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**CIVIL ENGINEERING DESIGN REPORT  
RYDE SECONDARY COLLEGE  
5 MALVINA STREET  
RYDE, NSW**

**For REF Submission  
SEPTEMBER 2022  
Revision 03**

**HENRY & HYMAS**  
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## Project Verification

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| Project Title  | Ryde Secondary College         |
| Document Title | 22M13 Civil Engineering Report |
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| Description    | Civil Engineering Report.(REF) |
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### Disclaimer:

The information presented by Henry & Hymas in the Report has been collated and summarised from reporting by a variety of specialist consultants. Due to the current stage and nature of the project Henry & Hymas does not take responsibility for the information presented in this report other than those related to civil or stormwater design. Henry & Hymas strongly recommends the specialist reporting is reviewed in conjunction with any non-civil/stormwater related information presented.



## 1. INTRODUCTION

### 1.1 General

This report forms part of an environmental assessment under Part 5 of the *Environmental Planning and Assessment Act, 1979* for proposed upgrades to Ryde Secondary College. The proposed works are deemed permitted without consent by Section 3.37 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* which provides that:

- (1) *Development for any of the following purposes may be carried out by or on behalf of a public authority without development consent on land within the boundaries of an existing school –*
  - (a) *Construction, operation or maintenance, more than 5 metres from any property boundary with land in a residential zone and more than 1 metre from any property boundary with land in any other zone, of –*
    - (ii) *a portable classroom (including a modular or prefabricated classroom that is not more than 2 storeys high*
  - (b) *Minor alterations and additions*
  - (c) *demolition of structures or buildings*

### 1.2 Engineering Principles

The following principles have been adopted as part of the design process

- Consideration of design intent in relation to functionality, expectations and requirements of end user
- Compliance with relevant Council and authority standards and policies
- Design coordination with project team
- A design philosophy sympathetic to the environment, terrain and landform

### 1.3 Council Policies

The civil engineering component of the aforementioned project has been designed in accordance with the following Council codes and policies:

- City of Ryde Council Development Control Plan 2014 (DCP)
- City of Ryde Council Stormwater Management Technical Manual

### 1.4 Site and Background information

Ryde Secondary College is located at 5 Malvina Street, Ryde (Lot 284 and 285 in DP752035) within the City of Ryde Local Government Area. Ryde Secondary College has approximately 1,362 students currently enrolled. A locality sketch of the site is provided in Figure 1 below.

Existing development includes single and double storey classrooms buildings, a multipurpose hall, covered outdoor learning areas, sports courts, demountable classrooms, landscaping, pathways and hardstand areas, vehicle circulation and carparking.

The site has frontage to Malvina Street (north-western boundary) and Forrest Road (north-eastern boundary) with low density residential development along the opposite road frontages. The site adjoins low density residential on the south-western boundary, Buffalo Creek along the southern boundary and Barton Reserve along the south-eastern boundary.



**LOCALITY SKETCH**

SCALE: N.T.S.

Figure 1: Locality Sketch

### 1.5 Proposed Development

This DA seeks approval for the Stage 1 works in the master-planned redevelopment of Ryde Secondary College including:

- Demolition in the vicinity of the proposed pavilion;
- Two (2) storey pavilion building comprising:
  - Thirteen (13) GLS;
  - Learning commons;
  - Fitness lab;
  - Seminar spaces;
  - Staff room;
  - Store; and
  - Change rooms;
- Lift, stair and ramp access;
- Associated adjustments to the existing sports court; and
- Removable of demountable classrooms.



## 2. EXISTING FLOODING

Flood investigations were undertaken to indicate the extent of flooding on the proposed development during a 1% AEP storm event and the probable maximum flood (PMF). The site is within the Buffalo Creek Catchment and flood studies from the City of Ryde indicate that the area of proposed works does not become inundated as a result of Buffalo Creek during the 1% AEP storm event and PMF storm event as shown in the flood extent maps below.



Figure 2: City of Ryde Buffalo Creek catchment flood extent study 1% AEP



Figure 3: City of Ryde Buffalo Creek catchment flood extent study PMF



Due to the close proximity of Ryde Secondary College to Buffalo Creek, flood advice has been provided as per the REF deliverables despite the extent of the proposed works remaining wholly above flood levels in a 1% AEP and PMF event. It should be noted that the light blue areas in the PMF study across the proposed site indicate localised ponding as a result of the flat nature of the terrain and not flooding as a result of Buffalo Creek. This is shown by the localised ponding not being linked to the Buffalo Creek flood extent. Since the proposed works are located above the flood levels, occupants such as teachers and students could remain onsite during a large flood event, with the highest point located at the intersection of Forrest Road and Malvina Street in the vicinity of the proposed works.

### **3. STORMWATER MANAGEMENT**

#### **3.1 Introduction**

Stormwater controls will be implemented that ensure that the proposed development does not adversely impact on stormwater flows and water quality of the stormwater system downstream of the site.

The principles and operation of the proposed stormwater system for the development including water quality measures and the components of the internal drainage system are detailed in the civil engineering drawings included in Appendix A.

#### **3.2 Proposed Stormwater System**

We understand based on discussions with City of Ryde Council's Engineer that due to the portable nature of the building rainwater tanks may be utilised for Onsite Stormwater Detention (OSD) storage. Council has subsequently confirmed this approach in their email dated 29th August 2022 (refer to Appendix B for details). DRAINS modelling was undertaken to calculate the necessary OSD storage required. As per the City of Ryde Council's DCP, OSD volumes were required to be sufficient enough to lower 100 year post development flows to the 5 year post development flow. With an OSD volume of 30m<sup>3</sup>, the following flow rates were calculated:

| 100 year post development flows (l/s) | 5 year post development flows (l/s) |
|---------------------------------------|-------------------------------------|
| 34 l/s                                | 35 l/s                              |

Four x 7.5kL rainwater tanks have been proposed to provide the required 30m<sup>3</sup> OSD storage. These above ground rainwater tanks will be in series and fitted with low level outlets such that the tank will form a detention function. The stormwater system was designed to drain a total catchment area of 1000m<sup>2</sup> of roof area, discharging towards an OSD discharge control pit fitted with a 115mm orifice plate. The OSD discharge control pit is to be sealed and the rainwater tanks are to be fitted to prevent discharge from overflowing from the pit.

The discharge point of the proposed stormwater system will be towards an existing kerb inlet pit located on Forrest Road, north-east of the site.

#### **3.4 Water Quality**

Discussions with City of Ryde Council's Engineer indicate that due to the portable nature of the development, water quality devices won't be required to meet any particular pollutant reduction targets. For the sake of water quality, a 5kL rainwater tank is proposed of which can be used for irrigation or fitted with a hose cock.

### **4. SEDIMENT AND EROSION CONTROLS**

During construction, appropriate sediment and erosion control measures need to be implemented to ensure that downstream receiving waters are not adversely impacted as a result of construction activities. The engineering drawings



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22M13\_DA\_SE01-SE02 by Henry & Hymas outline appropriately designed and detailed measures to mitigate against this risk. These measures have been designed in accordance with the requirements of the publication "Landcom – Managing Urban Stormwater - Soils and Construction, Volume 1, 4th Edition March 2004" and City of Ryde Council requirements

## **5. CONCLUSION**

As demonstrated above, the proposed stormwater design is generally in accordance with City of Ryde Council's detention and water quality requirements. Refer to the civil engineering plans in Appendix A for further details of the stormwater design.

In general, the engineering objectives of civil design and stormwater management elements mentioned above are to create a system that is based on the architectural layout and incorporates the natural topography and site constraints to produce a cost-effective and appropriate drainage system that meets best industry practices and governing water quality and quantity objectives.

We trust the information provided in this report satisfies matters relating to flooding, sediment and erosion control and stormwater matters such as On-site Stormwater Detention.

## **6. REFERENCES**

- Landcom - "Soils and Construction Volume 1 – 4<sup>th</sup> Edition", March 2004
- City of Ryde Council Stormwater Management Technical Manual
- City of Ryde Council – Development Control Plan





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## **7. APPENDICES**

Appendix A- Civil Engineering Drawings

Appendix B- Email Discussion with City of Ryde Council Engineer



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**8. APPENDIX A – CIVIL ENGINEERING DRAWINGS**

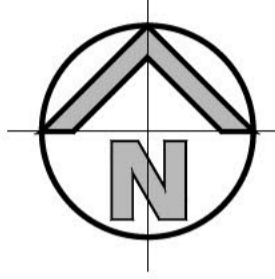
# RYDE SECONDARY COLLEGE

## 5 MALVINA STREET, RYDE NSW 2112

### CIVIL ENGINEERING WORKS

#### GENERAL NOTES:

- ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH CITY OF RYDE COUNCIL'S SPECIFICATION. CONTRACTOR TO OBTAIN AND RETAIN A COPY ON SITE DURING THE COURSE OF THE WORKS.
- ALL NEW WORKS ARE TO MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS AND MARRY IN A 'WORKMANLIKE' MANNER.
- THE CONTRACTOR IS TO VERIFY THE LOCATION OF ALL SERVICES WITH EACH RELEVANT AUTHORITY. ANY DAMAGE TO SERVICES SHALL BE RECTIFIED BY THE CONTRACTOR OR THE RELEVANT AUTHORITY AT THE CONTRACTOR'S EXPENSE. SERVICES SHOWN ON THESE PLANS ARE ONLY THOSE EVIDENT AT THE TIME OF SURVEY OR AS DETERMINED FROM SERVICE DIAGRAMS. H & H CONSULTING ENGINEERS PTY. LTD CANNOT GUARANTEE THE INFORMATION SHOWN NOR ACCEPT ANY RESPONSIBILITY FOR INACCURACIES OR INCOMPLETE DATA.
- SERVICES & ACCESSES TO THE EXISTING PROPERTIES ARE TO BE MAINTAINED IN WORKING ORDER AT ALL TIMES DURING CONSTRUCTION.
- ADJUST EXISTING SERVICE COVERS TO SUIT NEW FINISHED LEVELS TO RELEVANT AUTHORITY REQUIREMENTS WHERE NECESSARY.
- REINSTATE AND STABILISE ALL DISTURBED LANDSCAPED AREAS.
- MINIMUM GRADE OF SUBSOIL SHALL BE 0.5% (1:200) FALL TO OUTLETS.
- ALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES ARE TO BE CONSTRUCTED, PLACED AND MAINTAINED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS, EROSION AND SEDIMENTATION CONTROL PLAN AND CITY OF RYDE COUNCIL'S REQUIREMENTS WHERE APPLICABLE.
- CONTRACTOR TO CHECK AND CONFIRM SITE DRAINAGE CONNECTIONS ACROSS THE VERGE PRIOR TO COMMENCEMENT OF SITE DRAINAGE WORKS.
- PROPERTIES AFFECTED BY THE WORKS ARE TO BE NOTIFIED IN ADVANCE WHERE DISRUPTION TO EXISTING ACCESS IS LIKELY.



LOCALITY SKETCH

SCALE: N.T.S.

#### EXISTING SERVICES & FEATURES

- THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF ALL EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA OR AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
- THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
- PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF HIS PROGRAM FOR THE RELOCATION/ CONSTRUCTION OF TEMPORARY SERVICES.
- CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN SUPPLY TO EXISTING BUILDING REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED, THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
- INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE TO THE PRINCIPAL. CONTRACTOR TO GAIN APPROVAL FROM THE SUPERINTENDENT FOR TIME OF INTERRUPTION.
- EXISTING SERVICES, BUILDINGS, EXTERNAL STRUCTURES AND TREES SHOWN ON THESE DRAWINGS ARE EXISTING FEATURES PRIOR TO ANY DEMOLITION WORKS.
- EXISTING SERVICES UNLESS SHOWN ON SURVEY PLAN HAVE BEEN PLOTTED FROM SERVICES SEARCH PLANS AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLETE A 'DIAL BEFORE YOU DIG' SEARCH AND TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø80 uPVC SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND EDGE OF PAVING.

