

enstruct

CIVIL ENGINEERING WORKS

NARRABEEN EDUCATION PRECINCT

NARRABEEN NORTH PUBLIC SCHOOL

6 NAMONA STREET, NORTH NARRABEEN



CIVIL ENGINEERING WORKS DRAWING LIST:

6683-CV-0001	COVER SHEET
6683-CV-0002	NOTES SHEET
6683-CV-1001	EROSION AND SEDIMENT CONTROL PLAN SHEET1
6683-CV-1002	EROSION AND SEDIMENT CONTROL PLAN SHEET 2
6683-CV-1101	EROSION AND SEDIMENT CONTROL DETAIL SHEET
6683-CV-3001	BULK EARTHWORKS
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6683-CV-4301	STORMWATER DRAINAGE DETAIL SHEET

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02	14/09/22	ISSUE FOR DA	MZV	PAL	
01	19/08/22	ISSUE FOR DA	MZV	PAL	
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project	NARRABEEN EDUCATION PRECINCT
	NAMONA STREET STREET, NORTH NARRABEEN, NSW, 2101

drawing title	NARRABEEN NORTH PUBLIC SCHOOL COVER SHEET
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status			
FOR INFORMATION			
scale at A1	drawn	checked	approved
	MZV	PAL	PAL
project no.	sheet		rev.
6683	6683-CV-0001		02

BOUNDARY AND EASEMENT NOTE

The property boundary and easement locations shown on enstruct drawing's have been based from information received from: C.M.S. SURVEYORS 18830.A.

enstruct makes no guarantees that the boundary or easement information shown is correct. enstruct will accept no liabilities for boundary inaccuracies. The contractor/builder is advised to check/confirm all boundaries in relation to all proposed work prior to the commencement of construction. Boundary inaccuracies found are to be reported to the superintendent prior to construction starting.

CIVIL SAFETY IN DESIGN

enstruct (NSW) Pty Ltd operates under Safe Work Australia's code of Conduct for the Safe Design of Structures. These drawings shall be read in conjunction with the enstruct Transfer of Information Letter and Civil risk and Solutions Register. Under the Code of Conduct it is the Client's responsibility to provide a copy of the Civil Risk and Solutions Register to the Principal Contractor. It is the Principal Contractor's responsibility to review the hazards and risks identified during the design process to ensure a safe workplace is maintained for the construction, maintenance and eventual demolition of the civil infrastructure.

CONCRETE FINISHING NOTES

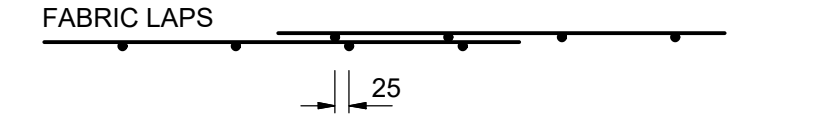
- 1. All exposed concrete pavements are to be broomed finished.
- 2. All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.
- 3. Concrete pavements with grades greater than 10 % shall be heavily broomed finished.
- 4. Carborundum to be added to all stair treads and ramped crossings U.N.O.

GENERAL NOTES

- 1. Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Engineer
- 2. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
- 3. Make smooth connection with all existing works.
- 4. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
- 5. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority; the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.
- 6. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.
- 7. For all temporary batters refer to geotechnical recommendations.
- 8. The approval of a substation shall be sought from the superintendent but is not an authorisation of a cost variation. The superintendent must approve any cost variation before any work starts

CONCRETE REINFORCEMENT NOTES

- 1. Fix reinforcement as shown on drawings. The type and grade is indicated by a symbol as shown below. On the drawings this is followed by a numeral which indicates the size in millimetres of the reinforcement.
 - N. Hot rolled ribbed bar grade D500N
 - R. Plain round bar grade R250N
 - SL. Square mesh grade 500L
 - RL. Rectangular mesh grade 500L
- 2. Provide bar supports or spacers to give the following concrete cover to all reinforcement unless otherwise noted on drawings.
 - Footings - 50 top, 50 bottom, 50 sides.
 - Walls
 - 30 generally.
 - 30 when cast in forms but later exposed to weather or ground.
 - .. when cast directly in contact with ground.
- 3. Cover to reinforcement ends to be 50 mm u.n.o.
- 4. Provide N12-450 support bars to top reinforcement as required, Lap 500 U.N.O.
- 5. Maintain cover to all pipes, conduits, reglets, drip grooves etc.
- 6. All cogs to be standard cogs unless noted otherwise.
- 7. Fabric end and side laps are to be placed strictly in accordance with the manufacturers requirements to achieve a full tensile lap. Fabric shall be laid so that there is a maximum of 3 layers at any location.



- 8. Laps in reinforcement shall be made only where shown on the drawings unless otherwise approved. Lap lengths as per table below.

SURVEY AND SERVICES INFORMATION

SURVEY
Origin of levels : SSM 40541
Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM
Coordinate system : MGA (GDA 2020)
Survey prepared by : C.M.S. SURVEYORS PTY LTD.
Setout Points : CONTACT THE SURVEYOR

enstruct does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

UNDERGROUND SERVICES - WARNING

The locations of underground services shown on enstruct drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.

The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.

enstruct does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.

The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to: State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.

enstruct plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

STORMWATER DRAINAGE NOTES

- 1. Stormwater Design Criteria :
 - (A) Average exceedance probability -
 - 1% AEP for roof drainage to first external pit
 - 5% AEP for paved and landscaped areas
 - (B) Rainfall intensities -
 - Time of concentration: 5 minutes
 - 1% AEP = 271 mm/hr
 - 5% AEP = 203 mm/hr
 - (C) Rainfall losses
 - Impervious areas: IL= 1.0 mm , CL= 0 mm/hr
 - Pervious areas: IL= 41mm , CL= 1.8 mm/hr
- 2. Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O. Pipes in public roadways (including public domain) to be class 4 reinforced concrete.
- 3. Pipes up to 300 dia may be sewer grade uPVC with solvent welded joints, subject to approval by the engineer
- 4. Equivalent strength VCP or FRP pipes may be used subject to approval.
- 5. Pits in roadways (including public domain) are to be insitu to council details.
- 6. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia.
- 7. Where subsoil drains pass under floor slabs and vehicular pavements, unslopped uPVC sewer grade pipe is to be used.
- 8. Grates and covers shall conform with AS 3996-2006, and AS 1428.1 for access requirements.
- 9. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
- 10. Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without approval.
- 11. All downpipe connections are to be 150mm DIA or the same size as the downpipe (whichever is larger) laid at 1% minimum fall connection to the nearest pit. Minimum cover 450mm in landscaped areas.
- 12. Subsoil drains to be slopped flexible uPVC U.N.O.
- 13. Adopt invert levels for pipe installation (grades shown are only nominal).

DBYD SERVICES NOTE

*Public Service Utility information shown on plan has been compiled from information received from Dial Before You Dig inquiry, reference Number **31037191**, which was obtained on 07/12/21. Unless specifically shown otherwise, this location and depth of services shown on this plan have not been verified.

The location of services shown on this drawing have been plotted as accurately as possible from diagrams provided by service authorities and should be confirmed by site inspection."

