points.

Refer to drawing C-1-00 in Appendix B for further information.



# **Appendix A**

## **City of Parramatta Council Stormwater and OSD documentation DA checklist.**

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## STORMWATER & OSD DOCUMENTATION DA CHECKLIST

Disclaimer: The information provided by you on this form will be used by Parramatta City Council or its agents to process this application. Once collected by Council, the information can be accessed by you in accordance with Council's Access to Information Policy and Privacy Management Plan or in special circumstances, where Commonwealth legislation requires or where you give permission for third party access.

- The purpose of this form is to confirm that your stormwater design and OSD drawings (where necessary) have been prepared in line with Council requirements.
- It will ensure that quality submissions are lodged with necessary and correct information to prevent delay of the assessment of the development application
- A correctly completed form is required to enable lodgement of your DA/s96.
- It is essential that the Design Engineer carefully reads this checklist as any inaccurate or incomplete checklists will prevent the lodgement of your application.
- N/A shall be indicated adjacent to any details or information that are not relevant.

### PROPERTY DETAILS

#### 1. Property Details

Unit No: 2, 4, 6

House No: 2b - 6

Address

Street: HASSALL STREET

Suburb: PARRAMATTA

Postcode: 2150

Lot/DP/SP etc

Lot: 22, 62, 7

DP/SP etc: DP608861, DP100 6215  
DP 128820

DA Number: (office use only)

### TYPE OF DEVELOPMENT

#### MINOR DEVELOPMENTS NO OSD

May include single and secondary dwellings, alterations and additions with No OSD.



PAGE 2

#### MAJOR DEVELOPMENTS with OSD

May include duplexes, townhouses, residential flat buildings, commercial premises, major developments.



PAGE 3 - 7



## STORMWATER & OSD DOCUMENTATION DA CHECKLIST

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### Minor Developments - No OSD

### Stormwater Drainer/ Plumber (or Engineer's) Details & Declaration

This form is to be completed by a Licensed Drainer/Plumber (or a Registered Stormwater Engineer).

#### Company Details

Company & ABN:

#### Engineering Details:

Registered Engineer Reference (NPER) if held:

Licence no & ABN:

Family Name:

Full Given Name(s):

Postal Address

Suburb:

Postcode:

Contact Details

Office phone:

Mobile:

Fax:

Email:

#### I confirm that:

- A true diagram or drawing of the stormwater system is attached.
- I am the Licensed Stormwater Drainer /Plumber (or Engineer) responsible for designing the stormwater system associated with this development proposal AND
- I certify that this proposal will meet accepted standards of good stormwater practice, Council and Australian Standards and will not cause nuisance or adversely affect this or other properties, AND
- There is no Council drainage line within or adjacent to this property, AND
- in my opinion, the existing stormwater drainage system is adequate to receive the stormwater from this new development OR I have proposed a new stormwater drainage system which will be adequate for the total site drainage needs from the existing and new development.

Stormwater Drainer / Plumber or Engineer's Signature:

date:



## STORMWATER & OSD DOCUMENTATION DA CHECKLIST

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### Major Developments - OSD required

This portion of the form is to be completed by a registered and practising stormwater engineer.

### Registered Stormwater Design Engineer's Details

Company & ABN: 67 010 580 248

Registered Stormwater Design Engineer Reference (NPER): 4155 632

Is the Engineer accredited to carry out Design of Stormwater & OSD Systems: ☒ Y ☐ N

Full Given Name(s): COLIN DAVID ROPE

Suburb: BELROSE

Postcode: NSW

Office phone: +61(0)2 82463200

Mobile: 0437 008 375

### Registered Stormwater Design Engineer's Checklist

|    | ITEMS  | Yes<br>(✓) | No<br>N/A<br>(✓)    |
|----|--|------------|---------------------|
| 1. | <b>Registered Stormwater Design Engineer</b><br><br>Name, Signature, and Registration of the <b>Stormwater Design Engineer</b> are clearly indicated on the submitted design documentation.  | ✓          |                     |
| 2. | <b>Flood Prone Land</b><br><br>The site is (wholly or partly) <b>affected by flood</b> as indicated on a current s149 planning certificate <b>AND:</b><br><br>Flood Level information has been obtained from Council by completing a <b>Flood Enquiry Application form</b> . This is attached.<br><br>20 year and 100 year ARI flood inundation extent line and levels (to m AHD) are clearly indicated on submitted Plan No. ....<br><br><b>AND/OR:</b><br><br>There is a <b>Council stormwater</b> pipe, channel or watercourse <b>traversing the site</b> or within close proximity to the site <b>AND</b> an upstream catchment Overland Flow Assessment Report is attached for a 1 in 20 and 1 in 100 year ARI storm event flow running through site (including hydrological and hydraulic calculations).<br>This information is attached as <b>Attachment - B</b><br>Overland flow paths within the site are identified on Plan No. .... | ✓<br><br>✓ | ✓<br><br>✓<br><br>✓ |







## STORMWATER & OSD DOCUMENTATION DA CHECKLIST

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|    |   |   |                  |
|----|---|---|------------------|
| 9. | <p><b>OSD Design (continued)</b></p> <p>The remaining percentage of the total site area not drained to the roofwater and OSD systems is <u>7.2</u>% (to be not more than 15%).</p> <p>This is <u>not</u> a 'drowned outlet'.</p> <p>Because the designed <b>discharge flow rate</b> is greater than 30l/s, a connection to the nearest Council stormwater pit has been shown with associated levels.</p> <p>Overland flow from adjacent properties has been intercepted and disposed separately without discharging into any proposed OSD system.</p> | ✓ | ✓<br>✓<br>✓<br>✓ |
|----|---|---|------------------|

### Registered Stormwater Design Engineer's Declaration

I confirm that, as the Registered Stormwater Design Engineer responsible for designing the stormwater system associated with this development proposal, that I have done so with a full understanding of the relevant Council requirements and have read, understood and completed this checklist accurately.

Registered Stormwater Design Engineer's Signature:



date:

03/04/2019

### Council Development Engineer's Notes

Development Engineer Name:

Signature:

date:

## STORMWATER & OSD DOCUMENTATION DA CHECKLIST

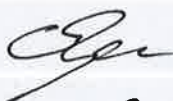
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### PART 4 - Applicant Declaration

#### 6. Declaration

**I confirm that as the design engineer/project designer responsible for designing the stormwater system associated with this development proposal that I have done so with a full understanding of the relevant Council requirements and have read, understood and completed this checklist accurately.**

Engineer's signature



date: 03/04/2019

Engineer's name

C ROPE

### PART 5 - Council's Officers Sign-off

#### 7. Declaration

Council Officers signature

date:

Council Officers name



You can log onto [www.parracity.nsw.gov.au/development](http://www.parracity.nsw.gov.au/development) to track the progress of any application lodged after 30 June 2005. The information you supply on this form and any related documentation will be publicly available on this Council website.

Parramatta City Council  
30 Darcy Street, Parramatta 2150  
PO Box 32, Parramatta 2124

DX 8279 Parramatta  
phone: 9806 5524  
fax: 9806 5917

# **Appendix B**

## **Civil Engineering Drawings**





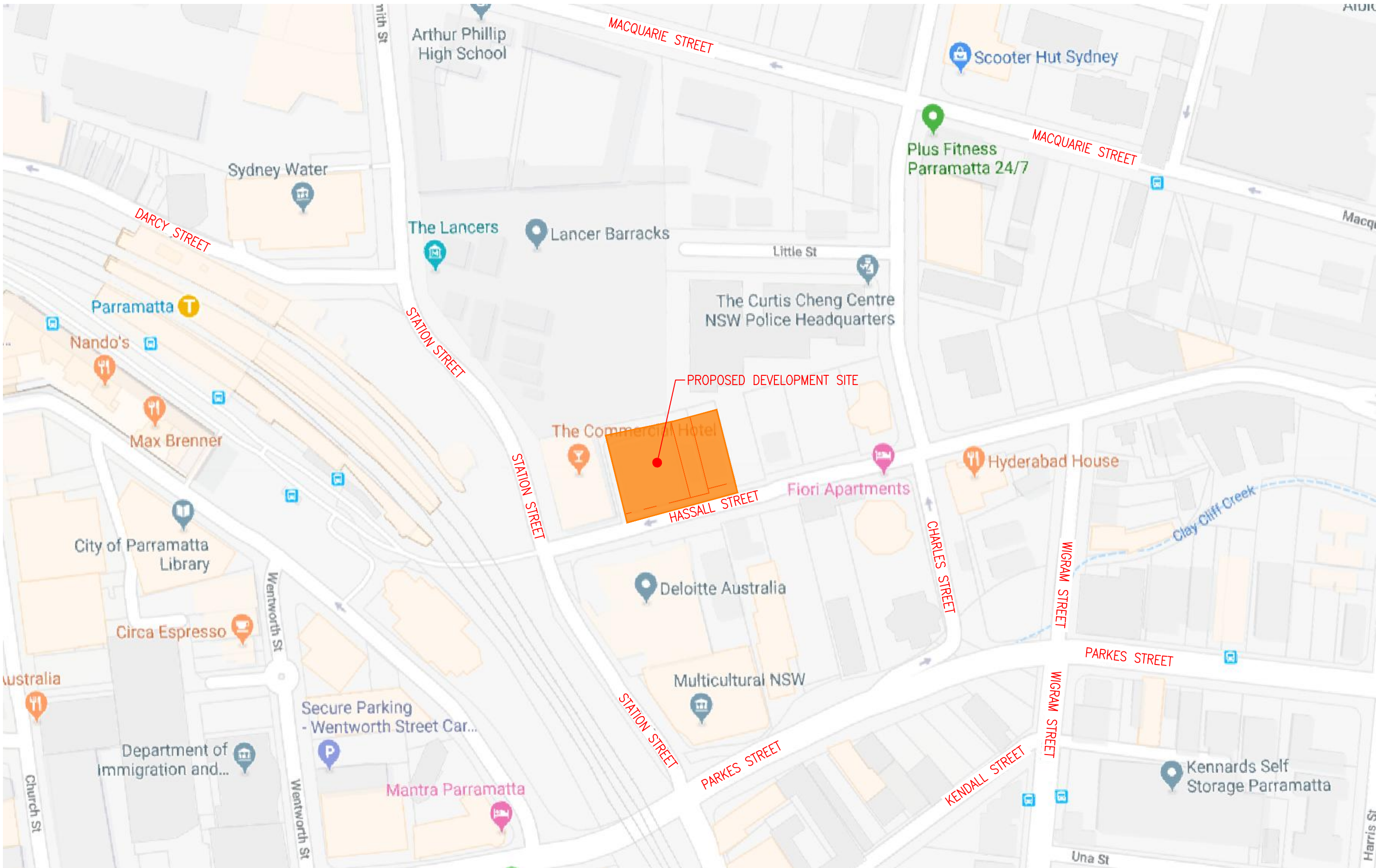
2B-6 HASSAL ST MAIN WORKS

PARRAMATTA, NSW 2150

CIVIL ENGINEERING DRAWINGS

ISSUED FOR DEVELOPMENT APPLICATION

| Sheet List Table |   |
|------------------|---|
| Sheet Number     | Sheet Title                               |
| C-0-00           | COVER SHEET, LOCATION MAP AND SHEET INDEX |
| C-0-01           | GENERAL NOTES                             |
| C-1-00           | EROSION AND SEDIMENT CONTROL              |
| C-1-10           | EROSION AND SEDIMENT CONTROL DETAILS      |
| C-2-01           | BULK EARTHWORKS PLAN                      |
| C-2-10           | BULK EARTHWORKS SECTIONS                  |
| C-3-00           | GENERAL ARRANGEMENT PLAN                  |
| C-3-10           | CIVIL DETAILS                             |
| C-4-10           | PAVEMENT DETAILS                          |
| C-6-50           | STORMWATER PRE CATCHMENT ANALYSIS         |
| C-6-51           | STORMWATER POST CATCHMENT ANALYSIS        |



LOCALITY MAP  
SCALE NTS

| Rev | Revision | Description                        | By | App | Date     |
|-----|----------|------------------------------------|----|-----|----------|
| 1   |          | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 04.03.19 |


| Rev | Revision | Description | By | App | Date |
|-----|----------|-------------|----|-----|------|
|     |          |             |    |     |      |

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DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS  
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

Structural, Civil & Construction  
Engineering Consultant

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ACN 010 580 248

Client

**Charter Hall**

Title

**COVER SHEET, LOCATION MAP AND SHEET INDEX**

Project

**2B-6 HASSALL STREET  
PARRAMATTA**

Scale of A1  
AS SHOWN  
Date  
04.03.19

Drawn  
S.MANANDHAR  
Designer  
Z.JONES

Design Checker  
Approved  
C.ROPE  
Job Number  
18570C

**NOT FOR CONSTRUCTION**

Drawing Number  
**C-0-00**

Revision  
**1**



GENERAL NOTES

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING DRAWINGS AND CITY OF PARRAMATTA COUNCIL AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.
2. THESE ENGINEERING PLANS ARE TO BE READ IN CONJUNCTION WITH PROJECT SPECIFICATIONS AND OTHER CONSULTANTS DOCUMENTATION ON THE PROJECT.
3. THESE ENGINEERING PLANS HAVE BEEN PREPARED FROM INFORMATION AVAILABLE AT THE TIME OF ISSUE. AS THIS INFORMATION MAY BE THE SUBJECT OF CHANGE PRIOR TO OR DURING CONSTRUCTION THE CONTRACTOR IS TO ADVISE THE ENGINEER WHERE DISCREPANCIES OCCUR.
4. THESE DRAWINGS SHALL NOT BE USED FOR FINAL SETOUT OF THE PROJECT UNLESS SPECIFICALLY STATED.
5. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH PARRAMATTA CITY COUNCIL STANDARDS, GUIDELINES AND TECHNICAL MANUALS.
6. ALL WORKS SHALL HAVE SMOOTH JUNCTIONS WITH EXISTING.
7. ALL SURFACES SHALL BE EVEN GRADED AT MINIMUM 1% TO PREVENT SURFACE WATER PONDING.
8. WHERE CERTIFICATION IS REQUIRED, INSPECTIONS ARE TO BE PERFORMED BY A DULY APPOINTED INSPECTOR FROM 'ROBERT BIRD GROUP'. THESE INSPECTIONS ARE TO BE PERFORMED IN ACCORDANCE WITH THE INSPECTION & TEST PLANS PREPARED BY 'ROBERT BIRD GROUP.' THE INSPECTOR IS TO BE GIVEN A MINIMUM NOTICE AS DETAILED IN THE SPECIFICATIONS.
9. ALL MATERIALS SHALL COMPLY WITH WHAT IS SHOWN ON THE PROJECT DRAWINGS AND IN THE PROJECT SPECIFICATIONS.
10. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING SERVICES WITH ALL RELEVANT SERVICE AUTHORITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. A COPY OF THE LOCATIONS OF THE EXISTING SERVICES IS TO BE PROVIDED TO THE MANAGING CONTRACTOR BY THE SERVICES ENGINEER. CONTRACTOR TO NOTIFY MANAGING CONTRACTOR OF ANY POTENTIAL CLASHES.
11. THE CONTRACTOR SHALL VERIFY OFFSET PEGS AND BENCHMARK LEVELS, AND ADVISE THE MANAGING CONTRACTOR OF ANY DISCREPANCY PRIOR TO COMMENCING CONSTRUCTION.
12. THE CONTRACTOR SHALL VERIFY THE EXISTING LEVELS WHERE NEW WORKS ARE TO JOIN TO EXISTING WORKS, AND ADVISE THE MANAGING CONTRACTOR OF ANY DISCREPANCY PRIOR TO COMMENCING CONSTRUCTION.
13. THE CONTRACTOR SHALL CHECK OR OBTAIN ALL DIMENSIONS RELEVANT TO SETTING OUT OF SITE WORKS.
14. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STABILITY OF THE WORKS AND ENSURE NO PART IS OVERSTRESSED. THE DESIGN AND CERTIFICATION OF ALL FORMWORK AND BACKPROPPING IS TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
15. THE CONTRACTOR IS TO OBTAIN DESIGN ADVICE FROM A SUITABLY QUALIFIED ENGINEER REGARDING DEMOLITION, RETROFITTING, TEMPORARY WORKS, HEALTH & SAFETY AND NUISANCE. THIS HAS BEEN REFERRED TO AS THE "CONTRACTORS ENGINEER" THROUGHOUT THE REMAINING NOTES.
16. FORMWORK STRIPPING: UNLESS SPECIFIED OTHERWISE IN THE PROJECT DOCUMENTATION, MINIMUM STRIPPING TIMES FOR IN-SITU CONCRETE FORMWORK SHALL COMPLY WITH SECTION 5.4.3 (TABLE 5.4.1) OF AS3610-"FORMWORK FOR CONCRETE".
17. WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT AUSTRALIAN STANDARDS AND BCA STATUTORY REQUIREMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT SUFFICIENT TOLERANCES ARE PROVIDED AND INTEGRATED THROUGHOUT ALL ELEMENTS OF THE WORKS.
19. ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.
20. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (A.H.D.).
21. DESIGN LEVELS AND SETOUT DETAILED HEREIN ARE DERIVED SURVEY, LANDSCAPE AND ARCHITECTURAL PLANS. CONTRACTOR SHALL CONFIRM LEVELS ARE COORDINATED PRIOR TO COMMENCING WORKS. EXISTING LEVELS ARE DERIVED FROM SURVEY DATA. CONTRACTOR TO CONFIRM ALL ON SITE PRIOR TO COMMENCING WORKS.

HEALTH & SAFETY

1. THE CONTRACTOR SHALL DEVELOP, IMPLEMENT AND ADMINISTER A WORKPLACE HEALTH AND SAFETY PROGRAM THAT WILL ENSURE THAT ALL CONSTRUCTION ACTIVITIES ARE PERFORMED TO THE RELEVANT WORKPLACE HEALTH AND SAFETY REQUIREMENTS AND ANY OTHER RELEVANT STATUTORY REQUIREMENTS.
2. THE WORKPLACE HEALTH AND SAFETY PROGRAM MUST BE CO-ORDINATED WITH ADJOINING PROPERTY OWNERS AND ALL RELEVANT PARTIES AS NECESSARY TO ENSURE A SAFE BUILDING ENVIRONMENT AT ALL TIMES.

NUISANCE

1. THE CONTRACTOR SHALL DEVELOP, IMPLEMENT, AND ADMINISTER A PLAN THAT WILL ENSURE THE MANAGEMENT OF NOISE AND VIBRATION RESULTING FROM CONSTRUCTION WORKS. REFER TO SPECIFICATIONS FOR REQUIRED LIMITS, OTHERWISE, CONTACT ENGINEER FOR GUIDANCE.
2. THE CONTRACTOR WILL NEED TO ENSURE ALL ADJOINING PROPERTY REQUIREMENTS RELATING TO NOISE AND VIBRATION ARE MET.
3. IF IT IS ESTABLISHED THAT THERE ARE NO SITE SPECIFIC REQUIREMENTS, THEN THE CONTRACTOR SHALL REFER TO MINIMUM REQUIREMENTS FOR ABATEMENT OF NOISE AND VIBRATION NOMINATED BY RELEVANT STATUTORY REQUIREMENTS
4. THE CONTRACTOR WILL NEED TO PREPARE AND ADVISE ON MONITORING AND MANAGEMENT OF NOISE AND VIBRATION BASED ON PROFESSIONAL ADVICE FROM SUITABLY QUALIFIED PERSON OR PERSONS.

SURVEY NOTES

1. THE SURVEY INFORMATION SHOWN ON ROBERT BIRD GROUP DRAWINGS HAS BEEN OVERLaid FROM INFORMATION PROVIDED IN THE DETAILED SURVEY BY USHER & COMPANY, SURVEYING AND LAND DEVELOPMENT CONSULTANTS FILE REF: 6083-DET ISSUE 3, DATED 25.09.2018. ROBERT BIRD GROUP DOES NOT GUARANTEE THAT THE SURVEY INFORMATION IS ACCURATE, AND ACCEPTS NO LIABILITY FOR INACCURACIES.

SEDIMENT AND EROSION CONTROL NOTES

1. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PROVIDED IN ACCORDANCE WITH SPECIFICATION AND EPA "MANAGING URBAN STORMWATER CONSTRUCTION ACTIVITIES" 1998. ALL WORKS SHALL BE COMPLETED PRIOR TO CONSTRUCTION COMMENCING.
2. REFER TO ROBERT BIRD GROUP'S DRAWING SHEETS C-1-00 AND C-1-10 FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.

EARTHWORKS NOTES

1. REFER TO THE GEOTECHNICAL ENGINEERING REPORT.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL, COMPACTION AND DISPOSAL OF ALL EXCAVATED MATERIAL.
3. ALL EARTHWORKS AREAS ARE TO BE LEFT IN A FREE DRAINING STATE.

4. PROOF ROLL SUBGRADE TO REVEAL SOFT SPOTS. SOFT SPOTS TO BE REMOVED AND BACKFILLED. ALL NATURAL SUBGRADE IS TO BE COMPACTED TO IN ACCORDANCE WITH AS1289 PRIOR TO PLACEMENT OF FILL MATERIAL.
5. MATERIAL WON FROM THE SITE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER FOR APPROVAL PRIOR TO USE AS FILL. ALL FILL TO BE COMPACTED TO MIN. 98% STANDARD COMPACTION IN 200mm MAXIMUM THICK LAYERS IN ACCORDANCE WITH AS1289.
6. TEST CERTIFICATES ON THE FILL MATERIAL SHALL BE SUPPLIED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO THE USE OF THE FILL MATERIAL.

TEMPORARY WORKS

1. THE CONTRACTOR SHALL ALLOW FOR THE DESIGN, SUPPLY, INSTALLATION AND REMOVAL OF ALL TEMPORARY BACK PROPPING, SAFETY SCREENS, SCAFFOLDING AND OTHER REQUIREMENTS OF THE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL ENGAGE SUITABLY QUALIFIED ENGINEER REFERRED TO AS "CONTRACTORS ENGINEER". TO DESIGN INSPECT AND CERTIFY ALL TEMPORARY WORKS, AND DEMOLITION WORKS.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE OVERALL STABILITY OF THE STRUCTURES WHILST UNDER CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ADVICE FROM THE CONTRACTORS ENGINEER.

CONCRETE NOTES

GENERAL

1. CONCRETE WORK SHALL BE IN ACCORDANCE WITH AS3600 AND WITH THE PROJECT SPECIFICATIONS.
2. CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN ON SUPERINTENDENT DRAWINGS OR SPECIFICALLY APPROVED BY SUPERINTENDENT.
3. ALL THICKNESSES SHOWN ARE MINIMUM STRUCTURAL REQUIREMENTS, NO REDUCTION IN THICKNESS DUE TO FALLS OR TOPPING IS PERMITTED.
4. UNLESS A GROOVE LINE ALLOWANCE HAS BEEN NOTED ON THE DRAWINGS, NO GROOVE LINES ARE PERMITTED, EXCEPT AT SLAB LINES. ALL GROOVE LINES ARE TO BE SUBMITTED TO 'ROBERT BIRD GROUP' FOR APPROVAL.
5. THE FACE OF ALL CONCRETE AGAINST WHICH NEW CONCRETE IS TO BE CAST IS TO BE THOROUGHLY MECHANICALLY SCABBLED, FULLY EXPOSING THE AGGREGATE MATRIX.

CONCRETE

1. THE CHARACTERISTIC COMPRESSIVE STRENGTH (f'c) AT 28 DAYS OF IN PLACE CONCRETE SHALL BE AS NOTED IN THE SPECIFICATION OR OTHERWISE NOTED ON THE DRAWINGS
2. MAXIMUM AGGREGATE SIZE.....20mm
3. SLUMP.....80mm
4. ALL CONCRETE SHALL BE VIBRATED.
5. ALL CONCRETE SHALL BE CURED IN ACCORDANCE WITH THE SPECIFICATION
6. ALL CONCRETE SHALL BE SAMPLED AND TESTED IN ACCORDANCE WITH AS1012 AND THE PROJECT SPECIFICATION.
7. ALL FORM WORK SHALL COMPLY WITH AS3610
8. REFER STRUCTURAL ENGINEER'S SPECIFICATIONS FOR CONCRETE REQUIREMENTS.

REINFORCEMENT

1. REINFORCEMENT IS TO BE MANUFACTURED IN ACCORDANCE WITH AS4671 AND SHALL BE FIXED AS SHOWN ON DRAWINGS.
2. MATERIAL IS INDICATED BY THE FOLLOWING SYMBOLS:-

Y

N

R

W

SL

RL

DEFORMED BAR GRADE 400

DEFORMED BAR GRADE 500 (NORMAL DUCTILITY)

PLAIN ROUND BAR GRADE 250

PLAIN WIRE GRADE 450

SQUARE FABRIC GRADE 500

RECTANGULAR FABRIC GRADE 500
3. THE BAR SIZE IS INDICATED BY A NUMBER AFTER THE SYMBOL, WHICH INDICATES THE BAR DIAMETER IN MILLIMETRES.
4. REINFORCEMENT SPACING NOMINATED ON DRAWINGS IS TO ASSIST SCHEDULER AND STEEL FIXER TO ASSESS TOTAL NUMBER OF BARS REQUIRED. WHERE BARS PLACED IN ACCORDANCE WITH SPACING NOMINATED FOUL WITH OTHER STRUCTURAL REQUIREMENTS, PREFERENCE IS TO BE GIVEN TO RELOCATING BARS BY LOCALLY ADJUSTING SPACING TO ENABLE ASSEMBLY OF REINFORCEMENT TO BE COMPLETED. ENGINEER IS TO BE CONTACTED IN THE EVENT THAT REINFORCEMENT IS NEEDED TO BE CUT ON SITE PRIOR TO CONTINUING.
5. LAP LENGTHS TO REINFORCEMENT BARS TO BE AS NOTED ON THE RELEVANT DRAWINGS.
6. WELDING OF REINFORCEMENT BARS IS NOT PERMITTED UNLESS APPROVED.

CONCRETE NOTES CONTINUED

REINFORCEMENT CONTINUED

7. COVER SHALL BE AS NOTED ON THE RELEVANT DRAWINGS.
8. CONCRETE COVERS NOTED ARE MEASURED FROM THE FORM WORK OR GROUND FACE TO THE OUTERMOST REINFORCEMENT COMPONENT. i.e.. IN COLUMNS AND BEAMS TO THE OUTSIDE OF TIES OR LIGATURES.
9. COVER TO BE MAINTAINED DURING POURING BY THE USE OF PLASTIC CHAIRS OR PLASTIC TIPPED METAL CHAIRS.
10. WHERE NO REINFORCEMENT IS SHOWN ON THE DRAWING AT RIGHT ANGLES TO THE MAIN REINFORCEMENT DISTRIBUTION REINFORCEMENT IS TO BE PROVIDED.
11. BENDING & STRAIGHTENING

COLD BENDING:

HOT BENDING:

STRAIGHTENING:

BARS CANNOT BE COLD BENT WITHOUT PRIOR APPROVAL FROM THE PROJECT STRUCTURAL ENGINEER. CORRECT MINIMUM DIAMETER FORMERS ARE TO BE USED IN ACCORDANCE WITH AS3600.

HOT BENDING MAY ONLY BE CONDUCTED WITH THE APPROVAL OF THE PROJECT STRUCTURAL ENGINEER. HOT BENDING CAN ONLY BE PERFORMED BY A CERTIFIED WELDER. TEST CERTIFICATE OF AFFECTED AREA TO BE OBTAINED.

WHEN RE-STRAIGHTENING PARTIALLY EMBEDDED BARS, DO NOT BEND OVER FORMERS OF SMALLER DIAMETER THAN PERMITTED IN AS 3600. DO NOT SUBJECT REINFORCEMENT BARS TO IMPACT IN ORDER TO STRAIGHTEN.

SLAB ON GROUND NOTES

1. SLAB ON GROUND TO BE POURED ON A LAYER OF POLYETHYLENE SHEETING 200µm THICK ON TOP OF 50mm OF BEDDING SAND. JOINTS TO BE TAPED
2. FABRIC TO BE PLACED ON CHAIRS AT 800 x 800 CENTRES AND CHAIRS TO BE PLACED ON STEEL PANS.
3. LAP FABRIC REINFORCEMENT THUS:

LAP

2 CROSS WIRES

LAP

2 CROSS WIRES
4. WHERE BEDDING SAND IS REQUIRED UNDER SLAB, THIS SHALL BE COMPACTED SUFFICIENTLY TO SUPPORT REINFORCEMENT PLUS 100kg/CHAIR WITHOUT VERTICAL DISPLACEMENT EXCEEDING 5mm.

ROADS AND PAVEMENT NOTES

GENERAL

1. PAVEMENT SHALL BE BOXED OUT TO THE DEPTHS AS SHOWN ON THE PAVEMENT DRAWINGS, AND SUBGRADE TESTING IS TO BE UNDERTAKEN. SUBGRADE TESTING RESULTS ARE TO BE FORWARDED TO THE ENGINEER (ROBERT BIRD GROUP) FOR DETERMINATION OF FINAL PAVEMENT DEPTH. PAVEMENT CONSTRUCTION IS TO HOLD UNTIL FINAL PAVEMENT DEPTH HAS BEEN DETERMINED BY THE ENGINEER, AND APPROVED BY THE RELEVANT AUTHORITY.

PREPARATION OF SELECT SUBGRADE LAYERED

2. THE SELECT SUBGRADE LAYER IS DEFINED AS THE UPPER 300MM OF THE FORMATION UPON WHICH THE ROAD PAVEMENT IS TO BE CONSTRUCTED. THE UPPER SURFACE OF THE SUBGRADE LAYER IS DEFINED AS THE DESIGN SUBGRADE LEVEL.
3. THE SELECT SUBGRADE LAYER SHALL BE FREE FROM ALL POCKETS OF SOFT COMPRESSIBLE MATERIAL, FREE FROM STONE WITH A MAXIMUM DIMENSION LARGER THAN 50MM, AND HAVE A MINIMUM SOAKED CBR AS SPECIFIED ON DRAWINGS.
4. ANY UNSUITABLE LAYER SHALL BE COMPACTED TO A FIELD DRY DENSITY OF NOT LESS THAN 100% AS DETERMINED IN ACCORDANCE WITH RTA TEST METHOD T111 – STANDARD COMPACTION (FOR A COHESIVE SOIL) OR A MINIMUM DENSITY INDEX OF 80% WHEN TESTED IN ACCORDANCE WITH AS.1289.5.6.1 (FOR A COHESIVE LESS SOIL)
5. TESTS FOR COMPACTION OF SELECTED SUBGRADE LAYER SHALL BE CARRIED OUT BY THE CONTRACTOR AT LOCATION APPROVED BY THE SUPERINTENDENT AT A RATE AS SPECIFIED.

PLACEMENT OF PAVEMENT MATERIALS

1. THE PAVEMENT SHALL BE CONSTRUCTED TO THE THICKNESS AS SHOWN ON THE DRAWINGS. PAVEMENT COURSES LESS THAN 150mm IN COMPACTED THICKNESS SHALL BE SPREAD AND COMPACTED IN TWO OR MORE LAYERS OF NOT LESS THAN 75MM OR MORE THAN 150MM IN COMPACTED THICKNESS.
2. SPREADING SHALL BE UNDERTAKEN BY A METHOD THAT WILL ENSURE THAT SEGREGATION DOES NOT OCCUR.
3. MIXING OR BLENDING OF PAVEMENT MATERIALS WILL NOT BE ALLOWED ON THE ROAD FORMATION. PAVEMENT MATERIAL SHALL NOT BE SPREAD ON A WATERLOGGED SUBGRADE NOR BROKEN ON THE SUBGRADE. WHEN SPREADING AND/OR MIXING PAVEMENT MATERIAL, CARE SHALL BE TAKEN TO ENSURE THAT THE SUBGRADE SHALL NOT BE DISTURBED, BECOME RUTTED OR MIXED WITH THE PAVEMENT MATERIALS.
4. IF, AT ANY TIME ANY PART OF SUBGRADE AND PAVEMENT MATERIALS BECOME MIXED, THE CONTRACTOR SHALL, AT ITS COST, REMOVE THE MIXTURE AND RESHAPE THE SUBGRADE WITH APPROVED MATERIAL COMPACTED UNIFORMLY WITH THE SURROUNDING SURFACE.
5. WHEN EACH LAYER OF PAVEMENT MATERIAL HAS BEEN SPREAD, WATERING SHALL BE CARRIED OUT AS NECESSARY TO MAINTAIN THE MATERIAL AT A MOISTURE CONTENT DURING ROLLING AS CLOSE TO BUT NOT EXCEEDING ITS OPTIMUM MOISTURE CONTENT.
6. WHERE THE MOISTURE CONTENT OF PAVEMENT MATERIAL IS INSUFFICIENT, WATER SHALL BE ADDED BY APPROVED WATERING EQUIPMENT AND SHALL BE MIXED UNIFORMLY WITH THE MATERIAL BY AN APPROVED MECHANICAL DEVICE.
7. WHERE THERE IS EXCESS MOISTURE IN THE PAVEMENT MATERIAL, IT SHALL BE DRIED TO THE REQUIRED MOISTURE CONTENT BY LOOSENING AND AERATING.