#### SITING NOTES

- DATUM: A.H.D.
- ORIGIN OF LEVELS: REFER TO BENCH OR STATE SURVEY MARKS WHERE SHOWN ON PLAN.
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO THE COMMENCEMENT OF WORK.
- ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS & THE DIRECTIONS OF THE SUPERINTENDENT.
- EXISTING SERVICES UNLESS SHOWN ON THE SURVEY PLAN HAVE BEEN PLOTTED FROM SERVICES SEARCH PLANS AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS ACHIEVED.
- THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
- CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATION IS TO BE UNDERTAKEN OVER TELSTRA OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
- CONTRACTOR TO OBTAIN AUTHORITY APPROVALS WHERE APPLICABLE.
- MAKE SMOOTH TRANSITION TO EXISTING SURFACES AND MAKE GOOD.
- THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED LANDSCAPE, ARCHITECTURAL, STRUCTURAL, HYDRAULIC AND MECHANICAL DRAWINGS AND SPECIFICATIONS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED RELATING TO DEVELOPMENT AT THE SITE.
- TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MINIMUM OF 50mm IN BITUMINOUS PAVING.
- ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø80 uPVC SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND EDGE OF PAVING.
- GRADES TO PAVEMENTS TO BE AS IMPLIED BY RL'S ON PLAN. GRADE EVENLY BETWEEN NOMINATED RL'S. AREAS EXHIBITING PONDING GREATER THAN 5mm DEPTH WILL NOT BE ACCEPTED UNLESS IN A DESIGNATED SAG POINT.
- ALL COVERS AND GRATES ETC TO EXISTING SERVICE UTILITIES ARE TO BE ADJUSTED TO SUIT NEW FINISHED SURFACE LEVELS WHERE APPLICABLE.

#### SURVEY NOTES

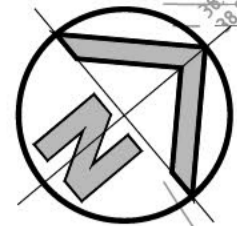
THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY THE SURVEYOR SPECIFIED IN THE TITLE BLOCK. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. HENRY AND HYMAS PTY. LTD. DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT HENRY AND HYMAS PTY. LTD. THE FOLLOWING NOTES HAVE BEEN TAKEN DIRECTLY FROM ORIGINAL SURVEY DOCUMENTS.

#### DRAWING SCHEDULE

| Drawing Code  | Description  |
|---------------|--|
| 22M13_DA_C000 | COVER SHEET, DRAWING SCHEDULE, NOTES AND LOCALITY SKETCH |
| 22M13_DA_C100 | GENERAL ARRANGEMENT PLAN                                 |
| 22M13_DA_C101 | SITE DETAIL PLAN   |
| 22M13_DA_C200 | STORMWATER MISCELLANEOUS DETAILS AND PIT LID SCHEDULE    |
| 22M13_DA_SE01 | SEDIMENT AND EROSION CONTROL PLAN                        |
| 22M13_DA_SE02 | SEDIMENT AND EROSION CONTROL TYPICAL DETAILS             |

#### REF SUBMISSION



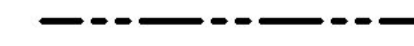
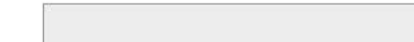
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| SURVEYED BY<br>C.M.S. SURVEYORS<br>DATUM: A.H.D.<br>ORIGIN OF LEVELS:<br>SSM83490 & SSM83479 |           |       |          |      |          |           |       |          |      | DEPARTMENT OF EDUCATION  |  | RYDE SECONDARY COLLEGE<br>5 MALVINA STREET, RYDE NSW 2112 |  | S.Chen         |  | A.Martano |  | AUG 2022         |  |
|  |           |       |          |      |          |           |       |          |      | BENNETT AND TRIMBLE  |  | henry&hymas   |  | A.Francis      |  | A.Francis |  | Scale @A1<br>NTS |  |
| 01 ISSUED FOR REF SUBMISSION   |           |       |          |      |          |           |       |          |      | This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas. |  | 22M13_DA_C000   |  | Drawing number |  | Revision  |  | 01               |  |
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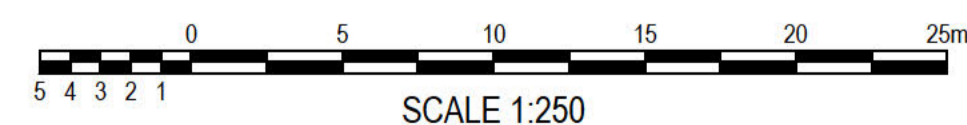


**GENERAL ARRANGEMENT PLAN**

SCALE: 1:250

**LEGEND**

-  PROPOSED LIMIT OF WORK
-  EXISTING BOUNDARY
-  PROPOSED BOUNDARY
-  SCOPE OF CIVIL WORKS



SCALE 1:250

**REF SUBMISSION**

|   |           |                    |          |      |          |           |       |            |      |  |  |
|---|-----------|--------------------|----------|------|----------|-----------|-------|------------|------|--|--|
| <b>SURVEY INFORMATION</b>               |           |                    |          |      |          |           |       |            |      |  |  |
| SURVEYED BY<br>C.M.S. SURVEYORS         |           | DATE<br>09.09.2022 |          | SC   |          | AM        |       | 09.09.2022 |      |  |  |
| ORIGIN OF LEVELS<br>SSM83490 & SSM83479 |           | DATE<br>26.08.2022 |          | SC   |          | AM        |       | 26.08.2022 |      |  |  |
| REVISION                                | AMENDMENT | DRAWN              | DESIGNED | DATE | REVISION | AMENDMENT | DRAWN | DESIGNED   | DATE |  |  |

Client  
**DEPARTMENT OF EDUCATION**

Architect  
**BENNETT AND TRIMBLE**

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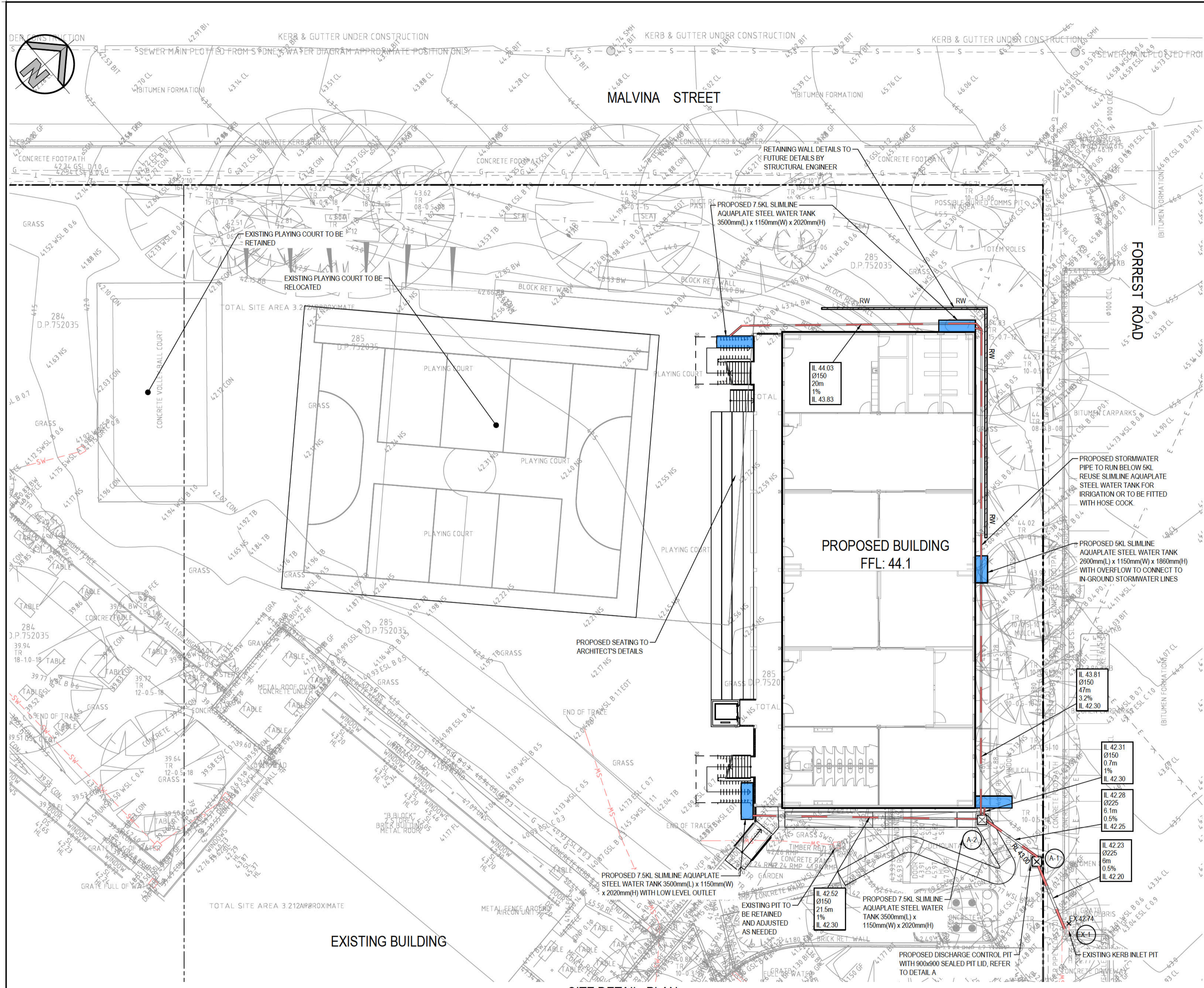
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Project  
**RYDE SECONDARY COLLEGE**  
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Title  
**GENERAL ARRANGEMENT PLAN**