STORMWATER PIT SCHEDULE

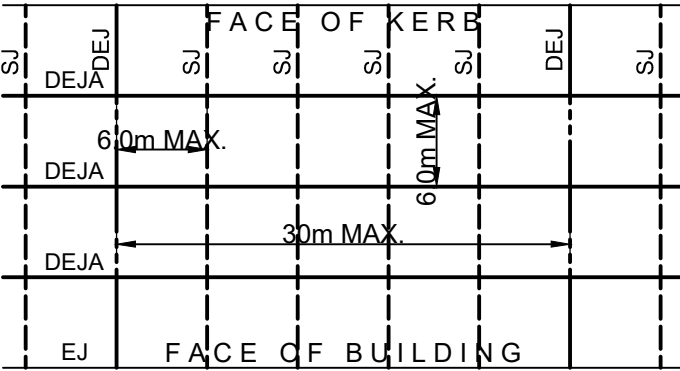
Note: Grate size does not necessarily reflect pit size, refer pit type details, shown on detail sheets - CV4301
Final internal pit dimensions are to comply with AS3500

Type	Description	Size	Class	Water Quality	Material	Number
B	Surface inlet pit	600x900	D	Litter basket	Galvanised mild steel grate hinged to frame	B1, B2

JOINTING NOTES

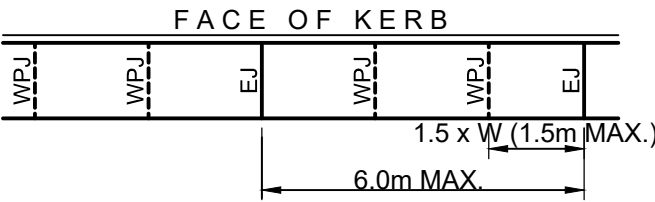
Vehicular Pavement Jointing

- 1. All vehicular pavements to be jointed as shown on drawings.
- 2. Keyed construction joints should generally be located at a maximum of 6m centres.
- 3. Sawn joints should generally be located at a maximum of 6m centres or 1.5 x the spacing of keyed joints, where key joint spacing is less than 4m, with dowelled expansion joints at maximum of 30m centres.
- 4. Provide 10mm wide full depth expansion joints between buildings and all concrete or unit pavers.
- 5. The timing of the saw cut is to be confirmed by the contractor on site. Site conditions will determine how many hours after the concrete pour before the saw cuts are commenced. Refer to the specification for weather conditions and temperatures required.
- 6. Vehicular pavement jointing as follows.



Pedestrian Footpath Jointing

- 1. Expansion joints are to be located where possible at tangent points of curves and elsewhere at max 6.0m centres.
- 2. Weakened plane joints are to be located at a max 1.5 x width of the pavement.
- 3. Where possible joints should be located to match kerbing and / or adjacent pavement joints.
- 4. All pedestrian footpath jointings as follows (uno).



CONCRETE NOTES

EXPOSURE CLASSIFICATION : External :B2

CONCRETE

Place concrete of the following characteristic compressive strength f_c as defined in AS 1379.

Location	AS 1379 f _c MPa at 28 days	Specified Slump	Nominal Agg. Size
Kerbs	S20	80	20
Pavements	S32	80	20
Retaining wall footing	S40	80	20

- 1. Use Type 'GP' cement, unless otherwise specified.
- 2. All concrete shall be subject to project assessment and testing to AS 1379.
- 3. Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
- 4. For all falls in slab, drip grooves, reglets, chamfers etc. refer to Architects drawings and specifications.
- 5. Unless shown on the drawings, the location of all construction joints shall be submitted to Engineer for review.
- 6. No holes or chases shall be made in the slab without the approval of the Engineer.
- 7. Conduits and pipes are to be fixed to the underside of the top reinforcement layer.
- 8. Slurry used to lubricate concrete pump lines is not to be used in any structural members.
- 9. All slabs cast on ground require sand blinding with a Concrete Underlay

FORMWORK

- 1. The design, certification, construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. Proposed method of installation and removal of formwork is to be submitted to the superintendent for comment prior to work being carried out.

KERBING NOTES

Includes all kerbs, gutters, dish drains, crossings and edges.

- 1. All kerbs, gutters, dish drains and crossings to be constructed on minimum 75mm granular basecourse compacted to minimum 98% modified maximum dry density in accordance with AS 1289 5.2.1.
- 2. Expansion joints (EJ) to be formed from 10mm compressible cork filler board for the full depth of the section and cut to profile. Expansion joints to be located at drainage pits, on tangent points of curves and elsewhere at 12m centres except for integral kerbs where the expansion joints are to match the joint locations in slabs.
- 3. Weakened plane joints to be min 3mm wide and located at 3m centres except for integral kerbs where weakened plane joints are to match the joint locations in slabs.
- 4. Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished.
- 5. In the replacement of kerbs - Existing road pavement is to be sawcut 900mm from: Lip of gutter, invert of kerb, or edge of dish drain. Upon completion of new kerbs, new basecourse and surface is to be laid 900mm wide to match existing materials and thicknesses.
- 6. Existing allotment drainage pipes are to be built into the new kerb with a 100mm dia hole.
- 7. Existing kerbs are to be completely removed where new kerbs are shown.

SAFETY IN DESIGN

Contractor to refer to the Civil Risk and Solutions Register.

EXISTING SERVICES

Contractor to be aware existing services are located within the site. Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.

EXISTING STRUCTURES

Contractor to be aware existing structures may exist within the site. To prevent damage to existing structure(s) and/or personnel, site works to be carried out as far as practicably possible from existing structure(s).

EXISTING TREES

Contractor to be aware existing trees exist within the site which need to be protected. To prevent damage to trees and/or personnel, site works to be carried out as far as practicably possible from existing trees. Advice needs to be sought from Arborist and/or Landscape Architect on measures required to protect trees.

GROUNDWATER

Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.

EXCAVATIONS

Deep excavations due to stormwater drainage works is required. Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and batters adequately supported to approval of Geotechnical Engineer.

GROUND CONDITIONS

Contractor to be aware of the site geotechnical conditions. Refer to geotechnical report by Douglas Partners for details.

HAZARDOUS MATERIALS

Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practices as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to geotechnical/environmental report by Douglas Partners for details.

CONFINED SPACES

Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces.

MANUAL HANDLING

Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.

WATER POLLUTION

Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.

SITE ACCESS/EGRESS

Contractor to be aware site works occur in close proximity to footpaths and roadways. Contractor to erect appropriate barriers and signage to protect site personnel and public.

VEHICLE MOVEMENT

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshal to supervise vehicle movements where necessary.

SITEWORKS NOTES

- 1. All basecourse material to comply with RMS specification No 3051 and compacted to minimum 98% modified dry density in accordance with AS 1289 5.2.1.
- 2. All trench backfill material shall be compacted to the same density as the adjacent material.
- 3. All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1