COMPACTION OF PAVEMENT MATERIALS

1. AS EACH LAYER IS BROUGHT TO IT OPTIMUM MOISTURE CONTENT, IT SHALL BE IMMEDIATELY COMPACTED BY ROLLING.
2. COMPACTION SHALL BE CARRIED OUT USING APPROVED EQUIPMENT OF ADEQUATE CAPACITY TO ACHIEVE THE DEGREE OF COMPACTION SPECIFIED.
3. ANY DEFICIENCIES MADE BY THE SINKING OF THE COMPACTOR WHEN COMPACTING MATERIAL SHALL AT ONCE BE MADE GOOD BY SCARIFYING THE SURFACE AND ADDING ADDITIONAL MATERIAL AT THE CONTRACTOR 'S EXPENSE.
4. ON THE SECTION OF PAVEMENT HAVING A ONE-WAY CROSS FALL, COMPACTION SHALL COMMENCE AT THE LOWER EDGE OF THE BASE AND PROGRESS UPWARDS TO THE HIGHER EDGE.
5. ON CROWNED SECTION OF PAVEMENT, COMPACTION SHALL COMMENCE AT THE OUTER EDGES OF THE BASE AND PROGRESS INWARDS TOWARDS THE CROWN.
6. EACH PASS OF THE COMPACTION PLANT SHALL BE PARALLEL TO THE CENTRE LINE OF THE PAVEMENT. THE METHOD OF COMPACTION SHALL ALLOW FOR PROGRESSIVE AND UNIFORM OVERLAP BETWEEN PASSES.
7. IF NON-VIBRATING SMOOTH-WHEELED ROLLERS ARE USED AS COMPACTION PLANT, THEY SHALL BE OPERATED WITH THE DRIVING ROLLERS FACING THE UNCOMPACTED MATERIAL DURING THE INITIAL PASS.
8. IF VIBRATING ROLLERS ARE USED AS COMPACTION PLANT, THE VIBRATOR SHALL NOT BE ACTIVATED UNTIL A MINIMUM OF TWO "STATIC" PASSES HAVE BEEN MADE. IN ADDITION, THE VIBRATORS SHALL NOT BE ACTIVATED DURING ANY CHANGE IN DIRECTION OF THE ROLLER.
9. COMPACTION PLANT AND OTHER ANCILLARY PLANT SHALL NOT BE ALLOWED TO REMAIN STANDING ON THE COMPACTED PAVEMENT WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
10. TRAFFIC SHALL NOT BE ALLOWED ON ANY COMPACTED LAYER WITHOUT APPROVAL OF THE SUPERINTENDENT. EACH LAYER IN A MULTI-LAYERED COURSE SHALL BE FULLY COMPACTED IN SEQUENCE. THE SURFACE OF THE COMPACTED LAYER SHALL BE KEPT SUFFICIENTLY MOIST TO MAINTAIN THE REQUIRED FIELD MOISTURE CONTENT THROUGHOUT THE FULL DEPTH OF THE LAYER PRIOR TO PLACEMENT OF SUBSEQUENT LAYERS OR TO THE APPLICATION OF THE SURFACE PRIMER, AS APPLICABLE.
11. COMPACTION SHALL CONTINUE UNTIL THE MATERIAL DOES NOT CREEP OR WAVE AHEAD OF THE ROLLER, UNTIL THE SURFACE PRESENTS A SMOOTH UNIFORM APPEARANCE AND UNTIL THE MATERIAL HAS BEEN LEVELED AND COMPACTED TO THE REQUIREMENTS AND TOLERANCES SPECIFIED ELSEWHERE HEREIN.
12. TESTS FOR COMPACTION OF ROAD PAVEMENT MATERIALS SHALL BE CARRIED OUT BY THE CONTRACTOR AT LOCATIONS APPROVED BY THE SUPERINTENDENT AT A RATE AS SPECIFIED.

STORMWATER DRAINAGE NOTES

1. THESE NOTES SHALL BE READ IN CONJUNCTION WITH:

A. GENERAL NOTES AND DISCLAIMERS FOR THE PROJECT

B. ROADWORKS NOTES FOR THE PROJECT

C. SPECIFICATIONS FOR THE PROJECT.
2. STORMWATER PIPES 375NB AND GREATER SHALL BE RCP R/RJ, U.N.O. CLASSES AS NOTED ON THE DRAWINGS. FRC PERMITTED.
3. STORMWATER DRAINAGE PIPES LESS THAN OR EQUAL TO 900mm DIAMETER SHALL BE SPIGOT AND SOCKET AND RUBBER RING JOINTED.
4. OUTLET LOCATIONS ARE TO BE CONFIRMED ON SITE BY THE MANAGING CONTRACTOR PRIOR TO THE COMMENCEMENT OF STORMWATER DRAINAGE CONSTRUCTION.
5. ALL PROPOSED STORMWATER WORKS DESIGNED IN ACCORDANCE WITH

A. AUSTRALIAN RAINFALL AND RUNOFF (1987 EDITION) VOLUMES 1 AND 2.

B. AS 3500 NATIONAL PLUMBING CODE PART 3 – STORMWATER DRAINAGE.

C. PARRAMATTA CITY COUNCIL'S PUBLIC DOMAIN GUIDELINES.

SERVICE NOTES

1. ALL EXISTING SERVICES LIDS THAT ARE TO REMAIN ARE TO BE RECONSTRUCTED TO MATCH PROPOSED LEVELS AND ALIGNED TO PARRAMATTA CITY COUNCIL STANDARDS.

LANDSCAPING NOTES

1. REFER TO ASPECT LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPING DETAILS.

HYDRAULICS NOTES

1. REFER TO HYDRAULIC ENGINEERS DRAWINGS FOR SEWER, WATER AND INTERNAL SITE STORMWATER DRAINAGE WORKS

| Rev | Revision | Description                        | By | App | Date     |
|-----|----------|------------------------------------|----|-----|----------|
| 1   |          | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 04.03.19 |

| Rev | Revision | Description | By | App | Date |
|-----|----------|-------------|----|-----|------|
|     |          |             |    |     |      |

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Client

Charter Hall

Title

GENERAL NOTES

Project

2B-6 HASSALL STREET  
PARRAMATTA

Scale of A1  
AS SHOWN  
Date  
04.03.19

Drawn  
S.MANANDHAR  
Designer  
Z.JONES

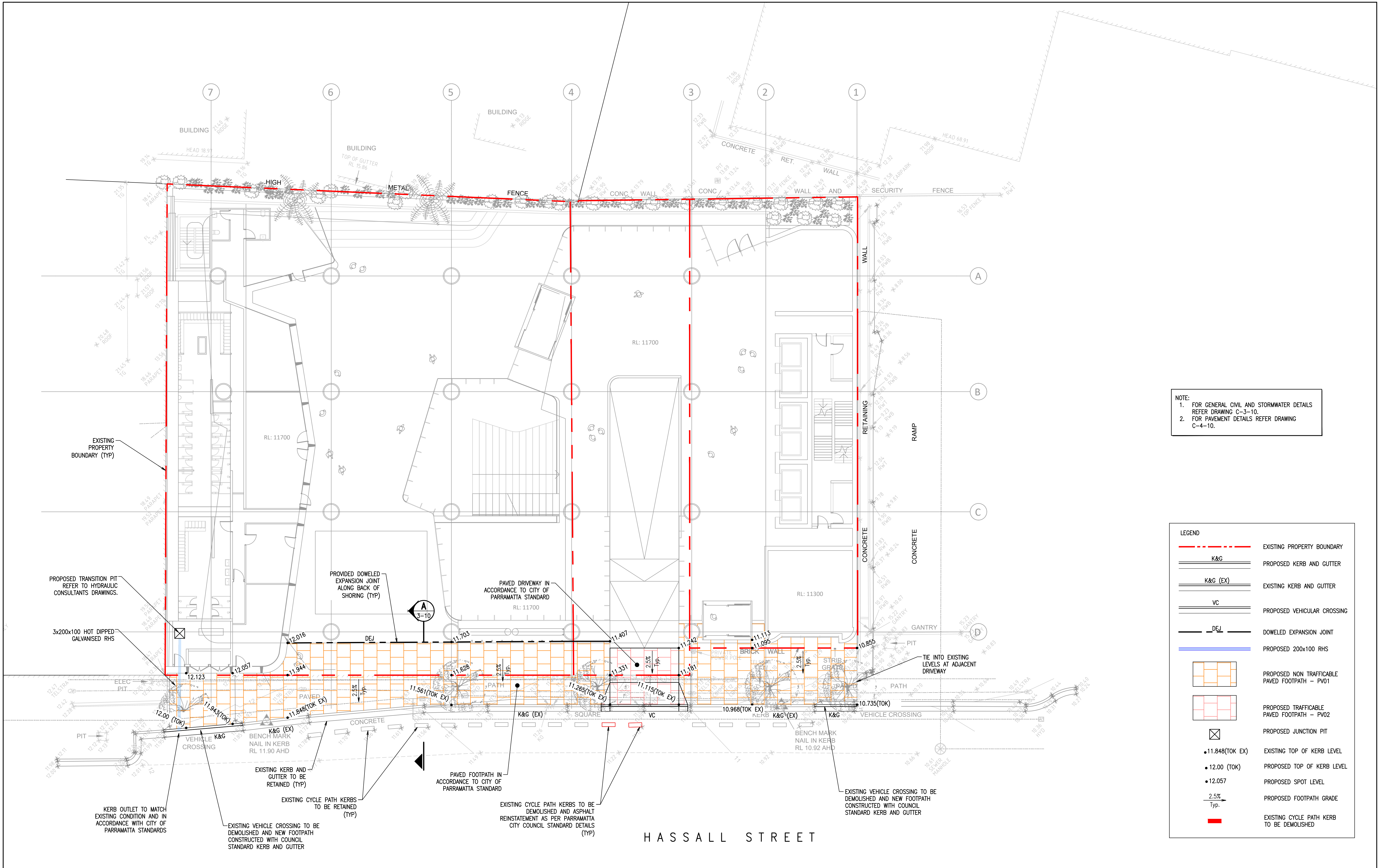
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Approved  
C.ROPE  
Job Number  
18570C

NOT FOR CONSTRUCTION

Drawing Number  
C-0-01

Revision  
1

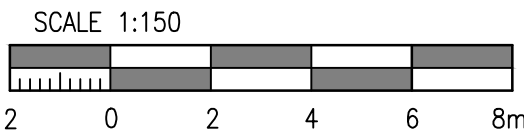




NOTE:  
1. FOR GENERAL CIVIL AND STORMWATER DETAILS  
REFER DRAWING C-3-10.  
2. FOR PAVEMENT DETAILS REFER DRAWING  
C-4-10.

**LEGEND**

- EXISTING PROPERTY BOUNDARY
- == K&G PROPOSED KERB AND GUTTER
- == K&G (EX) EXISTING KERB AND GUTTER
- == VC PROPOSED VEHICULAR CROSSING
- DEJ DOWELED EXPANSION JOINT
- PROPOSED 200x100 RHS
- [Grid Pattern] PROPOSED NON TRAFFICABLE PAVED FOOTPATH - PV01
- [Grid Pattern] PROPOSED TRAFFICABLE PAVED FOOTPATH - PV02
- [X] PROPOSED JUNCTION PIT
- 11.848(TOK EX) EXISTING TOP OF KERB LEVEL
- 12.00 (TOK) PROPOSED TOP OF KERB LEVEL
- 12.057 PROPOSED SPOT LEVEL
- 2.5% Typ. PROPOSED FOOTPATH GRADE
- [Red Line] EXISTING CYCLE PATH KERB TO BE DEMOLISHED



| Rev | Revision Description               | By | App | Date     |
|-----|------------------------------------|----|-----|----------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 04.03.19 |
| 2   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 03.04.19 |

| Rev | Revision Description               | By | App | Date     |
|-----|------------------------------------|----|-----|----------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 04.03.19 |
| 2   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 03.04.19 |

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Client

**Charter Hall**

Title  
**GENERAL ARRANGEMENT PLAN**

Project  
**2B-6 HASSALL STREET  
PARRAMATTA**

Scale of A1  
AS SHOWN  
Date  
03.04.19

Drawn  
S.MANANDHAR  
Designer  
Z.JONES

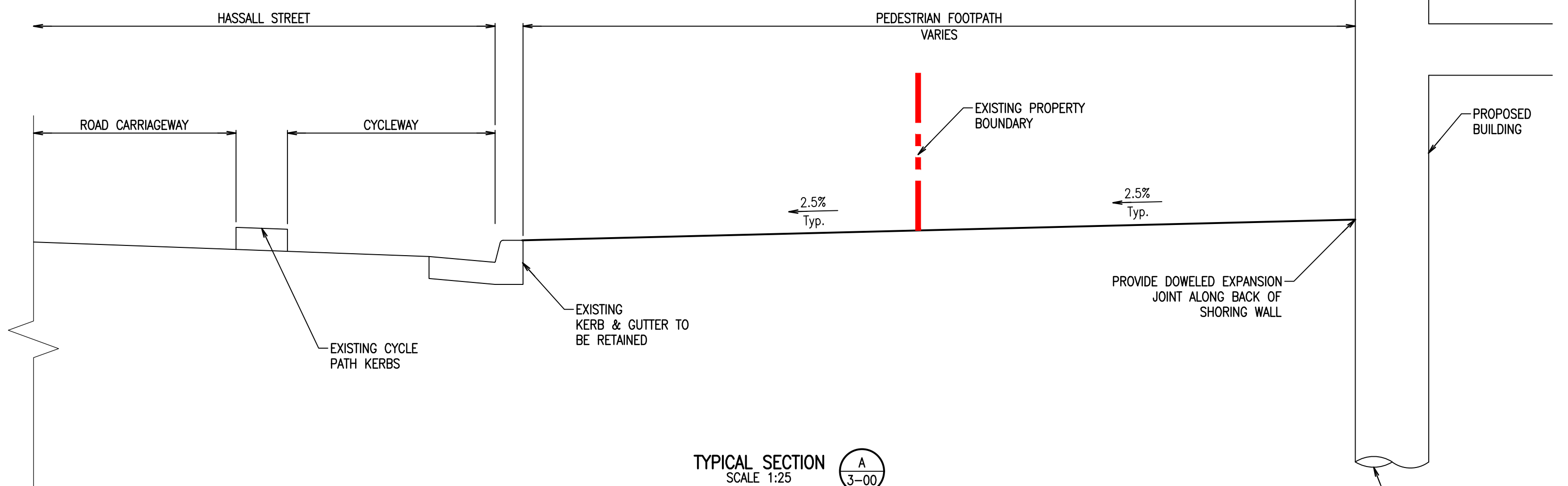
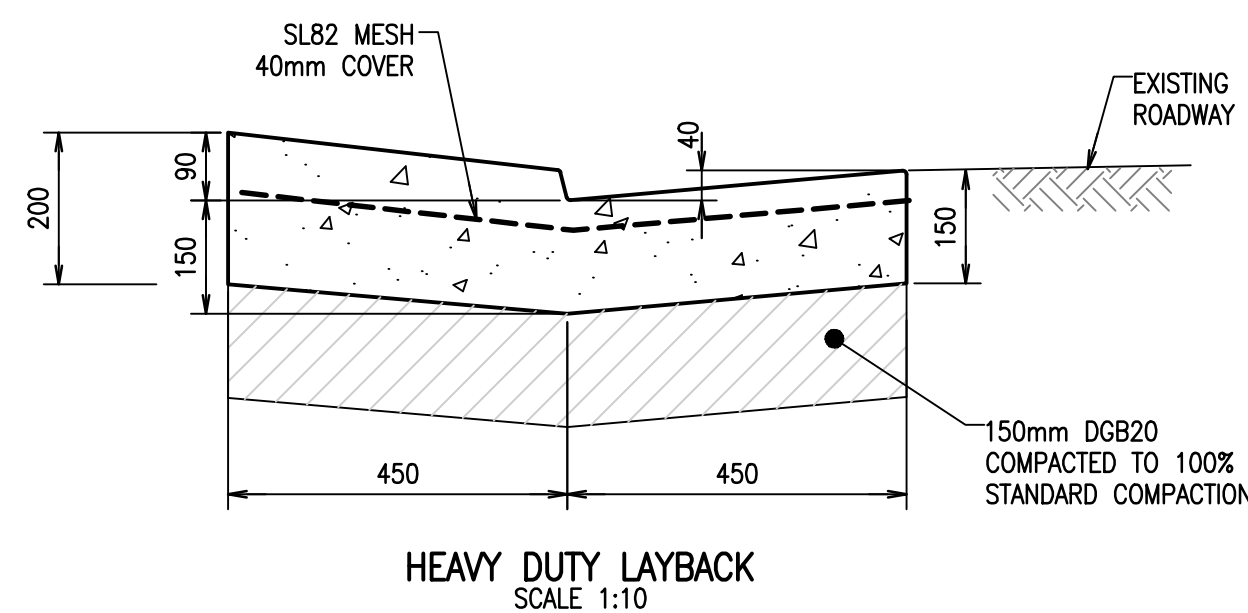
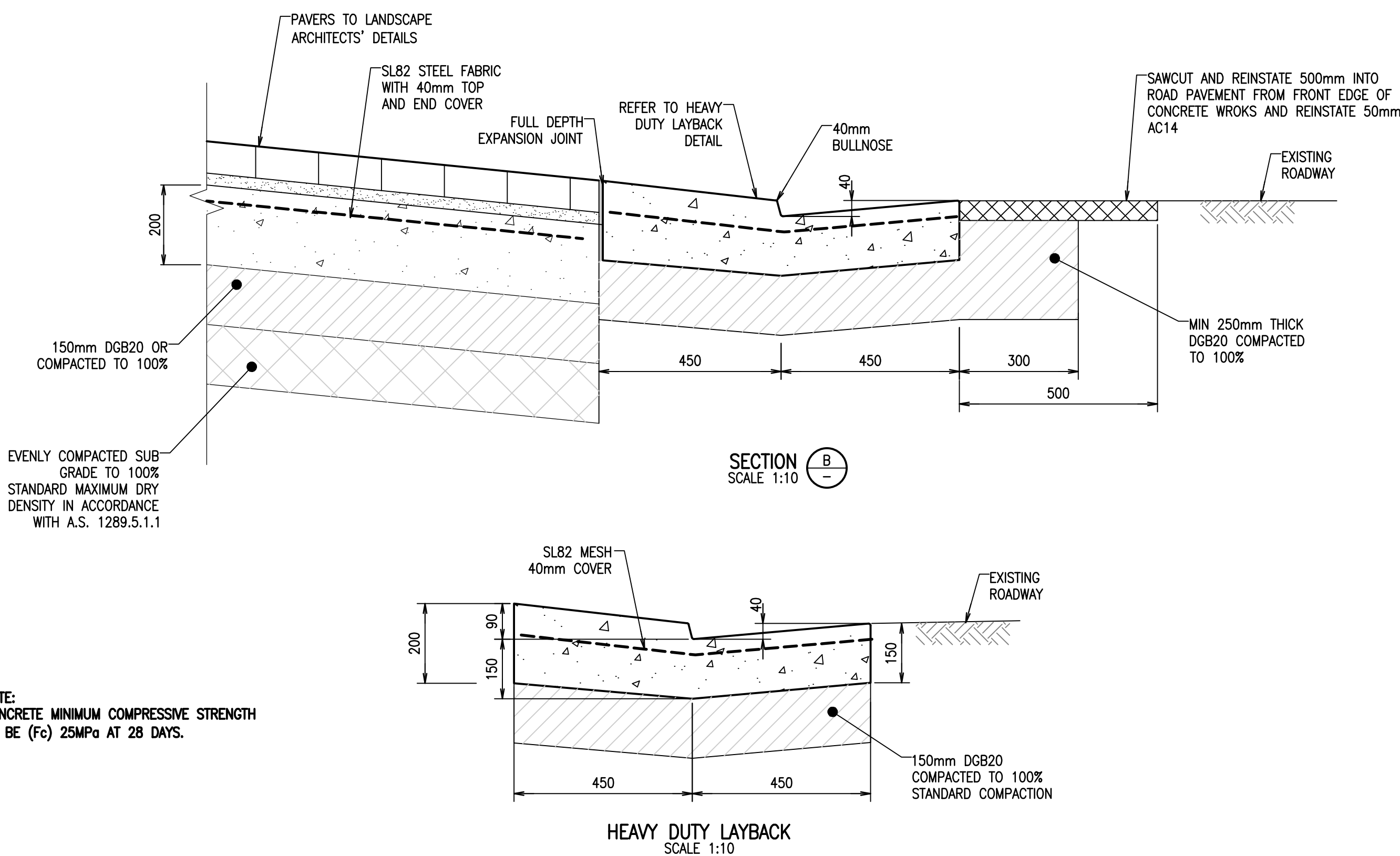
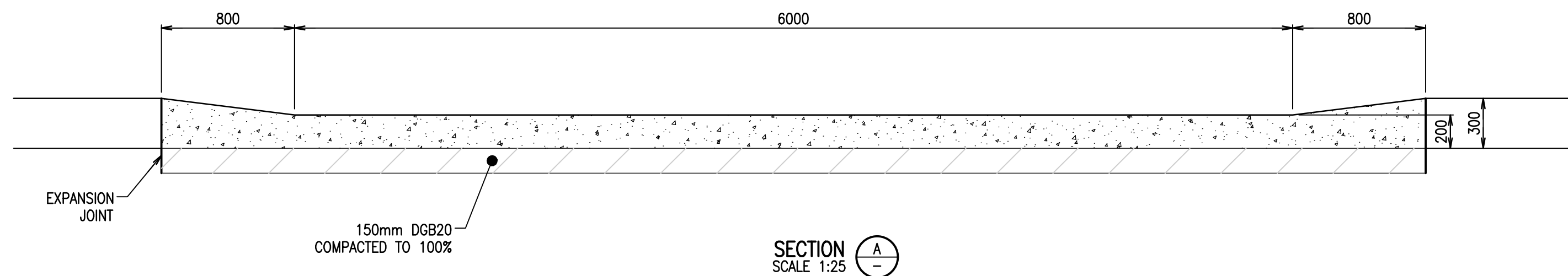
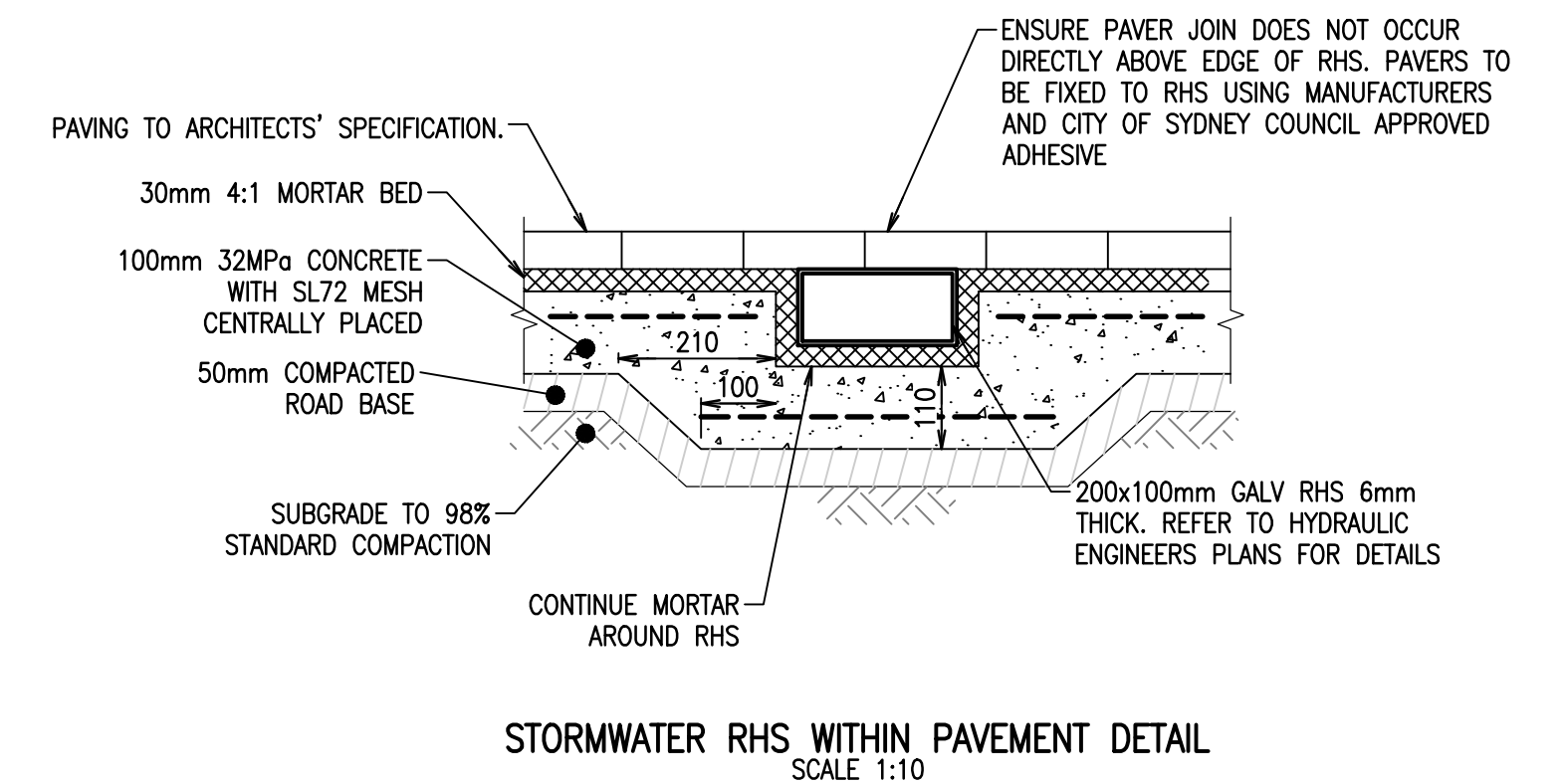
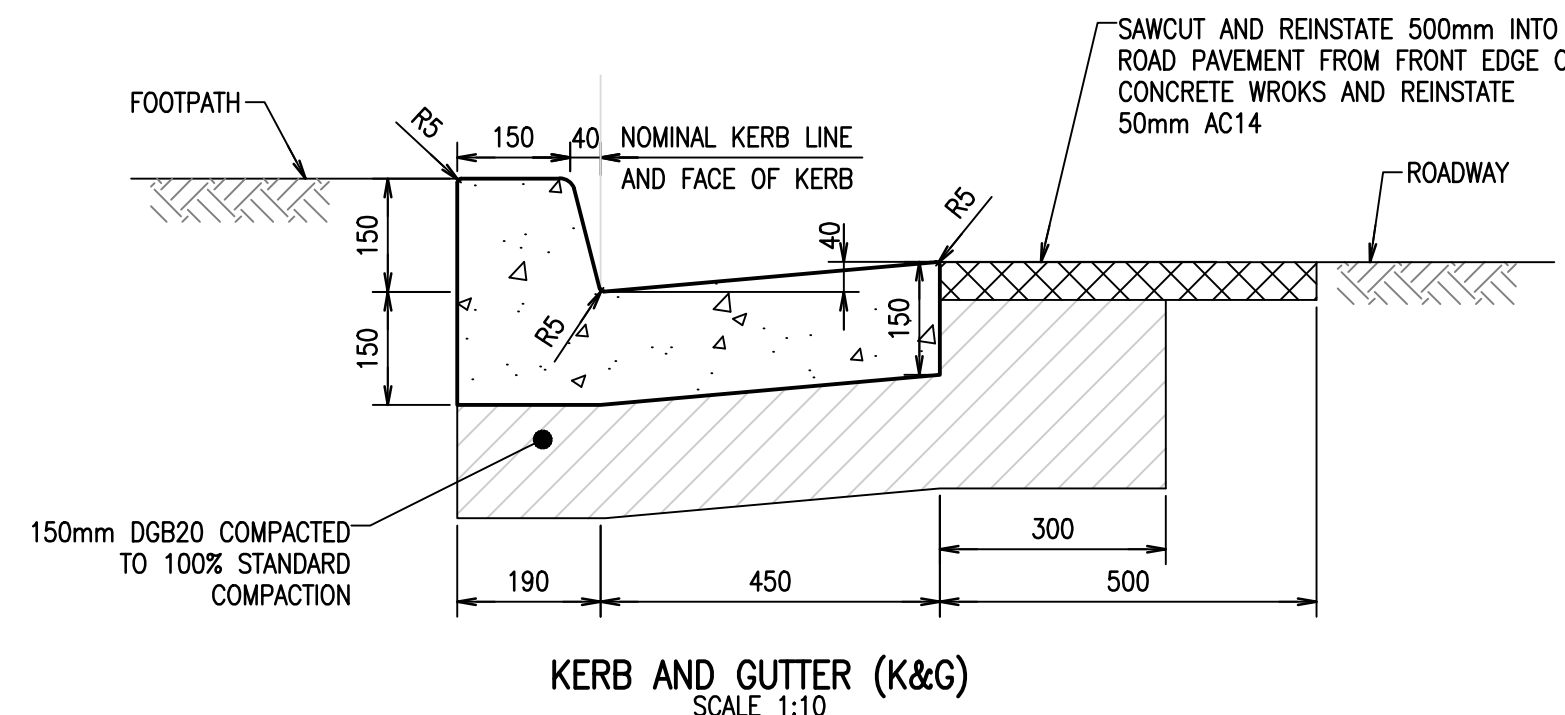
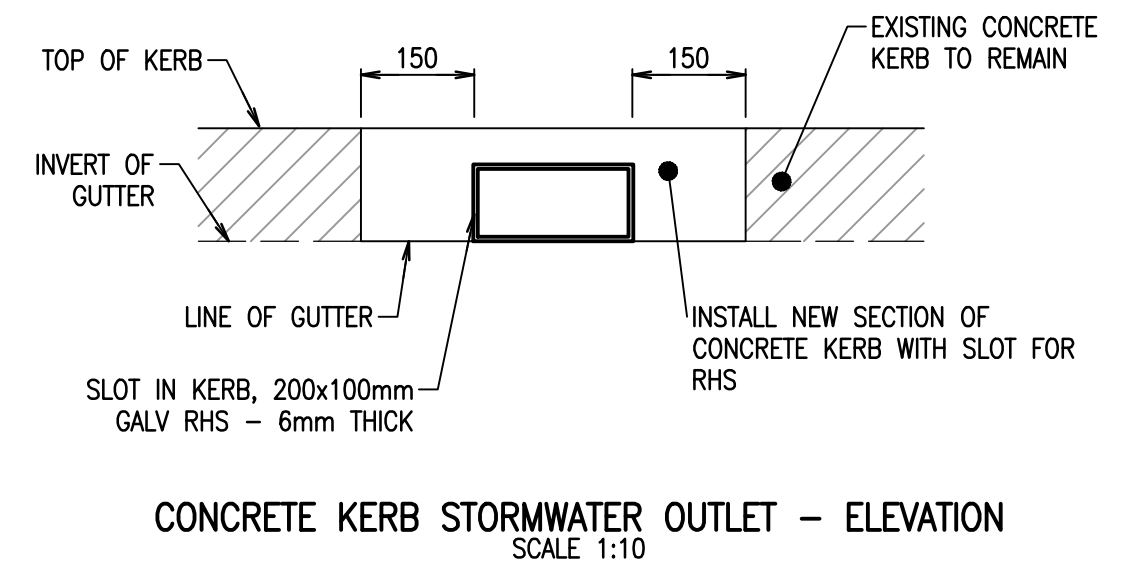
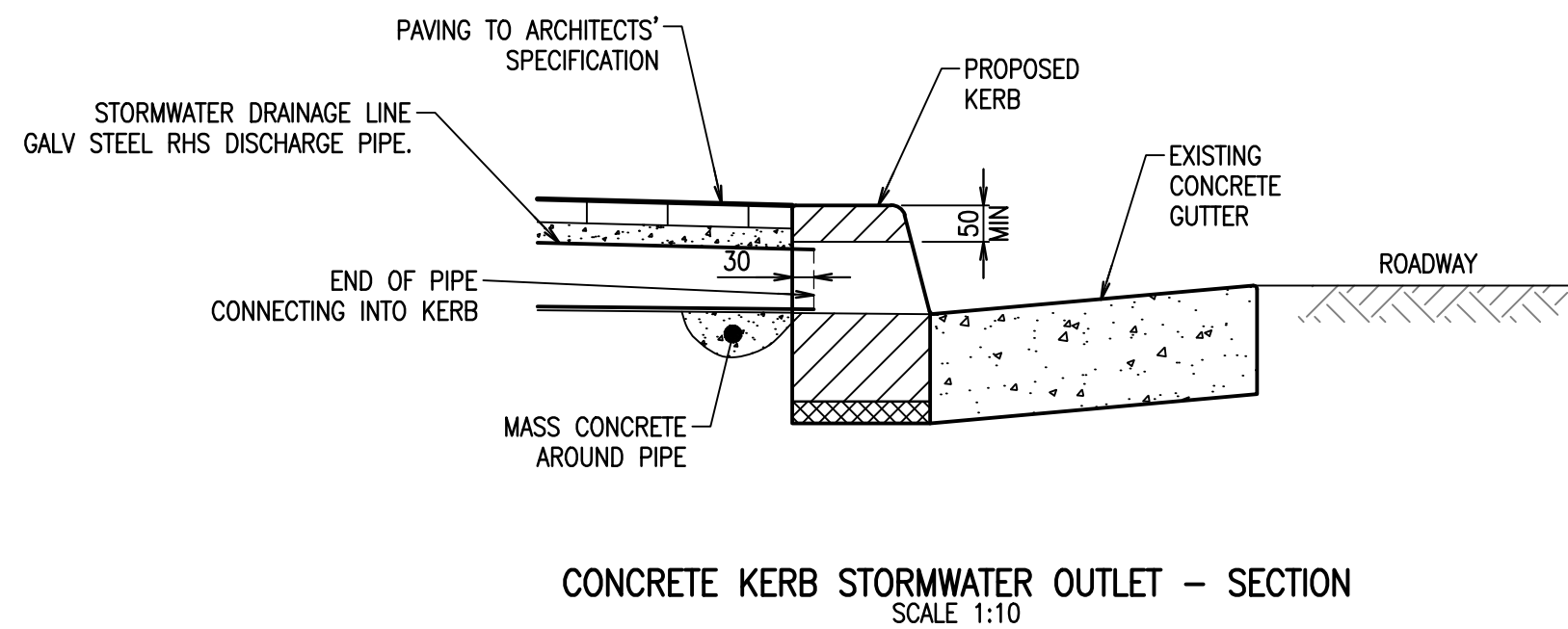
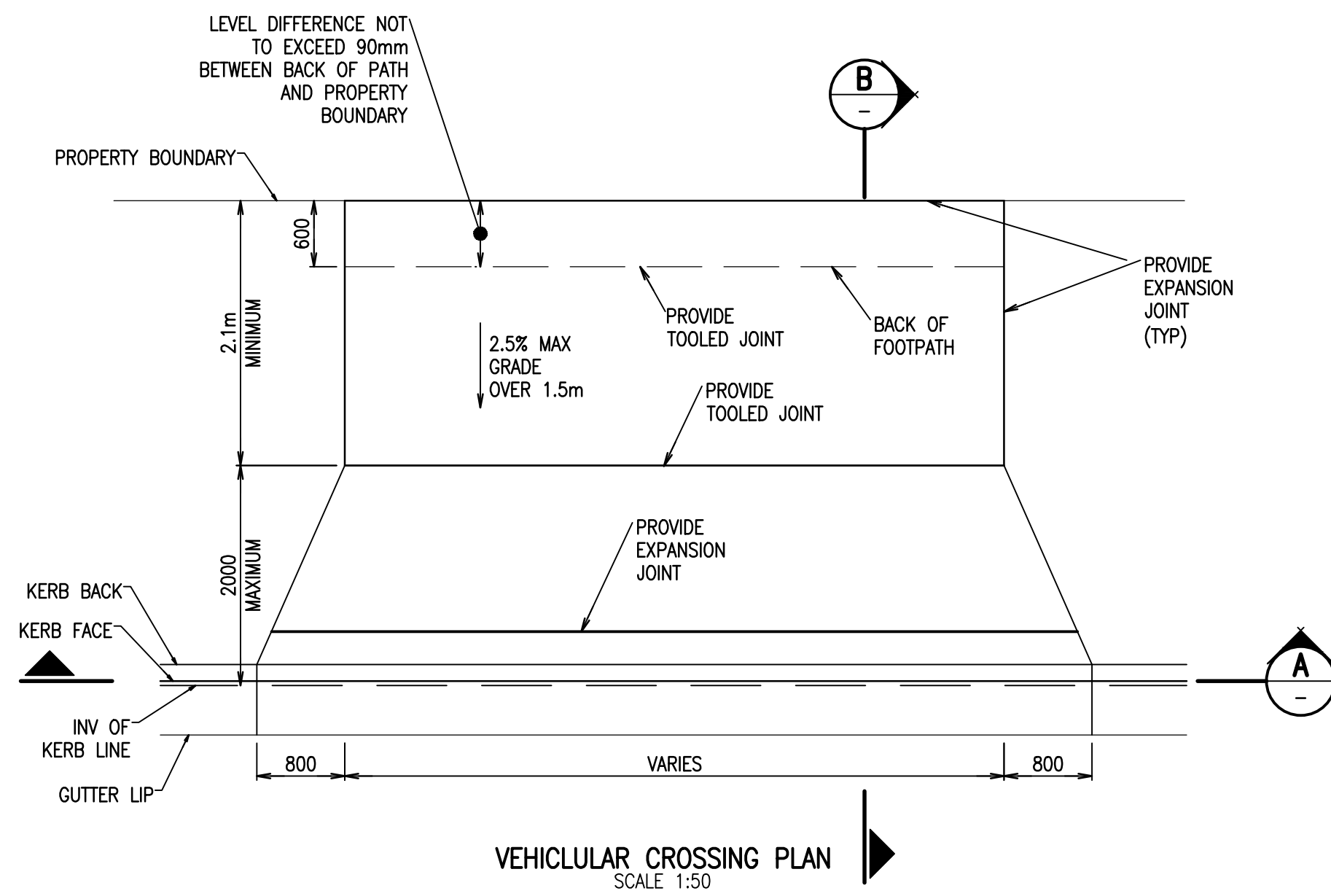
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C.ROPE  
Job Number  
18570C