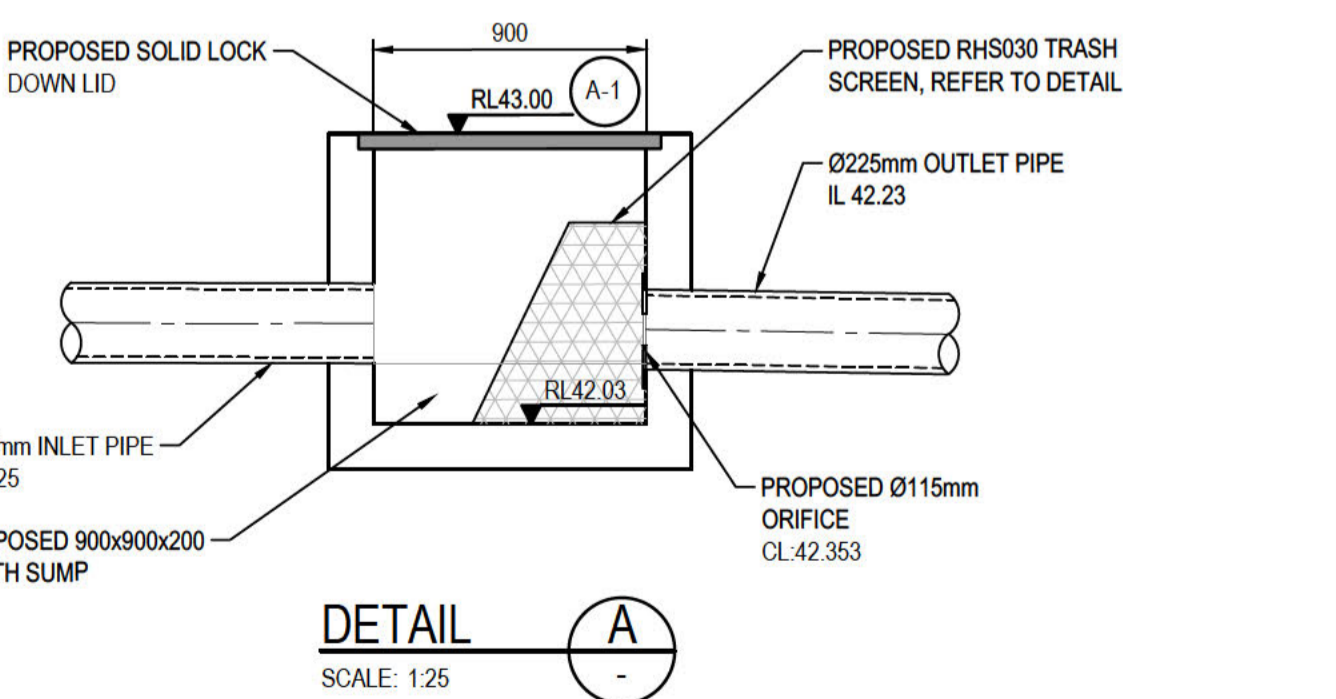
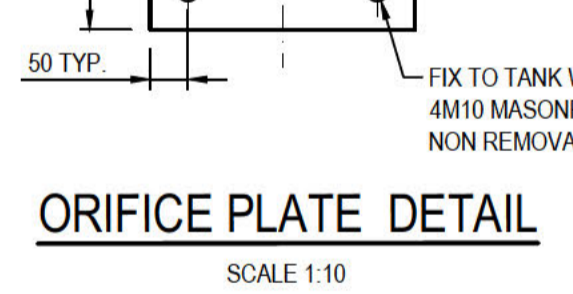
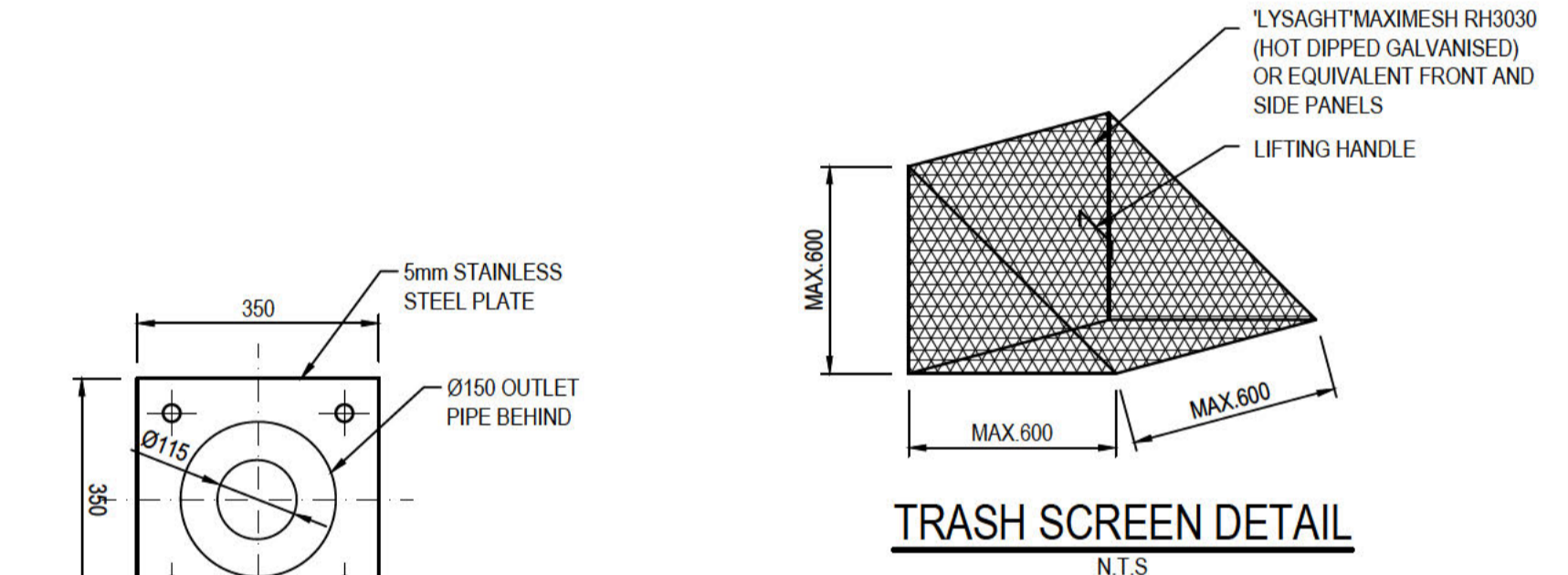
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| Drawn<br>S.Chen                        | Designed<br>A.Martano | Date<br>AUG 2022      |
| Checked<br>A.Francis                   | Approved<br>A.Francis | Scale @A1<br>1:250    |
| Drawing number<br><b>22M13_DA_C100</b> |                       | Revision<br><b>02</b> |



**SITE DETAIL PLAN**  
SCALE: 1:200

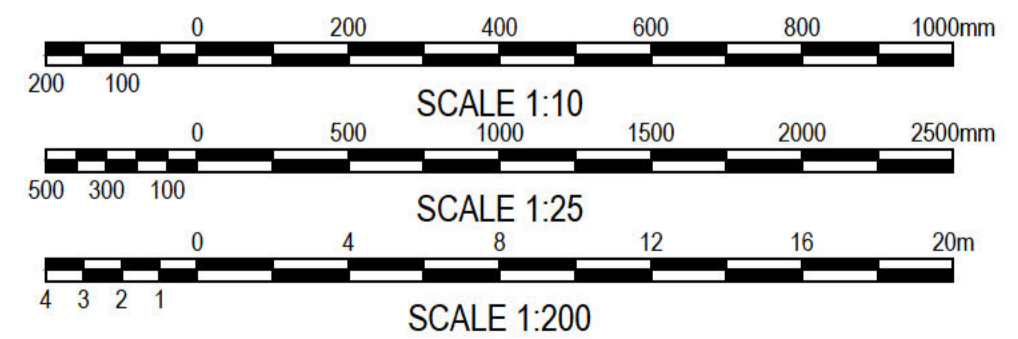
**LEGEND**

|  |   |
|--|---|
|  | EXISTING BOUNDARY   |
|  | PROPOSED BOUNDARY   |
|  | PROPOSED JUNCTION PITS  |
|  | PROPOSED SURFACE INLET PITS   |
|  | PROPOSED PIT TAG  |
|  | PROPOSED PIT NUMBER   |
|  | STORMWATER UPSTREAM INVERT RL, STORMWATER PIPE DIAMETER & CLASS, STORMWATER PIPE LENGTH, STORMWATER PIPE GRADE, STORMWATER DOWNSTREAM INVERT RL |
|  | PROPOSED GRATED DRAIN   |
|  | EXISTING STORMWATER PITS  |
|  | EXISTING STORMWATER PIPE  |
|  | PROPOSED STORMWATER PIPE  |
|  | EXISTING CONTOURS   |
|  | PROPOSED CONTOURS   |
|  | PROPOSED SPOT LEVEL   |
|  | EXISTING SPOT LEVEL   |
|  | PROPOSED RETAINING WALL   |
|  | EXISTING ELECTRICAL LINE  |
|  | EXISTING GAS LINE   |
|  | EXISTING SEWER LINE   |
|  | EXISTING TELSTRA LINES  |
|  | EXISTING WATER LINE   |
|  | EXISTING SEWER MANHOLE  |
|  | EXISTING UNKNOWN SERVICE LINE   |



**NOTE:**

- ROOF WATER TO BE CONNECTED TO THE OSD TANKS VIA DOWNPIPES TO HYDRAULIC ENGINEER'S DETAILS
- PROPOSED 7.5KL SLIMLINE AQUAPLATE STEEL WATER TANKS TO PROVIDE 30m³ OSD STORAGE