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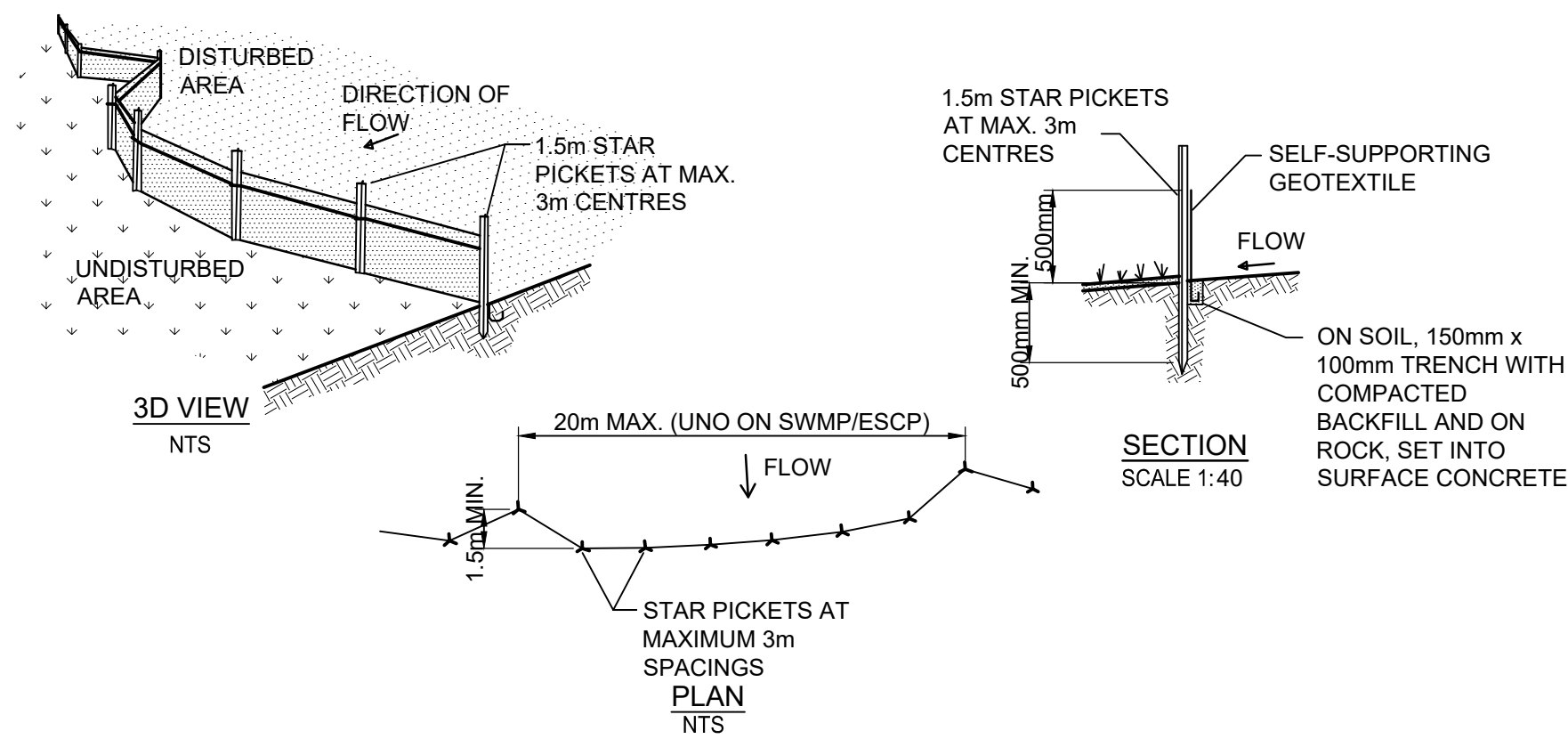
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project	NARRABEEN EDUCATION PRECINCT
	NAMONA STREET STREET, NORTH NARRABEEN, NSW, 2101

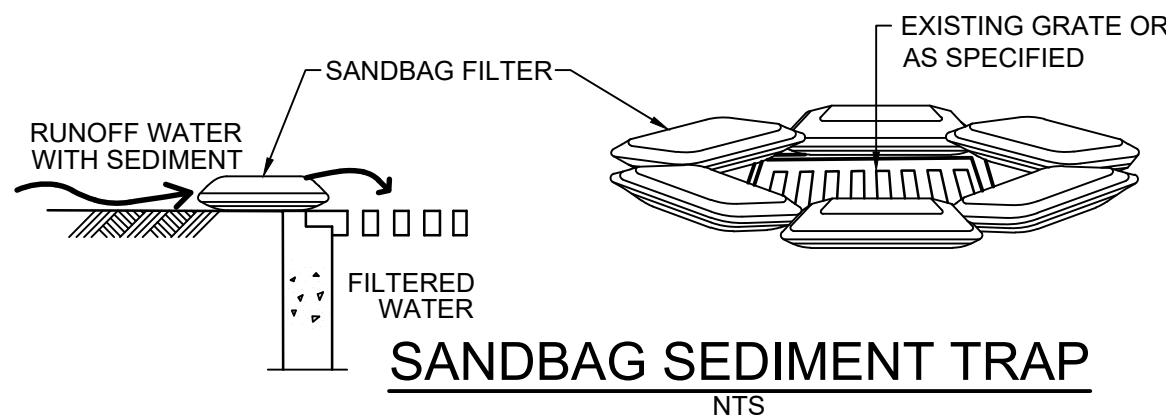
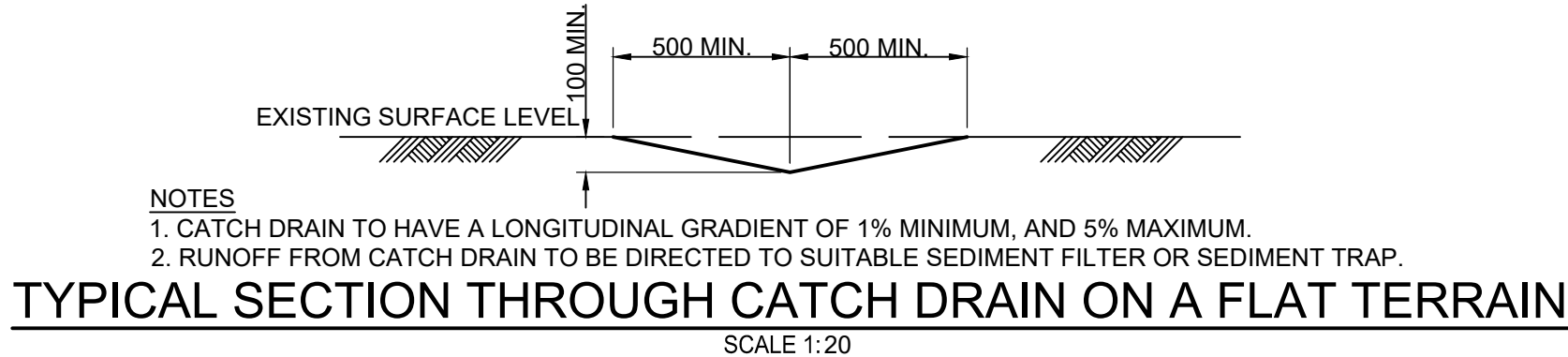
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status				FOR INFORMATION	
scale at A1	drawn	checked	approved		
NTS	MZV	PAL	PAL		
project no.	sheet		rev.		
6683	6683-CV-0002		02		



SILTATION FENCE DETAIL

- NOTES
- 1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
 - 2. DRIVE 1.5m LONG STAR PICKETS INTO GROUND, 3 METRES APART.
 - 3. DIG A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
 - 4. BACKFILL TRENCH OVER BASE OF FABRIC.
 - 5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
 - 6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.



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project	NARRABEEN EDUCATION PRECINCT
	NAMONA STREET STREET, NORTH NARRABEEN, NSW, 2101

drawing title	NARRABEEN NORTH PUBLIC SCHOOL EROSION AND SEDIMENT CONTROL DETAIL SHEET
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status			
FOR INFORMATION			
scale at A1	drawn	checked	approved
AS SHOWN	MZV	PAL	PAL
project no.	sheet		rev.
6683	6683-CV-1101		02



BULK EARTHWORKS LEGEND

Batter

BE 22.00

Bulk earthworks platform level

Flat platforms shown as hatched

Application Boundary

BULK EARTHWORKS CONSTRUCTION LEGEND

Temporary batter

Back fill

Bulk earthworks line shown on drawings

Proposed building or retaining wall

Building bulk platform level

2m UNO

BATTER TYPE A

NOTE
1. * Bulk Earthworks level = Finish surface - Pavement/slab thickness
2. Refer architects drawings for building setout
3. Bulk Earthwork drawings are for bulk excavation only. They are not to be used for detailed excavation such as: lift shafts, footings, pits etc.
4. Bulk Earthwork setout refers to bulk excavation only. They are not to be used for building, kerb or any other setout.