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Drawing Number  
**C-3-00**

Revision  
**2**





NOTE:  
CONCRETE MINIMUM COMPRESSIVE STRENGTH  
TO BE (F<sub>c</sub>) 25MPa AT 28 DAYS.

| Rev | Revision Description               | By | App | Date     |
|-----|------------------------------------|----|-----|----------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 04.03.19 |
| 2   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 03.04.19 |

| Rev | Revision Description | By | App | Date |
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Client

**Charter Hall**

Title

**CIVIL DETAILS**

Project  
**2B-6 HASSALL STREET  
PARRAMATTA**

Scale of A1  
AS SHOWN  
Date  
03.04.19

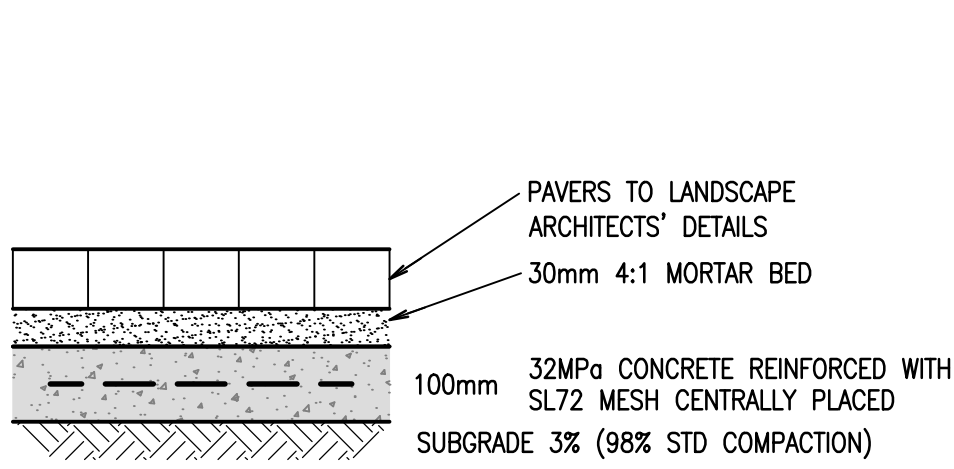
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Drawn  
S.MANANDHAR  
Designer  
Z.JONES

Design Checker  
Approved  
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Job Number  
18570C  
Revision  
**2**

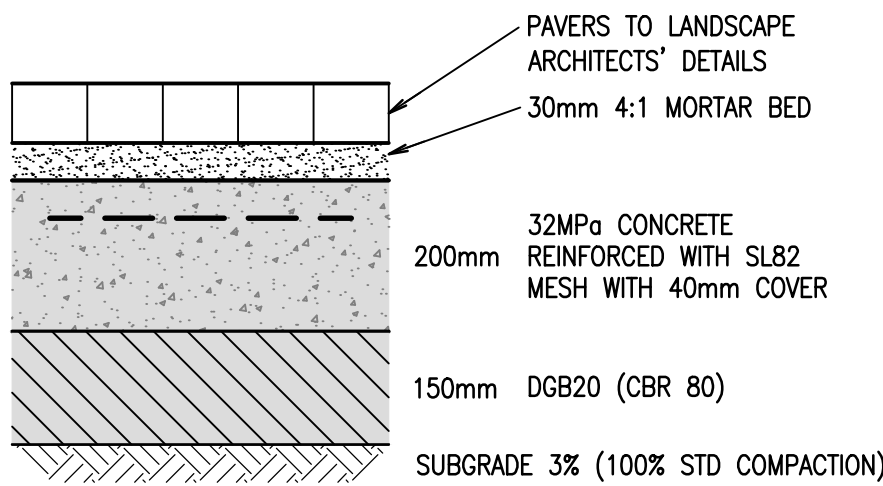
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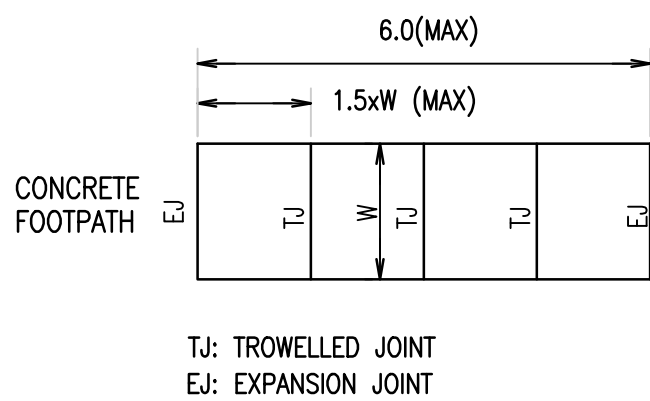


NON TRAFFICABLE PAVED FOOTPATH – PV01  
TYPICAL DETAILS  
SCALE 1:10

NOTE:  
1. REFER C-3-00 FOR PAVEMENT LAYOUT PLAN.  
2. ASSUMED SUBGRADE CBR 3% TO BE VERIFIED ON SITE BY INSITU SUBGRADE TESTING, IN ACCORDANCE WITH AS1209.6. TEST INTERVAL TO BE 1 TEST PER 400m<sup>2</sup>.

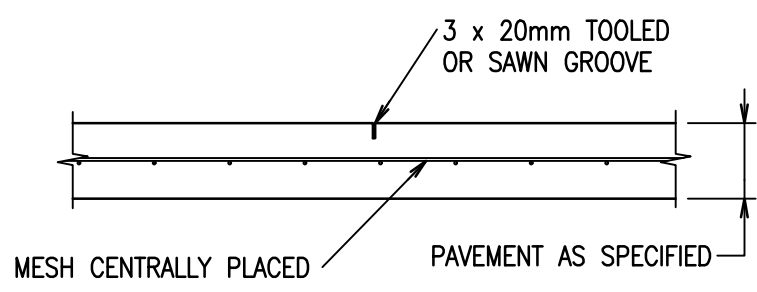


TRAFFICABLE PAVED FOOTPATH – PV02  
(PAVED VEHICULAR CROSSING)  
TYPICAL DETAILS  
SCALE 1:10

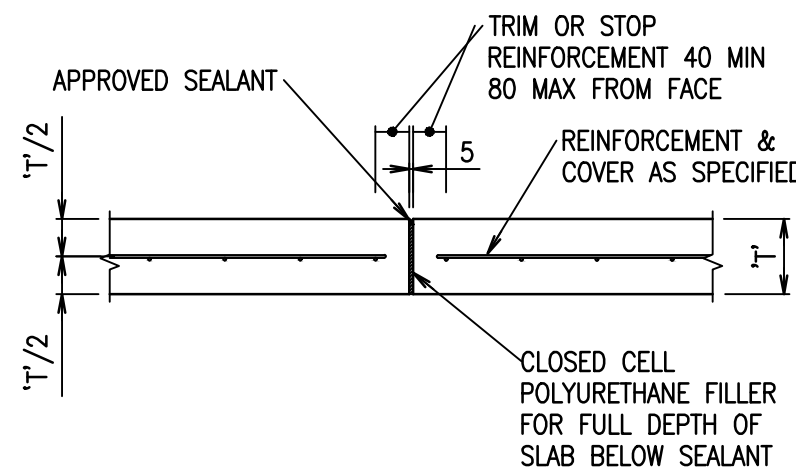


TJ: TROWELLED JOINT  
EJ: EXPANSION JOINT  
TYPICAL FOOTPATH JOINTING  
N.T.S.

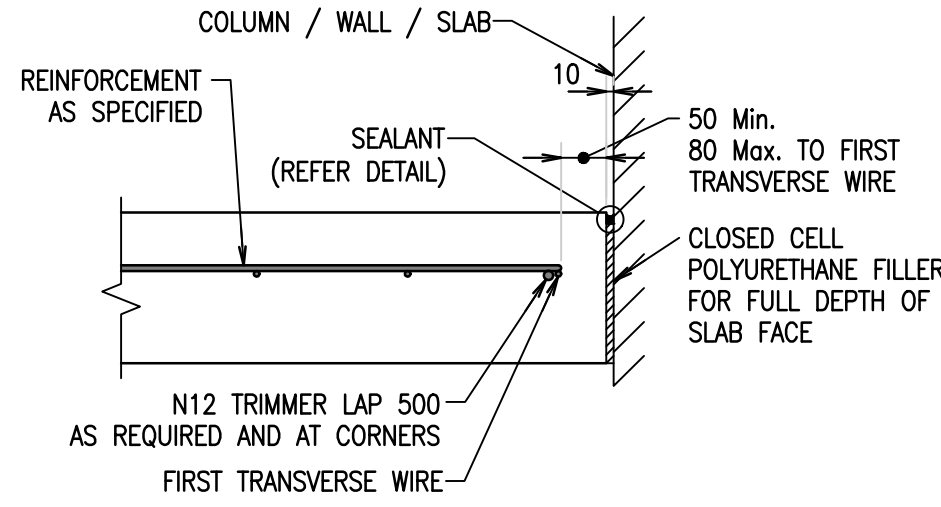
NOTES:  
1. EJ'S TO ALIGN WITH ADJOINING BAYS  
2. JOINT SPACING AROUND CURVES IS TO BE TAKEN TO THE OUTSIDE LENGTH



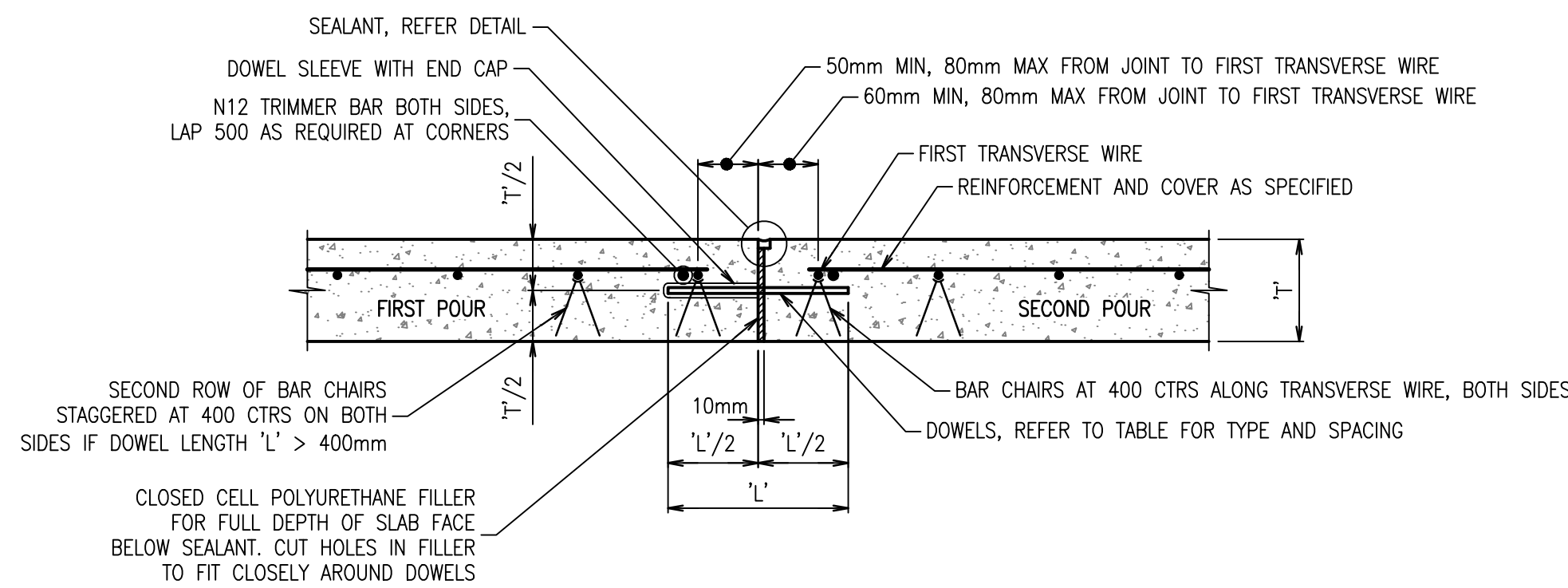
FOOTPATH TOOLED/SAWN JOINT (F.T.J.)  
SCALE 1:10



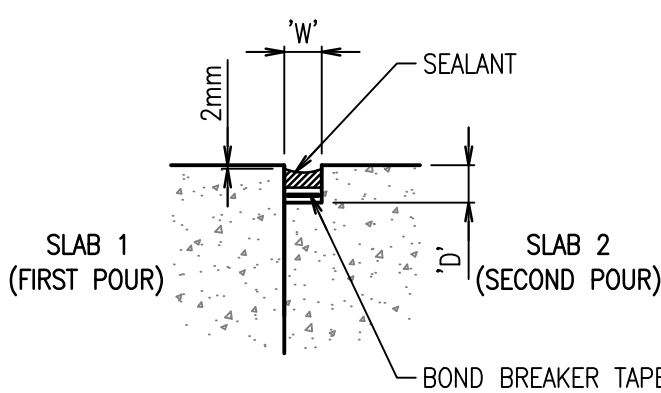
FOOTPATH EXPANSION JOINT (F.E.J.)  
SCALE 1:10



ISOLATION JOINT (I.J.)  
SCALE 1:10



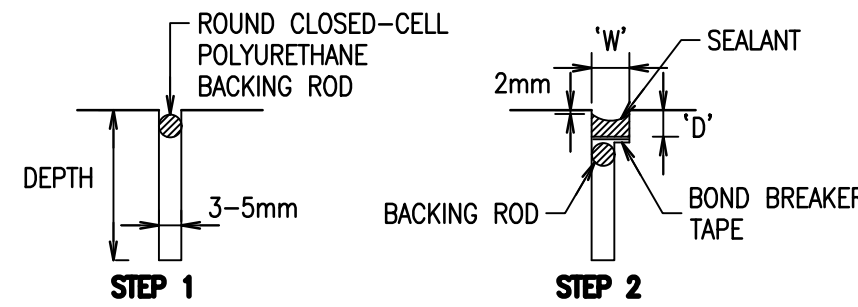
DOWELLED EXPANSION JOINT (DEJ) DETAIL  
SCALE 1:10



MOVEMENT JOINT SEALANT DETAILS  
(FOR DCJ, EJ, DEJ, KJ & DDJ JOINTS)  
SCALE 1:10

- STEPS:**
- FORM REBATE IN SLAB 2 AGAINST FACE OF SLAB 1.
  - AFTER SLAB CURING PERIOD (MIN. 28 DAYS) WASH OUT REBATE USING HIGH PRESSURE WATER. DRY USING HIGH PRESSURE COMPRESSED AIR AND ALLOW ADDITIONAL 16HRS TO DRY THOROUGHLY.
  - INSTALL POLYETHYLENE BOND BREAKER TAPE FOR FULL WIDTH 'W'. FOR IJ, EJ AND DEJ JOINTS OMIT BOND BREAKER TAPE.
  - PRIME FACES OF SIDES OF REBATE (REFER SEALANT TABLE)
  - INSTALL SEALANT AS SPECIFIED (REFER SEALANT TABLE) IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

| DOWEL / TIE BAR TABLE |                       |                 |            |
|-----------------------|-----------------------|-----------------|------------|
| JOINT DESIGNATION     | DOWEL / TIE           | SPACING CTR-CTR | LENGTH 'L' |
| DEJ                   | 10x110 DANLEY DIAMOND | 450             | 155        |



SAWN JOINT CUT AND SEALANT DETAILS  
SCALE 1:10

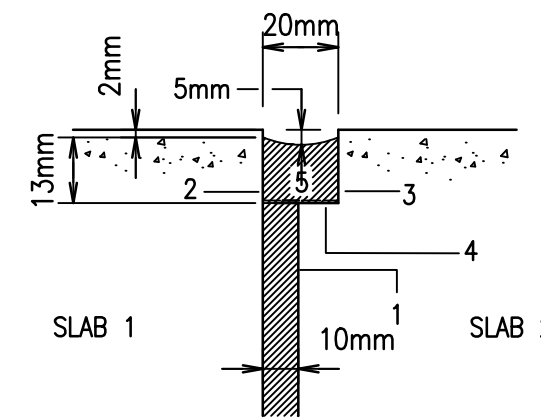
- STEP 1:**  
INITIAL CUT TO DEPTH 'T' (1/4 FOR STEEL FIBRE REINFORCED CONCRETE) WITHIN 1 DAY OF POURING CONCRETE. INSERT POLYURETHANE BACKING ROD TO PREVENT INGRESS OF DIRT UNTIL SEALANT APPLIED (MIN 28 DAYS LATER). ROD DIAMETER TO BE MIN. 1.25 x CUT WIDTH.
- STEP 2:**  
REMOVE ALL DIRT FROM SAW CUT, USING HIGH PRESSURE COMPRESSED AIR. REPLACE BACKING ROD WITH LARGER DIAMETER IF LOOSE. PUSH BACKING ROD INTO SAW CUT 1mm BELOW DEPTH 'D'. IF NECESSARY, REMOVE AND REPLACE BACKING ROD. WIDEN SAW CUT TO WIDTH 'W' AND DEPTH 'D' WITH ADDITIONAL SAW CUTS. REMOVE ALL FOREIGN MATERIAL USING HIGH PRESSURE WATER WASH. DRY USING HIGH PRESSURE COMPRESSED AIR AND ALLOW ADDITIONAL 16 HRS TO DRY THOROUGHLY. INSTALL POLYETHYLENE BOND BREAKER TAPE. PRIME FACES OF CUT CONCRETE (REFER TABLE BELOW). INSTALL SEALANT AS SPECIFIED (REFER TABLE BELOW) IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

| LOCATION           | SEALANT           | PRIMER           |
|--------------------|-------------------|------------------|
| EXTERNAL PAVEMENTS | EMER-ROAD SEAL SL | FOSROC PRIMER 10 |

- ALTERNATIVE SEALANTS MUST HAVE
- MOVEMENT ACCOMMODATION FACTOR +/- 50%
  - PRIMER TO MANUFACTURER'S SPECIFICATION
  - INSTALLATION TO MANUFACTURER'S RECOMMENDATIONS
  - PRIOR APPROVAL BY SUPERINTENDENT.

| SEALANT DIMENSIONS   |                        |                        |
|----------------------|------------------------|------------------------|
| MEAN SLAB LENGTH (m) | SEALANT WIDTH 'W' (mm) | SEALANT DEPTH 'D' (mm) |
| ≤4                   | 7 ± 1                  | 7 ± 1                  |
| 5                    | 9 ± 2                  | 7 ± 1                  |
| 6                    | 9 ± 2                  | 7 ± 1                  |
| 7                    | 10 ± 2                 | 8 ± 1                  |
| 8                    | 11 ± 2                 | 9 ± 2                  |
| 9                    | 12 ± 2                 | 10 ± 2                 |
| 10                   | 13 ± 2                 | 10 ± 2                 |
| 11                   | 14 ± 2                 | 11 ± 2                 |
| 12                   | 15 ± 2                 | 12 ± 2                 |
| ALL (TSJ)            | 6                      | 6                      |
| ALL (IJ & EJ)        | 10                     | 8                      |

**NOTES:**  
1. FOR T.S.J. ONLY, CLEAN, PRIME AND SEAL INITIAL SAW CUT ONLY.



EXPANSION JOINT AND ISOLATION JOINT SEALANT DETAIL

- CLOSED CELL POLYURETHANE FILLER (FULL DEPTH) CUT HOLES IN FILLER TO FIT CLOSELY AROUND DOWELS
- FORM GROOVE IN SLAB 2 AND AGAINST FACE OF SLAB 1
- JET WASH AND DRY GROOVE AFTER SLAB CURING PERIOD. PRIME FACES WITH FOSROC PRIMER 10
- BOND BREAKER TAPE
- INSTALL JOINT SEALANT PARBURY EMER-ROADSEAL OR APPROVED EQUIVALENT WITH MOVEMENT ACCOMMODATION FACTOR +/- 50% IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS

| Rev | Revision Description               | By | App | Date     |
|-----|------------------------------------|----|-----|----------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 04.03.19 |
| 2   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 03.04.19 |

| Rev | Revision Description               | By | App | Date     |
|-----|------------------------------------|----|-----|----------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 04.03.19 |
| 2   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 03.04.19 |

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Client

**Charter Hall**

Title  
**PAVEMENT DETAILS**

Project  
**2B-6 HASSALL STREET  
PARRAMATTA**

Scale of A1  
AS SHOWN  
Date  
03.04.19

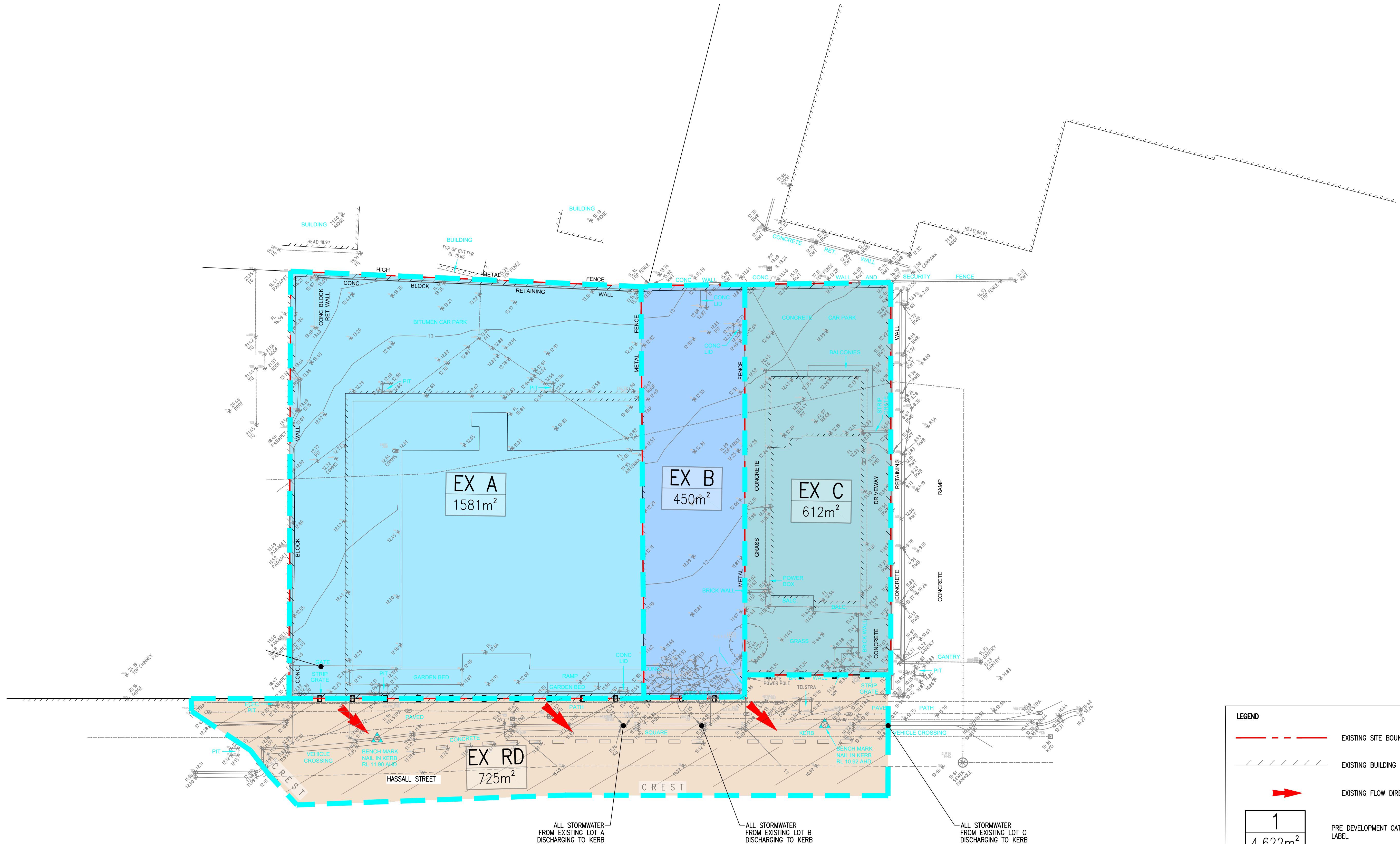
Drawn  
S.MANANDHAR  
Designer  
Z.JONES

Design Checker  
Approved  
C.ROPE  
Job Number  
18570C  
Revision  
**2**

**NOT FOR CONSTRUCTION**

Drawing Number  
**C-4-10**





LEGEND

EXISTING SITE BOUNDARY

EXISTING BUILDING

EXISTING FLOW DIRECTION

1

4,622m<sup>2</sup>

PRE DEVELOPMENT CATCHMENT LABEL

PRE DEVELOPMENT CATCHMENT BOUNDARY

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Client

Charter Hall

Title

STORMWATER PRE CATCHMENT ANALYSIS

Project

2B-6 HASSALL STREET  
PARRAMATTA

Scale of A1  
AS SHOWN  
Date  
04.03.19

Drawn  
ZJONES  
Designer  
ZJONES

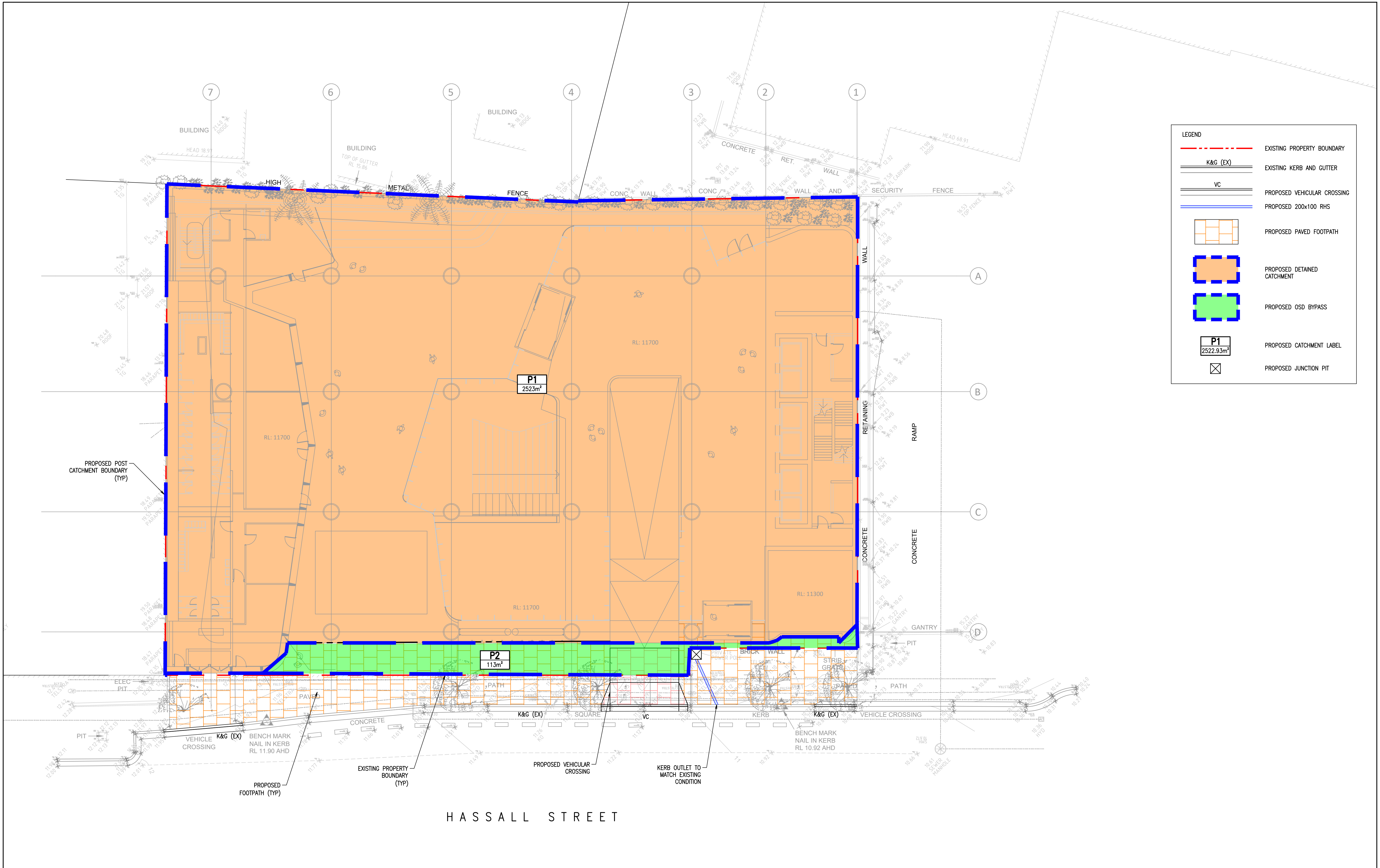
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18570C

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C-6-50

Revision  
1

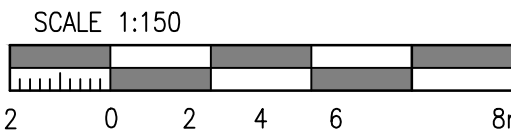




LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING KERB AND GUTTER
- PROPOSED VEHICULAR CROSSING
- PROPOSED 200x100 RHS
- PROPOSED PAVED FOOTPATH
- PROPOSED DETAINED CATCHMENT
- PROPOSED OSD BYPASS
- PROPOSED CATCHMENT LABEL
- PROPOSED JUNCTION PIT

HASSALL STREET



| Rev | Revision Description               | By | App | Date     |
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Client

**Charter Hall**

Title  
**STORMWATER POST CATCHMENT ANALYSIS**

Project  
**2B-6 HASSALL STREET PARRAMATTA**

|   |   |  |
|---|---|--|
| Scale of A1<br>AS SHOWN<br>Date<br>04.03.19 | Drawn<br>S.MANANDHAR<br>Designer<br>Z.JONES | Design Checker<br>Approved<br>C.ROPE<br>Job Number<br>18570C |
| NOT FOR CONSTRUCTION                        |   | Revision<br><b>1</b>   |

# **Appendix C**

## **Floth OSD and WSUD Drawings**





# 2-6 HASSALL STREET, PARRAMATTA



## LOCATION PLAN

### HYDRAULIC LEGEND:

#### STORMWATER

|                     |     |    |
|---------------------|-----|----|
| STORMWATER DRAINAGE | --- | SW |
| OVERFLOW            | --- | OF |
| SUB SOIL DRAINAGE   | --- |    |

#### PUMPED SERVICES

|                |     |    |
|----------------|-----|----|
| PUMP DISCHARGE | --- | PD |
|----------------|-----|----|

#### MISCELLANEOUS

|            |     |   |
|------------|-----|---|
| ELECTRICAL | --- | E |
|------------|-----|---|

### SYMBOLS

|  |   |
|--|---|
|  | PIPE RISER                                |
|  | PIPE DROPPER                              |
|  | HEEL GUARD GRATED<br>ACCESS COVER & FRAME |
|  | GRATED ACCESS<br>COVER & FRAME            |
|  | AIRTIGHT ACCESS<br>COVER & FRAME          |
|  | GRATED DRAIN                              |
|  | CONTROL PANEL                             |
|  | RAINWATER OUTLET                          |
|  | PLANTER DRAIN                             |
|  | CLEAROUT                                  |
|  | INSPECTION OPENING                        |
|  | OVERFLOW                                  |
|  | NON-RETURN VALVE                          |
|  | SUMP DRAIN                                |
|  | SERVICE                                   |
|  | PIPE SIZE                                 |

### ABBREVIATIONS

|     |                         |
|-----|-------------------------|
| AHD | AUSTRALIAN HEIGHT DATUM |
| EX  | EXISTING                |
| CP  | CONTROL PANEL           |
| CI  | CAST IRON               |
| CO  | CLEAROUT                |
| DN  | DIMENSION NOMINAL       |
| DP  | DOWN PIPE               |
| FFL | FINISHED FLOOR LEVEL    |
| H/L | HIGH LEVEL              |
| IL  | INVERT LEVEL            |
| KIP | KERB INLET PIT          |
| L/L | LOW LEVEL               |
| OF  | OVERFLOW                |
| OFG | OVERFLOW GULLY          |
| PD  | PLANTER DRAIN           |
| RL  | REDUCED LEVEL           |
| RWO | RAINWATER OUTLET        |
| SYP | SYPHONIC DRAINAGE       |
| U/S | UNDERSIDE               |