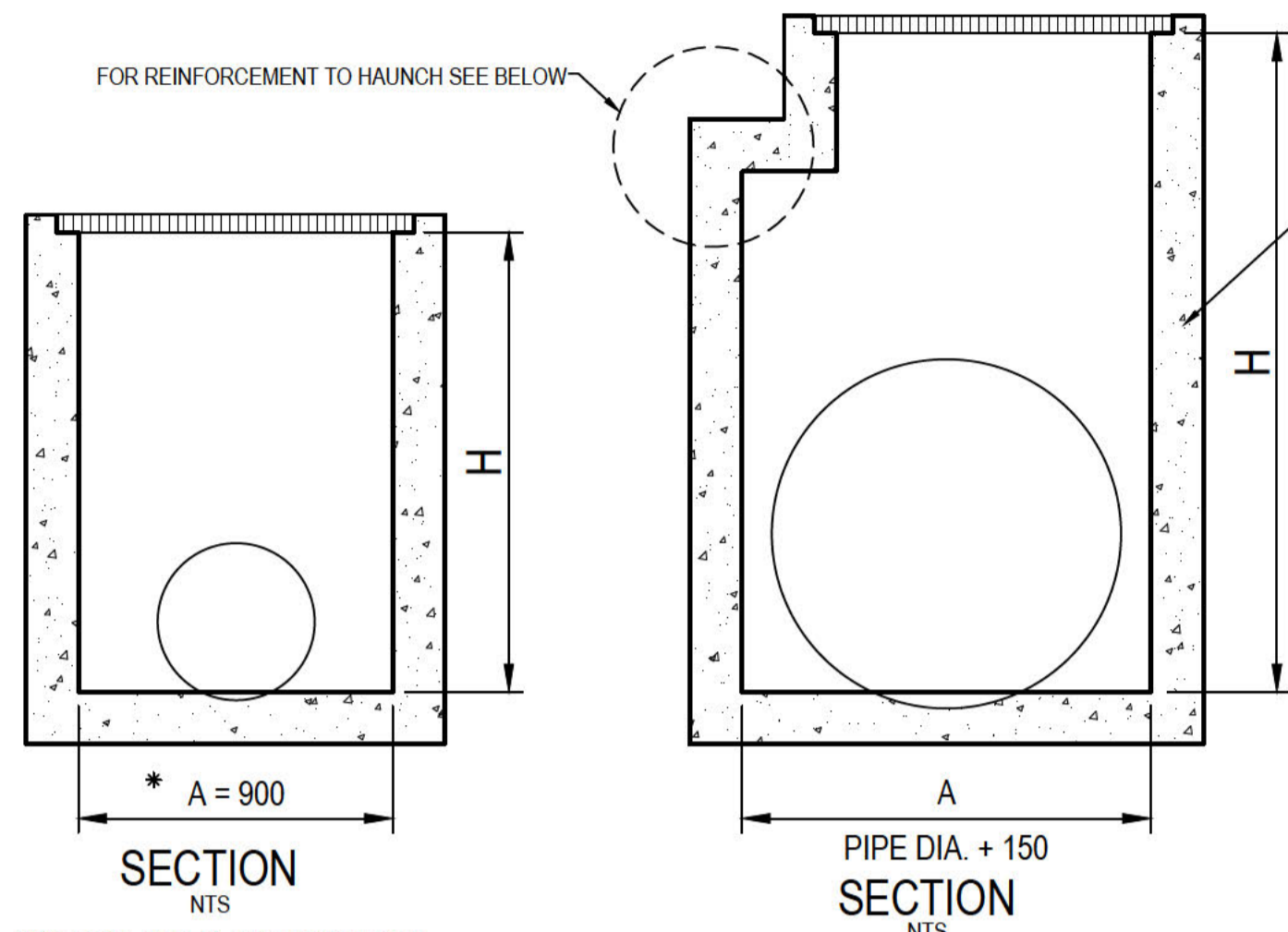


| <p><b>SURVEY INFORMATION</b></p> <p>SURVEYED BY<br/>C.M.S. SURVEYORS</p> <p>DATUM: AHD</p> <p>ORIGIN OF LEVELS:<br/>SSM83490 &amp; SSM83479</p> |  |          |           |            | <p>Client<br/><b>DEPARTMENT OF EDUCATION</b></p> <p>Architect<br/><b>BENNETT AND TRIMBLE</b></p> <p>This drawing and design remains the property of Henry &amp; Hymas and may not be copied in whole or in part without the prior written approval of Henry &amp; Hymas.</p> | <p>Suite 2.01<br/>828 Pacific Highway<br/>Gordon NSW 2072</p> <p>Telephone<br/>+61 2 9417 8400</p> <p>Facsimile<br/>+61 2 9417 8337</p> <p>Email<br/>email@hthconsult.com.au</p> <p>Web<br/>www.henryandhymas.com.au</p> |  | <p>Project<br/><b>RYDE SECONDARY COLLEGE</b><br/>5 MALVINA STREET, RYDE NSW 2112</p> | <p>Drawn<br/>S.Chen</p> <p>Checked<br/>A.Francis</p> <p>Drawing number<br/><b>22M13_DA_C101</b></p> | <p>Designed<br/>A.Martano</p> <p>Approved<br/>A.Francis</p> <p>Scale @A1<br/>AS NOTED</p> | <p>Date<br/>AUG 2022</p> <p>Scale @A1<br/>AS NOTED</p> |            |    |                           |    |    |            |  |  |
|---|--|----------|-----------|------------|--|--|--|--|---|---|--|------------|----|---------------------------|----|----|------------|--|--|
|   | <table border="1"> <tr> <th>REVISION</th> <th>AMENDMENT</th> <th>DRAWN</th> <th>DESIGNED</th> <th>DATE</th> </tr> <tr> <td>02</td> <td>ISSUED FOR REF SUBMISSION</td> <td>SC</td> <td>AM</td> <td>09.09.2022</td> </tr> <tr> <td>01</td> <td>ISSUED FOR REF SUBMISSION</td> <td>SC</td> <td>AM</td> <td>26.08.2022</td> </tr> </table> | REVISION | AMENDMENT | DRAWN      | DESIGNED   | DATE   |  | 02   | ISSUED FOR REF SUBMISSION   | SC  | AM   | 09.09.2022 | 01 | ISSUED FOR REF SUBMISSION | SC | AM | 26.08.2022 |  |  |
| REVISION  | AMENDMENT  | DRAWN    | DESIGNED  | DATE       |  |  |  |  |   |   |  |            |    |                           |    |    |            |  |  |
| 02  | ISSUED FOR REF SUBMISSION  | SC       | AM        | 09.09.2022 |  |  |  |  |   |   |  |            |    |                           |    |    |            |  |  |
| 01  | ISSUED FOR REF SUBMISSION  | SC       | AM        | 26.08.2022 |  |  |  |  |   |   |  |            |    |                           |    |    |            |  |  |

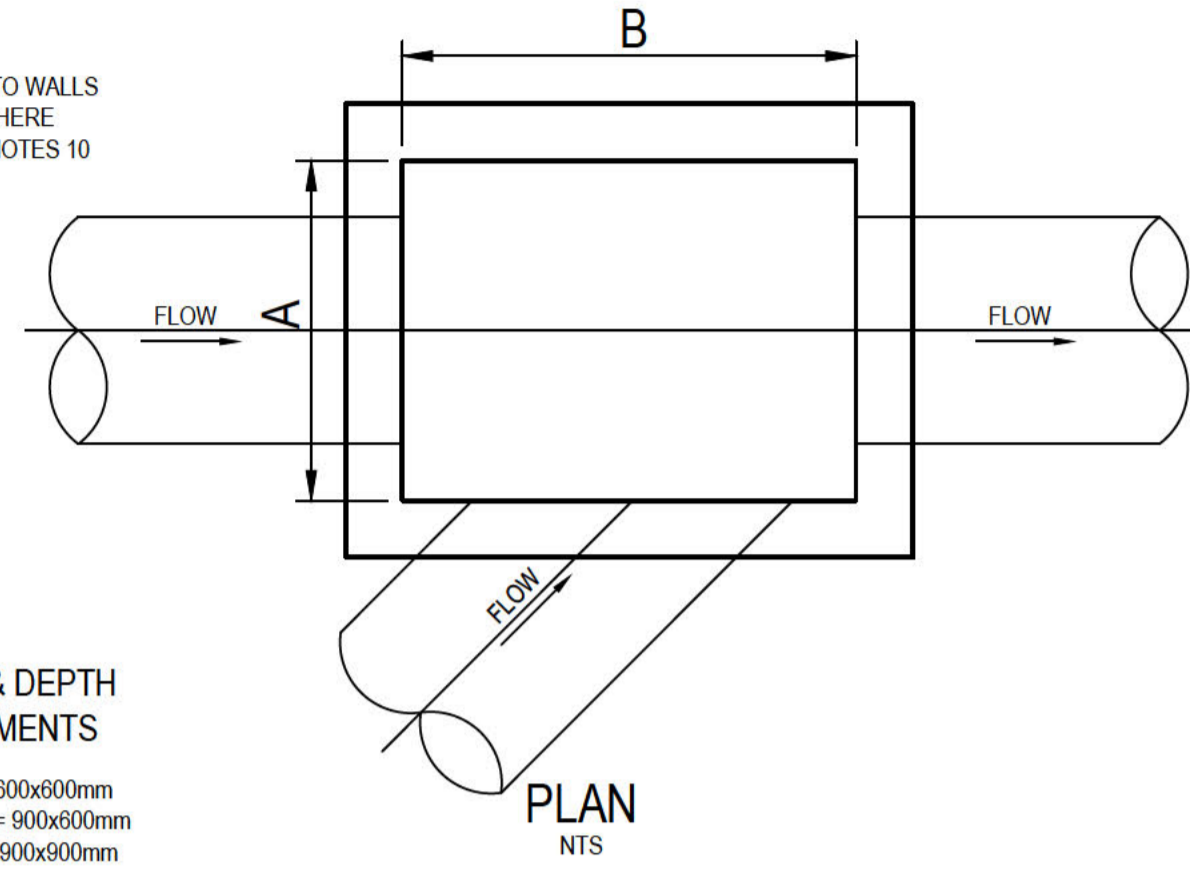
**TYPICAL PIT CHAMBER SIZES**  
**IT IS THE CONTRACTORS RESPONSIBILITY TO SELECT PIT CHAMBER SIZE WITH REGARDS TO PIPE SIZE, DEPTH TO INVERT AND SKEW ANGLE. REFER SKETCHES BELOW.**

- SELECT PIT CHAMBER USING THE STEPS BELOW.
- SELECT PIT CHAMBER SIZE DEPENDING ON THE PIPE DIAMETERS.
- CHECK PIT CHAMBER SIZE TO SATISFY DEPTH TO INVERT REQUIREMENTS.
- CHECK PIT CHAMBER DIMENSIONS TO SATISFY THE SKEW ANGLE IN THE TABLE.

FOR B = 600mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 225mm  
 FOR B = 900mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 375mm  
 FOR B = 1200mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 600mm  
 FOR B = 1500mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 825mm  
 FOR B = 1900mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 1050mm



**2 PIT SIZE & DEPTH REQUIREMENTS**  
 H = 0-900mm - Ax B = 600x600mm  
 H = 900-1200mm - Ax B = 900x900mm  
 H > 1200mm - Ax B = 900x900mm



**3 PIT CHAMBER FOR SIDE ENTRY ON SKEW**

| SIEVE SIZE (MM) | WEIGHT PASING (%) |
|-----------------|-------------------|
| 75.0            | 100               |
| 9.5             | 100 TO 50         |
| 2.36            | 100 TO 30         |
| 0.60            | 50 TO 15          |
| 0.075           | 25 TO 0           |

| SIEVE SIZE (MM) | WEIGHT PASING (%) |
|-----------------|-------------------|
| 19.0            | 100               |
| 2.36            | 100 TO 50         |
| 0.60            | 90 TO 20          |
| 0.30            | 60 TO 10          |
| 0.15            | 25 TO 0           |
| 0.075           | 10 TO 0           |

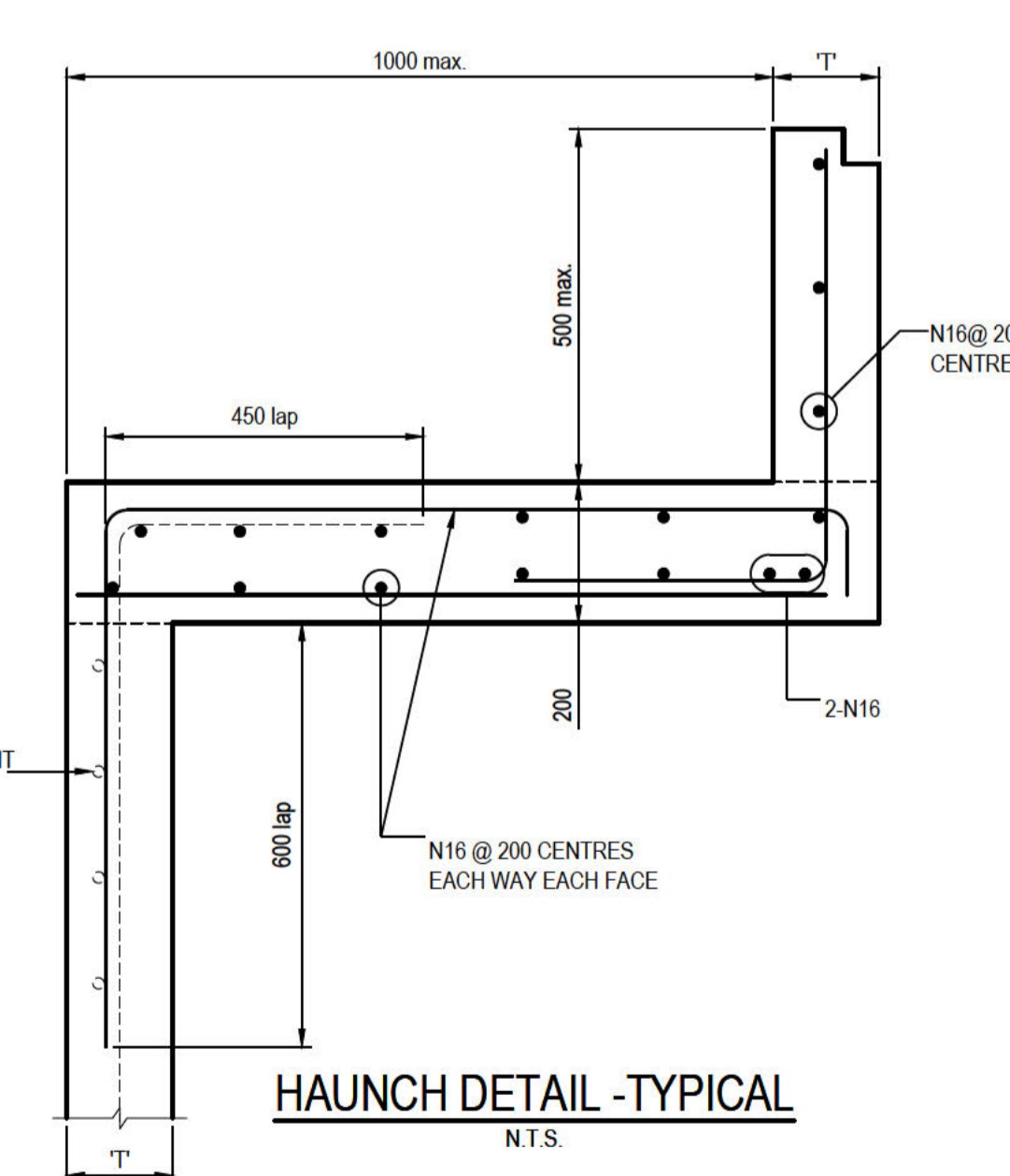
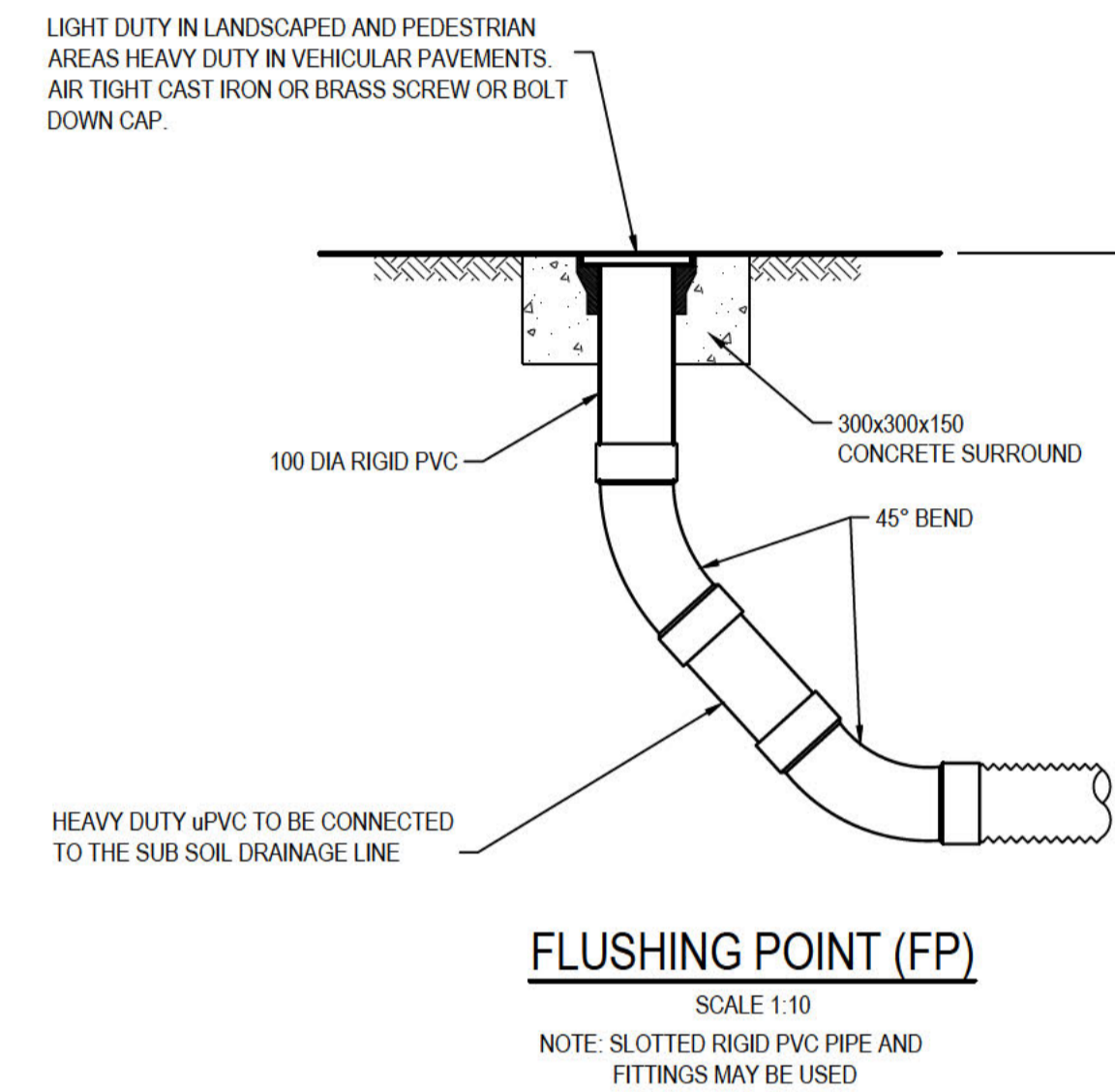
| SUPPORT TYPE | BED ZONE X                            | HAUNCH ZONE Y | BED AND HAUNCH ZONES COMPACTION | MAX BEDDING FACTOR |
|--------------|---------------------------------------|---------------|---------------------------------|--------------------|
| HS1          |                                       | 0.1D          | 50                              | 2.0                |
| HS2          | 100 IF D <= 1500, OR 150 IF D >= 1500 | 0.3D          | 60                              | 2.5                |
| HS3          |                                       | 0.3D          | 70                              | 4.0                |