BULK EARTHWORKS GENERAL NOTES

1. All bulk earthworks setout from grid lines U.N.O.
2. (i) All permanent batter at slope of 4(H):1(V) U.N.O.
(ii) All temporary batter at slope of 4(H):1(V) U.N.O.
3. Excavated material may be used as structural fill provided,
(i) it complies with the specification requirements for fill material,
(ii) the placement moisture content complies with the Geotechnical Consultants requirements, and allows filling to be placed and proofrolled in accordance with the specification. Where necessary the Contractor must moisture condition the excavated material to meet these requirements.
4. Compact fill areas and subgrade to not less than:

Location	Standard dry density (AS 1289 5.1.1.)	Moisture (OMC)
Under building slabs on ground:	98%	±2%
Under roads and carparks:	98%	±2%
Landscaped areas:	95%	±2%

5. Before placing fill, proof roll exposed subgrade with a 10 tonne minimum roller to test subgrade and then remove soft spots (areas with more than 3mm movement under roller). Soft spots to be replaced with GRANULAR fill U.N.O.
6. Contractor to provide proof roll compaction evidence for signoff.
7. Contractor shall place safety barriers around excavations in accordance with relevant safety regulations.
8. For interpretation of bulk earthworks foot print line shown on the bulk earthworks drawings refer to the bulk earthworks construction legend.
9. Bulk earthwork drawings are not to be used for detailed excavation.
10. Refer to Geotechnical Report prepared by - DOUGLAS PARTNERS NO.86973.00

SCALE 1:250

0 5 10 15 m

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03	14/09/22	ISSUE FOR DA	MZV	PAL
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NARRABEEN EDUCATION PRECINCT

NAMONA STREET STREET, NORTH
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drawing title
NARRABEEN NORTH PUBLIC SCHOOL BULK EARTHWORKS

status
FOR INFORMATION

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project no. 6683	sheet 6683-CV-3001	rev. 03	



LEGEND

ExSW

Existing Stormwater

SW

Proposed Stormwater

SW

Proposed Stormwater (Separate REF Application)

Building Extent

Ø DNP

Straight Round D.150 Downpipe

Ø DNP

2 Turns Type 1 Downpipe

SS

Bioretention Swale

Proposed Grated Pit

Proposed Grated Drain

RW

Proposed Retaining Wall

Application Boundary

04	14/09/22	ISSUE FOR DA	MZV	PAL
03	23/08/22	BIORETENTION SWALE REORIENTED	MZV	KEH
02	19/08/22	ISSUE FOR DA	MZV	PAL
01	29/07/22	DRAFT REVIEW	BEJ	PAL
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**NARRABEEN EDUCATION
PRECINCT**

NAMONA STREET STREET, NORTH
NARRABEEN, NSW, 2101

drawing title
**NARRABEEN NORTH
PUBLIC SCHOOL
STORMWATER DRAINAGE
PLAN SHEET 1**

status FOR INFORMATION			
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project no. 6683	sheet 6683-CV-4001	rev. 04	



LEGEND

ExSW

Existing Stormwater

SW

Proposed Stormwater (Separate REF Application)

Building Extent

Building Extent

SS

SS

Straight Round D.150 Downpipe

SS

SS

2 Turns Type 1 Downpipe

SS

SS

Bioretention Swale

SS

SS

Proposed Grated Pit

SS

SS

Proposed Grated Drain

SS

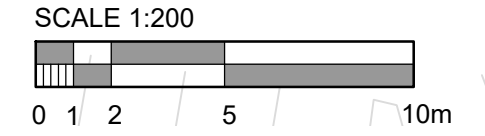
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Proposed Retaining Wall

SS

SS

Application Boundary



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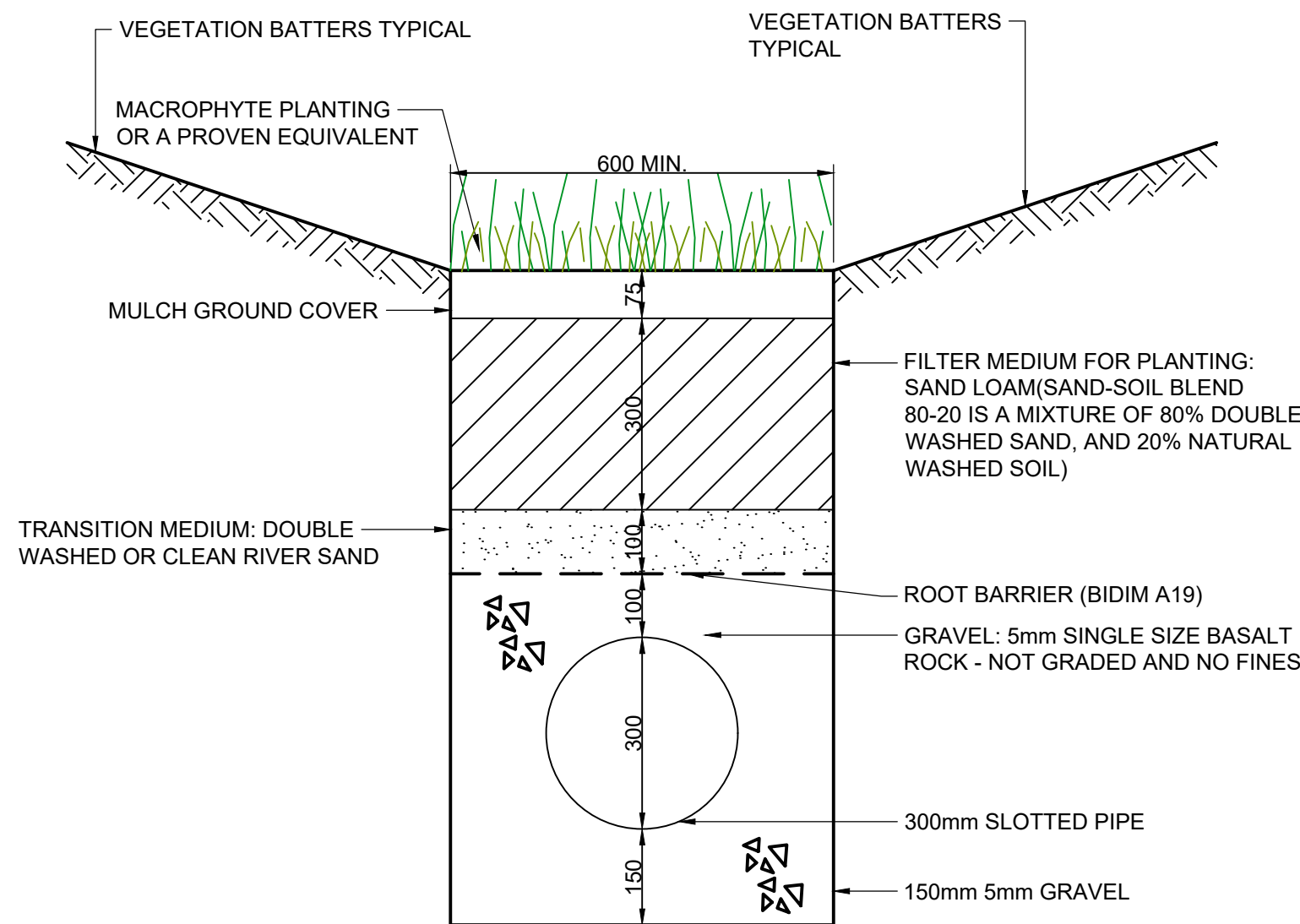