### DRAWING SCHEDULE

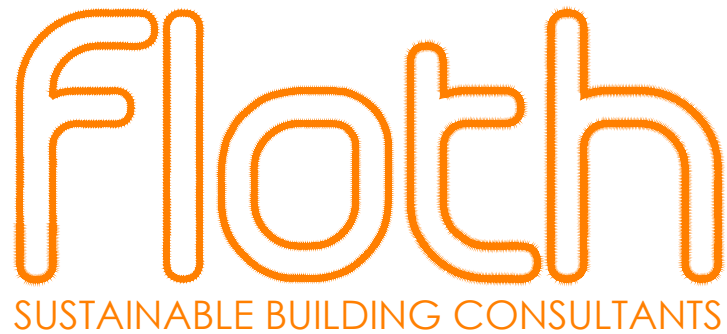
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|-------------|------------------------------------|
| DA-H01      | LEGEND & DRAWING SCHEDULE          |
| DA-H02      | SITE PLAN                          |
| DA-H03      | BASEMENT LEVEL STORMWATER SERVICES |
| DA-H04      | GROUND LEVEL STORMWATER SERVICES   |
| DA-H05      | LEVEL 1 STORMWATER SERVICES        |
| DA-H06      | DETAIL SHEET 1                     |
| DA-H07      | DETAIL SHEET 2                     |

| REVISION | DATE       | DRN | CHD | DA | ISSUE |
|----------|------------|-----|-----|----|-------|
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**HASSALL STREET, PARRAMATTA**  
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PARRAMATTA NSW 2150

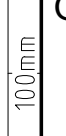
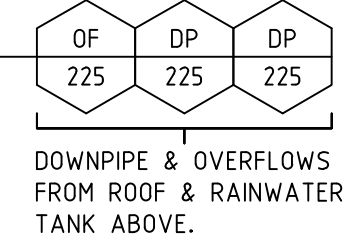
**STORMWATER CONCEPT PLAN**  
LEGEND AND DRAWING SCHEDULE


|               |              |
|---------------|--------------|
| DR            | JB           |
| CHECKED       | DATE STARTED |
| SO            | MARCH 2019   |
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| PROJECT NO    | DRAWING NO   |
| S18255        | DA-H01       |
| REVISION      | P1           |



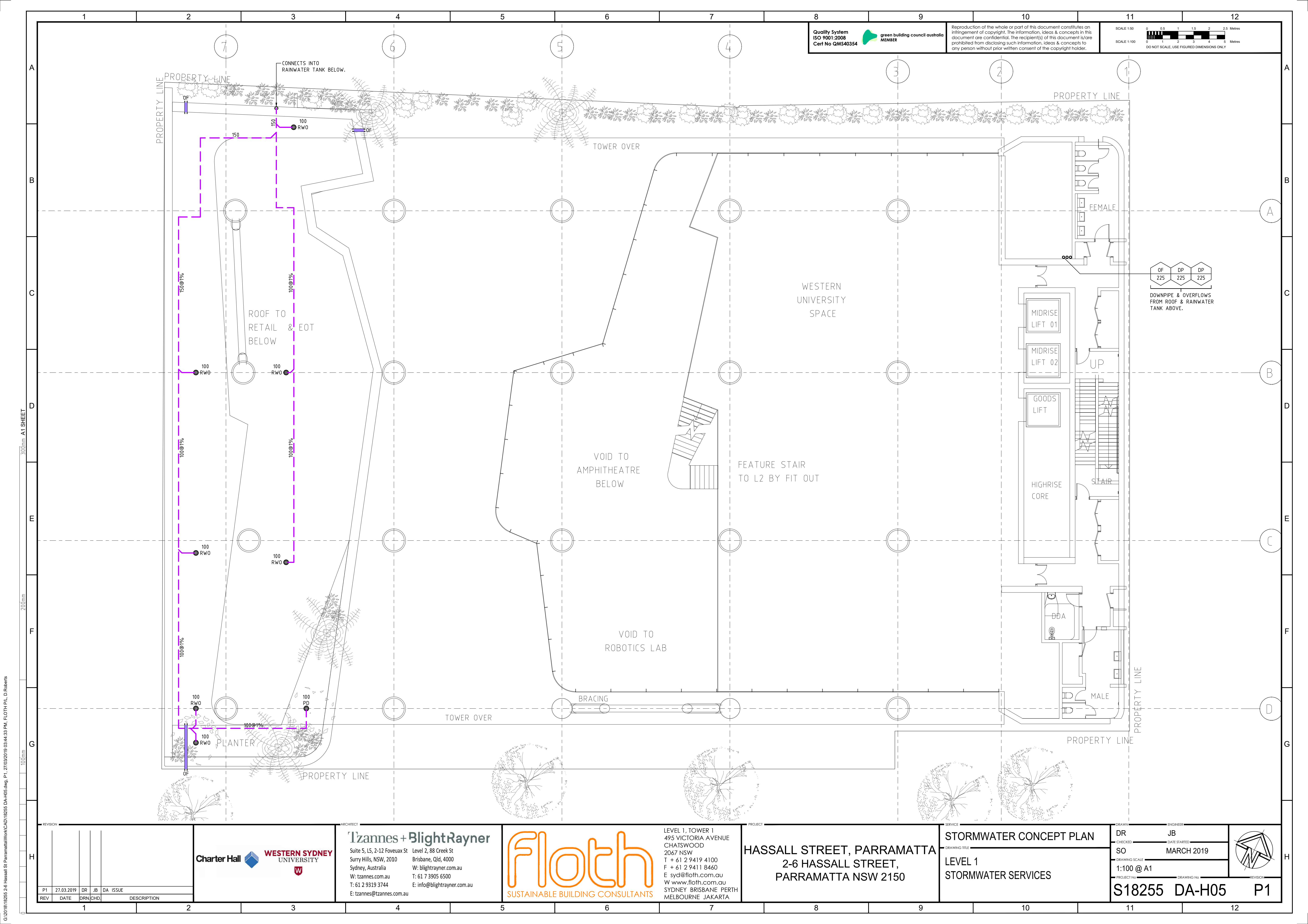






|               |              |   |   |
|---------------|--------------|---|---|
| DR            | JB           |  | H |
| CHECKED       | DATE STARTED |   |   |
| SO            | MARCH 2019   |   |   |
| DRAWING SCALE |              |   |   |
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0 0.5 1 1.5 2 2.5 Metres

SCALE 1:100  
0 1 2 3 4 5 Metres

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| P1  | 27.03.2019 | DR  | JB  | DA | ISSUE |             |

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PROJECT

HASSALL STREET, PARRAMATTA  
2-6 HASSALL STREET,  
PARRAMATTA NSW 2150

SERVICE

STORMWATER CONCEPT PLAN

DRAWING TITLE

LEVEL 1  
STORMWATER SERVICES

DRAWN

DR

ENGINEER

JB

CHECKED

SO

DATE STARTED

MARCH 2019

DRAWING SCALE

1:100 @ A1

PROJECT NO

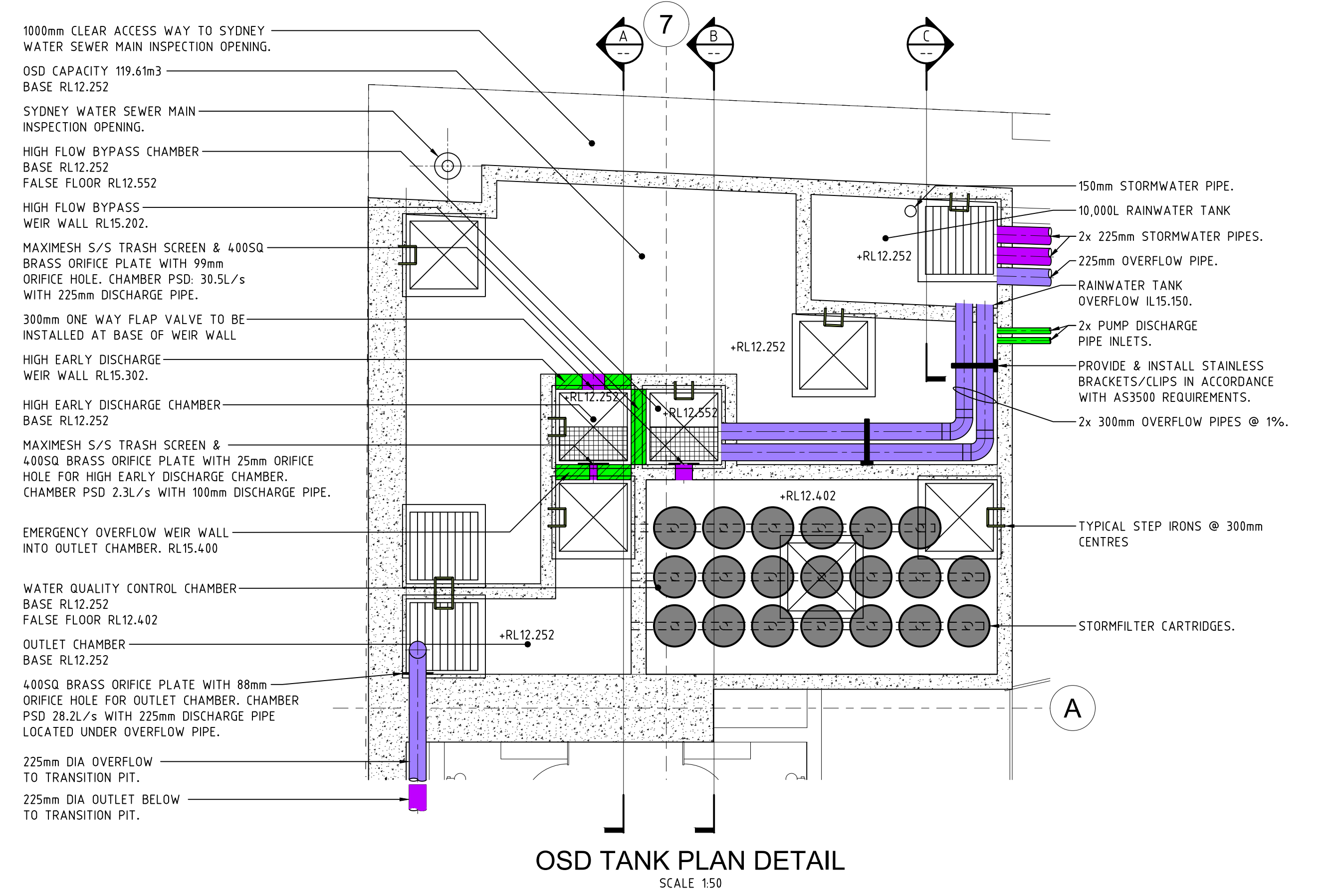
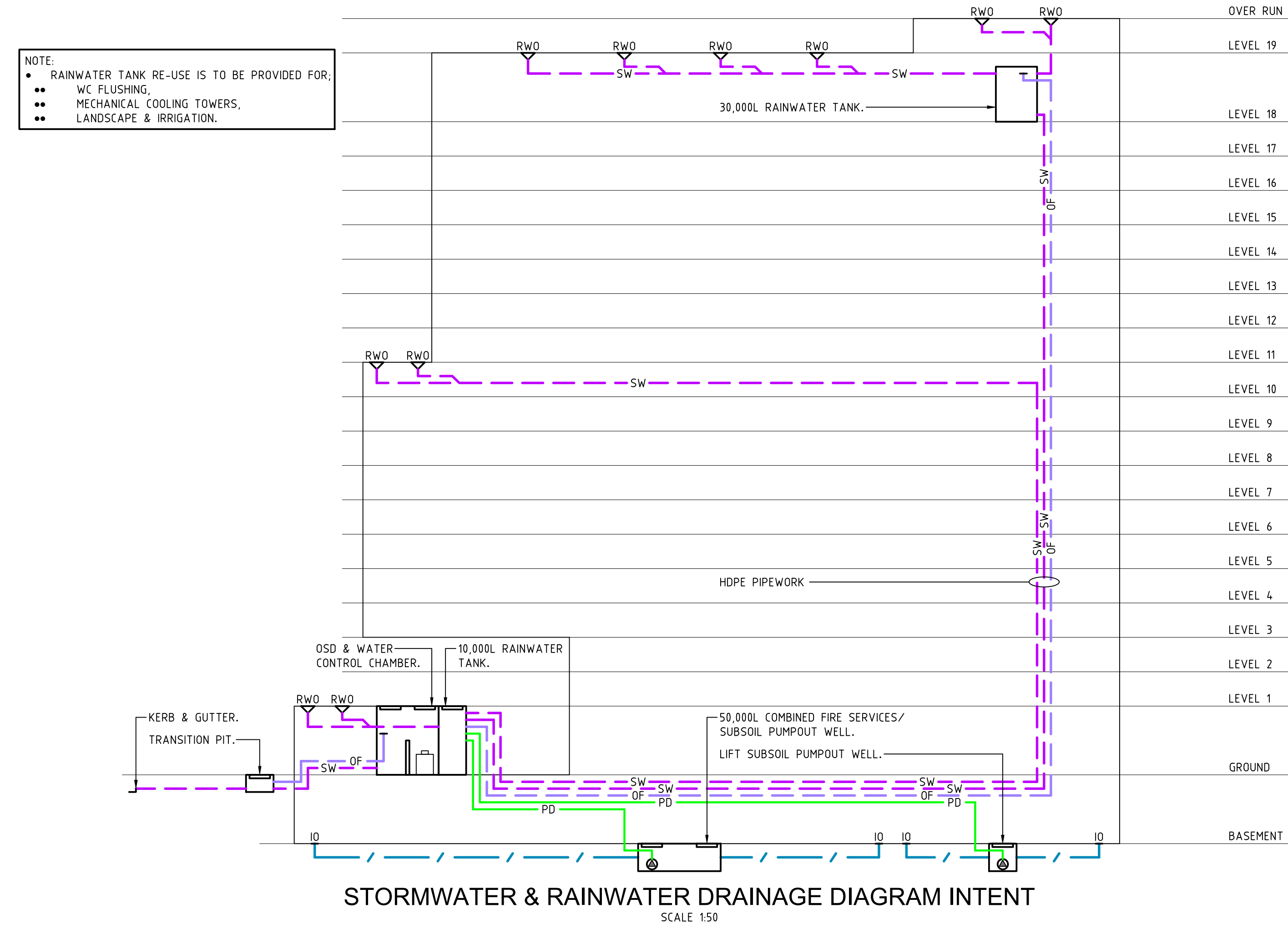
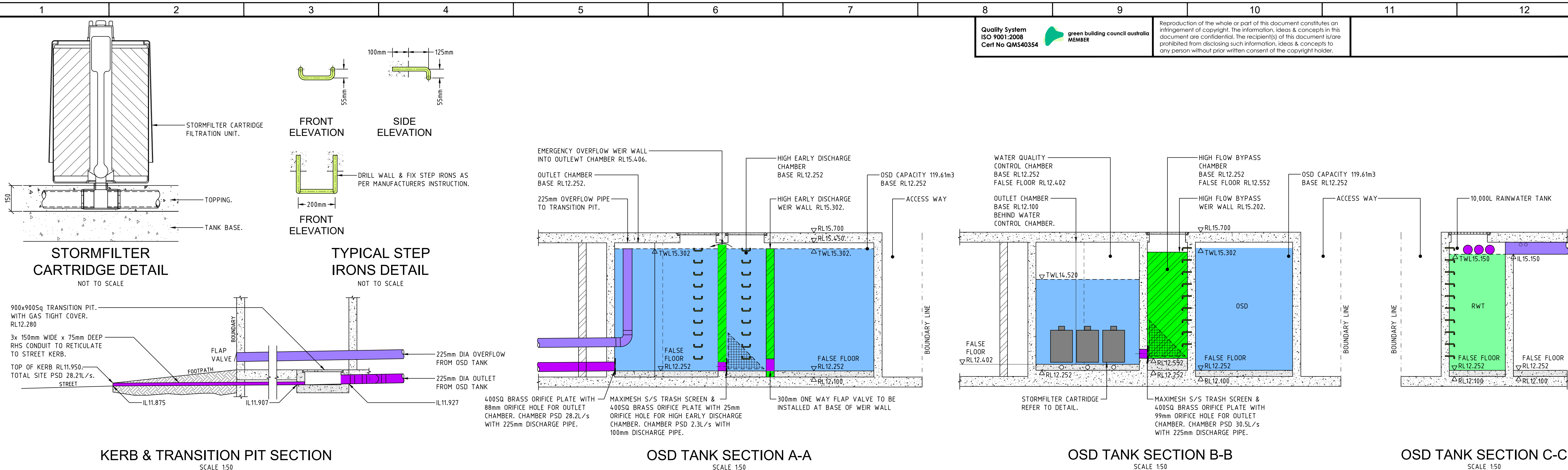
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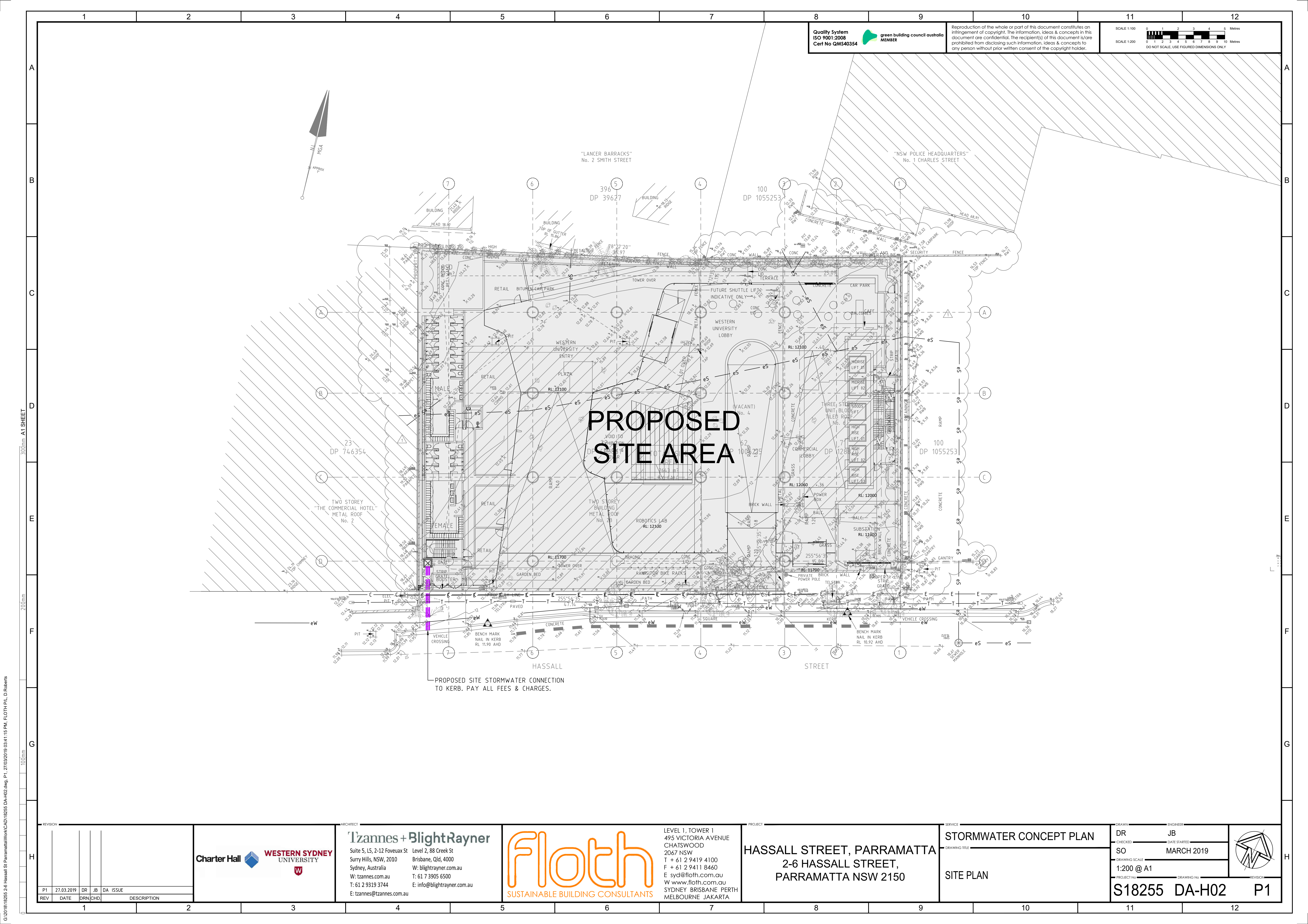
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SCALE 1:200  
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PROPOSED  
SITE AREA

PROPOSED SITE STORMWATER CONNECTION  
TO KERB. PAY ALL FEES & CHARGES.

| REVISION |            |     |     |             |
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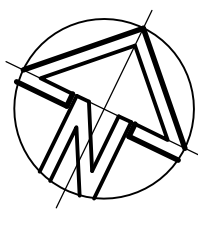


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STORMWATER CONCEPT PLAN  
DRAWING TITLE  
SITE PLAN

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CHECKED: SO  
DATE STARTED: MARCH 2019  
DRAWING SCALE: 1:200 @ A1  
PROJECT NO: S18255  
DRAWING NO: DA-H02



P1

## On-Site Detention Calculation Sheet for Upper Parramatta River Catchment HED Secondary Outlet

|  |                                       |                           |                    |                                   |                        |
|--|---------------------------------------|---------------------------|--------------------|-----------------------------------|------------------------|
| Project:   | 2-6 Hassall St Parramatta             |                           |                    |                                   |                        |
| Site Address                                     | 2-6 Hassall St Parramatta             |                           |                    |                                   |                        |
| Job No:  | 18255                                 |                           |                    |                                   |                        |
| Designer:  | James Browne                          |                           |                    |                                   |                        |
| Telephone:                                       | (02) 9406 4563                        |                           |                    |                                   |                        |
| <b>Site Data</b>                                 |                                       |                           |                    |                                   |                        |
| OSD Area:  | Upper Parramatta River Catchment      |                           |                    |                                   |                        |
| L.G.A  | Parramatta City Council               |                           |                    |                                   |                        |
| Site Area  | 0.2647                                | ha                        | 2,647              | m <sup>2</sup>                    |                        |
| Total Roof Area                                  | 0.1767                                | ha                        | 1,767              | m <sup>2</sup>                    |                        |
| Area of Site draining to OSD Storage             | 0.2456                                | ha                        | 2,456              | m <sup>2</sup>                    | Satisfactory           |
| Residual Site Area (Lot Area - Roof Area)        | 0.088                                 | ha                        |                    |                                   |                        |
| Area Bypassing Storage                           | 0.0191                                | ha                        |                    |                                   |                        |
| Area Bypassing / Residual Site Area              | 21.7%                                 |                           |                    |                                   | Satisfactory 30% Max   |
| No. of Dwellings on Site                         | 1                                     |                           |                    |                                   | Satisfactory           |
| Site Area per Dwelling                           | 0.265                                 | ha                        |                    |                                   |                        |
| Roof Area per Dwelling                           | 0.177                                 | ha                        |                    |                                   |                        |
| <b>Basic OSD Parameters</b>                      |                                       |                           |                    |                                   |                        |
|  |                                       | <b>Extended Detention</b> |                    | <b>Detention</b>                  |                        |
| Basic SSR Vols                                   | Ext Detention Storage                 | 300                       | m <sup>3</sup> /ha | Total Storage                     | 455 m <sup>3</sup> /ha |
| Basic SRDs                                       | Primary Outlet                        | 40                        | L/s/ha             | Secondary Outlet                  | 150 L/s/ha             |
| <b>OSD Tank Bypass</b>                           |                                       |                           |                    |                                   |                        |
| Residual Lot Capture in OSD Tank                 | 78%                                   |                           |                    |                                   |                        |
| Adjusted SRDs                                    | 33                                    | L/s/ha                    |                    | 107                               | L/s/ha                 |
| <b>OSD Calculations</b>                          |                                       |                           |                    |                                   |                        |
|  |                                       | <b>Extended Detention</b> |                    | <b>Detention</b>                  |                        |
| Basic SSR Volume                                 | Ext Detention Storage                 | 79.41                     | m <sup>3</sup>     | Total Storage                     | 120.44 m <sup>3</sup>  |
| Total Rainwater Tank Credits                     |                                       | 0.64                      | m <sup>3</sup>     |                                   | 0.83 m <sup>3</sup>    |
| Storage Volume                                   |                                       |                           |                    | Total                             | 119.61 m <sup>3</sup>  |
| Storage Volume                                   | Ext Detention Storage                 | 78.77                     | m <sup>3</sup>     | Flood Detention Storage           | 40.84 m <sup>3</sup>   |
| OSD Discharges                                   | Primary Outlet                        | 8.86                      | L/s                | Secondary Outlet                  | 28.21 L/s              |
| RL of Top Water Level of Storage                 | 0.000                                 | m                         |                    | 15.323                            | m                      |
| RL of Orifice Centre-line                        | 0.000                                 | m                         |                    | 12.302                            | m                      |
| Number of Orifices                               | 1                                     |                           |                    | 1                                 |                        |
| Estimated Downstream Flood Level                 | 9.00                                  | 1.5 yr ARI                |                    | 9.00                              | 100 yr ARI             |
| Downstream FL - RL of Orifice Centre-line        | 9.00                                  | Raise Orifice Level       | Satisfactory       | -3.30                             | m                      |
| Design Head to Orifice Centre                    | 0.000                                 | m                         |                    | TWL Ext Detn Storage - RL Orifice | -12.302 m              |
| Calculated Orifice Diameter                      | #DIV/0!                               | mm                        | Satisfactory       | #DIV/0!                           | #NUM! mm               |
| <b>Overflow Weir &amp; Freeboard Calculation</b> |                                       |                           |                    |                                   |                        |
| RL of Minimum Habitable Floor Level              |                                       |                           |                    | 12.100                            | m                      |
| RL of Minimum Garage Floor Level                 |                                       |                           |                    | 12.100                            | m                      |
| Length of Overflow Weir                          |                                       |                           |                    | 0.90                              | m                      |
| Site Runoff Coefficient                          | Parramatta City Council               |                           |                    | 0.75                              |                        |
| Storm Intensity (5 min 100 yr ARI)               |                                       |                           |                    | 206                               | mm/h                   |
| Peak Flow over Weir                              |                                       |                           |                    | 105.4                             | L/s                    |
| Depth of Flow over Weir                          |                                       |                           |                    | 172                               | mm                     |
| Freeboard to Habitable Floor                     | Unacceptable - Min Freeboard = 200 mm |                           |                    | -3395                             | mm                     |
| Freeboard to Garage Floor                        | Unacceptable - Min Freeboard = 100 mm |                           |                    | -3395                             | mm                     |

### Rainwater Tank Calculations (per Dwelling)



| Only Complete this Section if a Rainwater Tank Airspace Credit is Claimed               |                           |                |   |                     |
|---|---------------------------|----------------|---|---------------------|
| The calculations assume that the same size rainwater tank is installed on each dwelling |                           |                |   |                     |
|   |                           |                | <b>Min</b>                                  | <b>Max</b>          |
| % of Roof draining to Rainwater Tank  | 100.0%                    |                | Satisfactory                                | 4.6% 100%           |
| Total Rainwater Tank Volume   | 40.00                     | kL             | Tank Volume OK                              |                     |
| Min Volume that triggers Top-up   | 0.00                      | kL             | Note - Min Vol in Tank < 10% Total Tank Vol |                     |
| Total Tank Vol - Min Top-up Vol   | 40.00                     | kL             |   |                     |
| <b>Dedicated Airspace</b>   |                           |                |   |                     |
| Dedicated Airspace  | 0.00                      | kL             | Satisfactory                                |                     |
|   | <b>Extended Detention</b> |                | <b>Detention</b>                            |                     |
| Dedicated Airspace Credit   | 0.00                      | kL             |   | 0.00 kL             |
| Maximum Tank PSD  | 40                        | L/s/ha         |   |                     |
| Maximum Tank Discharge  | 0.0                       | L/s            |   |                     |
| Maximum Head to Centre of Tank Orifice  | 0.000                     | m              | No Dedicated Airspace                       |                     |
| Calculated Orifice Diameter   | 0                         | mm             | No Dedicated Airspace                       |                     |
| <b>Dynamic Airspace</b>   |                           |                |   |                     |
| Maximum Dynamic Storage (Nett Vol)  | 40.00                     | kL             | Controls minimum % Roof to Rainwater Tank   |                     |
| Daily Demand on Rainwater Tank  | 0.657                     | kL/d           | Satisfactory                                |                     |
| Dynamic Airspace at start of Storm  | 8.59                      | kL             |   |                     |
|   | <b>Extended Detention</b> |                | <b>Detention</b>                            |                     |
| Dynamic Airspace Credit   | 0.64                      | kL             |   | 0.83 kL             |
| Combined Rainwater Tank Credit  | 0.64                      | kL             |   | 0.83 kL             |
| Maximum Rainwater Tank Credit   | 40.00                     | kL             |   | 40.00 kL            |
| Rainwater Tank Credit per Dwelling  | 0.64                      | kL             |   | 0.83 kL             |
| Rainwater Tank Credit for the Site  | 0.64                      | m <sup>3</sup> |   | 0.83 m <sup>3</sup> |

Signature: James Browne 

Date: 27/03/2019







# **Appendix D**

## **Flood Enquiry Application**







Our Reference: FL/136/2018  
Contact: Peter Sirianni  
Telephone: 02 9806 8250  
Fax: 02 9806 5906

Gary Singh & Andrew Steventon  
Level 14, 5 Martin Place  
SYDNEY NSW 2000

24 October 2018

## FLOOD ENQUIRY APPLICATION

### Property Details

|                |   |
|----------------|---|
| <b>Address</b> | 2 Hassall Street, PARRAMATTA NSW 2150, 4 Hassall Street, PARRAMATTA NSW 2150, 6 Hassall Street, PARRAMATTA NSW 2150   |
|                | <i>This form applies for up to three adjoining sites relating to the same development. A separate Flood Enquiry form and fee will be required for more than 3 or separate lots.</i> |

### Delivery Preference

|   |
|---|
| gary.singh@solutionsconsulting.com.au & andrew.steventon@solutionsconsulting.com.au |
|---|

### Reason for Enquiry

|                                     |
|-------------------------------------|
| Proposed Re-development of Property |
|-------------------------------------|

### Property Type

**\*\* GST not applicable from 1 July 2013\*\***

|                                   |          |
|-----------------------------------|----------|
| Flooding Application - Commercial | \$496.45 |
|-----------------------------------|----------|

**Disclaimer:** Flood levels and flood extent lines are based on current information held by Council. Council does not accept responsibility for the accuracy of this information. Any pipe sizes and location of pits and pipe lines should be confirmed by site investigation.

The flood levels shown on the back of this form are only an approximate guide and have been derived using the current computer simulated model.

The information provided in this document is presented in good faith to assist the public in understanding Council's drainage requirements that apply within the Parramatta Local Government Area. It is the responsibility of each individual using this information to undertake their own checks and confirm this information prior to its use.

City of Parramatta Council, its agents and employees are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement, or advice referred to above.

**Refer to back of this form for level information issued**



## Flood Enquiry Information Issued - 24 October 2018

### Mainstream Flooding

|  |   |  |
|--|---|--|
| Is this property affected by mainstream flooding?<br><b>2-6 Hassall Street, Parramatta</b>   |   | <input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> No |
| <b>Flood Levels</b>  | Closest Cross Sections: <i>(Please refer to Flood Study):</i> |  |
| <input type="checkbox"/> 5% AEP  | m AHD   | <b>Comments:</b><br><br><b>See Note on Flood / Hazard Map</b>          |
| <input type="checkbox"/> 1% AEP  | m AHD   |  |
| <input type="checkbox"/> PMF   | m AHD   |  |
| <input checked="" type="checkbox"/> Refer to flood maps provided for detailed flood levels.  |   |  |
| Flood information is obtained from the following flood study report:<br><b>1. Lower Parramatta River Floodplain Risk Management Study – Flood Study Review, 2005 (SKM)</b><br><b>2. Parramatta Drainage, 1990 (Sinclair Knight &amp; Partners)</b> |   |  |

Note: Flood inundation can be verified by detail survey to AHD undertaken by a Registered Surveyor.

### Local Flooding

|   |   |
|---|---|
| Is the property located within a Hatched Grey Area?<br><i>Properties located within a <b>Hatched Grey Area</b> are subjected to flooding from the local catchment.</i>  | <input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> No                                |
| Is the property located within a Grey Area?<br><i>Properties located within a <b>Grey Area</b> are subjected to additional site drainage controls to manage flooding in the local catchment.</i>  | <input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> No                                |
| Is the property likely to be affected by overland stormwater run-off from the local catchment?<br><b>Note:</b> No site inspection conducted for this assessment. Based solely on the information supplied for this flood enquiry application. | <input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> Subject to Detailed Investigation |
| <b>Note:</b> You are required to contact Council's Development Service Engineer for any details and requirements relating to development that is affected by local flooding.  |   |

### Additional Recommended Actions

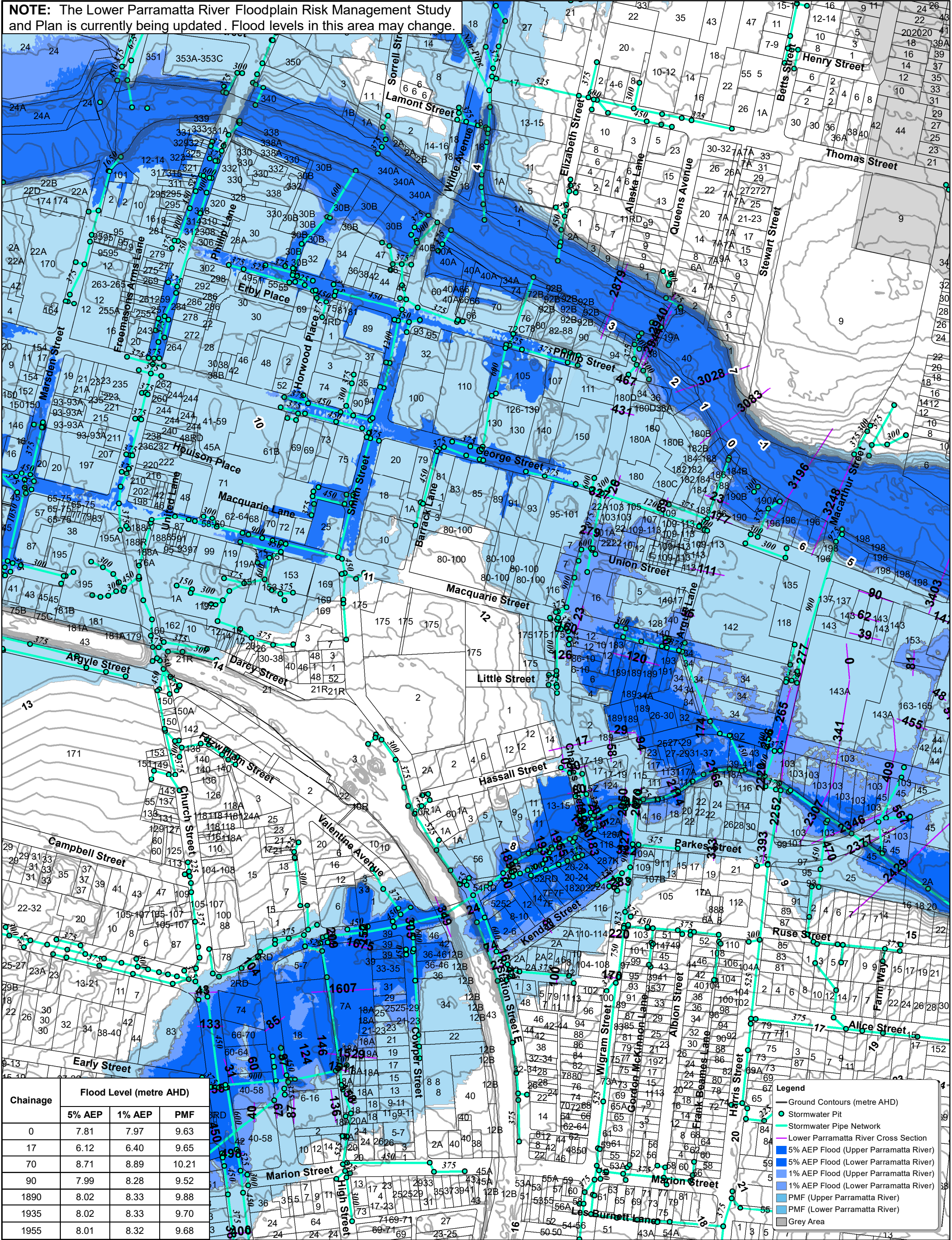
|                                     |   |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | The Applicant needs to discuss the proposal to re-develop this site with Council's Town Planner and Development Services Engineer.                |
| <input type="checkbox"/>            | The Applicant needs to contact Council's Town Planner and organise a pre-lodgement meeting to discuss any proposal to redevelop this property.    |
| <input type="checkbox"/>            | The Applicant needs to refer to Council's Local Floodplain Risk Management policy for details relating to developing a land affected by flooding. |

### Definitions: (As per NSW Floodplain Development Manual dated April 2005)

- AHD** – a common national surface level datum approximately corresponding to mean sea level.
- ARI** – the long term average number of years between the occurrences of a flood as big as or larger than, the selected event.
- PMF** – is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation.
- AEP** – Annual Exceedance Probability is the chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage.