**PIT LID SCHEDULE**

| PIT/STRUCTURE NUMBER | DESCRIPTION  |
|----------------------|--|
| A-1 A-2              | PROPOSED JUNCTION PIT WITH 900x900 LOCK DOWN SEALED LID IN ACCORDANCE WITH CITY OF RYDE COUNCIL REQUIREMENT. |
| EX-1                 | EXISTING COUNCIL GULLY PIT (GSP)   |

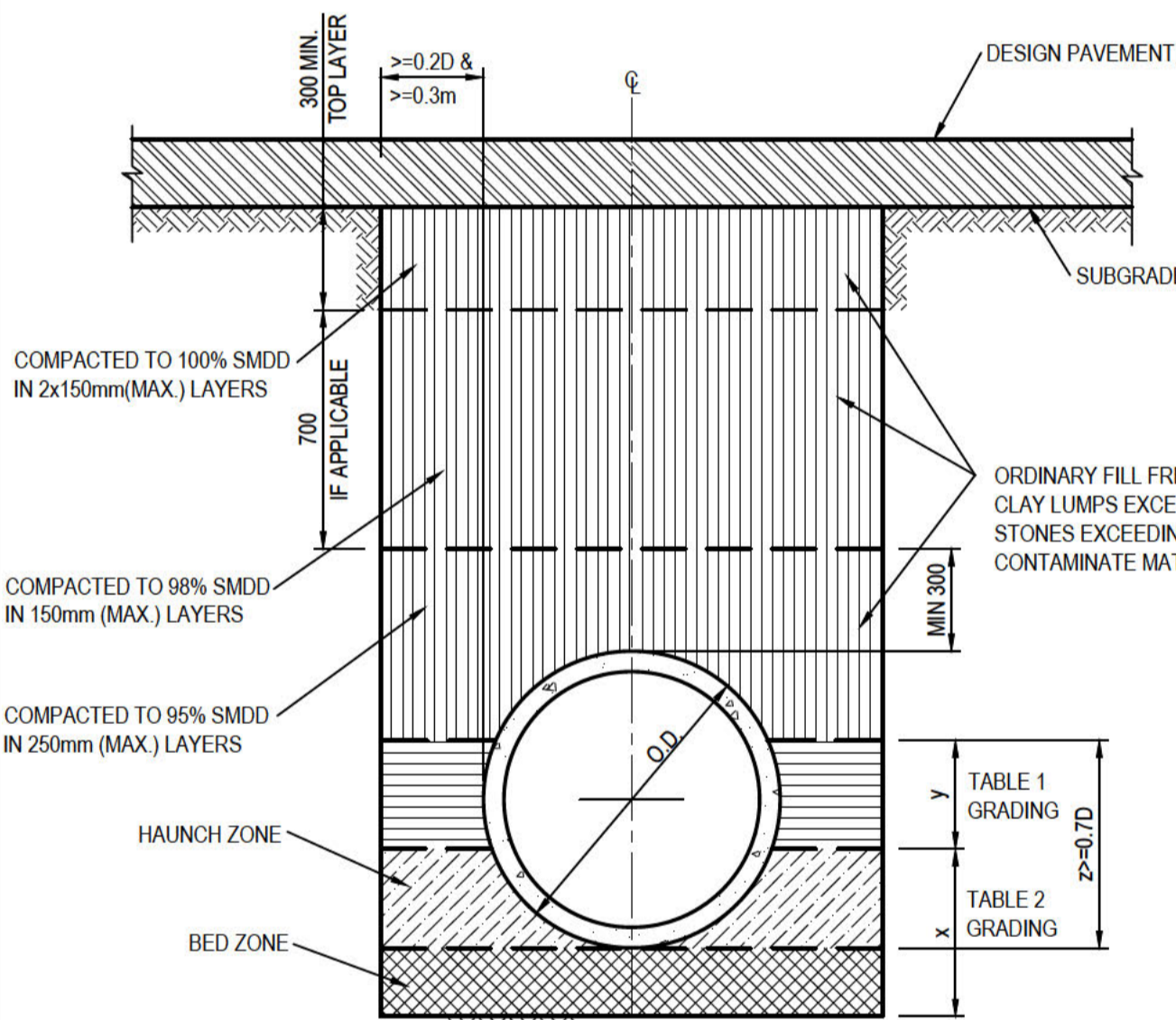
**DRAINAGE NOTES:**

- ALL STORMWATER WORK TO COMPLY WITH AS 3500 PART 3.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE MINIMUM COVER OF 600mm ON ALL PIPES.
- PROTECTION OF PIPES DUE TO LOADS EXCEEDING W7 WHEEL LOAD SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- BEDDING TYPE SHALL BE TYPE H2 FOR RCP. WHERE NECESSARY THE OVERLAY ZONE SHALL BE REDUCED TO ACCOMMODATE PAVEMENT REQUIREMENTS. REFER TO THIS DRAWING FOR DETAILS.
- MINIMUM COVER OVER EXISTING PIPES FOR PROTECTION DURING CONSTRUCTION SHALL BE 800mm.
- NO CONSTRUCTION LOADS SHALL BE APPLIED TO PLASTIC PIPES.
- FINISHED SURFACE LEVELS SHOWN ON LAYOUT PLAN DRGS TAKE PRECEDENCE OVER DESIGN DRAINAGE SURFACE LEVELS.
- ALL PIPES UP TO AND INCLUDING 300 DIA. SHALL BE SOLVENT OR RUBBER RING JOINTED PVC CLASS SH PIPE TO AS1280. ALL OTHER PIPES TO BE RCP USING CLASS 2 RUBBER RING JOINTED PIPE. HARDIES FRC PIPE MAY BE USED IN LIEU OF RCP IF DESIRED IN GROUND. ALL AERIAL PIPES TO BE PVC CLASS SH.
- ALL PITS IN NON TRAFFICABLE AREAS TO BE PREFABRICATED POLYESTER CONCRETE "POLYCRETE" WITH "LIGHT DUTY" CLASS B GALV. MILD STEEL GRATING AND FRAME. ALL PITS IN TRAFFICABLE AREAS (CLASS "D" LOADING MAX) TO HAVE 150mm THICK CONCRETE WALLS AND BASE CAST IN-SITU  $f_{c'}=32$  MPa, REINFORCED WITH N12-200 BOTH LOADING WAYS CENTRALLY PLACE U.N.O. ON SEPARATE DESIGN DRAWINGS IN THIS SET. GALV MILD STEEL GRATING AND FRAME TO SUIT DESIGN LOADING. PRECAST PITS, RECTANGULAR OR CIRCULAR IN SHAPE, MAY BE USED IN LIEU AND SHALL COMPLY WITH RELEVANT AUSTRALIAN STANDARDS.
- ALL PITS, GRATINGS AND FRAMES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION AND TO BE IN ACCORDANCE WITH AS3500.3 AND AS3996.
- PIT CHAMBER DIMENSIONS ARE TO BE SELECTED TO SATISFY THE FOLLOWING:  
 - PIPE SIZE  
 - DEPTH TO INVERT  
 - SKEW ANGLE  
 REFER TYPICAL PIT CHAMBER DETAILS BELOW  
 IF PIT LID SIZE IS SMALLER THAN THE PIT CHAMBER SIZE THEN THE PIT LID IS TO BE CONSTRUCTED ON THE CORNER OF THE PIT CHAMBER WITH THE STEP IRONS DIRECTLY BELOW. ALTERNATIVELY THE PIT LID TO BE USED, IS TO BE THE SAME SIZE AS THE PIT CHAMBER.
- FOR PIPE SIZES GREATER THAN 300mm, PIT FLOOR IS TO BE BENCHED TO FACILITATE FLOW.
- GALVANISED STEP IRONS SHALL BE PROVIDED AT 300 CTS FOR PITS HAVING A DEPTH EXCEEDING 1200mm. SUBSOIL DRAINAGE PIPE SHALL BE PROVIDED IN PIPE TRENCHES ADJACENT TO INLET PIPES. (MINIMUM LENGTH 3m).
- ALL SUBSOIL PIPES SHALL BE 100mm SLOTTED PVC IN A FILTER SOCK, UNO, WITH 3m INSTALLED UPSTREAM OF ALL PITS.
- ALL PIPEWORK SHALL HAVE MINIMUM DIAMETER 100.
- MINIMUM GRADE FOR ROOFWATER DRAINAGE LINES SHALL BE 1%.
- ALL PIPE JUNCTIONS AND TAPER UP TO AND INCLUDING 300 DIA. SHALL BE VIA PURPOSE MADE FITTINGS.
- ALL ROOF DRAINAGE TO BE INSTALLED IN ACCORDANCE WITH AS3500, PART 3. TESTING TO BE UNDERTAKEN AND REPORTS PROVIDED TO THE SUPERINTENDENT.
- LOCATION OF THE DIRECT DOWN PIPE CONNECTIONS MAY VARY ON SITE TO SUIT SITE CONDITIONS, WHERE CONNECTION SHOWN ON LONG SECTIONS CHAINAGES ARE INDICATIVE ONLY.
- PITS IN EXCESS OF 1.5 m DEEP TO HAVE WALL AND FLOOR THICKNESS INCREASED TO 200mm. REINFORCED WITH N12@200 CTS CENTRALLY PLACED BOTH WAYS THROUGHOUT U.N.O. ON SEPARATE DESIGN DRAWINGS IN THIS SET. IF DEPTH EXCEEDS 5m CONTACT ENGINEER.
- SUBSOIL DRAINAGE LINES FOR LANDSCAPE AREA NOT SHOWN ON THESE DRAWINGS. REFER TO LANDSCAPING PLANS FOR DETAILS.
- ALL STORMWATER PITS TO HAVE 100mm uPVC SLOTTED SUBSOIL PIPES CONNECTED TO THEM. THESE SUBSOILS TO EXTEND 3m UPSTREAM OF THE PIT AT A MINIMUM GRADE.