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**NARRABEEN EDUCATION
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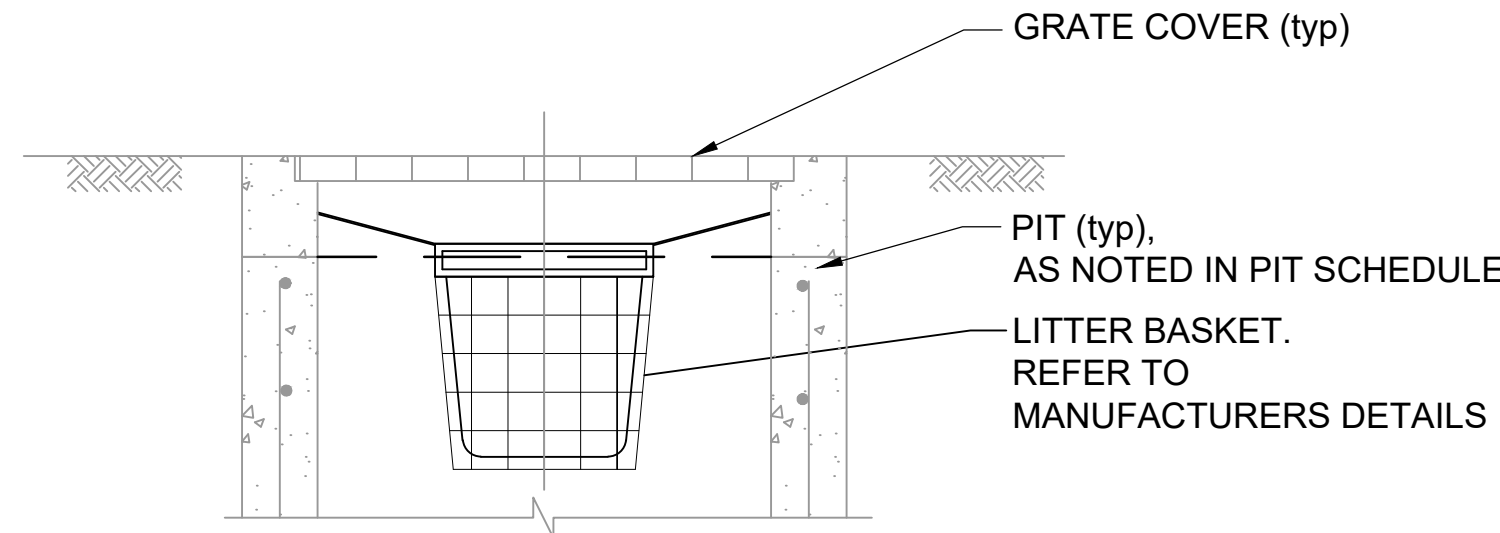
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drawing title
**NARRABEEN NORTH
PUBLIC SCHOOL
STORMWATER DRAINAGE
PLAN SHEET 2**

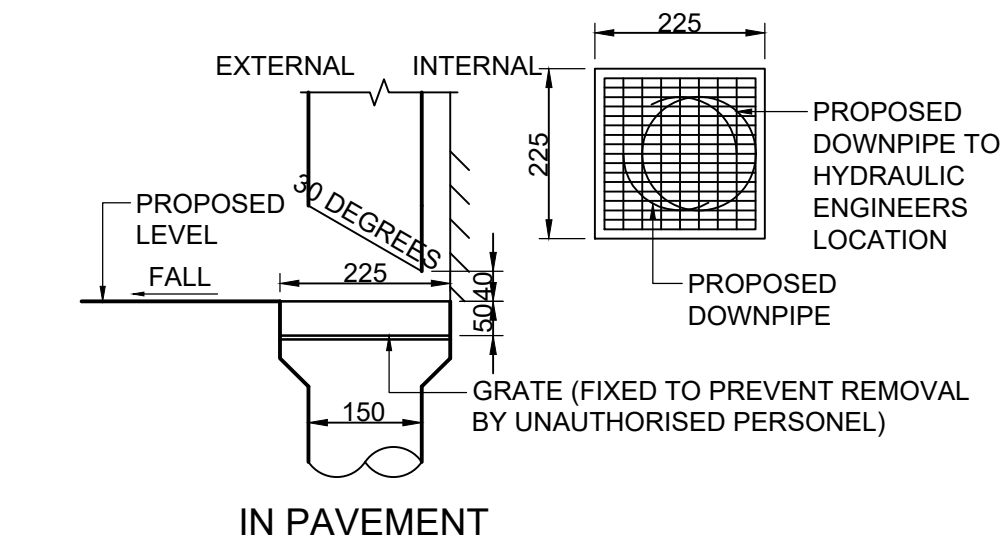
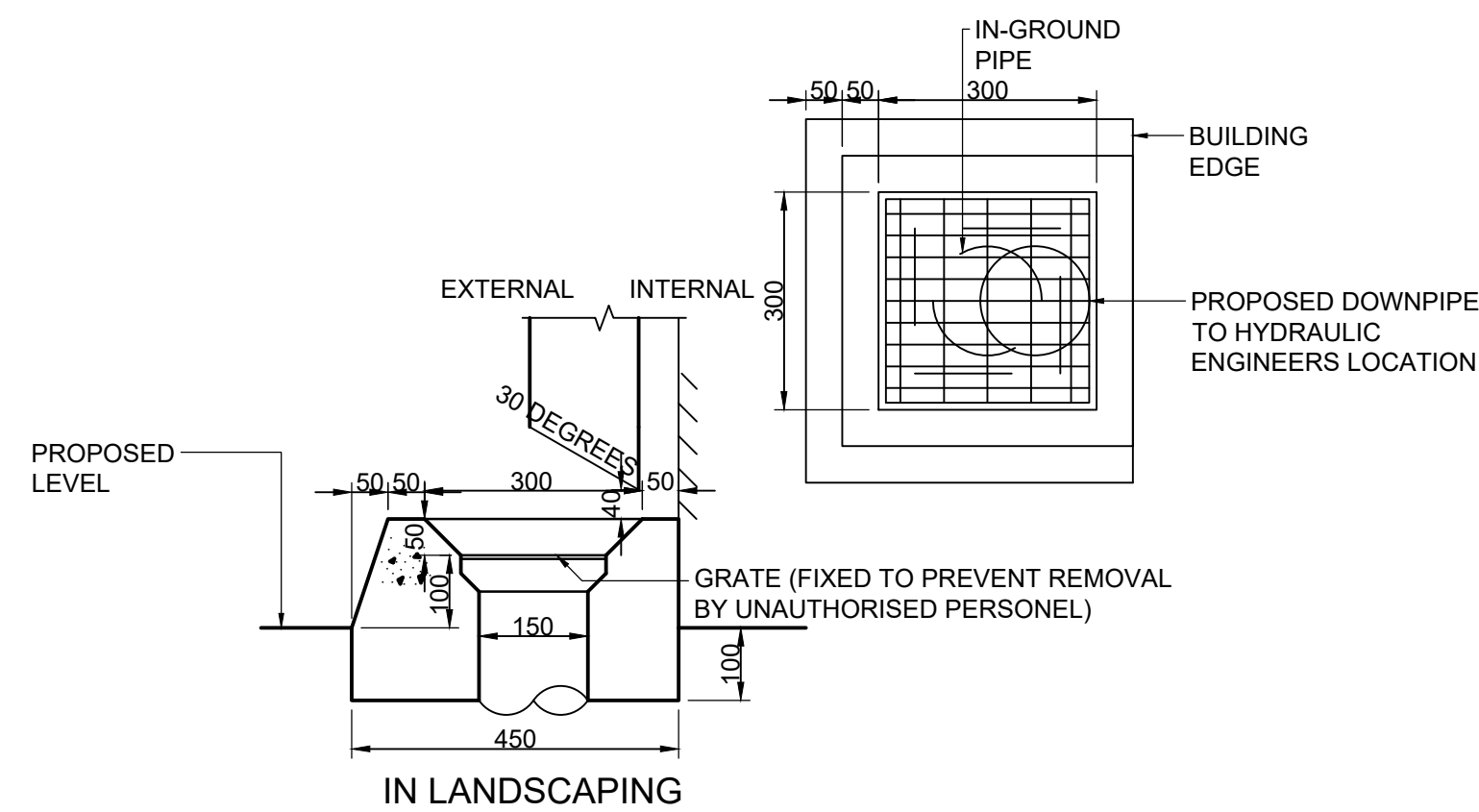
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project no. 6683	sheet 6683-CV-4002	rev. 01	