**NOTE:** The Lower Parramatta River Floodplain Risk Management Study and Plan is currently being updated . Flood levels in this area may change.



Printed  
23/10/2018

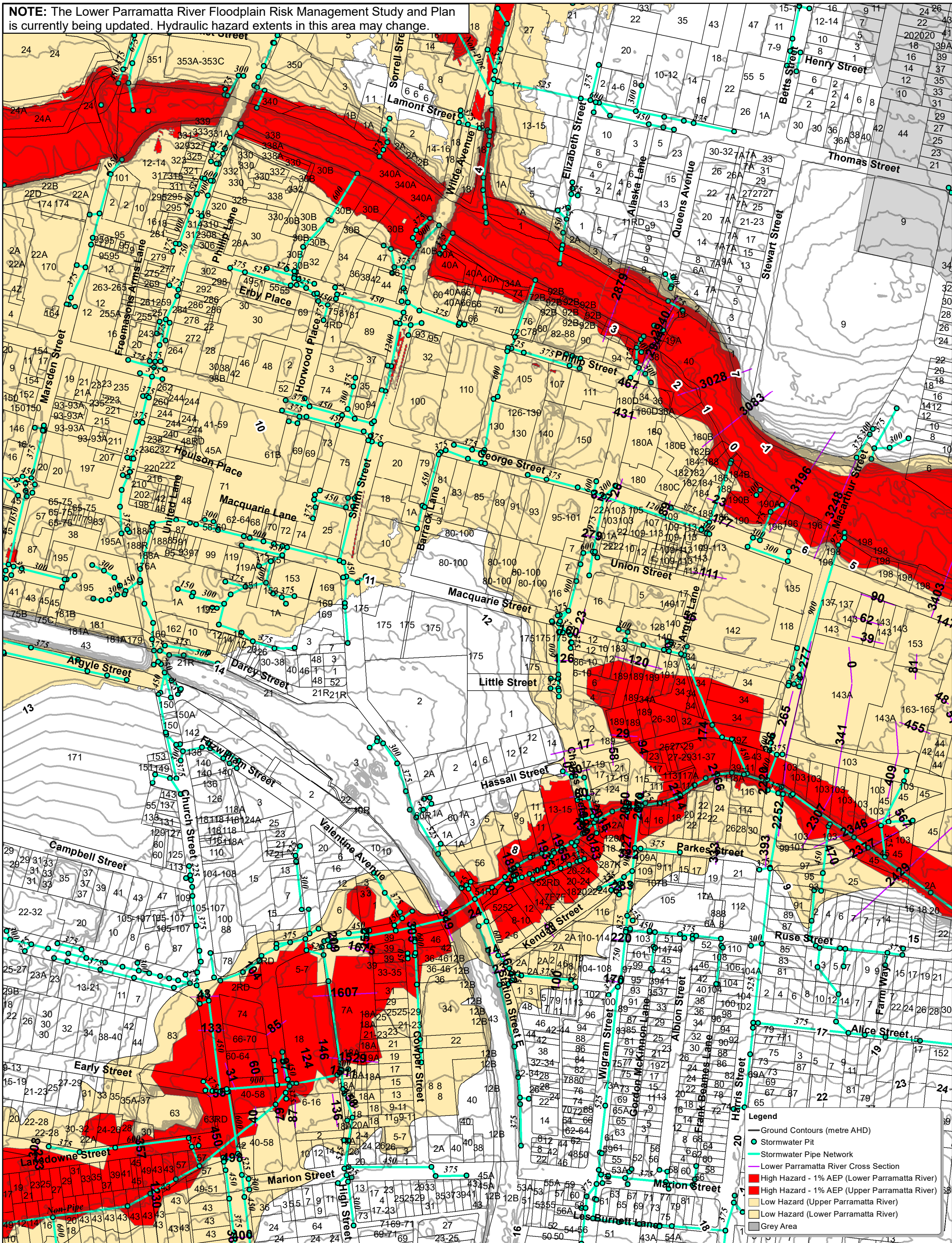
## City of Parramatta Council Flood Map



1:4,000



**NOTE:** The Lower Parramatta River Floodplain Risk Management Study and Plan is currently being updated. Hydraulic hazard extents in this area may change.



## City of Parramatta Council Hydraulic Hazard Map

**DISCLAIMER:** Flood levels and flood extent lines are based on current information held by Council. Council does not accept responsibility for the accuracy of this Information. Any pipe sizes and location of pits and pipe lines should be confirmed by site investigation. The flood levels provided are only an approximate guide and have been derived using the current computer simulated model. The information provided on this document is presented in good faith. It is the responsibility of each individual using this information to undertake their own checks and confirm this information prior to its use. City of Parramatta Council, its agents and employees are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement, or advice referred to above.

Printed  
23/10/2018



1:4,000





Robert  
**Bird**  
Group

### Sydney Office

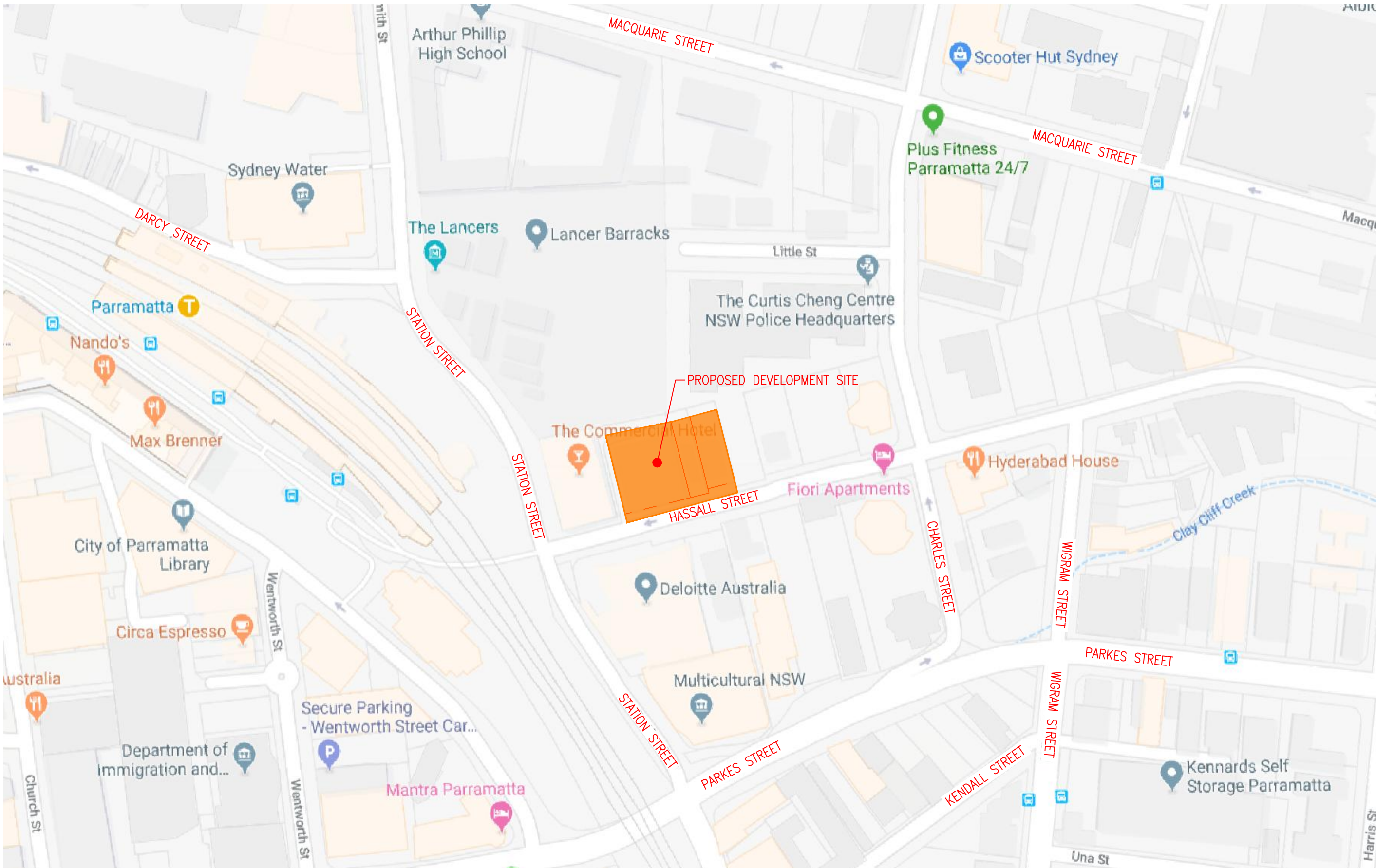
Robert Bird Group Pty Ltd  
ABN 67 010 580 248 ACN 010 580 248

Level 11, 151 Castlereagh Street  
Sydney NSW 2000  
PO Box A2309  
Sydney South NSW 1235  
Australia

P: +61 (0) 2 8246 3200  
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2B-6 HASSAL ST MAIN WORKS  
PARRAMATTA, NSW 2150  
CIVIL ENGINEERING DRAWINGS  
ISSUED FOR DEVELOPMENT APPLICATION

| Sheet List Table |   |
|------------------|---|
| Sheet Number     | Sheet Title                               |
| C-0-00           | COVER SHEET, LOCATION MAP AND SHEET INDEX |
| C-0-01           | GENERAL NOTES                             |
| C-1-00           | EROSION AND SEDIMENT CONTROL              |
| C-1-10           | EROSION AND SEDIMENT CONTROL DETAILS      |
| C-2-01           | BULK EARTHWORKS PLAN                      |
| C-2-10           | BULK EARTHWORKS SECTIONS                  |
| C-3-00           | GENERAL ARRANGEMENT PLAN                  |
| C-3-10           | CIVIL DETAILS                             |
| C-4-10           | PAVEMENT DETAILS                          |
| C-6-50           | STORMWATER PRE CATCHMENT ANALYSIS         |
| C-6-51           | STORMWATER POST CATCHMENT ANALYSIS        |



LOCALITY MAP  
SCALE NTS

| Rev | Revision                           | Description | By | App      | Date |
|-----|------------------------------------|-------------|----|----------|------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ          | CR | 04.03.19 |      |


| Rev | Revision | Description | By | App | Date |
|-----|----------|-------------|----|-----|------|
|     |          |             |    |     |      |

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DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS  
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

Structural, Civil & Construction  
Engineering Consultant

**RobertBirdGroup**  
Member of the Urbana Jurong Group

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Web: [www.robertbird.com](http://www.robertbird.com)  
ACN 010 580 248

Client

**Charter Hall**

Title

**COVER SHEET, LOCATION MAP AND SHEET INDEX**

Project

**2B-6 HASSALL STREET  
PARRAMATTA**

Scale of A1  
AS SHOWN  
Date  
04.03.19

Drawn  
S.MANANDHAR  
Designer  
Z.JONES

Design Checker  
Approved  
C.ROPE  
Job Number  
18570C

**NOT FOR CONSTRUCTION**

Drawing Number  
**C-0-00**

Revision  
**1**



GENERAL NOTES

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING DRAWINGS AND CITY OF PARRAMATTA COUNCIL AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.
2. THESE ENGINEERING PLANS ARE TO BE READ IN CONJUNCTION WITH PROJECT SPECIFICATIONS AND OTHER CONSULTANTS DOCUMENTATION ON THE PROJECT.
3. THESE ENGINEERING PLANS HAVE BEEN PREPARED FROM INFORMATION AVAILABLE AT THE TIME OF ISSUE. AS THIS INFORMATION MAY BE THE SUBJECT OF CHANGE PRIOR TO OR DURING CONSTRUCTION THE CONTRACTOR IS TO ADVISE THE ENGINEER WHERE DISCREPANCIES OCCUR.
4. THESE DRAWINGS SHALL NOT BE USED FOR FINAL SETOUT OF THE PROJECT UNLESS SPECIFICALLY STATED.
5. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH PARRAMATTA CITY COUNCIL STANDARDS, GUIDELINES AND TECHNICAL MANUALS.
6. ALL WORKS SHALL HAVE SMOOTH JUNCTIONS WITH EXISTING.
7. ALL SURFACES SHALL BE EVEN GRADED AT MINIMUM 1% TO PREVENT SURFACE WATER PONDING.
8. WHERE CERTIFICATION IS REQUIRED, INSPECTIONS ARE TO BE PERFORMED BY A DULY APPOINTED INSPECTOR FROM 'ROBERT BIRD GROUP'. THESE INSPECTIONS ARE TO BE PERFORMED IN ACCORDANCE WITH THE INSPECTION & TEST PLANS PREPARED BY 'ROBERT BIRD GROUP.' THE INSPECTOR IS TO BE GIVEN A MINIMUM NOTICE AS DETAILED IN THE SPECIFICATIONS.
9. ALL MATERIALS SHALL COMPLY WITH WHAT IS SHOWN ON THE PROJECT DRAWINGS AND IN THE PROJECT SPECIFICATIONS.
10. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING SERVICES WITH ALL RELEVANT SERVICE AUTHORITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. A COPY OF THE LOCATIONS OF THE EXISTING SERVICES IS TO BE PROVIDED TO THE MANAGING CONTRACTOR BY THE SERVICES ENGINEER. CONTRACTOR TO NOTIFY MANAGING CONTRACTOR OF ANY POTENTIAL CLASHES.
11. THE CONTRACTOR SHALL VERIFY OFFSET PEGS AND BENCHMARK LEVELS, AND ADVISE THE MANAGING CONTRACTOR OF ANY DISCREPANCY PRIOR TO COMMENCING CONSTRUCTION.
12. THE CONTRACTOR SHALL VERIFY THE EXISTING LEVELS WHERE NEW WORKS ARE TO JOIN TO EXISTING WORKS, AND ADVISE THE MANAGING CONTRACTOR OF ANY DISCREPANCY PRIOR TO COMMENCING CONSTRUCTION.
13. THE CONTRACTOR SHALL CHECK OR OBTAIN ALL DIMENSIONS RELEVANT TO SETTING OUT OF SITE WORKS.
14. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STABILITY OF THE WORKS AND ENSURE NO PART IS OVERSTRESSED. THE DESIGN AND CERTIFICATION OF ALL FORMWORK AND BACKPROPPING IS TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
15. THE CONTRACTOR IS TO OBTAIN DESIGN ADVICE FROM A SUITABLY QUALIFIED ENGINEER REGARDING DEMOLITION, RETROFITTING, TEMPORARY WORKS, HEALTH & SAFETY AND NUISANCE. THIS HAS BEEN REFERRED TO AS THE "CONTRACTORS ENGINEER" THROUGHOUT THE REMAINING NOTES.
16. FORMWORK STRIPPING: UNLESS SPECIFIED OTHERWISE IN THE PROJECT DOCUMENTATION, MINIMUM STRIPPING TIMES FOR IN-SITU CONCRETE FORMWORK SHALL COMPLY WITH SECTION 5.4.3 (TABLE 5.4.1) OF AS3610-"FORMWORK FOR CONCRETE".
17. WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT AUSTRALIAN STANDARDS AND BCA STATUTORY REQUIREMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT SUFFICIENT TOLERANCES ARE PROVIDED AND INTEGRATED THROUGHOUT ALL ELEMENTS OF THE WORKS.
19. ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.
20. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (A.H.D.).
21. DESIGN LEVELS AND SETOUT DETAILED HEREIN ARE DERIVED SURVEY, LANDSCAPE AND ARCHITECTURAL PLANS. CONTRACTOR SHALL CONFIRM LEVELS ARE COORDINATED PRIOR TO COMMENCING WORKS. EXISTING LEVELS ARE DERIVED FROM SURVEY DATA. CONTRACTOR TO CONFIRM ALL ON SITE PRIOR TO COMMENCING WORKS.

HEALTH & SAFETY

1. THE CONTRACTOR SHALL DEVELOP, IMPLEMENT AND ADMINISTER A WORKPLACE HEALTH AND SAFETY PROGRAM THAT WILL ENSURE THAT ALL CONSTRUCTION ACTIVITIES ARE PERFORMED TO THE RELEVANT WORKPLACE HEALTH AND SAFETY REQUIREMENTS AND ANY OTHER RELEVANT STATUTORY REQUIREMENTS.
2. THE WORKPLACE HEALTH AND SAFETY PROGRAM MUST BE CO-ORDINATED WITH ADJOINING PROPERTY OWNERS AND ALL RELEVANT PARTIES AS NECESSARY TO ENSURE A SAFE BUILDING ENVIRONMENT AT ALL TIMES.

NUISANCE

1. THE CONTRACTOR SHALL DEVELOP, IMPLEMENT, AND ADMINISTER A PLAN THAT WILL ENSURE THE MANAGEMENT OF NOISE AND VIBRATION RESULTING FROM CONSTRUCTION WORKS. REFER TO SPECIFICATIONS FOR REQUIRED LIMITS, OTHERWISE, CONTACT ENGINEER FOR GUIDANCE.
2. THE CONTRACTOR WILL NEED TO ENSURE ALL ADJOINING PROPERTY REQUIREMENTS RELATING TO NOISE AND VIBRATION ARE MET.
3. IF IT IS ESTABLISHED THAT THERE ARE NO SITE SPECIFIC REQUIREMENTS, THEN THE CONTRACTOR SHALL REFER TO MINIMUM REQUIREMENTS FOR ABATEMENT OF NOISE AND VIBRATION NOMINATED BY RELEVANT STATUTORY REQUIREMENTS
4. THE CONTRACTOR WILL NEED TO PREPARE AND ADVISE ON MONITORING AND MANAGEMENT OF NOISE AND VIBRATION BASED ON PROFESSIONAL ADVICE FROM SUITABLY QUALIFIED PERSON OR PERSONS.

SURVEY NOTES

1. THE SURVEY INFORMATION SHOWN ON ROBERT BIRD GROUP DRAWINGS HAS BEEN OVERLaid FROM INFORMATION PROVIDED IN THE DETAILED SURVEY BY USHER & COMPANY, SURVEYING AND LAND DEVELOPMENT CONSULTANTS FILE REF: 6083-DET ISSUE 3, DATED 25.09.2018. ROBERT BIRD GROUP DOES NOT GUARANTEE THAT THE SURVEY INFORMATION IS ACCURATE, AND ACCEPTS NO LIABILITY FOR INACCURACIES.

SEDIMENT AND EROSION CONTROL NOTES

1. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PROVIDED IN ACCORDANCE WITH SPECIFICATION AND EPA "MANAGING URBAN STORMWATER CONSTRUCTION ACTIVITIES" 1998. ALL WORKS SHALL BE COMPLETED PRIOR TO CONSTRUCTION COMMENCING.
2. REFER TO ROBERT BIRD GROUP'S DRAWING SHEETS C-1-00 AND C-1-10 FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.

EARTHWORKS NOTES

1. REFER TO THE GEOTECHNICAL ENGINEERING REPORT.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL, COMPACTION AND DISPOSAL OF ALL EXCAVATED MATERIAL.
3. ALL EARTHWORKS AREAS ARE TO BE LEFT IN A FREE DRAINING STATE.

4. PROOF ROLL SUBGRADE TO REVEAL SOFT SPOTS. SOFT SPOTS TO BE REMOVED AND BACKFILLED. ALL NATURAL SUBGRADE IS TO BE COMPACTED TO IN ACCORDANCE WITH AS1289 PRIOR TO PLACEMENT OF FILL MATERIAL.
5. MATERIAL WON FROM THE SITE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER FOR APPROVAL PRIOR TO USE AS FILL. ALL FILL TO BE COMPACTED TO MIN. 98% STANDARD COMPACTION IN 200mm MAXIMUM THICK LAYERS IN ACCORDANCE WITH AS1289.
6. TEST CERTIFICATES ON THE FILL MATERIAL SHALL BE SUPPLIED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO THE USE OF THE FILL MATERIAL.

TEMPORARY WORKS

1. THE CONTRACTOR SHALL ALLOW FOR THE DESIGN, SUPPLY, INSTALLATION AND REMOVAL OF ALL TEMPORARY BACK PROPPING, SAFETY SCREENS, SCAFFOLDING AND OTHER REQUIREMENTS OF THE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL ENGAGE SUITABLY QUALIFIED ENGINEER REFERRED TO AS "CONTRACTORS ENGINEER". TO DESIGN INSPECT AND CERTIFY ALL TEMPORARY WORKS, AND DEMOLITION WORKS.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE OVERALL STABILITY OF THE STRUCTURES WHILST UNDER CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ADVICE FROM THE CONTRACTORS ENGINEER.

CONCRETE NOTES

GENERAL

1. CONCRETE WORK SHALL BE IN ACCORDANCE WITH AS3600 AND WITH THE PROJECT SPECIFICATIONS.
2. CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN ON SUPERINTENDENT DRAWINGS OR SPECIFICALLY APPROVED BY SUPERINTENDENT.
3. ALL THICKNESSES SHOWN ARE MINIMUM STRUCTURAL REQUIREMENTS, NO REDUCTION IN THICKNESS DUE TO FALLS OR TOPPING IS PERMITTED.
4. UNLESS A GROOVE LINE ALLOWANCE HAS BEEN NOTED ON THE DRAWINGS, NO GROOVE LINES ARE PERMITTED, EXCEPT AT SLAB LINES. ALL GROOVE LINES ARE TO BE SUBMITTED TO 'ROBERT BIRD GROUP' FOR APPROVAL.
5. THE FACE OF ALL CONCRETE AGAINST WHICH NEW CONCRETE IS TO BE CAST IS TO BE THOROUGHLY MECHANICALLY SCABBLED, FULLY EXPOSING THE AGGREGATE MATRIX.

CONCRETE

1. THE CHARACTERISTIC COMPRESSIVE STRENGTH (f'c) AT 28 DAYS OF IN PLACE CONCRETE SHALL BE AS NOTED IN THE SPECIFICATION OR OTHERWISE NOTED ON THE DRAWINGS
2. MAXIMUM AGGREGATE SIZE.....20mm
3. SLUMP.....80mm
4. ALL CONCRETE SHALL BE VIBRATED.
5. ALL CONCRETE SHALL BE CURED IN ACCORDANCE WITH THE SPECIFICATION
6. ALL CONCRETE SHALL BE SAMPLED AND TESTED IN ACCORDANCE WITH AS1012 AND THE PROJECT SPECIFICATION.
7. ALL FORM WORK SHALL COMPLY WITH AS3610
8. REFER STRUCTURAL ENGINEER'S SPECIFICATIONS FOR CONCRETE REQUIREMENTS.

REINFORCEMENT

1. REINFORCEMENT IS TO BE MANUFACTURED IN ACCORDANCE WITH AS4671 AND SHALL BE FIXED AS SHOWN ON DRAWINGS.
2. MATERIAL IS INDICATED BY THE FOLLOWING SYMBOLS:-

Y

N

R

W

SL

RL

DEFORMED BAR GRADE 400

DEFORMED BAR GRADE 500 (NORMAL DUCTILITY)

PLAIN ROUND BAR GRADE 250

PLAIN WIRE GRADE 450

SQUARE FABRIC GRADE 500

RECTANGULAR FABRIC GRADE 500
3. THE BAR SIZE IS INDICATED BY A NUMBER AFTER THE SYMBOL, WHICH INDICATES THE BAR DIAMETER IN MILLIMETRES.
4. REINFORCEMENT SPACING NOMINATED ON DRAWINGS IS TO ASSIST SCHEDULER AND STEEL FIXER TO ASSESS TOTAL NUMBER OF BARS REQUIRED. WHERE BARS PLACED IN ACCORDANCE WITH SPACING NOMINATED FOUL WITH OTHER STRUCTURAL REQUIREMENTS, PREFERENCE IS TO BE GIVEN TO RELOCATING BARS BY LOCALLY ADJUSTING SPACING TO ENABLE ASSEMBLY OF REINFORCEMENT TO BE COMPLETED. ENGINEER IS TO BE CONTACTED IN THE EVENT THAT REINFORCEMENT IS NEEDED TO BE CUT ON SITE PRIOR TO CONTINUING.
5. LAP LENGTHS TO REINFORCEMENT BARS TO BE AS NOTED ON THE RELEVANT DRAWINGS.
6. WELDING OF REINFORCEMENT BARS IS NOT PERMITTED UNLESS APPROVED.

CONCRETE NOTES CONTINUED

REINFORCEMENT CONTINUED

7. COVER SHALL BE AS NOTED ON THE RELEVANT DRAWINGS.
8. CONCRETE COVERS NOTED ARE MEASURED FROM THE FORM WORK OR GROUND FACE TO THE OUTERMOST REINFORCEMENT COMPONENT. i.e.. IN COLUMNS AND BEAMS TO THE OUTSIDE OF TIES OR LIGATURES.
9. COVER TO BE MAINTAINED DURING POURING BY THE USE OF PLASTIC CHAIRS OR PLASTIC TIPPED METAL CHAIRS.
10. WHERE NO REINFORCEMENT IS SHOWN ON THE DRAWING AT RIGHT ANGLES TO THE MAIN REINFORCEMENT DISTRIBUTION REINFORCEMENT IS TO BE PROVIDED.
11. BENDING & STRAIGHTENING

COLD BENDING:

HOT BENDING:

STRAIGHTENING:

BARS CANNOT BE COLD BENT WITHOUT PRIOR APPROVAL FROM THE PROJECT STRUCTURAL ENGINEER. CORRECT MINIMUM DIAMETER FORMERS ARE TO BE USED IN ACCORDANCE WITH AS3600.

HOT BENDING MAY ONLY BE CONDUCTED WITH THE APPROVAL OF THE PROJECT STRUCTURAL ENGINEER. HOT BENDING CAN ONLY BE PERFORMED BY A CERTIFIED WELDER. TEST CERTIFICATE OF AFFECTED AREA TO BE OBTAINED.

WHEN RE-STRAIGHTENING PARTIALLY EMBEDDED BARS, DO NOT BEND OVER FORMERS OF SMALLER DIAMETER THAN PERMITTED IN AS 3600. DO NOT SUBJECT REINFORCEMENT BARS TO IMPACT IN ORDER TO STRAIGHTEN.

SLAB ON GROUND NOTES

1. SLAB ON GROUND TO BE POURED ON A LAYER OF POLYETHYLENE SHEETING 200µm THICK ON TOP OF 50mm OF BEDDING SAND. JOINTS TO BE TAPED
2. FABRIC TO BE PLACED ON CHAIRS AT 800 x 800 CENTRES AND CHAIRS TO BE PLACED ON STEEL PANS.
3. LAP FABRIC REINFORCEMENT THUS:

LAP

2 CROSS WIRES

LAP

2 CROSS WIRES
4. WHERE BEDDING SAND IS REQUIRED UNDER SLAB, THIS SHALL BE COMPACTED SUFFICIENTLY TO SUPPORT REINFORCEMENT PLUS 100kg/CHAIR WITHOUT VERTICAL DISPLACEMENT EXCEEDING 5mm.

ROADS AND PAVEMENT NOTES

GENERAL

1. PAVEMENT SHALL BE BOXED OUT TO THE DEPTHS AS SHOWN ON THE PAVEMENT DRAWINGS, AND SUBGRADE TESTING IS TO BE UNDERTAKEN. SUBGRADE TESTING RESULTS ARE TO BE FORWARDED TO THE ENGINEER (ROBERT BIRD GROUP) FOR DETERMINATION OF FINAL PAVEMENT DEPTH. PAVEMENT CONSTRUCTION IS TO HOLD UNTIL FINAL PAVEMENT DEPTH HAS BEEN DETERMINED BY THE ENGINEER, AND APPROVED BY THE RELEVANT AUTHORITY.

PREPARATION OF SELECT SUBGRADE LAYERED

2. THE SELECT SUBGRADE LAYER IS DEFINED AS THE UPPER 300MM OF THE FORMATION UPON WHICH THE ROAD PAVEMENT IS TO BE CONSTRUCTED. THE UPPER SURFACE OF THE SUBGRADE LAYER IS DEFINED AS THE DESIGN SUBGRADE LEVEL.
3. THE SELECT SUBGRADE LAYER SHALL BE FREE FROM ALL POCKETS OF SOFT COMPRESSIBLE MATERIAL, FREE FROM STONE WITH A MAXIMUM DIMENSION LARGER THAN 50MM, AND HAVE A MINIMUM SOAKED CBR AS SPECIFIED ON DRAWINGS.
4. ANY UNSUITABLE LAYER SHALL BE COMPACTED TO A FIELD DRY DENSITY OF NOT LESS THAN 100% AS DETERMINED IN ACCORDANCE WITH RTA TEST METHOD T111 – STANDARD COMPACTION (FOR A COHESIVE SOIL) OR A MINIMUM DENSITY INDEX OF 80% WHEN TESTED IN ACCORDANCE WITH AS.1289.5.6.1 (FOR A COHESIVE LESS SOIL)
5. TESTS FOR COMPACTION OF SELECTED SUBGRADE LAYER SHALL BE CARRIED OUT BY THE CONTRACTOR AT LOCATION APPROVED BY THE SUPERINTENDENT AT A RATE AS SPECIFIED.

PLACEMENT OF PAVEMENT MATERIALS

1. THE PAVEMENT SHALL BE CONSTRUCTED TO THE THICKNESS AS SHOWN ON THE DRAWINGS. PAVEMENT COURSES LESS THAN 150mm IN COMPACTED THICKNESS SHALL BE SPREAD AND COMPACTED IN TWO OR MORE LAYERS OF NOT LESS THAN 75MM OR MORE THAN 150MM IN COMPACTED THICKNESS.
2. SPREADING SHALL BE UNDERTAKEN BY A METHOD THAT WILL ENSURE THAT SEGREGATION DOES NOT OCCUR.
3. MIXING OR BLENDING OF PAVEMENT MATERIALS WILL NOT BE ALLOWED ON THE ROAD FORMATION. PAVEMENT MATERIAL SHALL NOT BE SPREAD ON A WATERLOGGED SUBGRADE NOR BROKEN ON THE SUBGRADE. WHEN SPREADING AND/OR MIXING PAVEMENT MATERIAL, CARE SHALL BE TAKEN TO ENSURE THAT THE SUBGRADE SHALL NOT BE DISTURBED, BECOME RUTTED OR MIXED WITH THE PAVEMENT MATERIALS.
4. IF, AT ANY TIME ANY PART OF SUBGRADE AND PAVEMENT MATERIALS BECOME MIXED, THE CONTRACTOR SHALL, AT ITS COST, REMOVE THE MIXTURE AND RESHAPE THE SUBGRADE WITH APPROVED MATERIAL COMPACTED UNIFORMLY WITH THE SURROUNDING SURFACE.
5. WHEN EACH LAYER OF PAVEMENT MATERIAL HAS BEEN SPREAD, WATERING SHALL BE CARRIED OUT AS NECESSARY TO MAINTAIN THE MATERIAL AT A MOISTURE CONTENT DURING ROLLING AS CLOSE TO BUT NOT EXCEEDING ITS OPTIMUM MOISTURE CONTENT.
6. WHERE THE MOISTURE CONTENT OF PAVEMENT MATERIAL IS INSUFFICIENT, WATER SHALL BE ADDED BY APPROVED WATERING EQUIPMENT AND SHALL BE MIXED UNIFORMLY WITH THE MATERIAL BY AN APPROVED MECHANICAL DEVICE.
7. WHERE THERE IS EXCESS MOISTURE IN THE PAVEMENT MATERIAL, IT SHALL BE DRIED TO THE REQUIRED MOISTURE CONTENT BY LOOSENING AND AERATING.