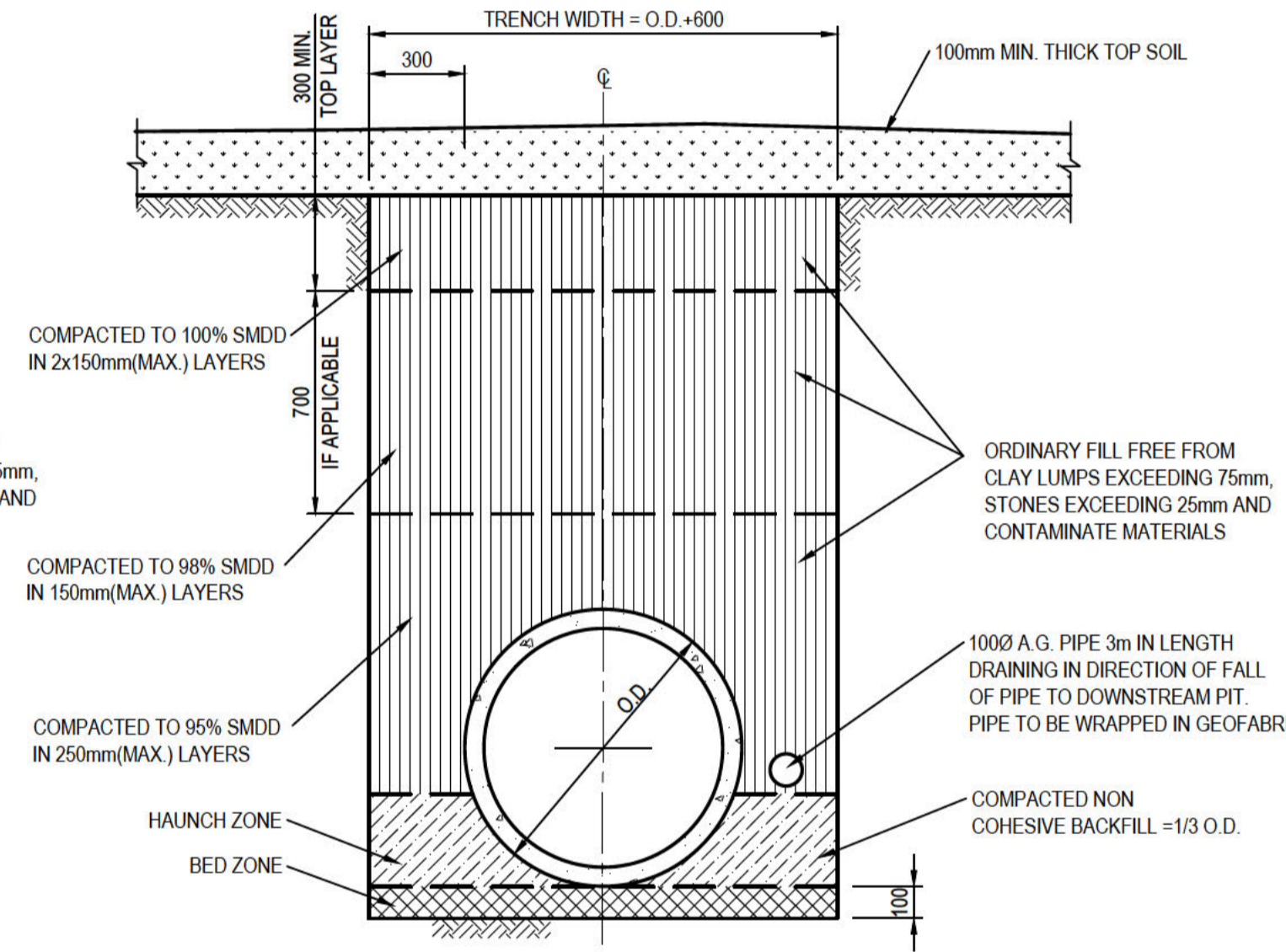


- \*A = 600 FOR PIPES UP TO 375 DIA.  
**1 PIT CHAMBER DIMENSIONS FOR PIPES UP TO 600 DIA.**

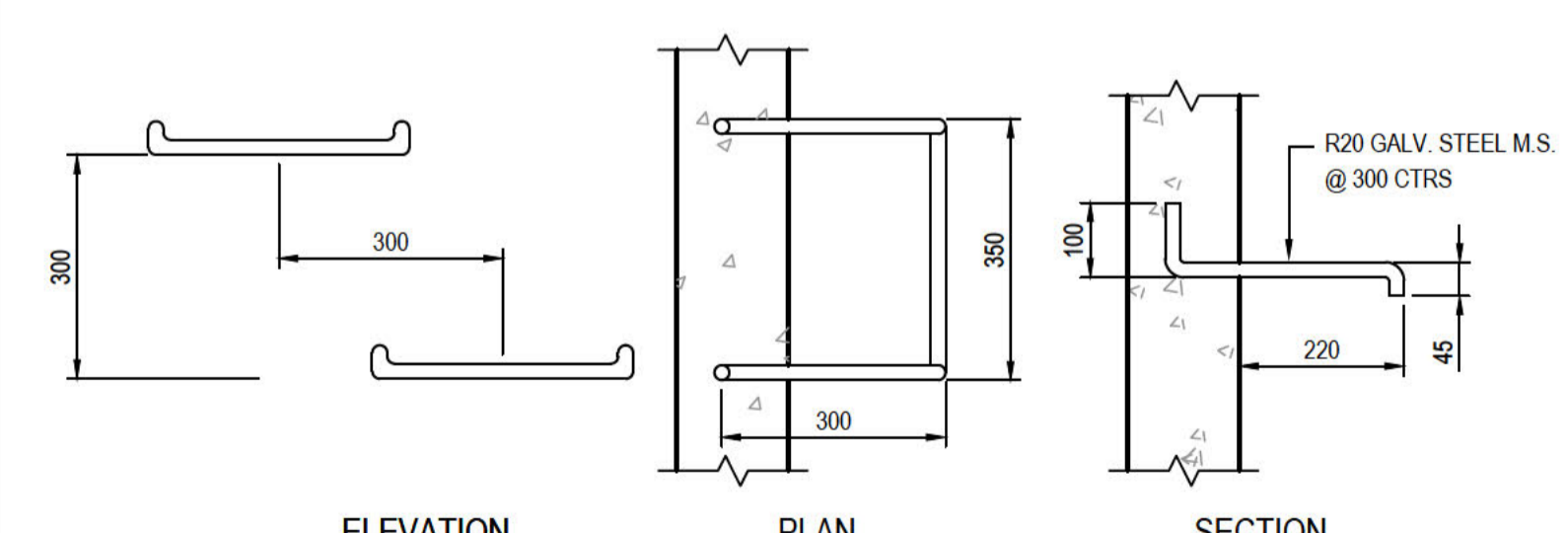
**1 PIT CHAMBER FOR PIPES GREATER THAN 600 DIA.**



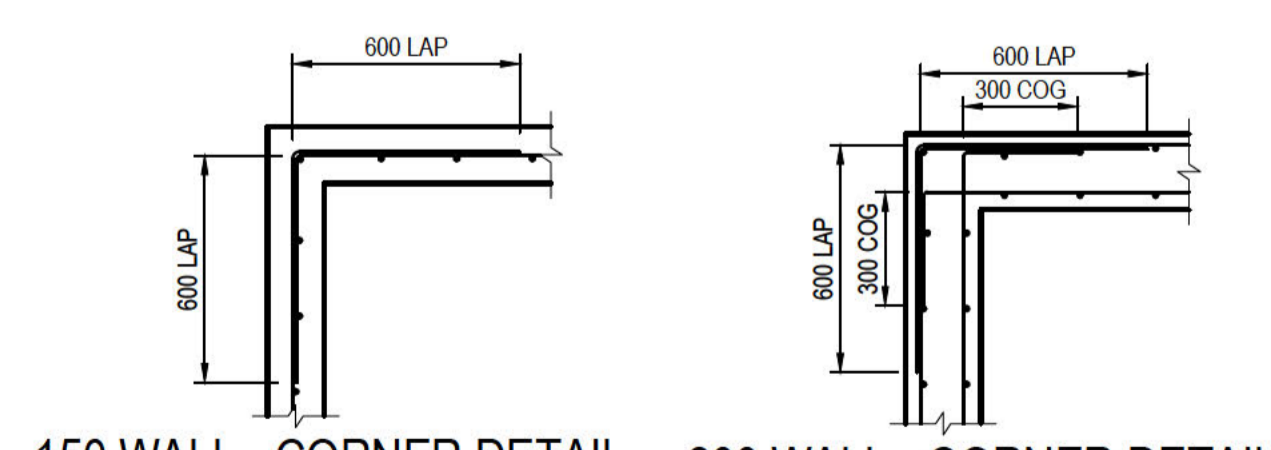
**PIPE TRENCH INSTALLATION BENEATH PAVEMENT**  
 (HS SUPPORT TO BE USED UNDER ROADWAY)  
 SCALE 1:20



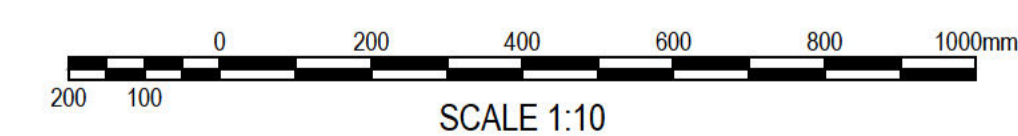
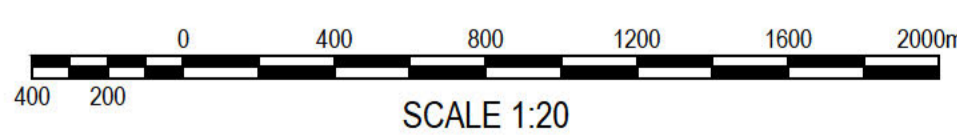
**PIPE TRENCH INSTALLATION IN LANDSCAPE AREAS**  
 (H1 & H2 SUPPORT)  
 SCALE 1:20



**TYPICAL STEP IRON DETAIL**



**150 WALL - CORNER DETAIL** SCALE 1:20  
**200 WALL - CORNER DETAIL** SCALE 1:20



**REF SUBMISSION**

| REVISION | AMENDMENT                 | DRAWN | DESIGNED | DATE       | REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
|----------|---------------------------|-------|----------|------------|----------|-----------|-------|----------|------|
| 01       | ISSUED FOR REF SUBMISSION | SC    | AM       | 25.08.2022 |          |           |       |          |      |