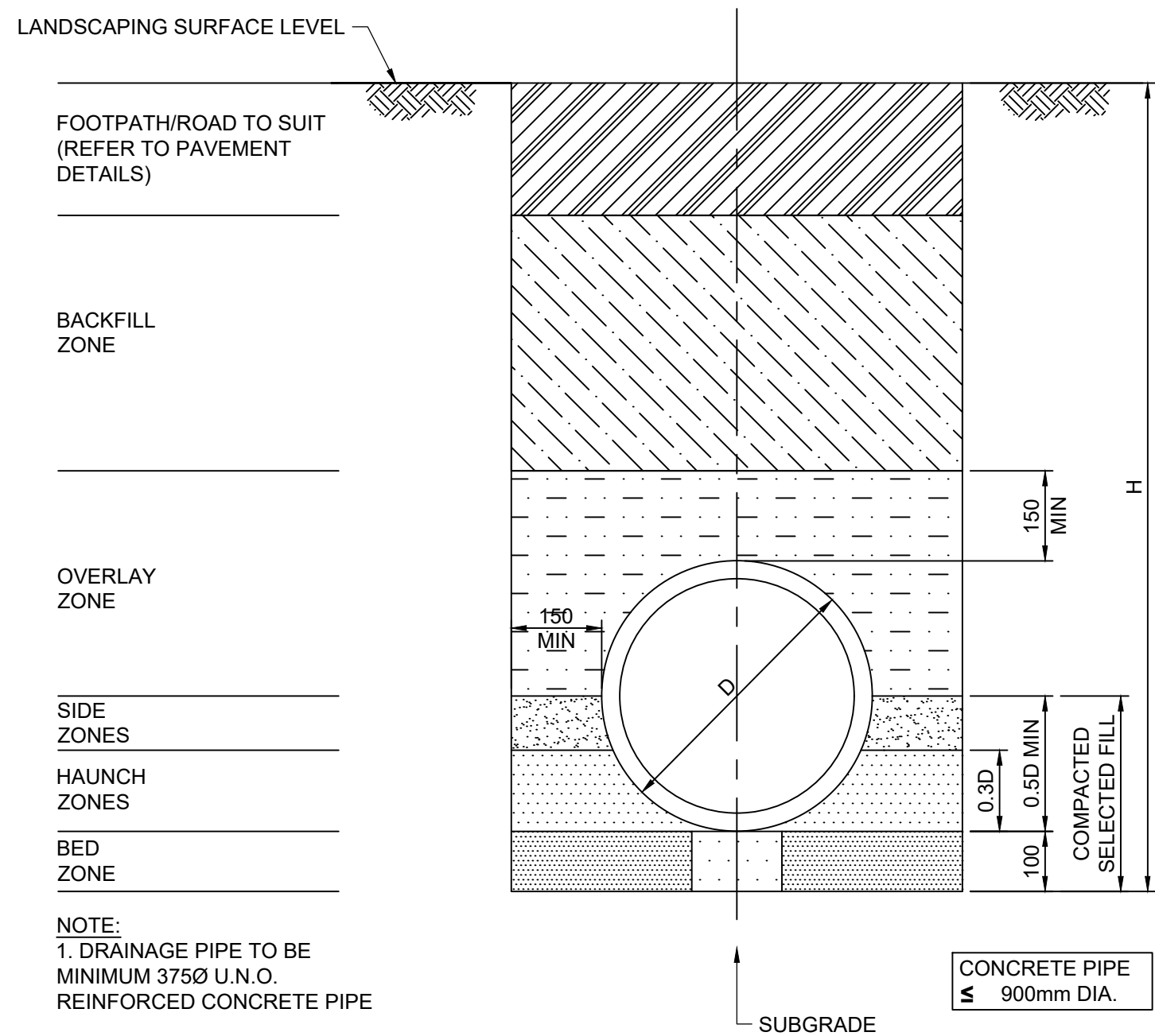
BIORETENTION SWALE (BRS)
SCALE 1:10



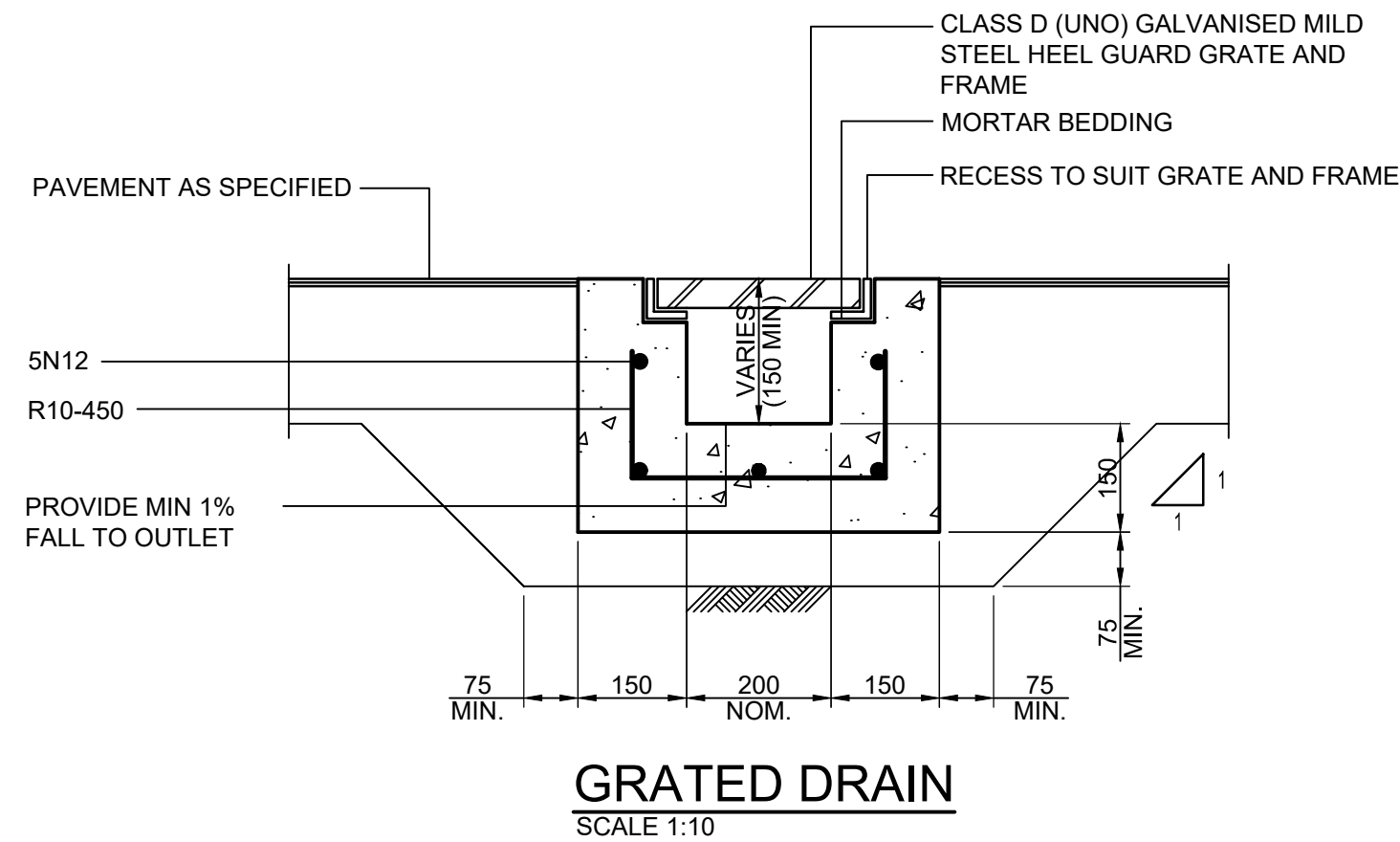
TYPICAL GROSS POLLUTANT TRAP (GPT) PIT BASKET INSERT
SCALE: NTS



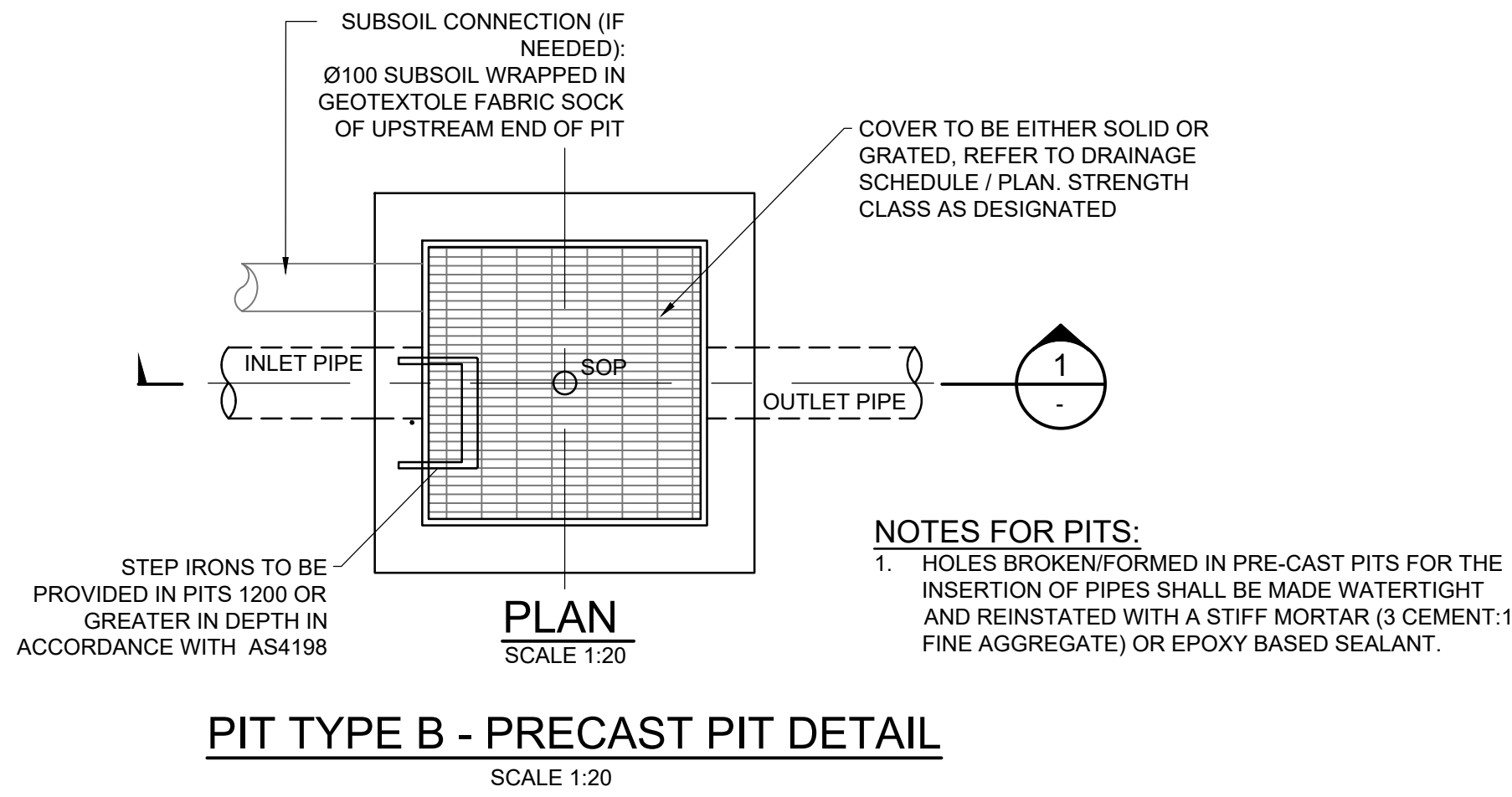
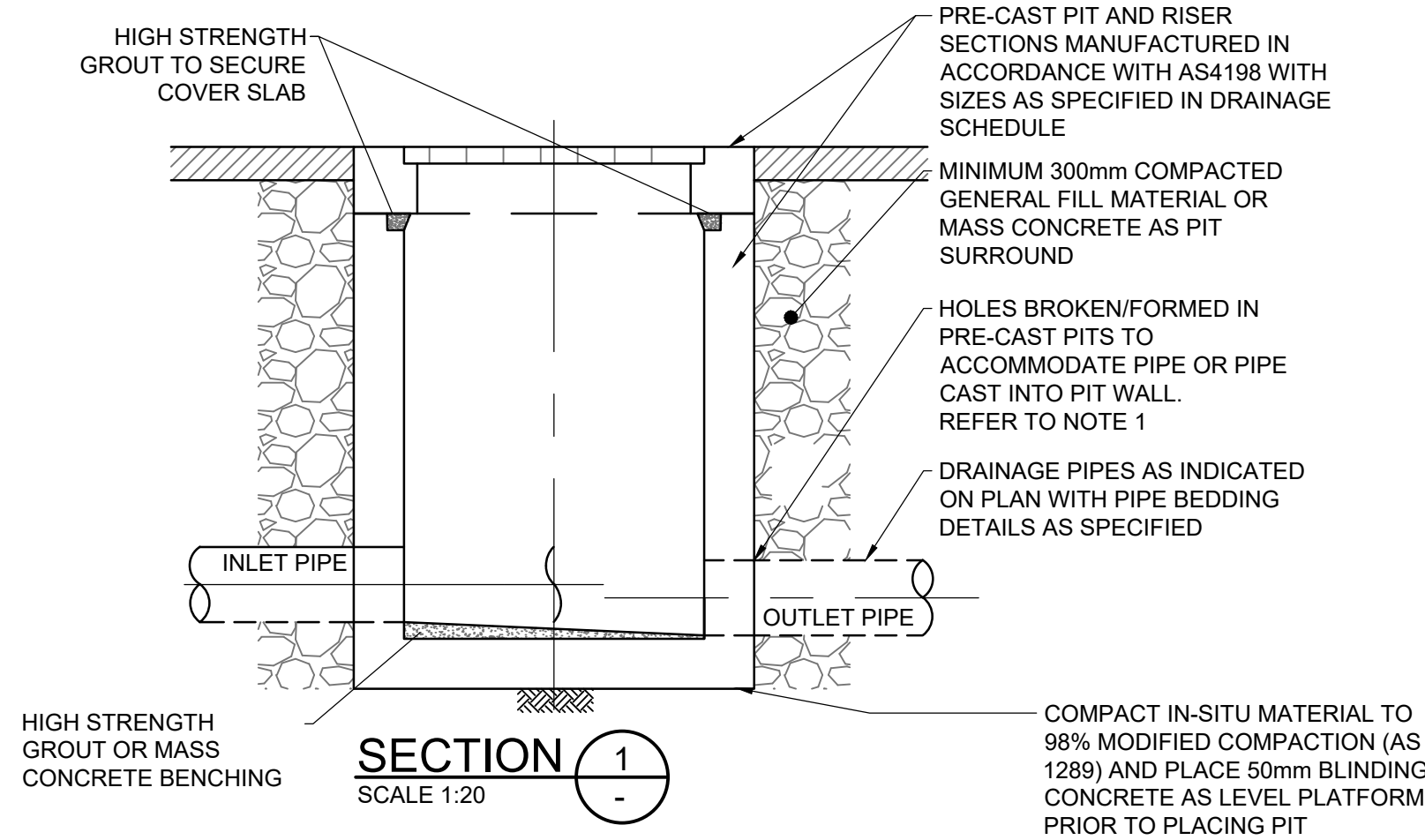
SCHOOL DOWNPIPE DETAILS