COMPACTION OF PAVEMENT MATERIALS

1. AS EACH LAYER IS BROUGHT TO IT OPTIMUM MOISTURE CONTENT, IT SHALL BE IMMEDIATELY COMPACTED BY ROLLING.
2. COMPACTION SHALL BE CARRIED OUT USING APPROVED EQUIPMENT OF ADEQUATE CAPACITY TO ACHIEVE THE DEGREE OF COMPACTION SPECIFIED.
3. ANY DEFICIENCIES MADE BY THE SINKING OF THE COMPACTOR WHEN COMPACTING MATERIAL SHALL AT ONCE BE MADE GOOD BY SCARIFYING THE SURFACE AND ADDING ADDITIONAL MATERIAL AT THE CONTRACTOR 'S EXPENSE.
4. ON THE SECTION OF PAVEMENT HAVING A ONE-WAY CROSS FALL, COMPACTION SHALL COMMENCE AT THE LOWER EDGE OF THE BASE AND PROGRESS UPWARDS TO THE HIGHER EDGE.
5. ON CROWNED SECTION OF PAVEMENT, COMPACTION SHALL COMMENCE AT THE OUTER EDGES OF THE BASE AND PROGRESS INWARDS TOWARDS THE CROWN.
6. EACH PASS OF THE COMPACTION PLANT SHALL BE PARALLEL TO THE CENTRE LINE OF THE PAVEMENT. THE METHOD OF COMPACTION SHALL ALLOW FOR PROGRESSIVE AND UNIFORM OVERLAP BETWEEN PASSES.
7. IF NON-VIBRATING SMOOTH-WHEELED ROLLERS ARE USED AS COMPACTION PLANT, THEY SHALL BE OPERATED WITH THE DRIVING ROLLERS FACING THE UNCOMPACTED MATERIAL DURING THE INITIAL PASS.
8. IF VIBRATING ROLLERS ARE USED AS COMPACTION PLANT, THE VIBRATOR SHALL NOT BE ACTIVATED UNTIL A MINIMUM OF TWO "STATIC" PASSES HAVE BEEN MADE. IN ADDITION, THE VIBRATORS SHALL NOT BE ACTIVATED DURING ANY CHANGE IN DIRECTION OF THE ROLLER.
9. COMPACTION PLANT AND OTHER ANCILLARY PLANT SHALL NOT BE ALLOWED TO REMAIN STANDING ON THE COMPACTED PAVEMENT WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
10. TRAFFIC SHALL NOT BE ALLOWED ON ANY COMPACTED LAYER WITHOUT APPROVAL OF THE SUPERINTENDENT. EACH LAYER IN A MULTI-LAYERED COURSE SHALL BE FULLY COMPACTED IN SEQUENCE. THE SURFACE OF THE COMPACTED LAYER SHALL BE KEPT SUFFICIENTLY MOIST TO MAINTAIN THE REQUIRED FIELD MOISTURE CONTENT THROUGHOUT THE FULL DEPTH OF THE LAYER PRIOR TO PLACEMENT OF SUBSEQUENT LAYERS OR TO THE APPLICATION OF THE SURFACE PRIMER, AS APPLICABLE.
11. COMPACTION SHALL CONTINUE UNTIL THE MATERIAL DOES NOT CREEP OR WAVE AHEAD OF THE ROLLER, UNTIL THE SURFACE PRESENTS A SMOOTH UNIFORM APPEARANCE AND UNTIL THE MATERIAL HAS BEEN LEVELED AND COMPACTED TO THE REQUIREMENTS AND TOLERANCES SPECIFIED ELSEWHERE HEREIN.
12. TESTS FOR COMPACTION OF ROAD PAVEMENT MATERIALS SHALL BE CARRIED OUT BY THE CONTRACTOR AT LOCATIONS APPROVED BY THE SUPERINTENDENT AT A RATE AS SPECIFIED.

STORMWATER DRAINAGE NOTES

1. THESE NOTES SHALL BE READ IN CONJUNCTION WITH:

A. GENERAL NOTES AND DISCLAIMERS FOR THE PROJECT

B. ROADWORKS NOTES FOR THE PROJECT

C. SPECIFICATIONS FOR THE PROJECT.
2. STORMWATER PIPES 375NB AND GREATER SHALL BE RCP R/RJ, U.N.O. CLASSES AS NOTED ON THE DRAWINGS. FRC PERMITTED.
3. STORMWATER DRAINAGE PIPES LESS THAN OR EQUAL TO 900mm DIAMETER SHALL BE SPIGOT AND SOCKET AND RUBBER RING JOINTED.
4. OUTLET LOCATIONS ARE TO BE CONFIRMED ON SITE BY THE MANAGING CONTRACTOR PRIOR TO THE COMMENCEMENT OF STORMWATER DRAINAGE CONSTRUCTION.
5. ALL PROPOSED STORMWATER WORKS DESIGNED IN ACCORDANCE WITH

A. AUSTRALIAN RAINFALL AND RUNOFF (1987 EDITION) VOLUMES 1 AND 2.

B. AS 3500 NATIONAL PLUMBING CODE PART 3 – STORMWATER DRAINAGE.

C. PARRAMATTA CITY COUNCIL'S PUBLIC DOMAIN GUIDELINES.

SERVICE NOTES


1. ALL EXISTING SERVICES LIDS THAT ARE TO REMAIN ARE TO BE RECONSTRUCTED TO MATCH PROPOSED LEVELS AND ALIGNED TO PARRAMATTA CITY COUNCIL STANDARDS.

LANDSCAPING NOTES

1. REFER TO ASPECT LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPING DETAILS.

HYDRAULICS NOTES

1. REFER TO HYDRAULIC ENGINEERS DRAWINGS FOR SEWER, WATER AND INTERNAL SITE STORMWATER DRAINAGE WORKS

| <table><tr><th>Rev</th><th>Revision Description</th><th>By</th><th>App</th><th>Date</th></tr><tr><td>1</td><td>ISSUED FOR DEVELOPMENT APPLICATION</td><td>ZJ</td><td>CR</td><td>04.03.19</td></tr></table> |                                    |             |     |             |  | Rev                  | Revision Description | By       | App | Date | 1 | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR | 04.03.19 | <table><tr><th>Rev</th><th>Revision Description</th><th>By</th><th>App</th><th>Date</th></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table> |  |  |  |  |  | Rev | Revision Description | By | App | Date |  |  |  |  |  | <div><div>Disclaimer: Robert Bird Group Pty Ltd ACN 010 580 248 and its related entities (RBG) do not warrant the accuracy, currency or completeness of any information or data they supply or transfer by electronic means. You are responsible for verifying that any information or data supplied or transferred by electronic means matches the information or data on the corresponding PDF or DWG version issued by RBG. RBG will not be liable for any loss or damage you or any other party incurs as a result of acting in reliance on any information or data supplied or transferred by electronic means and you release RBG from any liability for any loss or damage however caused which you or any other party may directly or indirectly suffer in connection with your access to or use of that information or data.</div><div>RBG provides this information for the express purpose contemplated by the underlying terms of engagement for the project which must not be used for any other purpose. The information is not a contractual document. Unless otherwise agreed in writing by RBG, all intellectual property rights in any information supplied by RBG are owned by, or licensed to, RBG. RBG only provides you with a non-transferable, fully revocable licence to use the intellectual property rights for the express purpose.</div><div>DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS<br/>REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE</div></div> |  |  |  |  |  | <div><div>Structural, Civil &amp; Construction<br/>Engineering Consultant</div><div><div><div>RobertBirdGroup</div><div>Member of the Surbana Jurong<br/>Group</div></div><div><div><div>SYDNEY OFFICE</div><div>Robert Bird Group Pty Ltd<br/>PO Box A2309<br/>Sydney South, NSW 1235<br/>Level 11, 151 Castlereagh St<br/>Sydney NSW 2000</div><div>Ph: (02) 8246 3200<br/>Fax: (02) 8246 3201<br/>Email: sydney@robertbird.com.au<br/>Web: www.robertbird.com<br/>ACN 010 580 248</div></div></div></div></div> |  |  |  |  |  | Client |  |  |  |  |  | <table><tr><td colspan="2">Title</td><td colspan="2">Scale of A1</td><td colspan="2">Drawn</td><td colspan="2">Design</td></tr><tr><td colspan="2">GENERAL NOTES</td><td colspan="2">AS SHOWN</td><td colspan="2">S.MANANDHAR</td><td colspan="2">Checker</td></tr><tr><td colspan="2"></td><td colspan="2">Date</td><td colspan="2">Designer</td><td colspan="2">Approved</td></tr><tr><td colspan="2"></td><td colspan="2">04.03.19</td><td colspan="2">Z.JONES</td><td colspan="2">C.ROPE</td></tr><tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2">Job Number</td></tr><tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2">18570C</td></tr></table> |  |  |  |  |  | Title |  | Scale of A1 |  | Drawn |  | Design |  | GENERAL NOTES |  | AS SHOWN |  | S.MANANDHAR |  | Checker |  |  |  | Date |  | Designer |  | Approved |  |  |  | 04.03.19 |  | Z.JONES |  | C.ROPE |  |  |  |  |  |  |  | Job Number |  |  |  |  |  |  |  | 18570C |  | <table><tr><td colspan="2">Project</td><td colspan="2">Revision</td></tr><tr><td colspan="2">2B-6 HASSALL STREET<br/>PARRAMATTA</td><td colspan="2" rowspan="4">1</td></tr></table> |  |  |  |  |  | Project |  | Revision |  | 2B-6 HASSALL STREET<br>PARRAMATTA |  | 1 |  |
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| Rev  | Revision Description               | By          | App | Date        |  |                      |                      |          |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |
| 1  | ISSUED FOR DEVELOPMENT APPLICATION | ZJ          | CR  | 04.03.19    |  |                      |                      |          |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |
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| GENERAL NOTES  |                                    | AS SHOWN    |     | S.MANANDHAR |  | Checker              |                      |          |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |
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|  |                                    | 04.03.19    |     | Z.JONES     |  | C.ROPE               |                      |          |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |
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|  |                                    |             |     |             |  | 18570C               |                      |          |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |
| Project  |                                    | Revision    |     |             |  |                      |                      |          |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |
| 2B-6 HASSALL STREET<br>PARRAMATTA  |                                    | 1           |     |             |  |                      |                      |          |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |
|  |                                    |             |     |             |  | NOT FOR CONSTRUCTION |                      |          |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |
|  |                                    |             |     |             |  | Drawing Number       |                      | Revision |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |
|  |                                    |             |     |             |  | C-0-01               |                      |          |     |      |   |                                    |    |    |          |   |  |  |  |  |  |     |                      |    |     |      |  |  |  |  |  |   |  |  |  |  |  |   |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |  |  |       |  |             |  |       |  |        |  |               |  |          |  |             |  |         |  |  |  |      |  |          |  |          |  |  |  |          |  |         |  |        |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |        |  |   |  |  |  |  |  |         |  |          |  |                                   |  |   |  |









GENERAL NOTES:

- A1. THIS SOIL AND WATER MANAGEMENT PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS RELATING TO THIS DEVELOPMENT.
- A2. CONTRACTORS WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE UNDERTAKEN AS INSTRUCTED IN THIS SPECIFICATION AND CONSTRUCTED FOLLOWING THE LANDCOM – MANAGING URBAN STORMWATER: SOIL AND CONSTRUCTION, 4th EDITION, MAR 2004.
- A3. REFER VEGETATION MANAGEMENT PLAN BY ECOLOGICAL FOR VEGETATION CLEARANCE AND RIPARIAN ZONE MANAGEMENT.
- A4. REFER GEOTECHNICAL REPORT FOR EARTHWORKS AND PARAMETERS.
- A5. ALL SUBCONTRACTORS WILL BE INFORMED OF THEIR RESPONSIBILITIES IN REDUCING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE AREAS.

SITE MAINTENANCE NOTES:

- SM1. THE CONTRACTOR SHALL INSPECT THE SITE AT LEAST WEEKLY AND AT THE CONCLUSION OF EVERY STORM EVENT TO:
- A) ENSURE THAT DRAINS OPERATE PROPERLY AND TO EFFECT AND NECESSARY REPAIRS.
- B) REMOVED SPILLED SAND OR OTHER MATERIALS FROM HAZARD AREAS, INCLUDING LANDS CLOSER THAN 5 METRES FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS ESPECIALLY WATERWAYS AND PAVED AREAS.
- C) REMOVED TRAPPED SEDIMENT WHENEVER THE DESIGN CAPACITY OF THAT STRUCTURES HAS BEEN EXCEEDED.
- D) ENSURE REHABILITATION LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD TO INITIATE UPGRADING OR REPAIR AS NECESSARY.
- E) CONSTRUCT ADDITIONAL EROSION AND OR SEDIMENT CONTROL WORKS THAT MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS. MAKE ONGOING CHANGES TO THE PLAN WHERE IT PROVES INADEQUATE IN PRACTICE OR IS SUBJECT TO CHANGES IN CONDITIONS ON THE WORK-SITE OR ELSEWHERE IN THE CATCHMENT.
- F) MAINTAIN EROSION AND SEDIMENT CONTROL STRUCTURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
- SM2. THE SITE SUPERINTENDENT WILL KEEP A LOGBOOK MAKING ENTRIES AT LEAST WEEKLY, IMMEDIATELY BEFORE FORECAST RAIN AND AFTER RAINFALL. ENTRIES WILL INCLUDE:
- A) THE VOLUME AND INTENSITY OF ANY RAINFALL EVENTS.
- B) THE CONDITION OF ANY SOIL AND WATER MANAGEMENT WORKS.
- C) THE CONDITION OF VEGETATION AND ANY NEED TO IRRIGATE.
- D) THE NEED FOR DUST PREVENTION STRATEGIES
- THE LOGBOOK WILL BE KEPT ON-SITE AND MADE AVAILABLE TO ANY AUTHORISED PERSON UPON REQUEST. IT WILL BE GIVEN TO THE SUPERINTENDENT AT THE CONCLUSION OF THE WORKS.

SEDIMENT CONTROL NOTES:

- SC1. SEDIMENT FENCES WILL BE INSTALLED AS SHOWN ON THE PLAN AND ELSEWHERE AT THE DISCRETION OF THE SITE SUPERINTENDENT TO CONTAIN SOIL AS NEAR AS POSSIBLE TO THEIR SOURCE.
- SC2. SEDIMENT FENCES WILL NOT HAVE CATCHMENT AREAS EXCEEDING 900 SQUARE METRES AND HAVE A STORAGE DEPTH OF AT LEAST 0.6 METRES.
- SC3. SEDIMENT REMOVED FROM ANY TRAPPING DEVICES WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS CANNOT OCCUR.
- SC4. STOCKPILES ARE NOT TO BE LOCATED WITHIN 5 METERS OF HAZARD AREAS INCLUDING AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS AND DRIVEWAYS.
- SC5. WATER WILL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR WATER HAS BEEN TREATED BY AN APPROVED DEVICE.
- SC6. TEMPORARY SEDIMENT TRAPS WILL REMAIN IN PLACE UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.
- SC7. ACCESS TO SITES SHOULD BE STABILIZED TO REDUCE THE LIKELIHOOD OF VEHICLES TRACKING SOIL MATERIALS ONTO PUBLIC ROADS AND ENSURE ALL-WEATHER ENTRY/EXIT.

LAND DISTURBANCE NOTES:

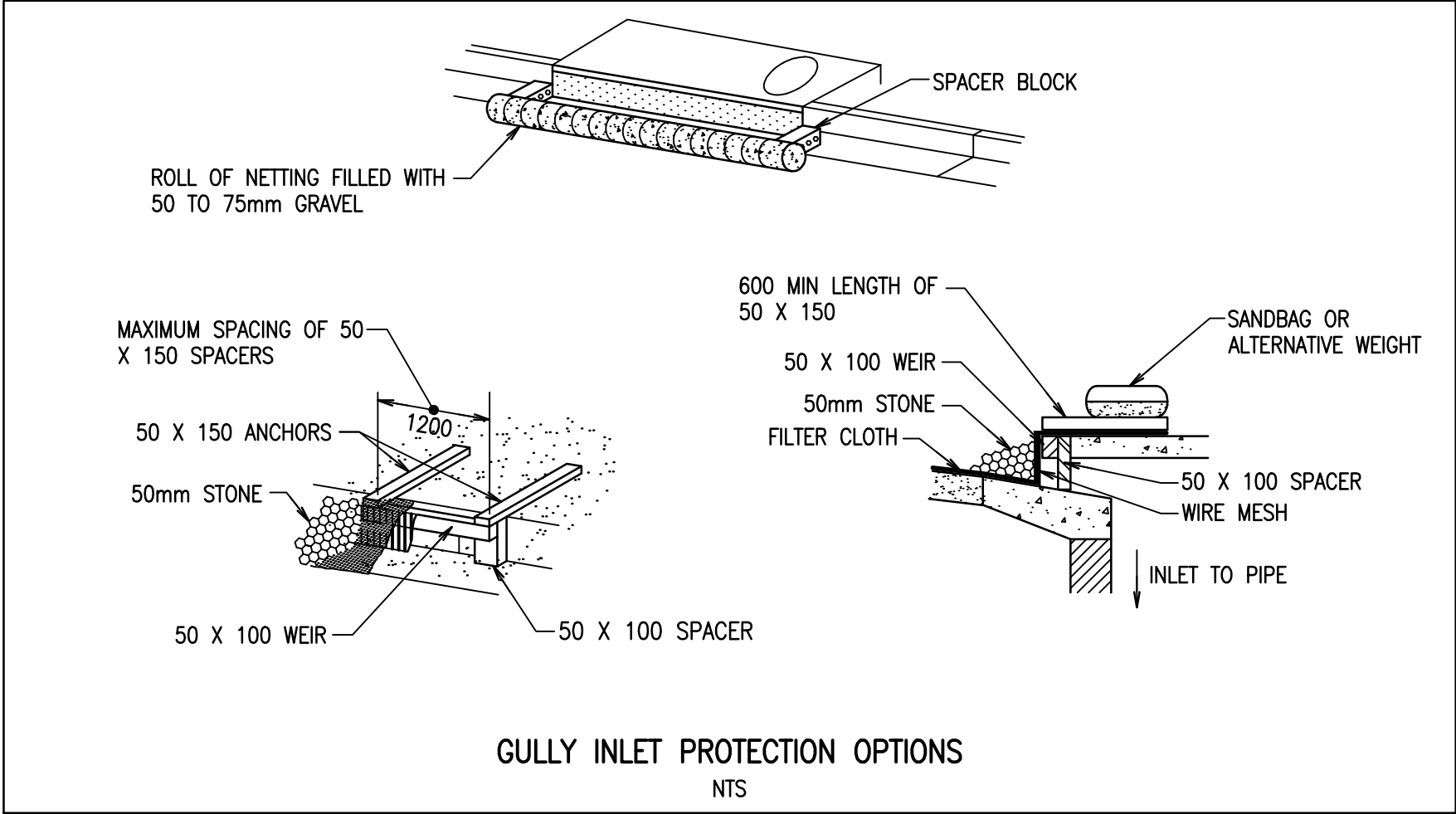
- LD1. ACCESS AREAS ARE TO BE LIMITED TO A MAXIMUM WIDTH OF 10 METERS THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON-SITE. ALL SITE WORKERS WILL CLEARLY RECOGNIZE THOSE BOUNDARIES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH A BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
- LD2. ENTRY TO LANDS NOT REQUIRED FOR CONSTRUCTION OR ACCESS IS PROHIBITED EXCEPT FOR ESSENTIAL THINNING OF PLANT GROWTH.
- LD3. WORKS ARE TO PROCEED IN THE FOLLOWING SEQUENCE:
- A) INSTALL ALL BARRIER AND SEDIMENT FENCING WHERE SHOWN ON THE PLAN.
- B) CONSTRUCT THE STABILISED SITE ACCESS.
- C) CONSTRUCT DIVERSION DRAINS AS REQUIRED.
- D) INSTALL MESH AND GRAVEL INLETS FOR ANY ADJACENT KERB INLETS.
- E) INSTALL GEOTEXTILE INLET FILTERS AROUND ANY ON-SITE DROP INLET PITS.
- F) CLEAR SITE AND STRIP AND STOCKPILE TOPSOIL IN LOCATIONS SHOWN ON THE PLAN.
- G) UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS ENSURING THAT ROOF AND/OR PAVED AREA STORMWATER SYSTEMS ARE CONNECTED TO PERMANENT DRAINAGE AS SOON AS PRACTICABLE.
- H) GRADE LOT AREAS TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 20 DAYS OF COMPLETION OF CONSTRUCTION WORKS.
- I) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.
- LD4. ENSURE THAT SLOPE LENGTHS DO NOT EXCEED 80 METRES WHERE PRACTICABLE. SLOPE LENGTHS ARE DETERMINED BY SILTATION FENCING AND CATCH DRAIN SPACING.

SOIL EROSION CONTROL NOTES:

- SE1. EARTH BATTERS WILL BE CONSTRUCTED WITH AS LOW A GRADIENT AS PRACTICABLE BUT NO STEEPER, UNLESS OTHERWISE NOTES, THAN THAT RECOMMENDED BY THE GEOTECHNICAL REPORT.
- SE2. ALL WATERWAYS, DRAINS, SPILLWAYS AND THEIR OUTLETS WILL BE CONSTRUCTED TO BE STABLE IN AT LEAST THE 1:20 YEAR ARI, TIME OF CONCENTRATION STORM EVENT.
- SE3. WATERWAYS AND OTHER AREAS SUBJECT TO CONCENTRATED FLOWS AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.05 (70% GROUND COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION. FOOT AND VEHICULAR TRAFFIC WILL BE PROHIBITED IN THESE AREAS.
- SE4. STOCKPILES AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND-COVER C-FACTOR OF 0.1% (60% GROUND-COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION.
- SE5. ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES DURING CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.15 (50% GROUND COVER) WITHIN 20 WORKING DAYS FROM INACTIVITY EVEN THOUGH WORKS MAY CONTINUE LATER.
- SE6. PERMANENT REHABILITATION OF LANDS AFTER CONSTRUCTION WILL ACHIEVE A GROUND-COVER C-FACTOR OF LESS THAN 0.1 AND LESS THAN 0.05 WITHIN 60 DAYS. NEWLY PLANTED LANDS WILL BE WATERED REGULARLY UNTIL AN EFFECTIVE COVER IS ESTABLISHED AND PLANTS ARE GROWING VIGOROUSLY. FOLLOW-UP SEED AND FERTILISER WILL BE APPLIED AS NECESSARY.

WASTE CONTROL NOTES:

- WC1. ACCEPTABLE BINS WILL BE PROVIDED FOR ANY CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHING, LIGHTWEIGHT WASTE MATERIALS AND LITTER. CLEARANCE SERVICES WILL BE PROVIDED AT LEAST WEEKLY. DISPOSAL OF WASTE WILL BE IN A MANNER APPROVED BY THE SITE SUPERINTENDENT.
- WC2. ALL POSSIBLE POLLUTANT MATERIALS ARE TO BE STORED WELL CLEAR OF ANY POORLY DRAINED AREAS, FLOW PRONE AREAS, STREAMBANKS, CHANNELS AND STORMWATER DRAINAGE AREAS. STORE SUCH MATERIALS IN A DESIGNATED AREA UNDER COVER WHERE POSSIBLE AND WITHIN CONTAINMENT BUNDS.
- WC3. ALL SITE STAFF AND SUBCONTRACTORS ARE TO BE INFORMED OF THEIR OBLIGATION TO USE WASTE CONTROL FACILITIES PROVIDED.
- WC4. ANY DE-WATERING ACTIVITIES ARE TO BE CLOSELY MONITORED TO ENSURE THAT WATER IS NOT POLLUTED BY SEDIMENT, TOXIC MATERIALS OR PETROLEUM PRODUCTS.
- WC5. PROVIDE DESIGNATED VEHICULAR WASHDOWN AND MAINTENANCE AREAS WHICH ARE TO HAVE CONTAINMENT BUNDS.

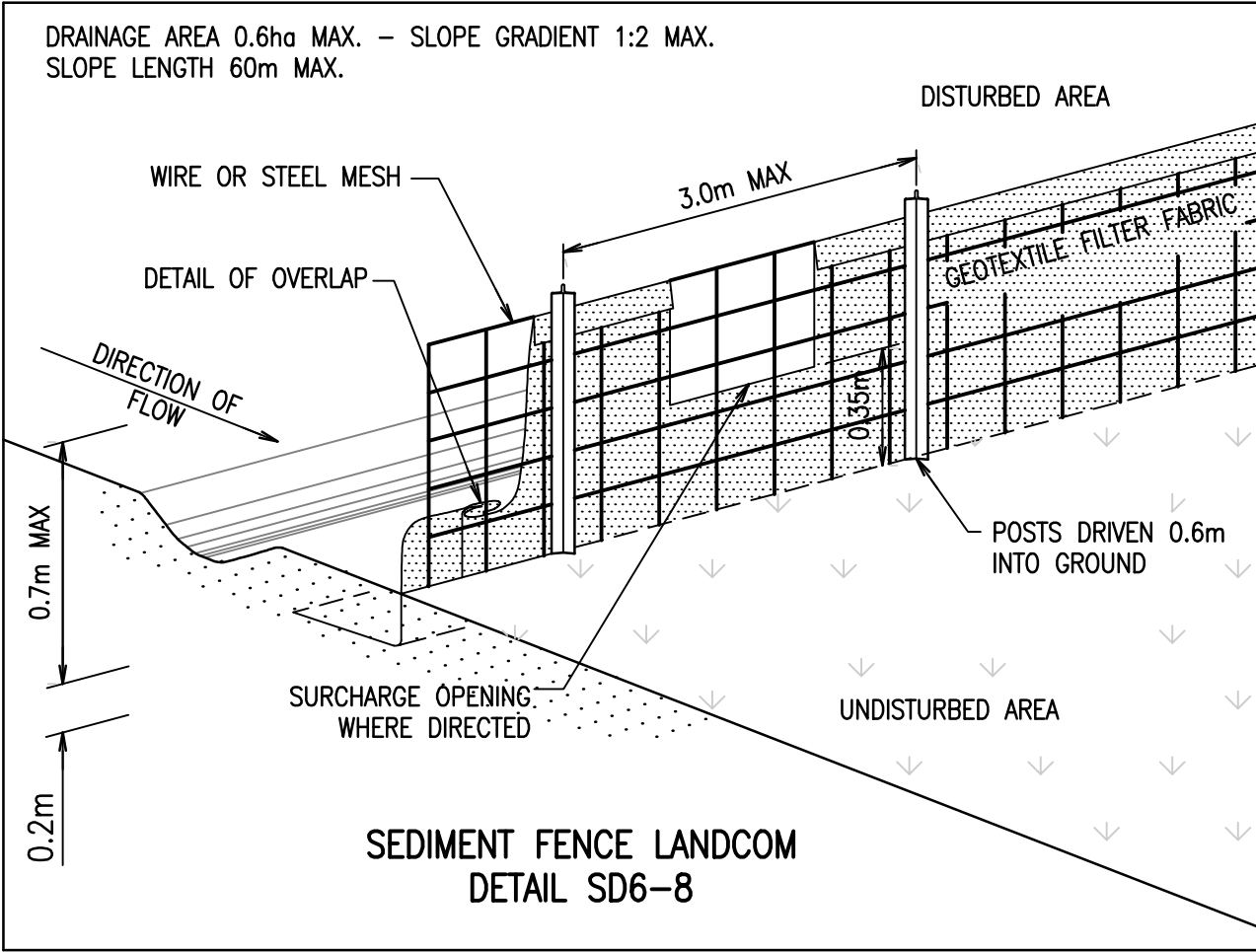


GULLY INLET PROTECTION OPTIONS  
NTS

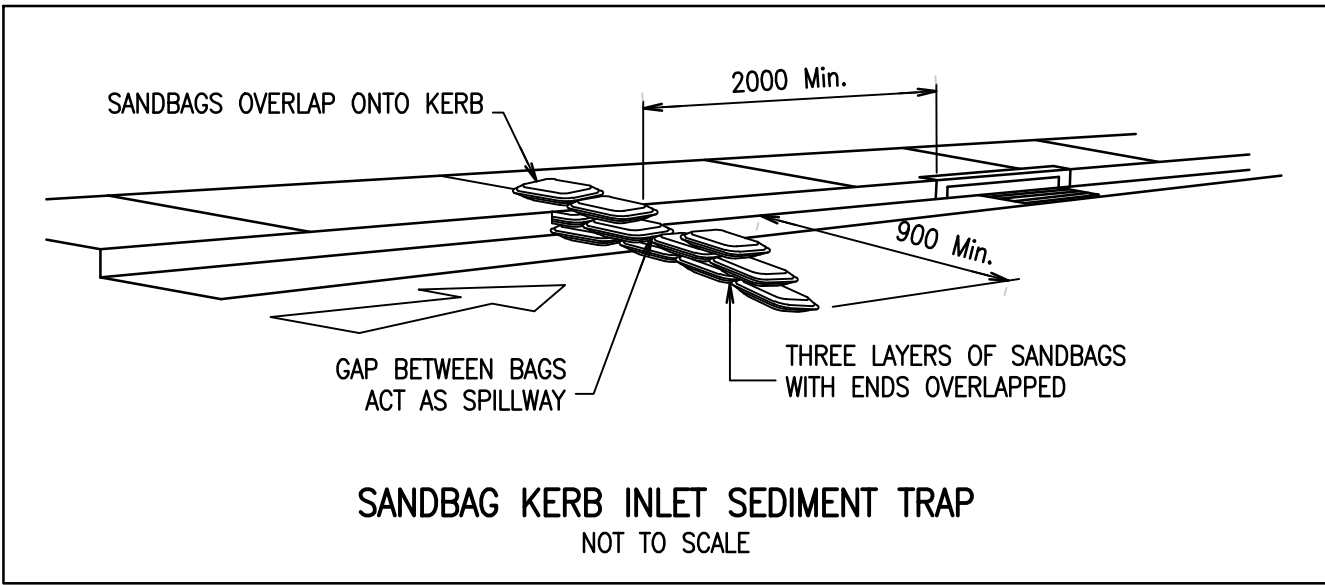
INSTALLATION

- EXCAVATE A TRENCH 200mm DEEP.
- DRIVE POSTS 500-700mm INTO GROUND AT A MAXIMUM SPACING OF 3.0m CENTRES.
- PLACE AND FIX SUPPORT MESH (F52) TO POST.
- LAY BIDIM GEOTEXTILE (SF 2000) AGAINST THE SUPPORT MESH AND FIX BY TIE WIRE, STAPLES OR HOG RINGS.
- PLACE BIDIM IN TRENCH AND BACKFILL WITH SOIL.

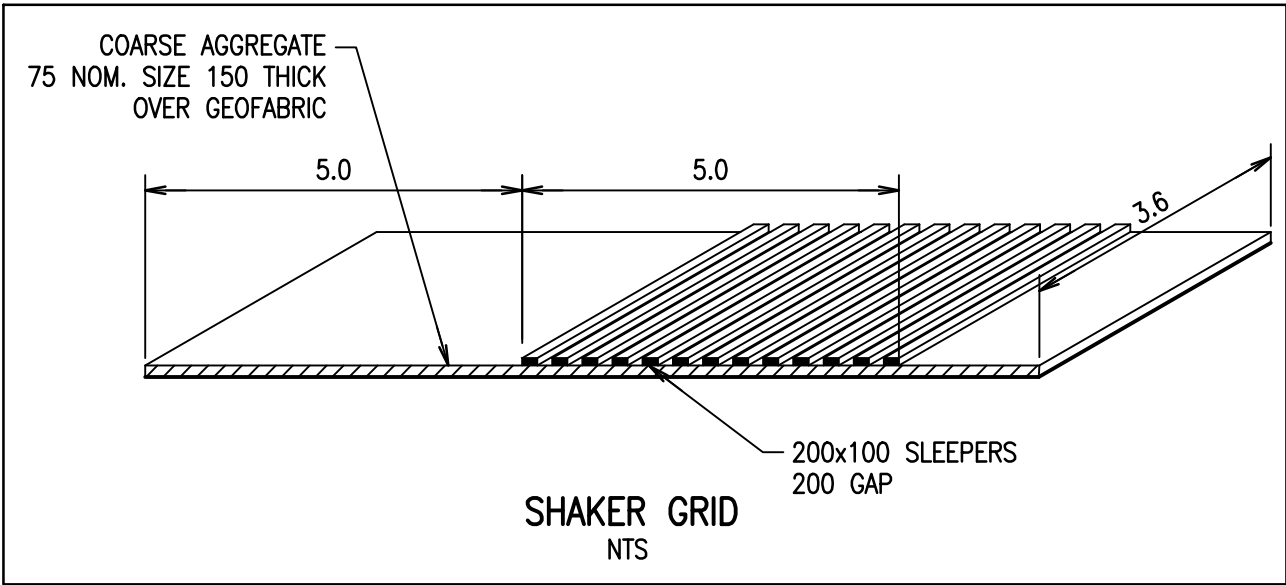
NOTE:  
POSITION OF SEDIMENT FENCE AS DIRECTED BY SUPERINTENDENT. FENCE TO REMAIN IN PLACE UNTIL EXCAVATION IS BELOW FOOTPATH LEVEL.



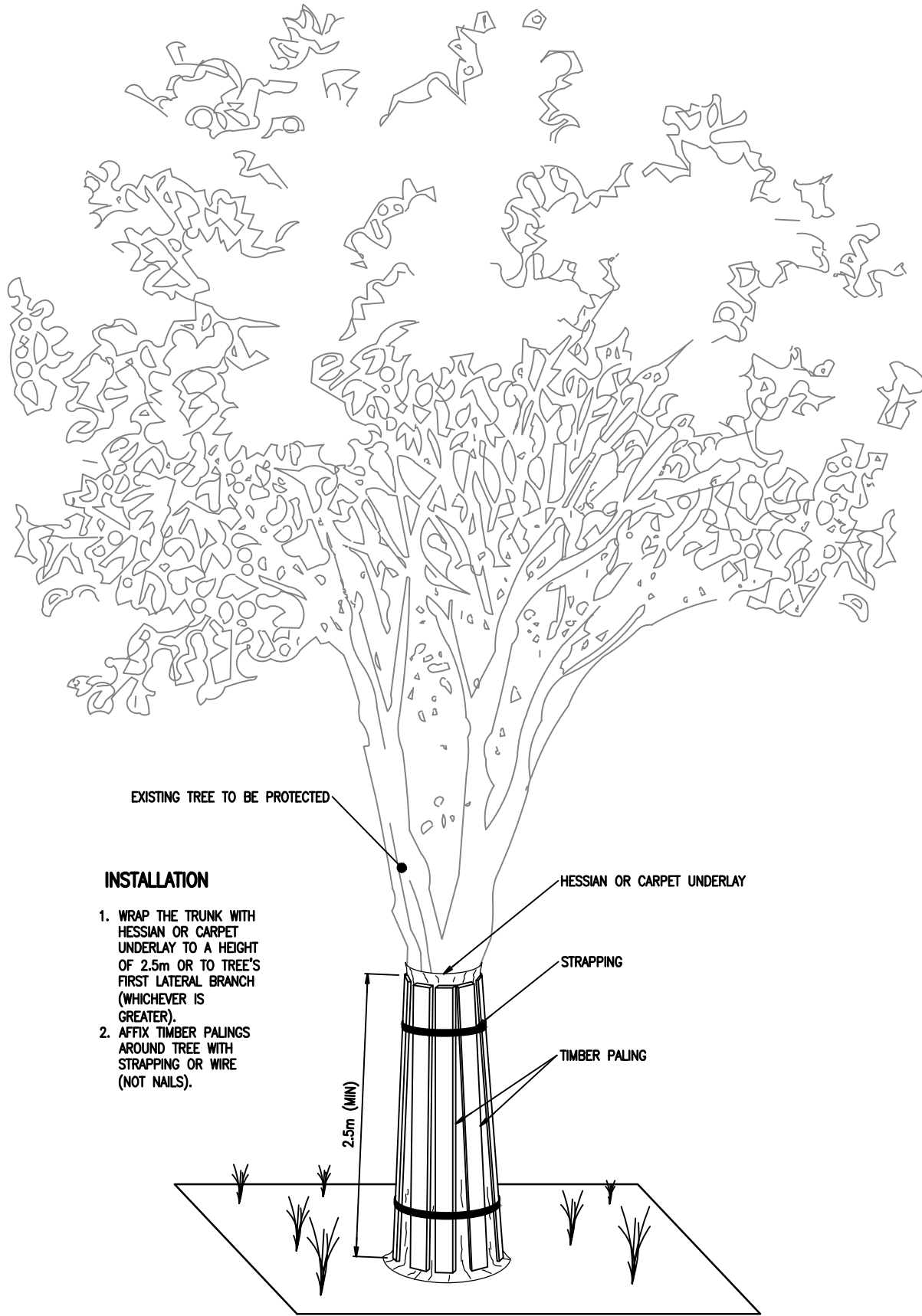
SEDIMENT FENCE LANDCOM  
DETAIL SD6-8



SANDBAG KERB INLET SEDIMENT TRAP  
NOT TO SCALE



SHAKER GRID  
NTS



INSTALLATION

- WRAP THE TRUNK WITH HESSIAN OR CARPET UNDERLAY TO A HEIGHT OF 2.5m OR TO TREE'S FIRST LATERAL BRANCH (WHICHEVER IS GREATER).
- AFTER TIMBER PALINGS AROUND TREE WITH STRAPPING OR WIRE (NOT NAILS).