Client: DEPARTMENT OF EDUCATION  
 Architect: BENNETT AND TRIMBLE  
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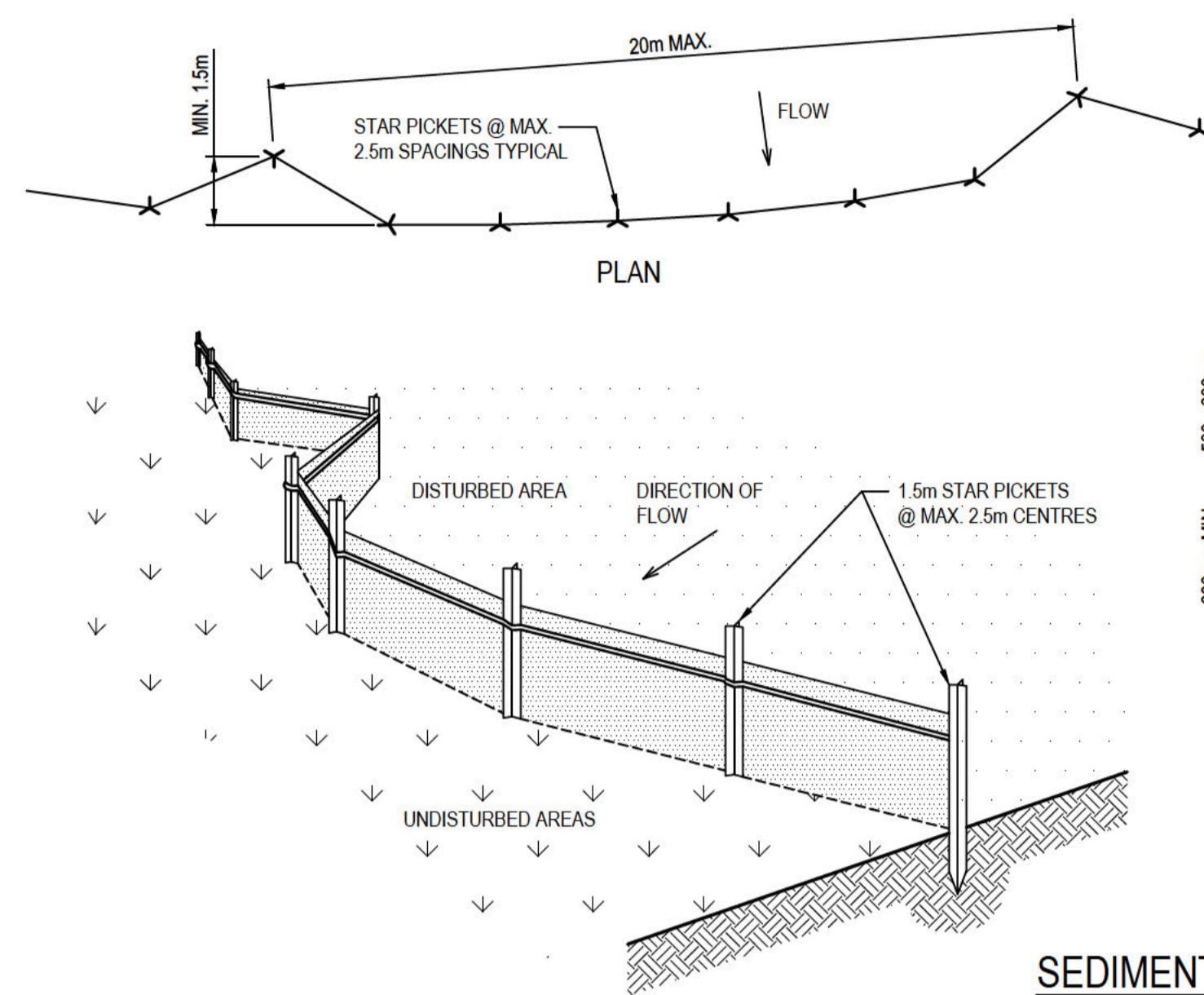
Suite 2.01  
 828 Pacific Highway  
 Gordon NSW 2072  
 Telephone: +61 2 9417 8400  
 Facsimile: +61 2 9417 8337  
 Email: email@hhconsult.com.au  
 Web: www.henryandhymas.com.au



Project: RYDE SECONDARY COLLEGE  
 5 MALVINA STREET, RYDE NSW 2112  
 Title: STORMWATER MISCELLANEOUS DETAILS & PIT LID SCHEDULE

| Drawn          | Designed  | Date     |
|----------------|-----------|----------|
| S.Chen         | A.Martano | AUG 2022 |
| Checked        | Approved  | Scale    |
| A.Francis      | A.Francis | @A1      |
| Drawing number | Revision  |          |
| 22M13_DA_C200  | 01        |          |

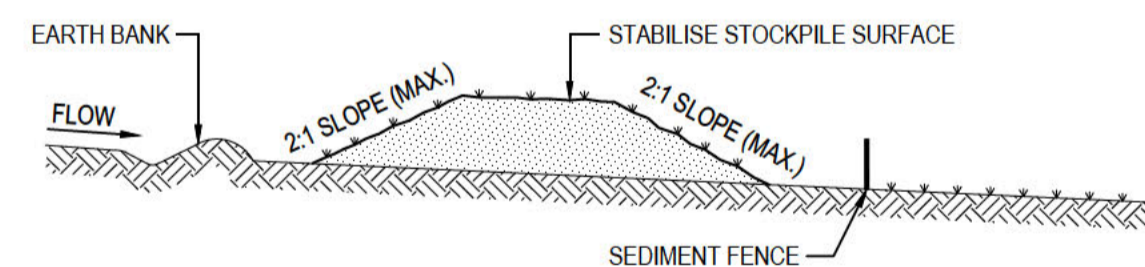




**SEDIMENT FENCE**  
SCALE N.T.S.

**SEDIMENT FENCE CONSTRUCTION NOTES:**

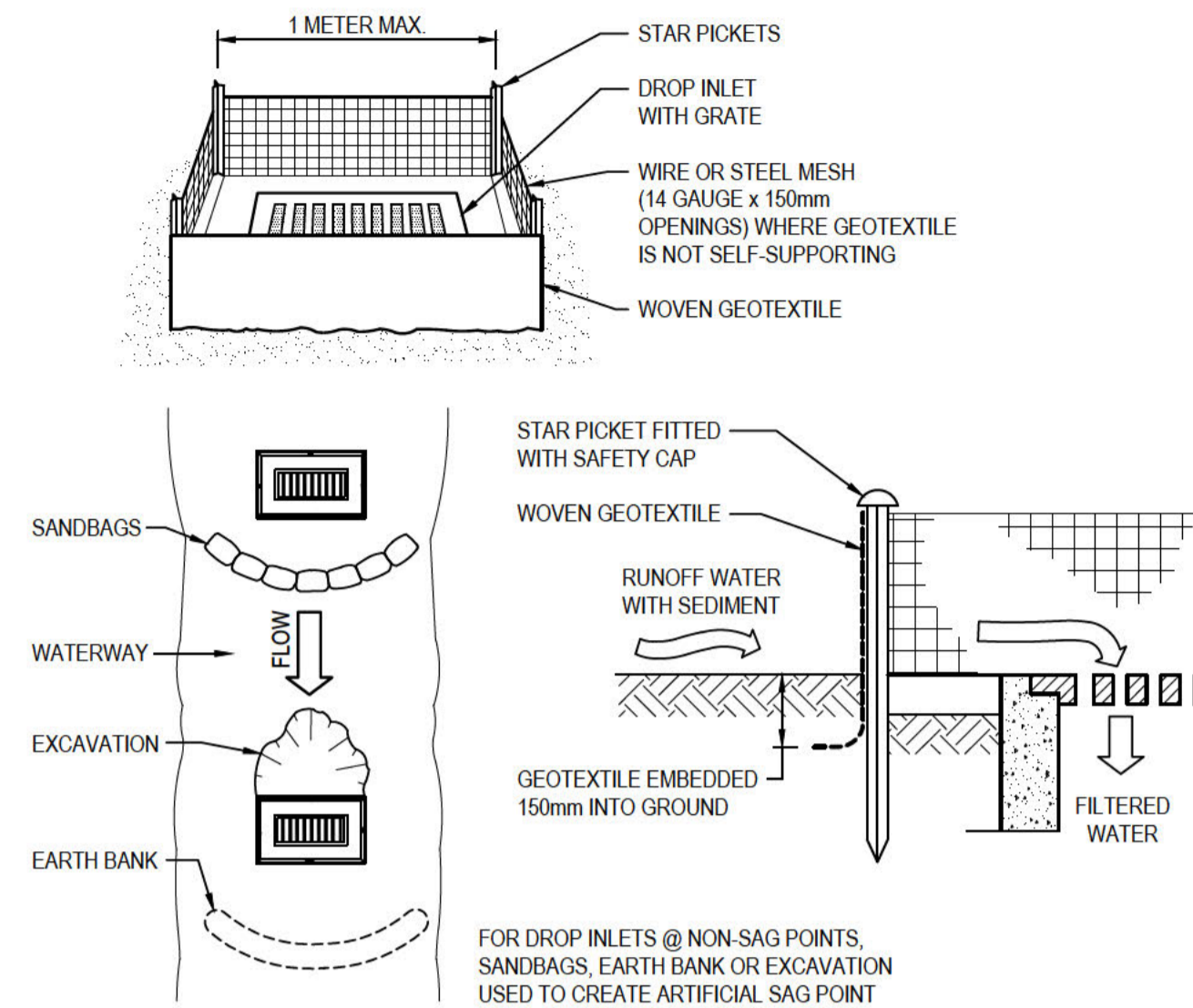
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND @ 2.5m INTERVALS (MAX.) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP. 6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.



**STOCKPILE CONSTRUCTION NOTES:**

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE PLACED FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.C.P. OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.

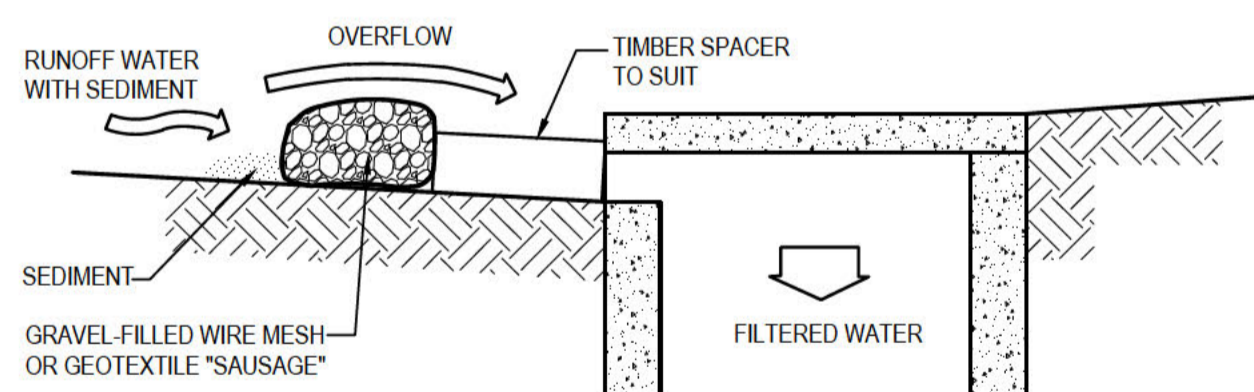
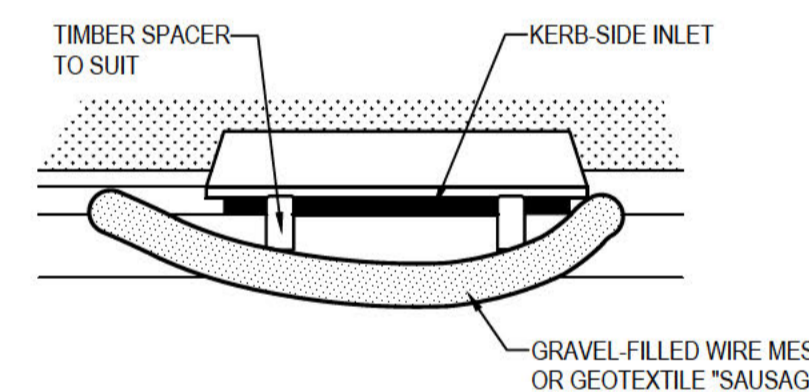
**STOCKPILES**  
SCALE N.T.S.