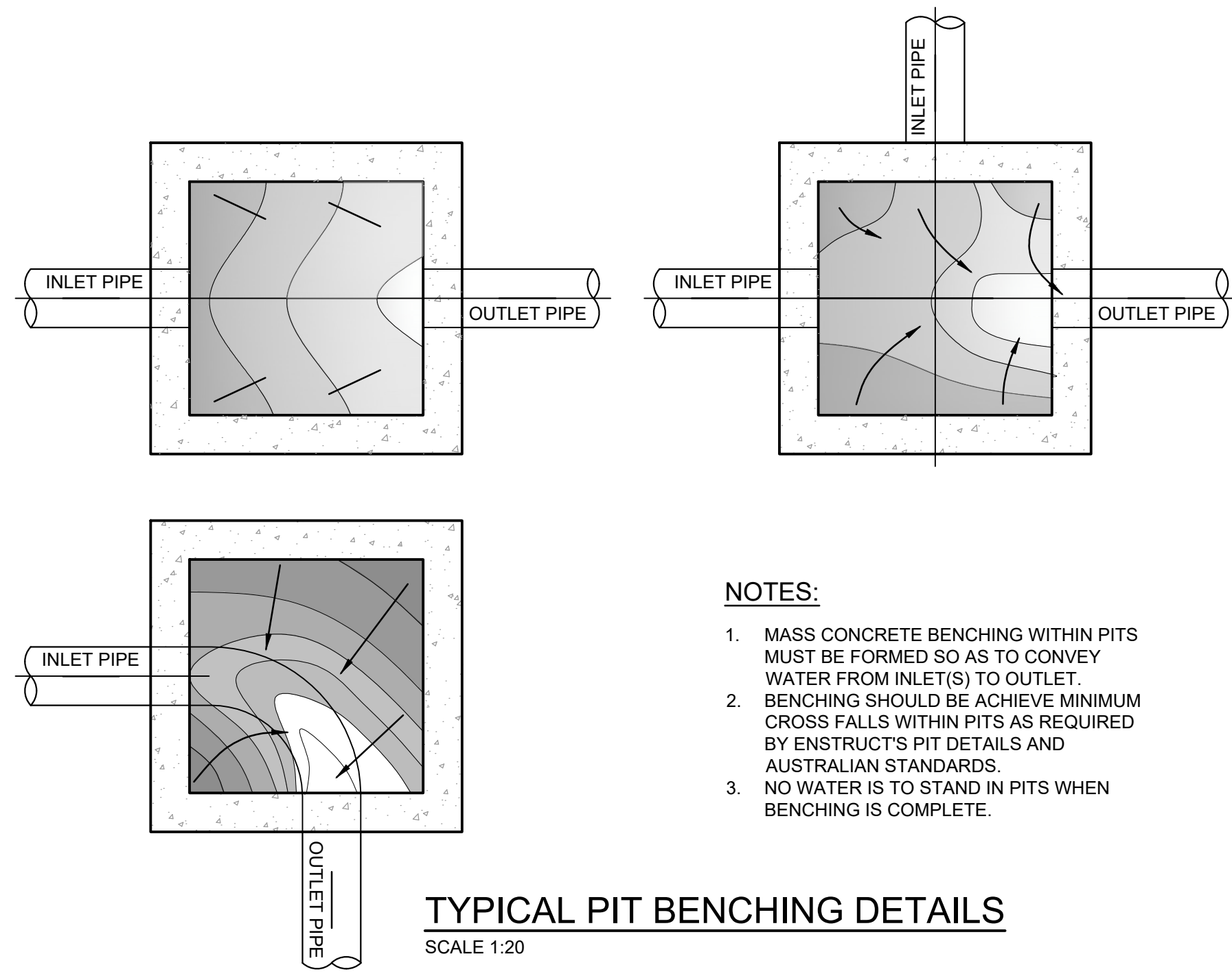
TYPICAL TRENCH 'HS' SUPPORT BACKFILL DETAIL
SCALE 1:10



GRADED DRAIN
SCALE 1:10



PIT TYPE B - PRECAST PIT DETAIL
SCALE 1:20



- NOTES:**
1. MASS CONCRETE BENCHING WITHIN PITS MUST BE FORMED SO AS TO CONVEY WATER FROM INLET(S) TO OUTLET.
 2. BENCHING SHOULD BE ACHIEVE MINIMUM CROSS FALLS WITHIN PITS AS REQUIRED BY ENSTRUCT'S PIT DETAILS AND AUSTRALIAN STANDARDS.
 3. NO WATER IS TO STAND IN PITS WHEN BENCHING IS COMPLETE.

TYPICAL PIT BENCHING DETAILS
SCALE 1:20

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TO BE PRINTED IN FULL COLOUR

NOT FOR CONSTRUCTION

rev	date	description	dm	ch/k
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01	19/08/22	ISSUE FOR DA	MZV	PAL

rev	date	description	dm	ch/k

rev	date	description	dm	ch/k

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drawing title
**NARRABEEN NORTH
PUBLIC SCHOOL
STORMWATER DRAINAGE
DETAIL SHEET**

FOR INFORMATION			
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