EXISTING TREE TO BE PROTECTED

HESSIAN OR CARPET UNDERLAY

STRAPPING

TIMBER PALING

2.5m

|  |  |   |   |  |
|--|--|---|---|--|
| Title<br><b>EROSION AND SEDIMENT CONTROL DETAILS</b> |  | Scale of A1<br>AS SHOWN<br>Date<br>30.11.18 | Drawn<br>S.MANANDHAR<br>Designer<br>Z.JONES | Design Checker<br>C.ROPE<br>Approved<br>C.ROPE<br>Job Number<br>18570C |
| Project<br><b>2B-6 HASSALL STREET PARRAMATTA</b>     |  | <b>NOT FOR CONSTRUCTION</b>                 |   |  |
| Drawing Number<br><b>C-1-10</b>                      |  | Revision<br><b>1</b>                        |   |  |

| Rev | Revision | Description                        | By | App | Date     |
|-----|----------|------------------------------------|----|-----|----------|
| 1   |          | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 30.11.18 |

| Rev | Revision | Description | By | App | Date |
|-----|----------|-------------|----|-----|------|
|-----|----------|-------------|----|-----|------|

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Client

**Charter Hall**





## EARTHWORKS ANALYSIS

THIS PLAN DENOTES THE PROPOSED DEPTH OF BULK EARTHWORKS:

GROSS CUT VOLUME 15,750m<sup>3</sup>  
GROSS FILL VOLUME 0m<sup>3</sup>  
NET VOLUME 15,750m<sup>3</sup> (CUT)

SOIL ESTIMATION;

GENERAL SOLID WASTE (GWS)  
- 1100m<sup>3</sup>

EXCAVATED NATURAL MATERIAL (ENM)/VIRGIN EXCAVATED NATURAL MATERIAL  
-14,650m<sup>3</sup>

CUT & FILL ANALYSIS ASSUMPTIONS:

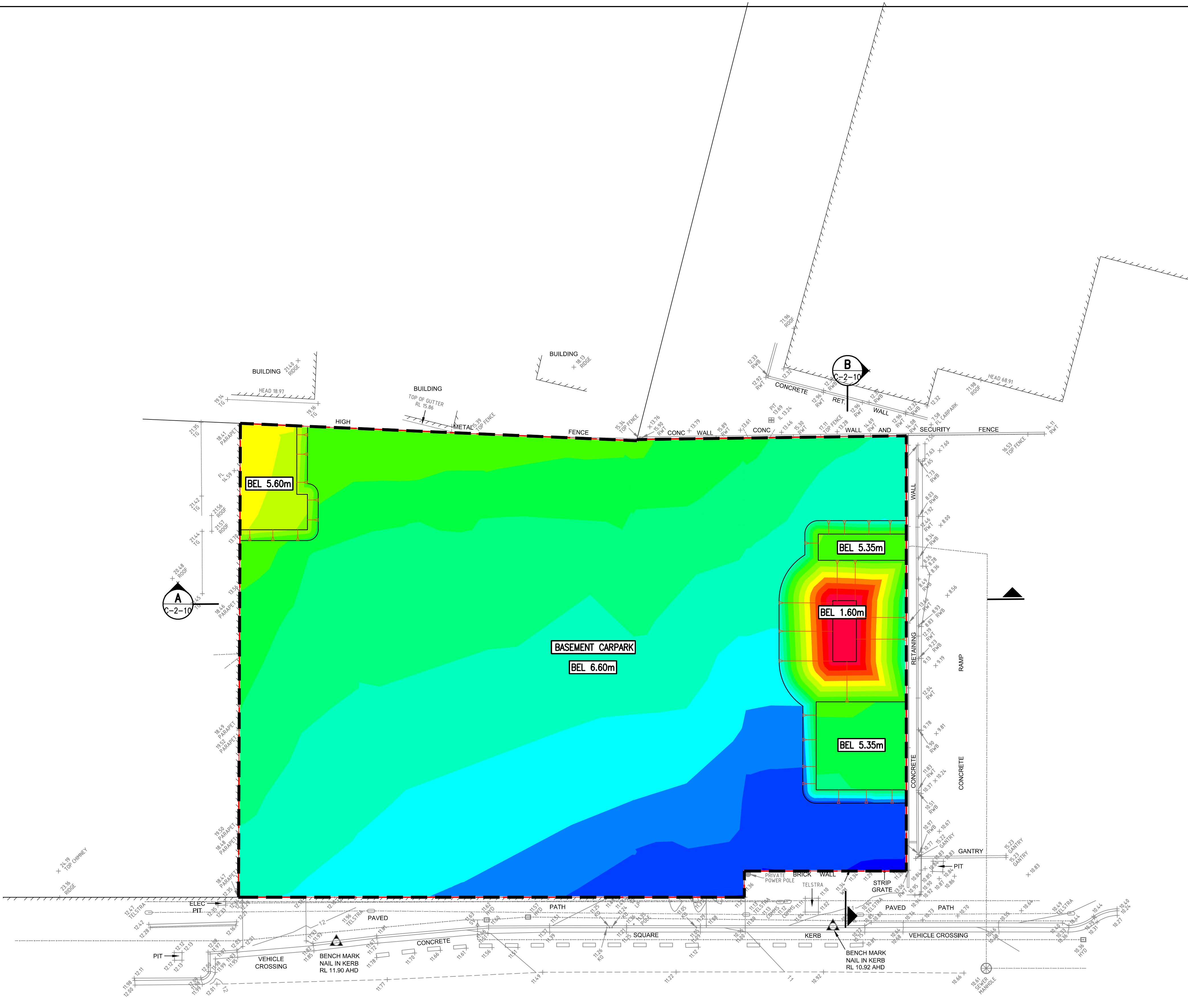
- ANALYSIS HAS NOT INCORPORATED STRUCTURAL FOOTINGS, CONSTRUCTION ACCESS RAMPS, BASEMENT SERVICE TRENCHES OR TREES.
- 1:1 TEMPORARY BATTERS HAVE BEEN ALLOWED. FOR SAFE WORKING BATTERS REFER TO GEOTECHNICAL REPORT 86415.03.R.001.Rev0.GEOTECH.
- SHORING ASSUMED TO BE VERTICAL.
- EXISTING LEVELS BASED ON SURVEY DATA "6083-DET-2", DATE OF SURVEY 10/01/2019.
- EARTHWORKS ANALYSIS DOES NOT INCLUDE MATERIAL BULKING VALUES THROUGH EXCAVATION.
- BULK EARTHWORKS CALCULATED TO THE UNDERSIDE OF THE RAFT SLAB . NO PAD FOOTINGS OR PILES HAVE BEEN ALLOWED.
- BUILDING LEVELS BASED ON SECTION DRAWING "2B-6 HASSALL STREET PARRAMATTA SCHEMATIC DESIGN DEC 2018, EAST-WEST SECTION.
- VOLUME OF SOIL MATERIAL IS AN ESTIMATION ONLY. THE CALCULATIONS ARE BASED ON THE GEOTECHNICAL REPORT, 86415.03.R.001.Rev0.GEOTECH

### LEGEND

- BEL BULK EARTHWORKS LEVEL  
- - - PROPOSED BASEMENT OUTLINE  
BATTER

### Surface Analysis: Elevation Ranges

| Number | Color | Minimum Elevation (m) | Maximum Elevation (m) |
|--------|-------|-----------------------|-----------------------|
| 1      |       | -10.700               | -10.000               |
| 2      |       | -10.000               | -9.500                |
| 3      |       | -9.500                | -9.000                |
| 4      |       | -9.000                | -8.500                |
| 5      |       | -8.500                | -8.000                |
| 6      |       | -8.000                | -7.500                |
| 7      |       | -7.500                | -7.000                |
| 8      |       | -7.000                | -6.500                |
| 9      |       | -6.500                | -6.200                |
| 10     |       | -6.200                | -5.900                |
| 11     |       | -5.900                | -5.600                |
| 12     |       | -5.600                | -5.300                |
| 13     |       | -5.300                | -5.000                |
| 14     |       | -5.000                | -4.700                |
| 15     |       | -4.700                | -4.400                |
| 16     |       | -4.400                | -4.100                |
| 17     |       | -4.100                | 0.100                 |



SCALE 1:200  
2 0 2 4 6 8m

| Rev | Revision Description               | By | App | Date     |
|-----|------------------------------------|----|-----|----------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 15.01.19 |
| 2   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 01.03.19 |

| Rev | Revision Description | By | App | Date |
|-----|----------------------|----|-----|------|
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Client

**Charter Hall**



**BULK EARTHWORKS PLAN**

Project  
**2B-6 HASSALL STREET  
PARRAMATTA**

Scale of A1  
AS SHOWN  
Date  
01.03.19

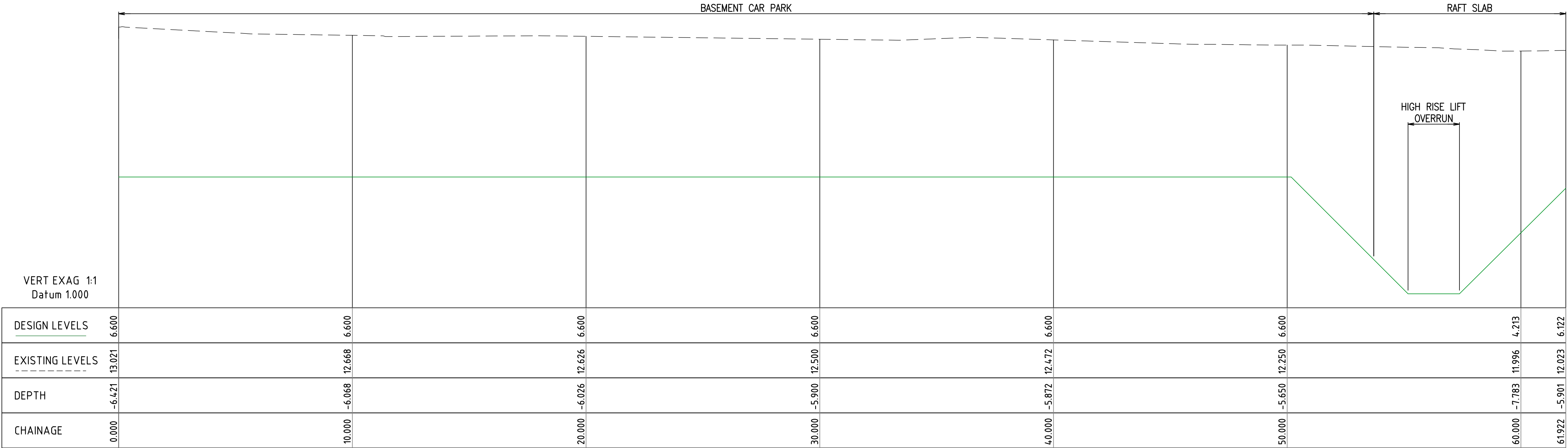
Drawn  
Z.JONES  
Designer  
Z.JONES

Design Checker  
C.WAITE  
Approved  
C.ROPE  
Job Number  
18570C

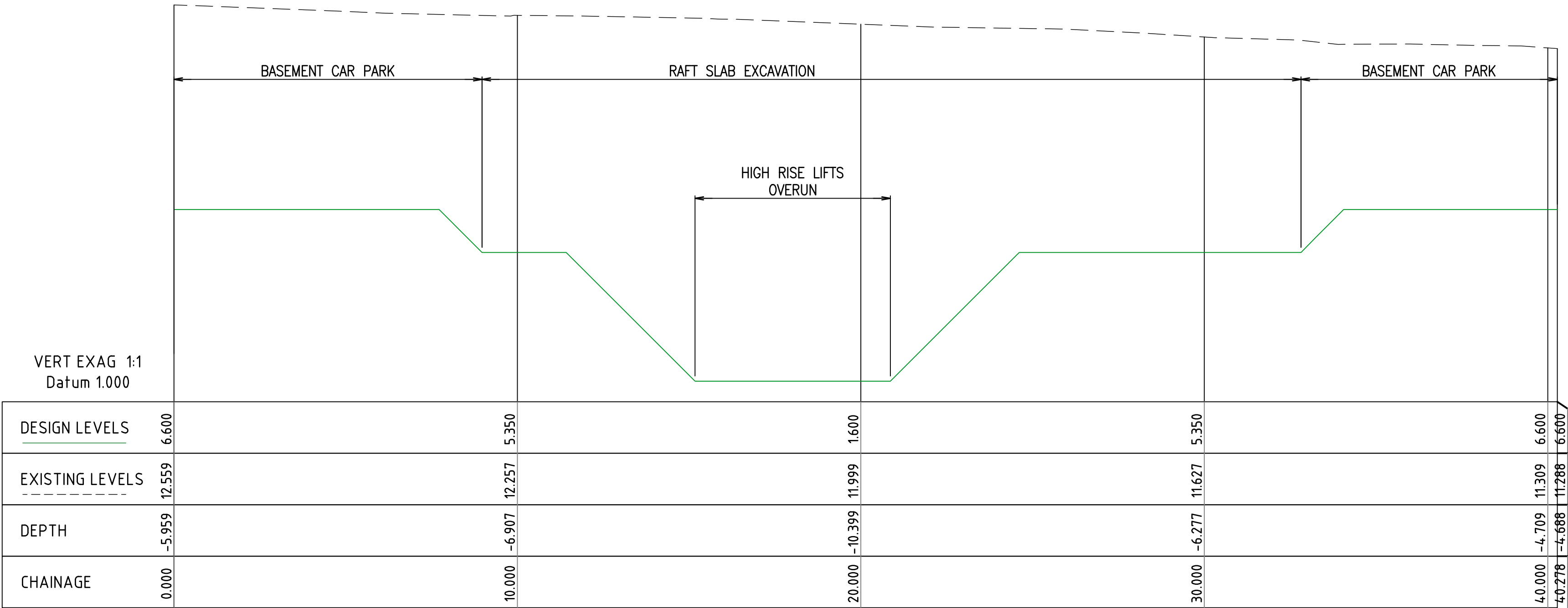
**NOT FOR CONSTRUCTION**

Drawing Number  
**C-2-01**

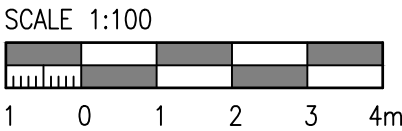
Revision  
**2**



SECTION A - LONG SECTION



SECTION B - LONG SECTION



| Rev | Revision Description               | By | App | Date     |
|-----|------------------------------------|----|-----|----------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 15.01.19 |
| 2   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 01.03.19 |

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Web: www.robertbird.com  
ACN 010 580 248

Client

**Charter Hall**

Title

**BULK EARTHWORKS  
SECTIONS**

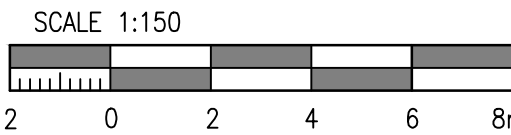
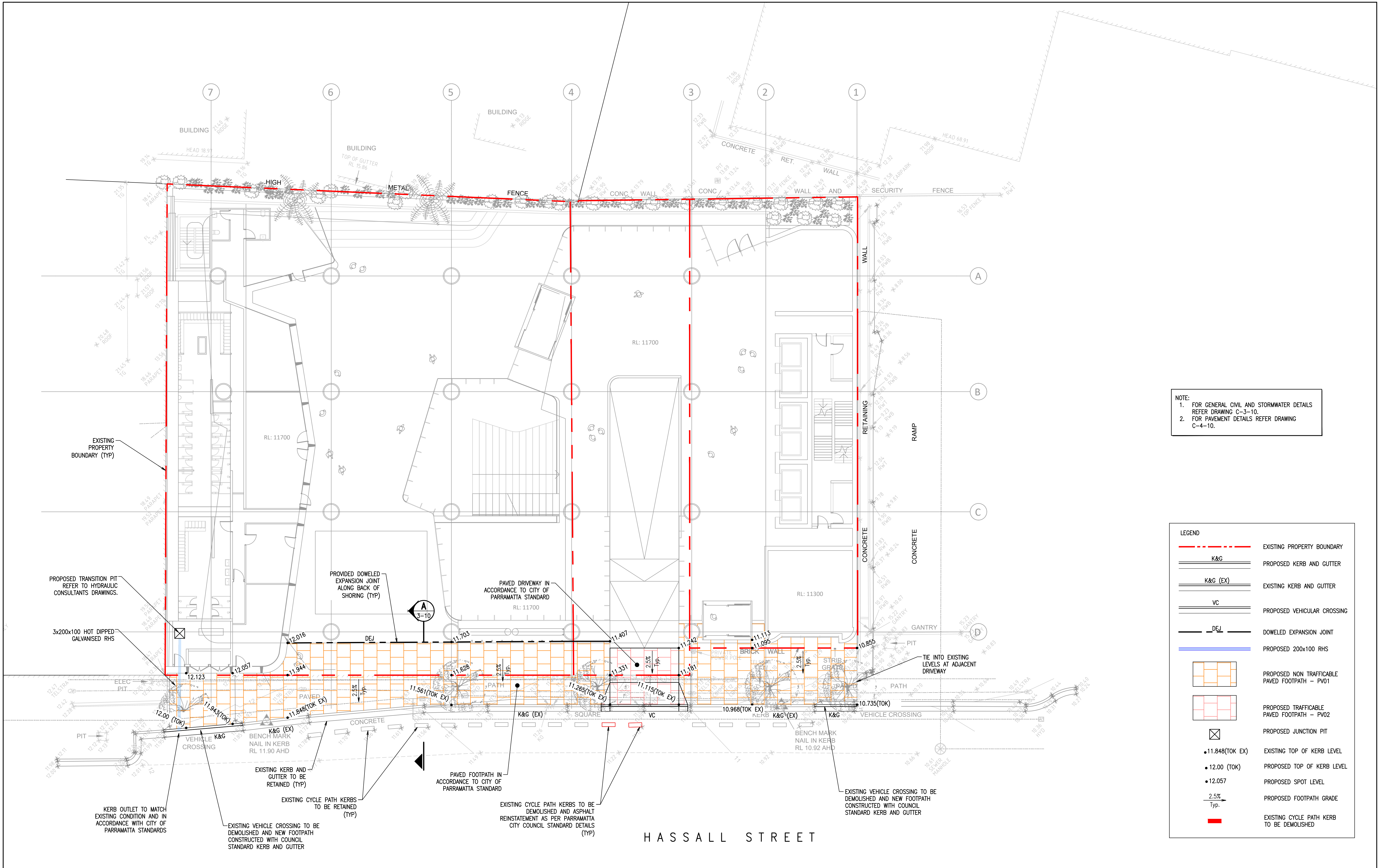
Project

**2B-6 HASSALL STREET  
PARRAMATTA**

|  |   |  |
|--|---|--|
| Scale of A1<br><b>AS SHOWN</b><br>Date<br>01.03.19 | Drawn<br>Z.JONES<br>Designer<br>Z.JONES | Design Checker<br>C.WAITE<br>Approved<br>C.ROPE<br>Job Number<br><b>18570C</b> |
| Drawing Number<br><b>C-2-10</b>                    |   | Revision<br><b>2</b>   |

**NOT FOR CONSTRUCTION**





| Rev | Revision Description               | By | App | Date     |
|-----|------------------------------------|----|-----|----------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 04.03.19 |
| 2   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 03.04.19 |

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Client

**Charter Hall**

Title  
**GENERAL ARRANGEMENT PLAN**

Project  
**2B-6 HASSALL STREET PARRAMATTA**

Scale of A1  
AS SHOWN  
Date  
03.04.19

Drawn  
S.MANANDHAR  
Designer  
Z.JONES

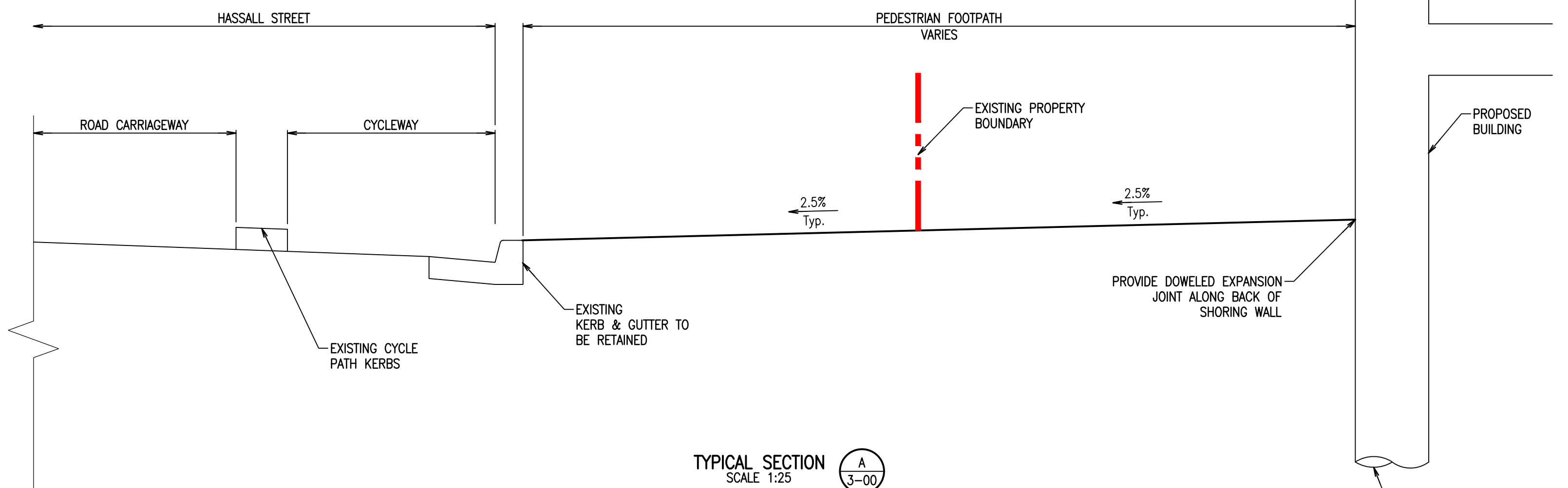
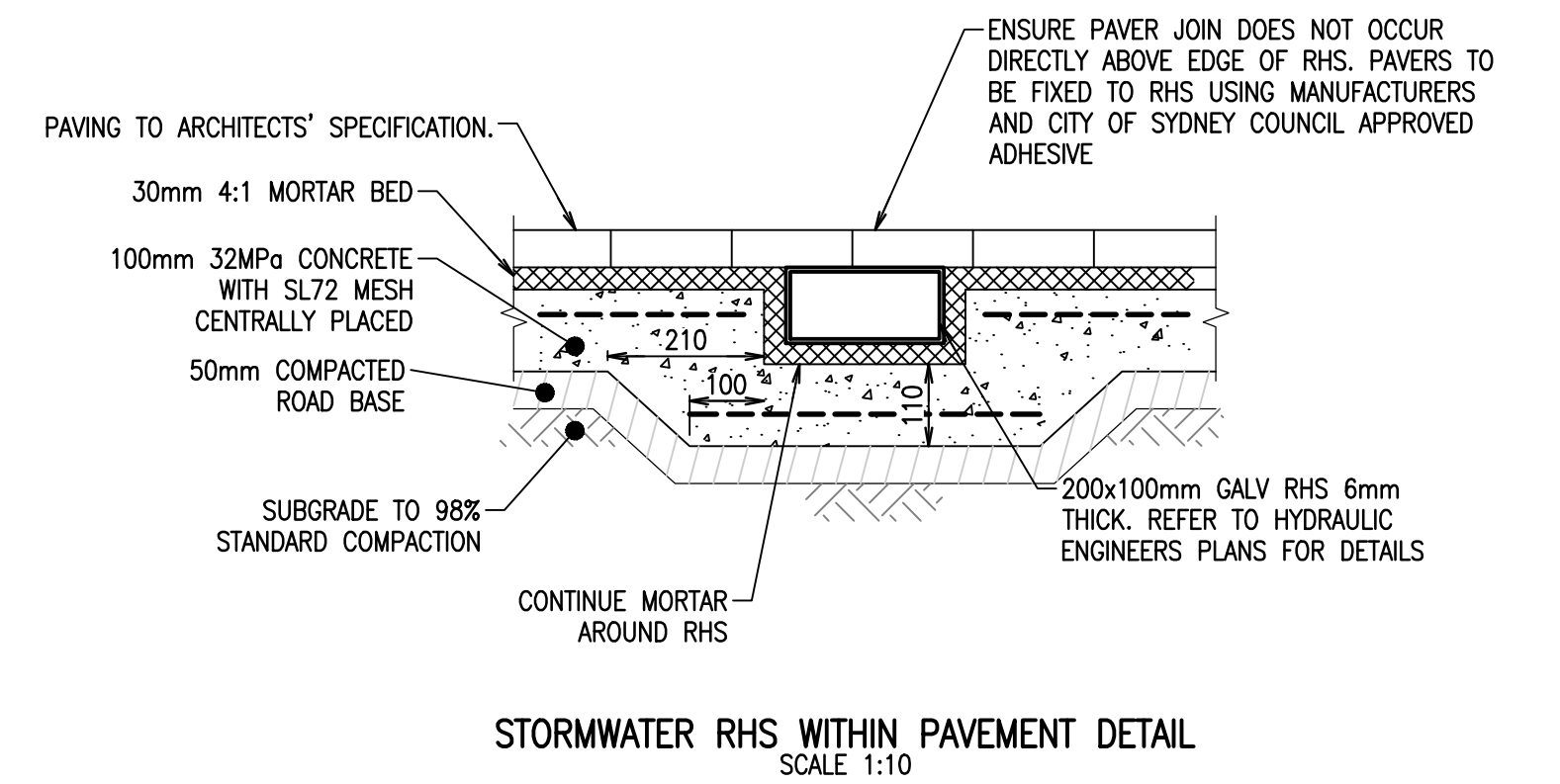
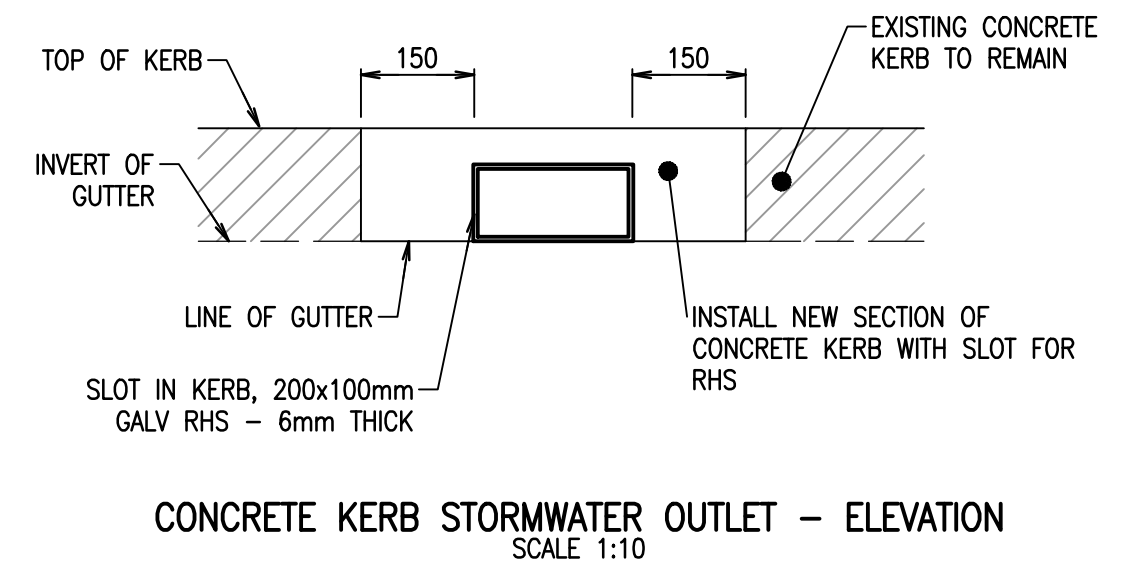
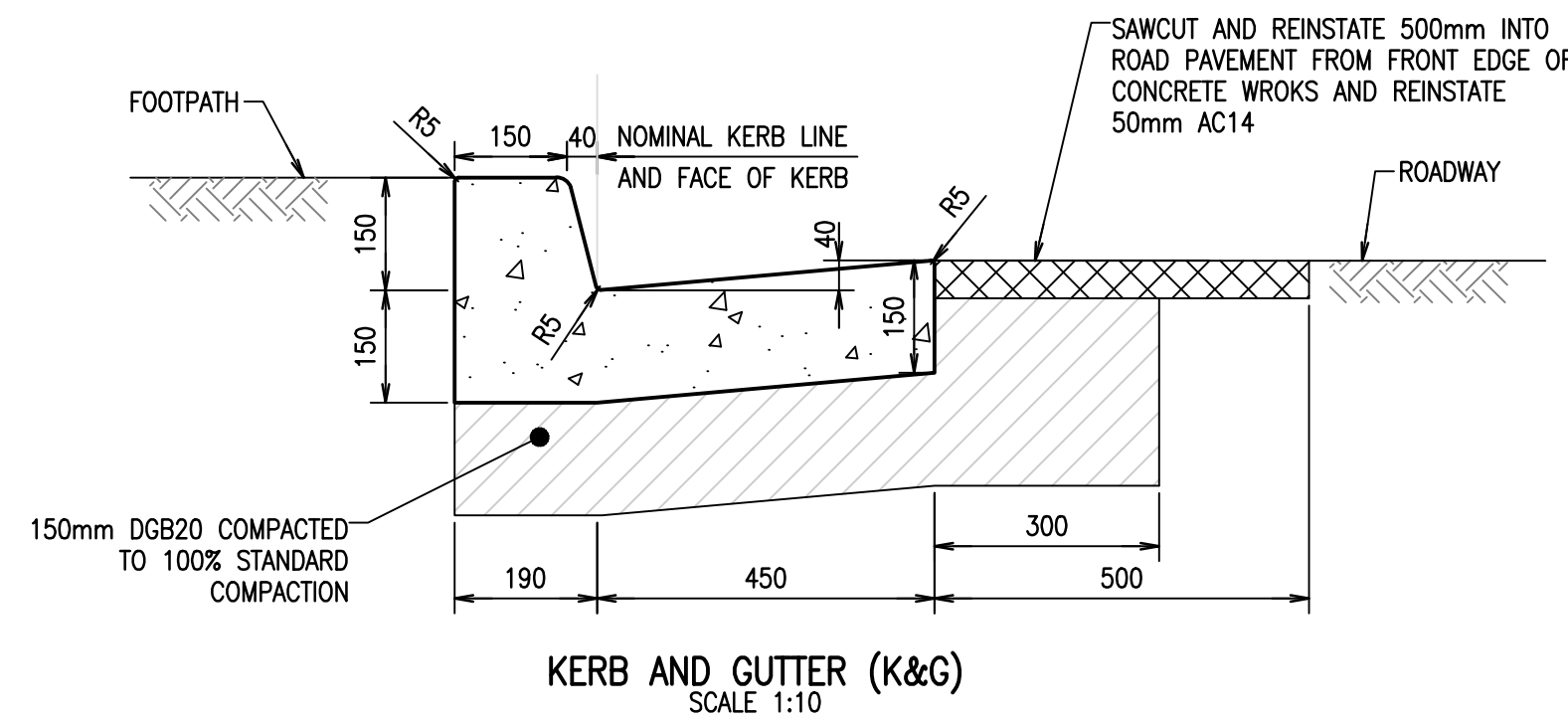
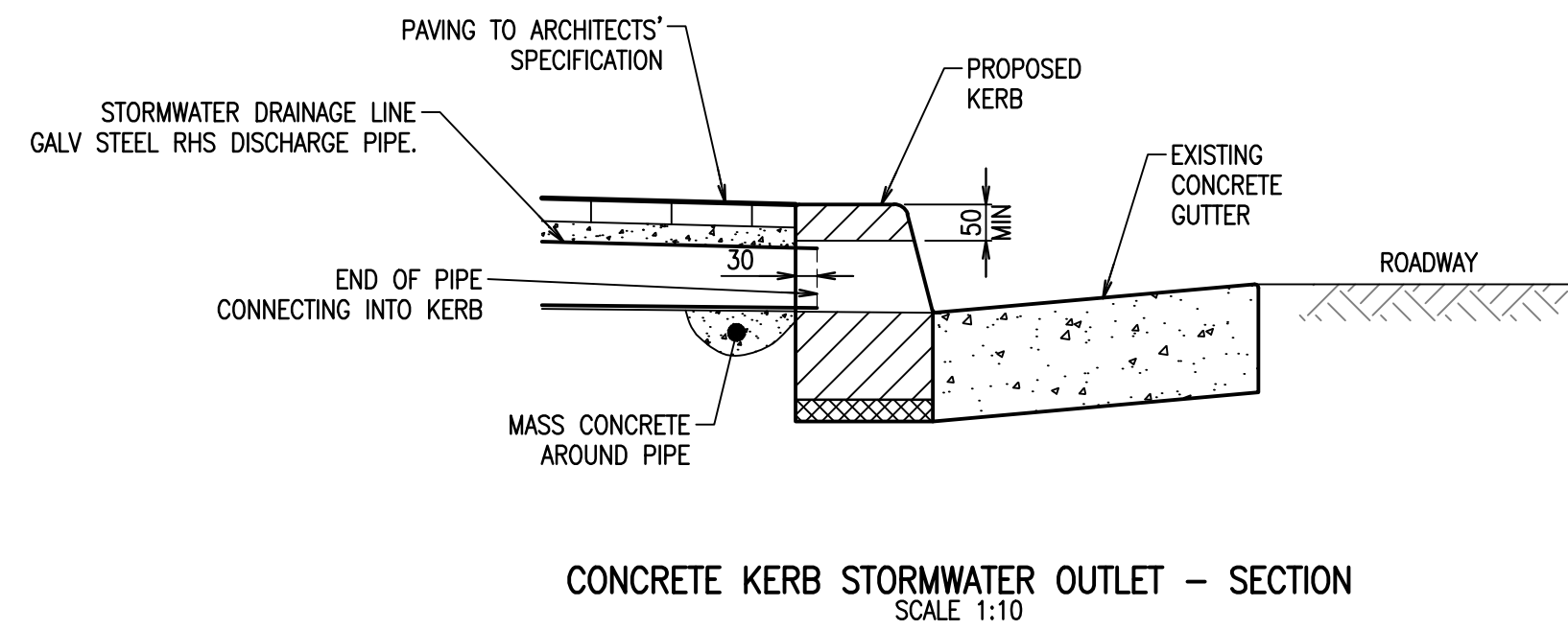
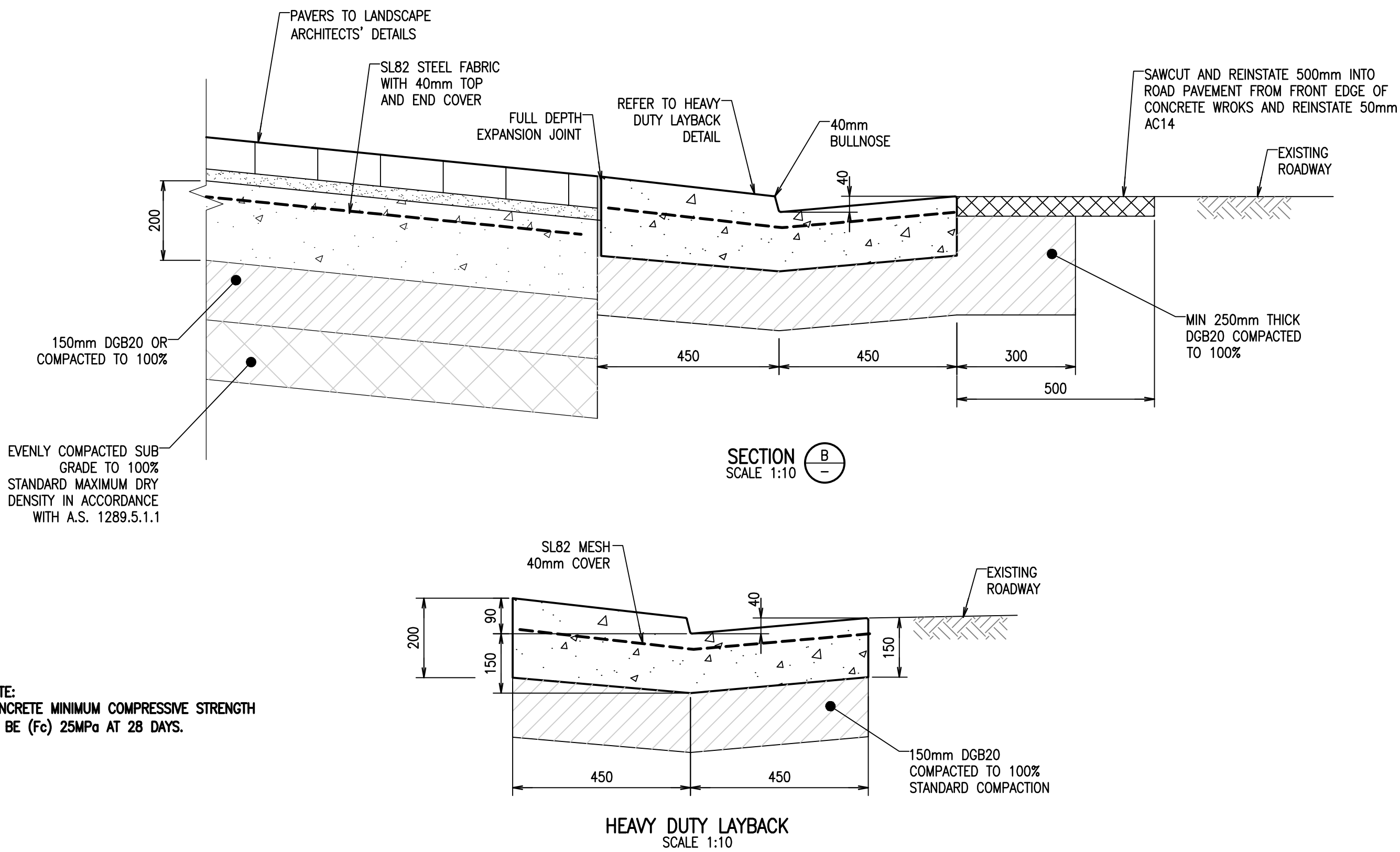
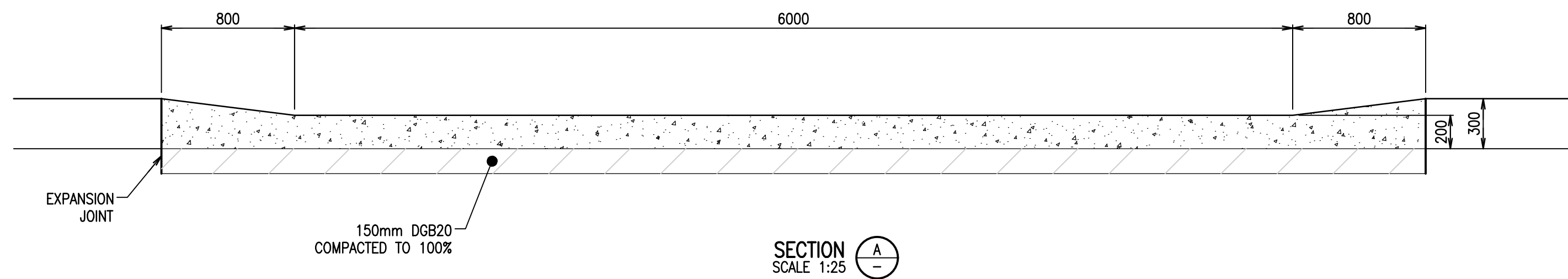
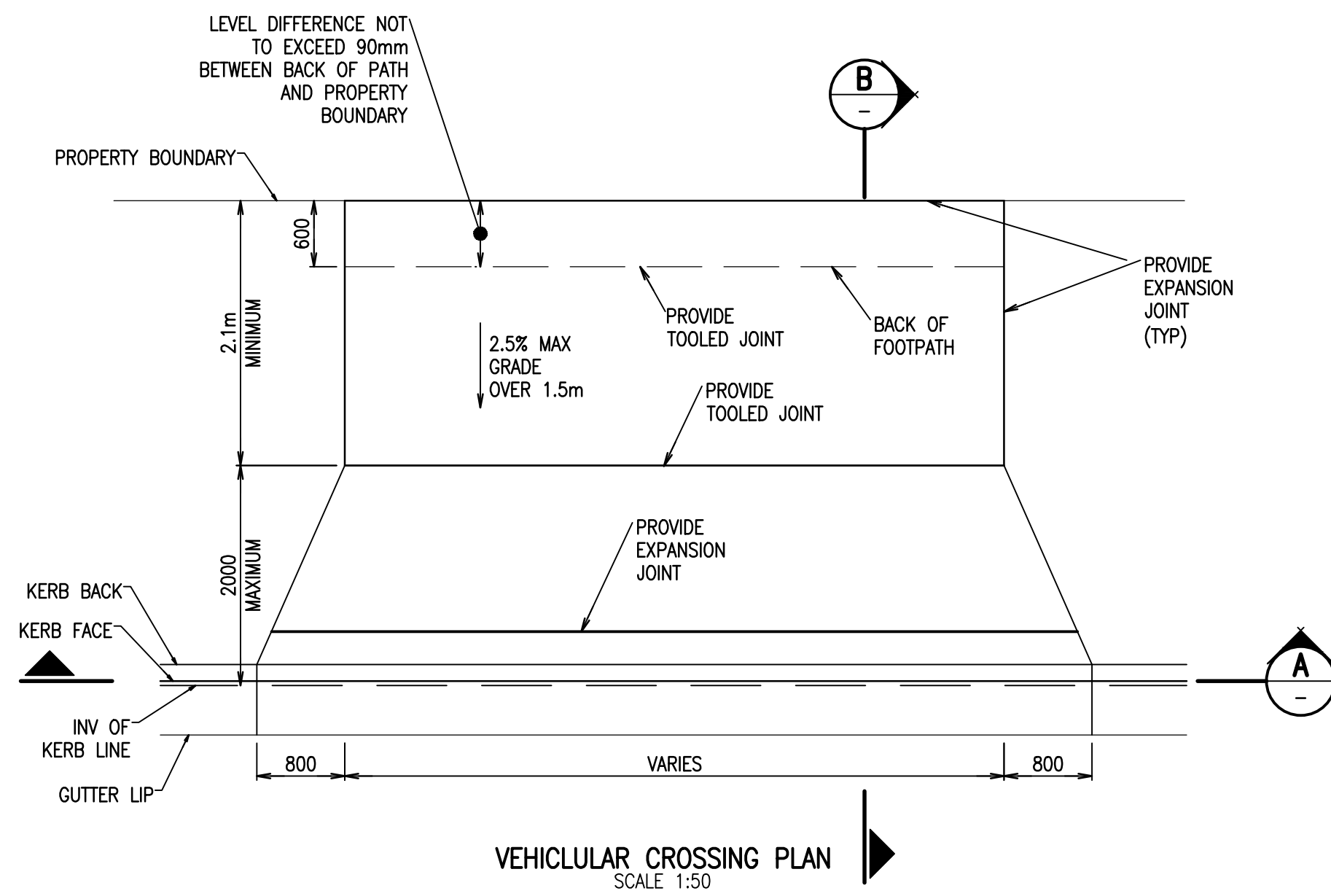
Design Checker  
Approved  
C.ROPE  
Job Number  
18570C