**GEOTEXTILE INLET FILTER CONSTRUCTION NOTES:**

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE.
2. PICKET SPACING TO BE MAXIMUM 1.0m.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILES UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

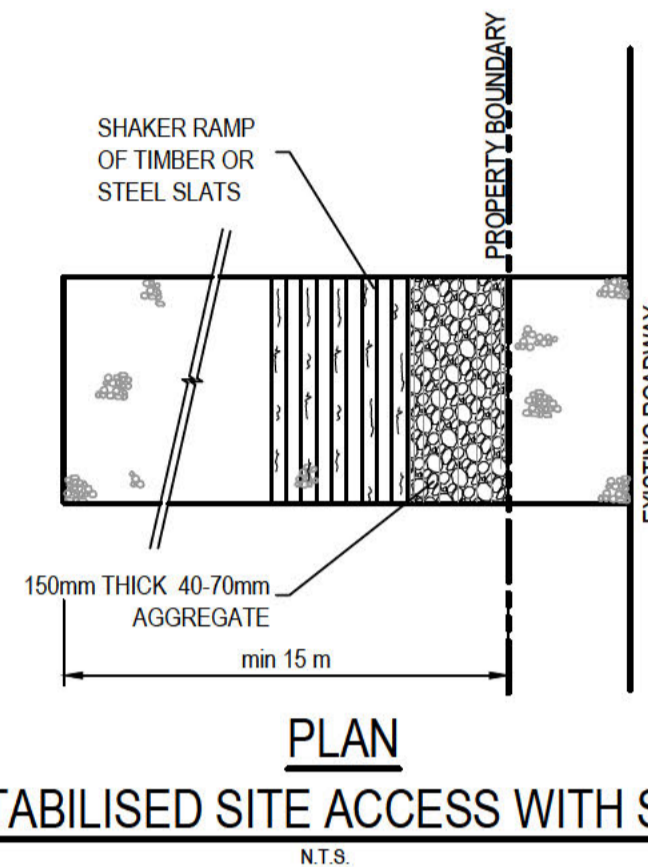
**GEOTEXTILE INLET FILTER**  
SCALE N.T.S.



**MESH & GRAVEL INLET FILTER CONSTRUCTION NOTES:**

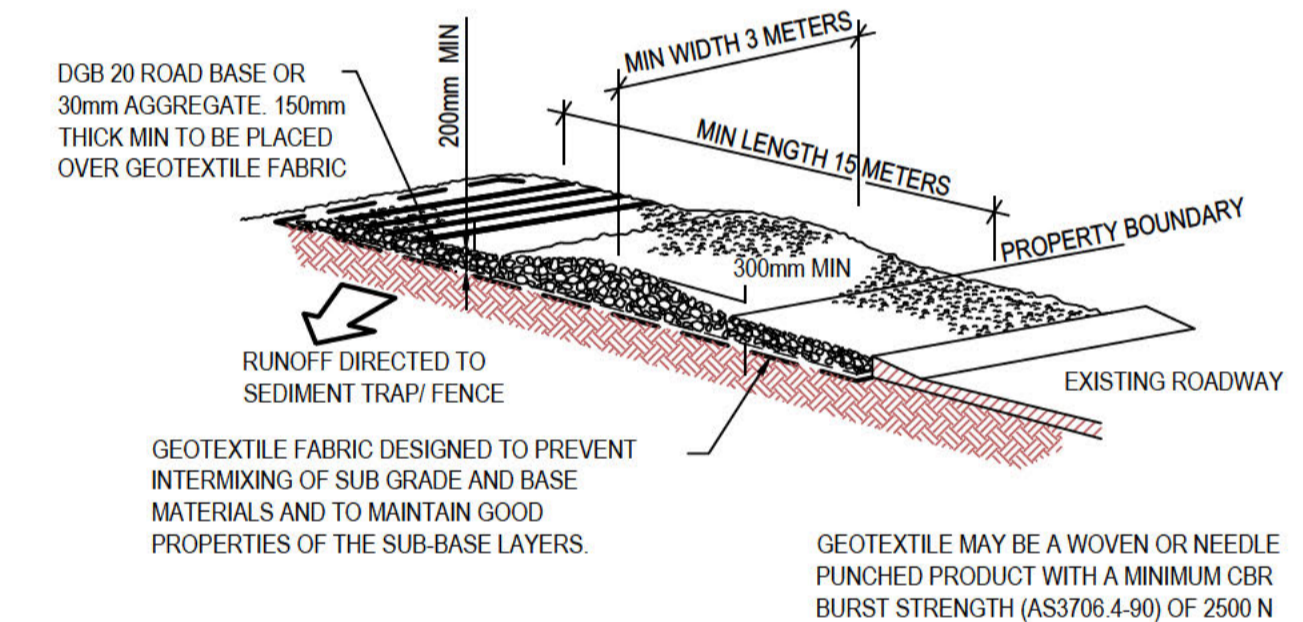
1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
3. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
4. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
5. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY CAN FIRMLY ABUT EACH OTHER AND SEDIMENT / LADEN WATERS CANNOT PASS BETWEEN.

**MESH & GRAVEL INLET FILTER**  
SCALE N.T.S.



**STABILISED SITE ACCESS WITH SHAKER RAMP**  
N.T.S.

**CONSTRUCTION SITE**



**STABILISED SITE ACCESS WITH SHAKER RAMP**  
N.T.S.

**NOTES:**

1. THIS DEVICE IS TO BE LOCATED AT ALL EXITS FROM CONSTRUCTION SITE.
2. THIS DEVICE IS TO BE REGULARLY CLEANED OF DEPOSITED MATERIAL SO AS TO MAINTAIN A 50mm DEEP SPACE BETWEEN PLANKS.
3. ANY UNSEALED ROAD BETWEEN THIS DEVICE AND NEAREST ROADWAY IS TO BE TOPPED WITH 100mm THICK 40-70mm SIZE AGGREGATE.
4. ALTERNATIVELY, THREE(3) PRECAST CONCRETE CATTLE GRIDS (AS MANUFACTURED BY THUMES CONCRETE MAY BE USED. 1, 2 & 3 ABOVE ALSO APPLY.

**REF SUBMISSION**

|  |                              |  |  |  |  |  |  |  |  |                       |  |  |  |  |                       |  |                       |  |                  |  |
|--|------------------------------|--|--|--|--|--|--|--|--|-----------------------|--|--|--|--|-----------------------|--|-----------------------|--|------------------|--|
| <b>SURVEY INFORMATION</b><br>SURVEYED BY<br>C.M.S. SURVEYORS<br>DATUM: AHD<br>ORIGIN OF LEVELS:<br>SSM83490 & SSM83479 |                              |  |  |  | Client<br><b>DEPARTMENT OF EDUCATION</b> |  |  |  | Suite 2.01<br>826 Pacific Highway<br>Gordon NSW 2072   |                       | Telephone<br>+61 2 9417 8400<br>Facsimile<br>+61 2 9417 8337<br>Email<br>email@hiconsult.com.au<br>Web<br>www.henryandhymas.com.au |  | Project<br><b>RYDE SECONDARY COLLEGE</b><br><b>5 MALVINA STREET, RYDE NSW 2112</b> |  | Drawn<br>S.Chen       |  | Designed<br>A.Martano |  | Date<br>AUG 2022 |  |
|  | 01 ISSUED FOR REF SUBMISSION |  |  |  | Architect<br><b>BENNETT AND TRIMBLE</b>  |  |  |  | This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas. |                       | Title<br><b>SEDIMENT AND EROSION CONTROL</b><br><b>TYPICAL DETAILS</b>   |  | Checked<br>A.Francis   |  | Approved<br>A.Francis |  | Scale @A1<br>N.T.S.   |  |                  |  |
| REVISION AMENDMENT DRAWN DESIGNED DATE REVISION AMENDMENT DRAWN DESIGNED DATE  |                              |  |  |  |  |  |  | Drawing number<br><b>22M13_DA_SE02</b> |  | Revision<br><b>01</b> |  |  |  |  |                       |  |                       |  |                  |  |





*henry&hymas*

**9. APPENDIX B – EMAIL DISCUSSION WITH CITY OF RYDE COUNCIL ENGINEER**

**From:** Daniel Pearse [REDACTED]  
**Sent:** Monday, 29 August 2022 10:13 AM  
**To:** Andrew Francis  
**Cc:** Adrian Martano  
**Subject:** RE: Ryde Secondary College - REF for temporary classrooms

Hi Andrew,

In response to each of your points;

- 1) Since the school is temporary, there won't be a need to provide water quality devices to meet any particular targets. In fact I recall you felt that devices associated with temporary works may be less likely to be maintained. I suggested the use of a 5,000L rainwater tank that can be used for water quality purposes. The tank could be used for irrigation or provided with a hose cock.*

No objections. The DCP does specify pollution targets which are to be satisfied however it is conceded the resources required to implement and maintain these components / landscaping are likely to have low benefit/ cost ratio when considering the anticipated service life of the structure. An effort must be made to implement some form of landscape irrigation from the rainwater tank (even as basic as a gravity fed system) as I am concerned that a simply hose cock fitting will see very little use once the project is completed and operational.

- 2) I proposed that we would still meet Council's OSD requirements, but since the building will be of a temporary nature, that OSD will be provided in the form of a series of above ground rainwater tanks with low level outlets such that the tanks will form a detention function rather than an in-ground concrete tank.*

No objections. Tanks will need to be placed mindful of failure mode (ensure that any surcharge flow will not be conveyed into / damage internal areas downstream. Should the system be designed using the detail method in the DCP, this will require that the nominated PSD is no greater than the 5yr ARI **post-development discharge**.

- 3) We propose to connect the outlet from the OSD system to the existing Council pit in Forrest Road to the north east of the site.*

This will require a Roads Act consent but I can't see any issue with such a connection in principal.

- 4) In regards to flooding, the building will be located at the highest end of the site and will be set with a floor level of 44.1m AHD which is more than 20m above both the 100 year ARI and PMF levels in Buffalo Creek (RL 20m AHD and 22m AHD respectively).*

The extent of flooding over the site is relatively minor. The major overland flowpaths are along Robinson Street and the natural creek parallel to Pidding Road. As such, flooding does not appear to be any concern.



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**From:** Andrew Francis [REDACTED]  
**Sent:** Tuesday, 23 August 2022 4:02 PM  
**To:** Daniel Pearse [REDACTED]  
**Cc:** Adrian Martano [REDACTED]  
**Subject:** Ryde Secondary College - REF for temporary classrooms

Hi Daniel,

I trust you are well. I refer to our conversation on Monday 15<sup>th</sup> August 2022 regarding the proposed REF for some temporary classrooms at Ryde Secondary School. Below is a summary of my understanding of the outcomes of our discussion.

The proposed works comprise a temporary building of approximately 1,000m<sup>2</sup> and associated ramps and stairs. This will replace some existing relocatable classrooms that have recently been removed from site.

- 1) Since the school is temporary, there won't be a need to provide water quality devices to meet any particular targets. In fact I recall you felt that devices associated with temporary works may be less likely to be maintained. I suggested the use of a 5,000L rainwater tank that can be used for water quality purposes. The tank could be used for irrigation or provided with a hose cock.
- 2) I proposed that we would still meet Council's OSD requirements, but since the building will be of a temporary nature, that OSD will be provided in the form of a series of above ground rainwater tanks with low level outlets such that the tanks will form a detention function rather than an in-ground concrete tank.
- 3) We propose to connect the outlet from the OSD system to the existing Council pit in Forrest Road to the north east of the site.
- 4) In regards to flooding, the building will be located at the highest end of the site and will be set with a floor level of 44.1m AHD which is more than 20m above both the 100 year ARI and PMF levels in Buffalo Creek (RL 20m AHD and 22m AHD respectively).

I understand that the REF will be submitted to Council in the near future and this will include Drawings and a Report that detail the works associated with the above commentary.

Please review and let me know if you have any queries or if your recollection of our conversation differs from mine.

Regards,

[Redacted text]

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