**NOT FOR CONSTRUCTION**

Drawing Number  
**C-3-00**

Revision  
**2**





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|-----|------------------------------------|----|-----|----------|
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Client

**Charter Hall**

Title

**CIVIL DETAILS**

Project  
**2B-6 HASSALL STREET  
PARRAMATTA**

Scale of A1  
AS SHOWN  
Date  
03.04.19

Drawn  
S.MANANDHAR  
Designer  
Z.JONES

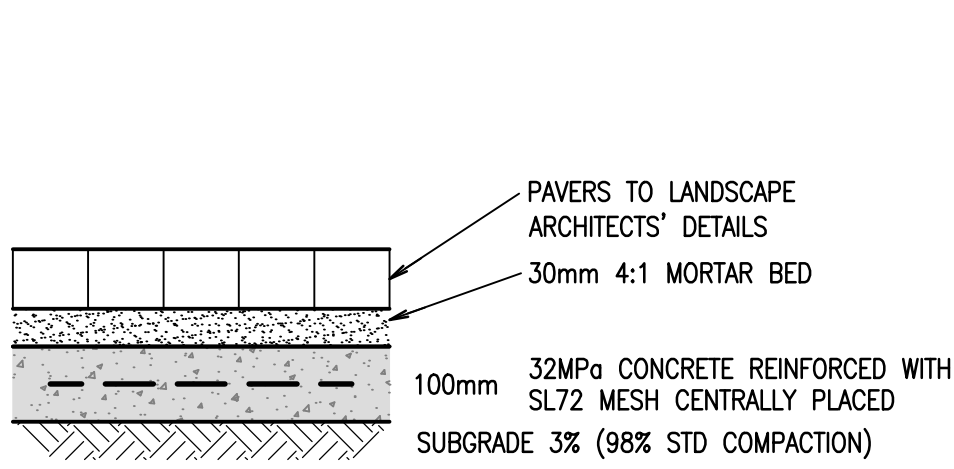
Design Checker  
Approved  
C.ROPE  
Job Number  
18570C

**NOT FOR CONSTRUCTION**

Drawing Number  
**C-3-10**

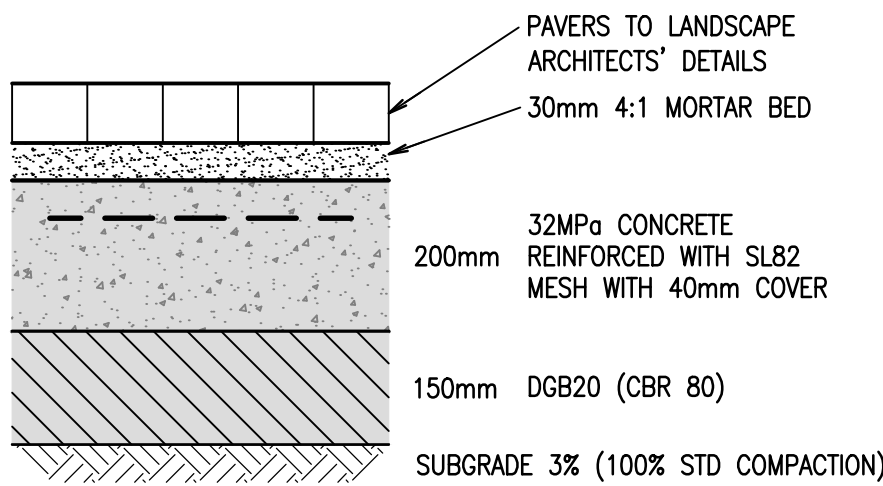
Revision  
**2**



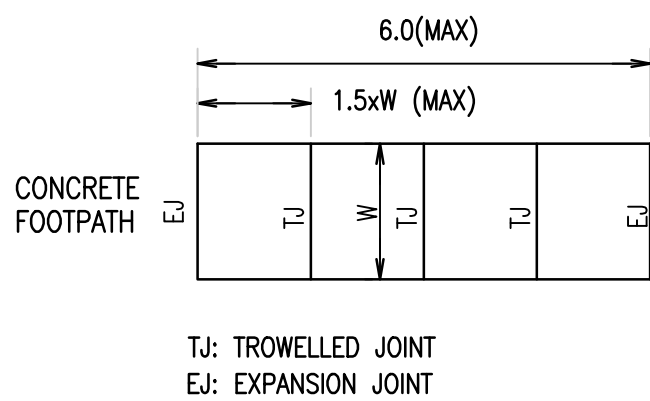


NON TRAFFICABLE PAVED FOOTPATH – PV01  
TYPICAL DETAILS  
SCALE 1:10

NOTE:  
1. REFER C-3-00 FOR PAVEMENT LAYOUT PLAN.  
2. ASSUMED SUBGRADE CBR 3% TO BE VERIFIED ON SITE BY INSITU SUBGRADE TESTING, IN ACCORDANCE WITH AS1209.6. TEST INTERVAL TO BE 1 TEST PER 400m<sup>2</sup>.

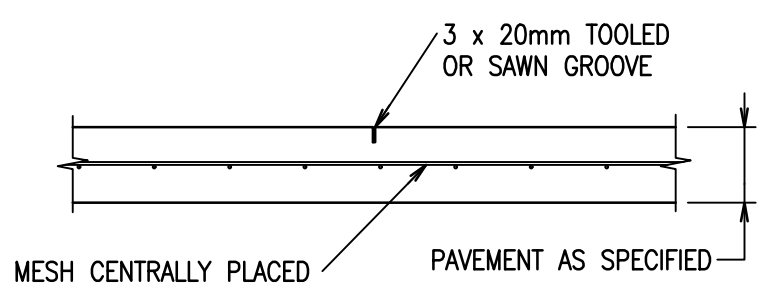


TRAFFICABLE PAVED FOOTPATH – PV02  
(PAVED VEHICULAR CROSSING)  
TYPICAL DETAILS  
SCALE 1:10

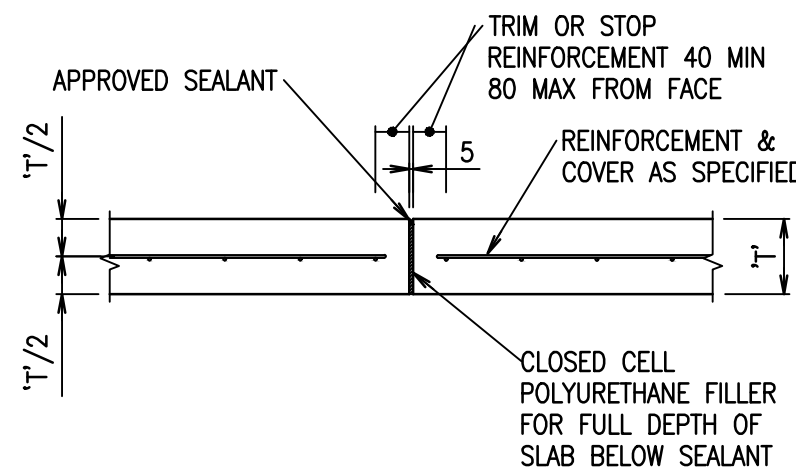


TJ: TROWELLED JOINT  
EJ: EXPANSION JOINT  
TYPICAL FOOTPATH JOINTING  
N.T.S.

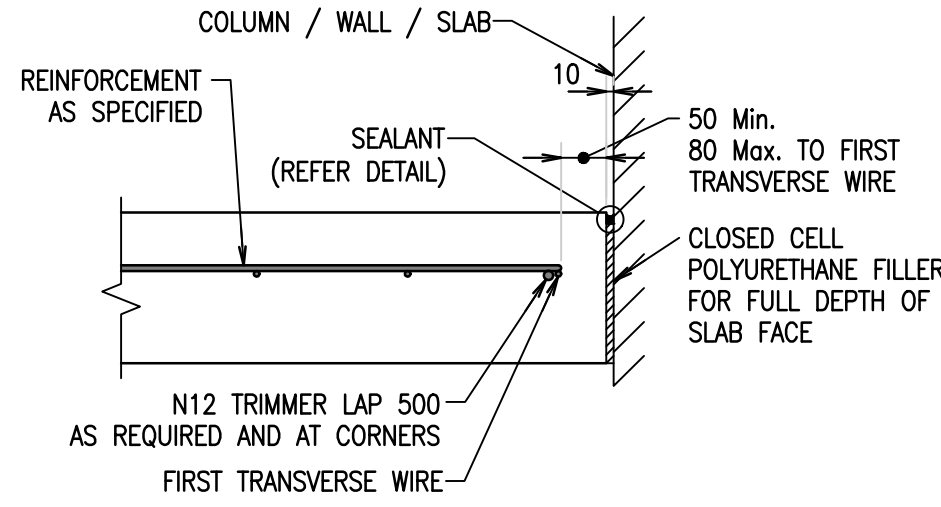
NOTES:  
1. EJ'S TO ALIGN WITH ADJOINING BAYS  
2. JOINT SPACING AROUND CURVES IS TO BE TAKEN TO THE OUTSIDE LENGTH



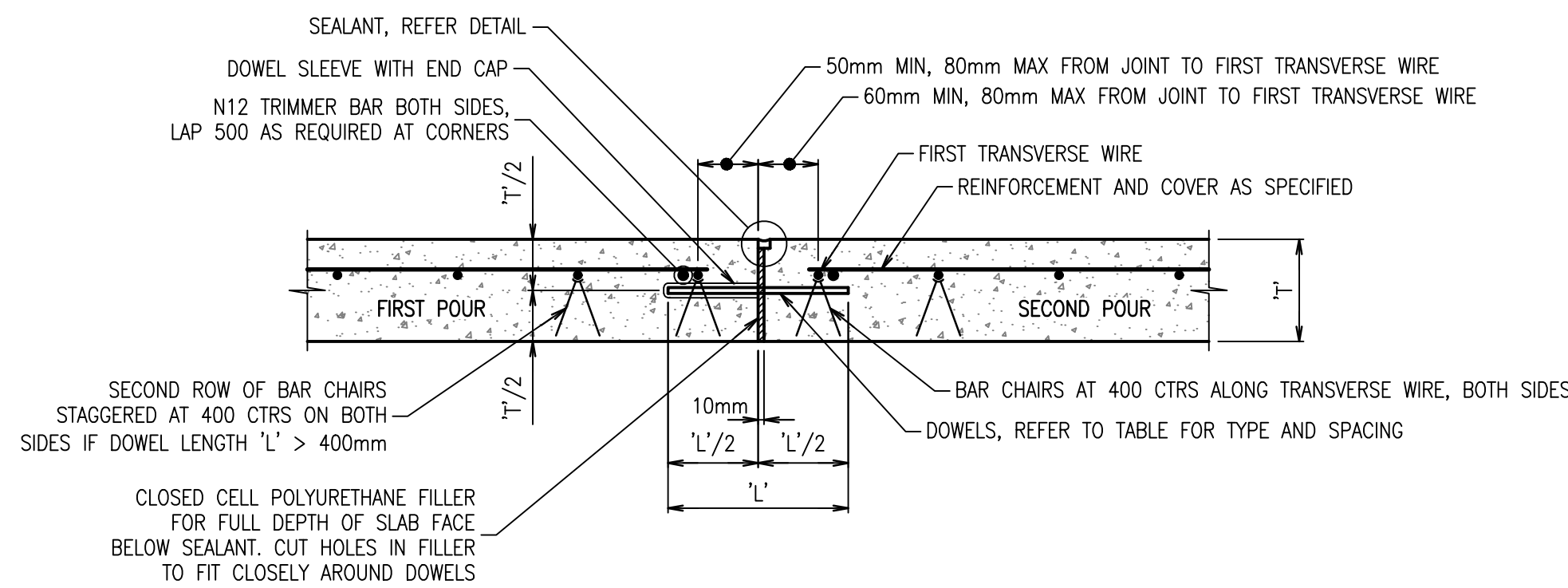
FOOTPATH TOOLED/SAWN JOINT (F.T.J.)  
SCALE 1:10



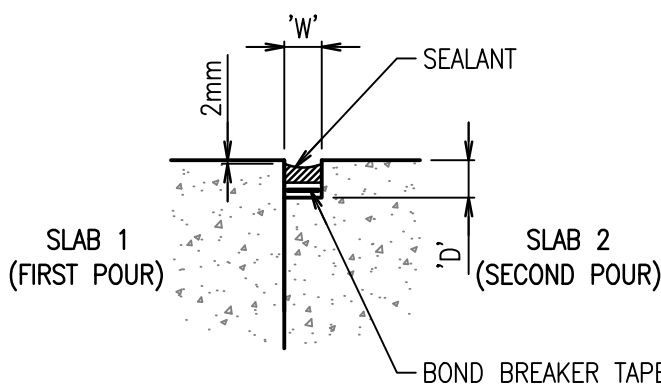
FOOTPATH EXPANSION JOINT (F.E.J.)  
SCALE 1:10



ISOLATION JOINT (I.J.)  
SCALE 1:10



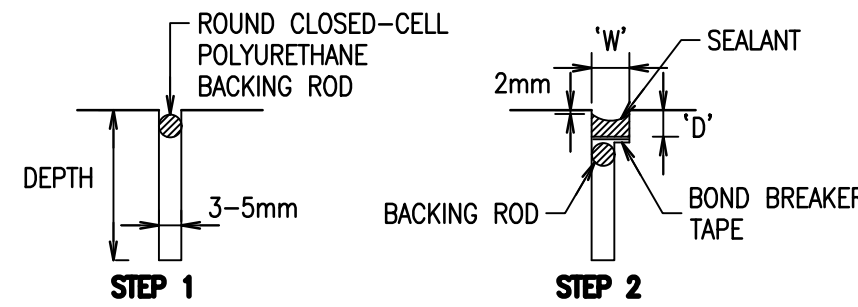
DOWELLED EXPANSION JOINT (DEJ) DETAIL  
SCALE 1:10



MOVEMENT JOINT SEALANT DETAILS  
(FOR DCJ, EJ, DEJ, KJ & DDJ JOINTS)  
SCALE 1:10

- STEPS:**
- FORM REBATE IN SLAB 2 AGAINST FACE OF SLAB 1.
  - AFTER SLAB CURING PERIOD (MIN. 28 DAYS) WASH OUT REBATE USING HIGH PRESSURE WATER. DRY USING HIGH PRESSURE COMPRESSED AIR AND ALLOW ADDITIONAL 16HRS TO DRY THOROUGHLY.
  - INSTALL POLYETHYLENE BOND BREAKER TAPE FOR FULL WIDTH 'W'. FOR IJ, EJ AND DEJ JOINTS OMIT BOND BREAKER TAPE.
  - PRIME FACES OF SIDES OF REBATE (REFER SEALANT TABLE)
  - INSTALL SEALANT AS SPECIFIED (REFER SEALANT TABLE) IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

| DOWEL / TIE BAR TABLE |                       |                 |            |
|-----------------------|-----------------------|-----------------|------------|
| JOINT DESIGNATION     | DOWEL / TIE           | SPACING CTR-CTR | LENGTH 'L' |
| DEJ                   | 10x110 DANLEY DIAMOND | 450             | 155        |



SAWN JOINT CUT AND SEALANT DETAILS  
SCALE 1:10

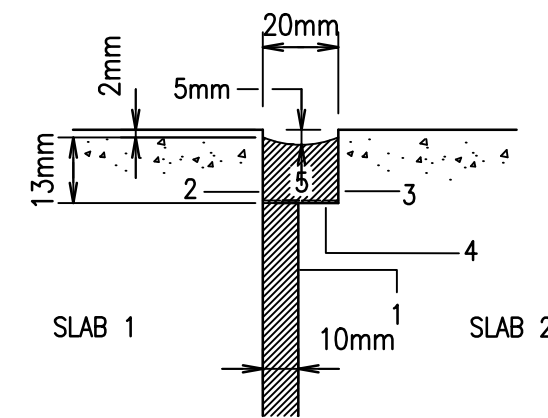
- STEP 1:**  
INITIAL CUT TO DEPTH 'T' (1/4 FOR STEEL FIBRE REINFORCED CONCRETE) WITHIN 1 DAY OF POURING CONCRETE. INSERT POLYURETHANE BACKING ROD TO PREVENT INGRESS OF DIRT UNTIL SEALANT APPLIED (MIN 28 DAYS LATER). ROD DIAMETER TO BE MIN. 1.25 x CUT WIDTH.
- STEP 2:**  
REMOVE ALL DIRT FROM SAW CUT, USING HIGH PRESSURE COMPRESSED AIR. REPLACE BACKING ROD WITH LARGER DIAMETER IF LOOSE. PUSH BACKING ROD INTO SAW CUT 1mm BELOW DEPTH 'D'. IF NECESSARY, REMOVE AND REPLACE BACKING ROD. WIDEN SAW CUT TO WIDTH 'W' AND DEPTH 'D' WITH ADDITIONAL SAW CUTS. REMOVE ALL FOREIGN MATERIAL USING HIGH PRESSURE WATER WASH. DRY USING HIGH PRESSURE COMPRESSED AIR AND ALLOW ADDITIONAL 16 HRS TO DRY THOROUGHLY. INSTALL POLYETHYLENE BOND BREAKER TAPE. PRIME FACES OF CUT CONCRETE (REFER TABLE BELOW). INSTALL SEALANT AS SPECIFIED (REFER TABLE BELOW) IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

| LOCATION           | SEALANT           | PRIMER           |
|--------------------|-------------------|------------------|
| EXTERNAL PAVEMENTS | EMER-ROAD SEAL SL | FOSROC PRIMER 10 |

- ALTERNATIVE SEALANTS MUST HAVE
- MOVEMENT ACCOMMODATION FACTOR +/- 50%
  - PRIMER TO MANUFACTURER'S SPECIFICATION
  - INSTALLATION TO MANUFACTURER'S RECOMMENDATIONS
  - PRIOR APPROVAL BY SUPERINTENDENT.

| SEALANT DIMENSIONS   |                        |                        |
|----------------------|------------------------|------------------------|
| MEAN SLAB LENGTH (m) | SEALANT WIDTH 'W' (mm) | SEALANT DEPTH 'D' (mm) |
| ≤4                   | 7 ± 1                  | 7 ± 1                  |
| 5                    | 9 ± 2                  | 7 ± 1                  |
| 6                    | 9 ± 2                  | 7 ± 1                  |
| 7                    | 10 ± 2                 | 8 ± 1                  |
| 8                    | 11 ± 2                 | 9 ± 2                  |
| 9                    | 12 ± 2                 | 10 ± 2                 |
| 10                   | 13 ± 2                 | 10 ± 2                 |
| 11                   | 14 ± 2                 | 11 ± 2                 |
| 12                   | 15 ± 2                 | 12 ± 2                 |
| ALL (TSJ)            | 6                      | 6                      |
| ALL (IJ & EJ)        | 10                     | 8                      |

**NOTES:**  
1. FOR T.S.J. ONLY, CLEAN, PRIME AND SEAL INITIAL SAW CUT ONLY.



EXPANSION JOINT AND ISOLATION JOINT SEALANT DETAIL

- CLOSED CELL POLYURETHANE FILLER (FULL DEPTH) CUT HOLES IN FILLER TO FIT CLOSELY AROUND DOWELS
- FORM GROOVE IN SLAB 2 AND AGAINST FACE OF SLAB 1
- JET WASH AND DRY GROOVE AFTER SLAB CURING PERIOD. PRIME FACES WITH FOSROC PRIMER 10
- BOND BREAKER TAPE
- INSTALL JOINT SEALANT PARBURY EMER-ROADSEAL OR APPROVED EQUIVALENT WITH MOVEMENT ACCOMMODATION FACTOR +/- 50% IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS

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Client

**Charter Hall**

Title  
**PAVEMENT DETAILS**

Project  
**2B-6 HASSALL STREET  
PARRAMATTA**

Scale of A1  
AS SHOWN  
Date  
03.04.19

Drawn  
S.MANANDHAR  
Designer  
Z.JONES

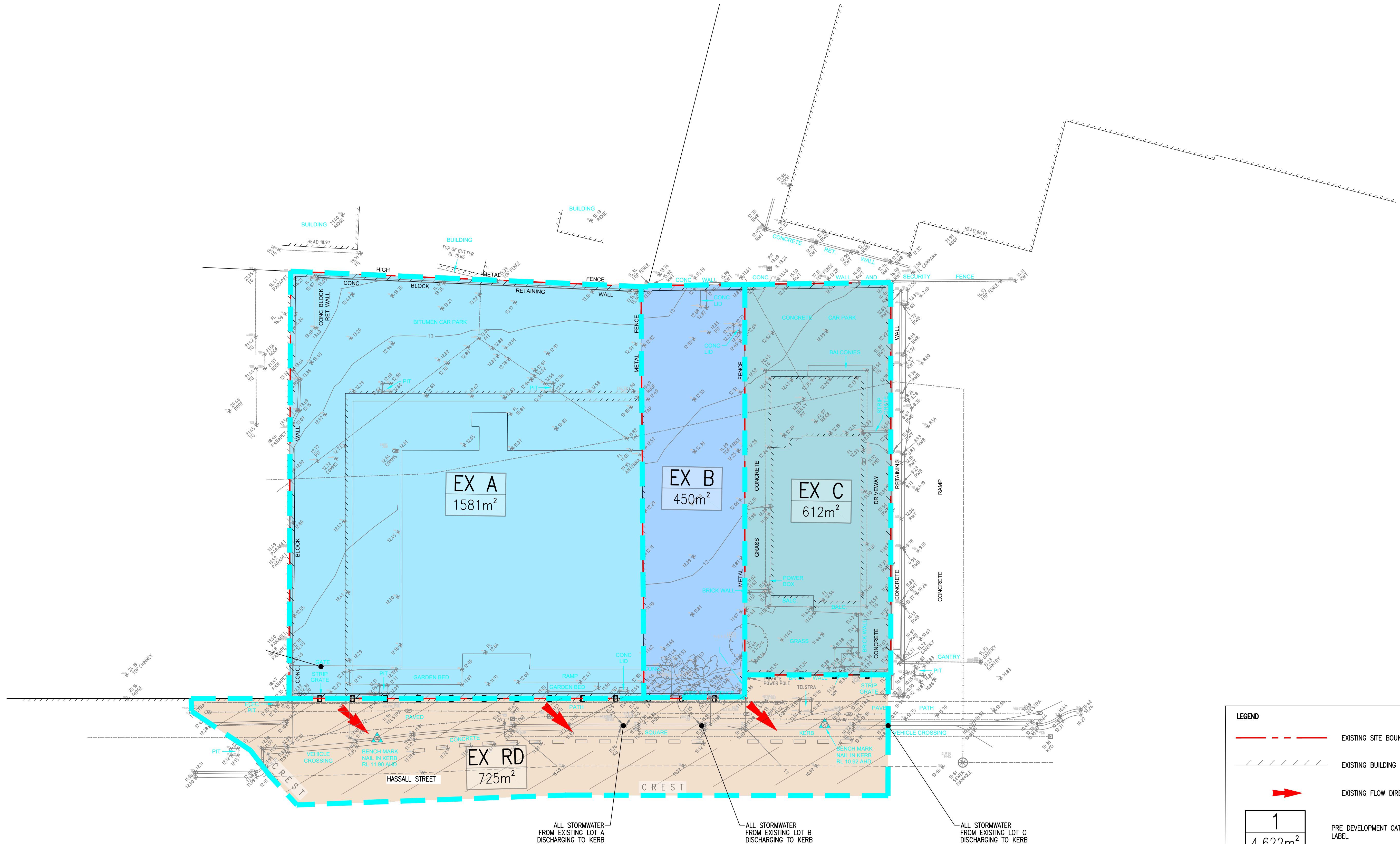
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C.ROPE  
Job Number  
18570C

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Drawing Number  
**C-4-10**

Revision  
**2**





LEGEND

EXISTING SITE BOUNDARY

EXISTING BUILDING

EXISTING FLOW DIRECTION

1

4,622m<sup>2</sup>

PRE DEVELOPMENT CATCHMENT LABEL

PRE DEVELOPMENT CATCHMENT BOUNDARY

| Rev | Revision Description               | By | App | Date     |
|-----|------------------------------------|----|-----|----------|
| 1   | ISSUED FOR DEVELOPMENT APPLICATION | ZJ | CR  | 04.03.19 |

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Client

Charter Hall

Title

STORMWATER PRE CATCHMENT ANALYSIS

Project

2B-6 HASSALL STREET  
PARRAMATTA

Scale of A1  
AS SHOWN  
Date  
04.03.19

Drawn  
ZJONES  
Designer  
ZJONES

Design Checker  
Approved  
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C-6-50

Revision  
1



