

# M+G Consulting

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## New High School in Bungendore Bungendore, NSW

### Civil RTS Design Report

Revision: E

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Date: July 2022  
Issued For: RTS

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Report Amendment Register

Rev. No.	Issue/Amendment	Author/Initials		Reviewer/Initials		Date
01	Draft SD Issue (Meinhardt Bonacci)	Youmna Khalid	YK	George K	GK	24/03/21
A	SSD (Meinhardt Bonacci)	Youmna Khalid	YK	George K	GK	09/07/21
B	SSD (Meinhardt Bonacci)	George K.	GK	Amir B	AB	23/07/21
C	SSD (M+G Consulting)	Nicholas Nishijima	NN	Simon Matthews	SM	04/08/2021
D	SSD (M+G Consulting)	Nicholas Nishijima	NN	Simon Matthews	SM	09/09/2021
E	RTS (M+G Consulting)	Nicholas Nishijima	NN	Simon Matthews	SM	15/07/2022

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## 1. PREAMBLE

### 1.1. Introduction

M+G Consulting has prepared a Civil RTS Design Report that forms part of the Environmental Impact Statement for SSD No 14394209 for a new high school at Bungendore. The Environmental Impact Statement was exhibited by the NSW Department of Planning from Monday 20 September 2021 to Monday 18 October 2021. During the exhibition submissions were received and following exhibition the Department of Planning and Environment issued two requests for information dated 16 November 2021 and 24 December 2021.

This report accompanies an Amendment Report for the project and forms an update to the previously issued Civil Schematic Design Report (refer report amendment register).

### 1.2. Amended Proposal

- The amended design no longer includes facilities for Queanbeyan-Palerang Regional Council (Council) such as the previously proposed community health centre, community library and council shop front. The facilities are still to be provided by Council, however, through a separate planning process and on a separate site.
- Administration and staff facilities have been relocated from Block A into Block C (existing council building) and the visual arts and TAS functions have been relocated into Block A.
- The school library has been relocated from Block D to a standalone block, Block E, which is located to east of the Majara Street alignment and centered on the school common.
- Block D has been replanned to address the removal of Council facilities, the relocation of the school library and to sit to the east of the Majara Street alignment. The floor level of Block D has also been lowered to suit the revised building footprint.
- Block B has been relocated to the west, off the Majara Street alignment.
- The games courts and cricket batting nets have been relocated within the school boundary.
- The bulk and scale of buildings facing public roads (Blocks A and B) have been reduced.
- The façade materials of the proposed buildings have been revised to be more sympathetic to the existing village character.
- The primary outdoor learning areas, including the 'covered' outdoor learning areas have been relocated and redesigned to be integrated within the landscape design.
- Minor planning changes to Block B which include relocation of the outdoor learning spaces, student amenities and building services to provide a new covered walk through from the school plaza to Mick Sherd Oval.
- The covered walkway connection between Block B and Block D has been redesigned to arc around the eastern side of the school common and provide a covered connection to the relocated school library, Block E.
- The school security fence between Blocks B and D has been redesigned to arc around the western perimeter of the school common. The school security fence to the northern and southern boundaries has been rationalised and face brickwork piers have been introduced to define the school entries.
- The waste vehicle turning circle has been removed from the proposal. The waste collection area has been relocated to the southern end of the existing carpark and a waste vehicle turning head has been added. A new turning bay is provided for assisted transport vehicles to the northern end of the car park.
- The onsite detention tank has shifted to the west.
- The electronic school sign has been replaced with a changeable, static 'notice board' sign. The sign has been relocated further back from Majara Street, behind the school security fence.
- The Scout storage shed has been relocated from the agricultural plot to within the Scout site. The Scout storage shed will be subject to a separate planning pathway and does not form part of this application. The school agricultural support building, Block F, has been repositioned and the landscape paths and driveways have been updated to suit the change.
- An addition 58 car parking spaces are proposed along Turallo Terrace providing a total of 98 spaces (compared to the original 35). An additional 3 drop off/ pickup spaces are proposed on Turallo Terrace providing a total of 6 spaces (compared with the original 3).
- The proposed delineation works to Mick Sherd Oval and the War Memorial have been removed from the proposal.
- The redesign of pedestrian crossings on Gibraltar Street and Turallo Terrace from 'School Crossings' to 'Wombat Crossings'.
- A footpath is proposed to the northern side of Turallo Terrace connecting the proposed parking with the existing path adjacent to Turallo Creek



1.3. Site Description

The proposed development is located within the Bungendore Town Centre within the local government area of Queanbeyan-Palerang Regional Council. The proposal involves the use of land bounded by Bungendore Park, Gibraltar Street, Majara Street, Turallo Terrace and Butmaroo Street, the existing former Palerang Council site at 10 Majara Street, the Majara Street road reserve bounded by Turallo Terrace and Gibraltar Streets and Nos. 2, 4 and 6 Majara Street (Refer to Table 1 below).

The site is legally described as per the existing Lots and DPs in Table 1 below. The school site comprises land which has recently been transferred to the ownership of the Department of Education, being Lots 12-14 of DP1139067, Lot 3 of DP830878, part of Lot 701 of DP1027107, the part of lot 701 of DP96240, and part of the Majara Street Road Reserve. The proposed Lots and DPs are detailed within Table 1 below and are not yet registered at the time of writing of this Amendment Report.

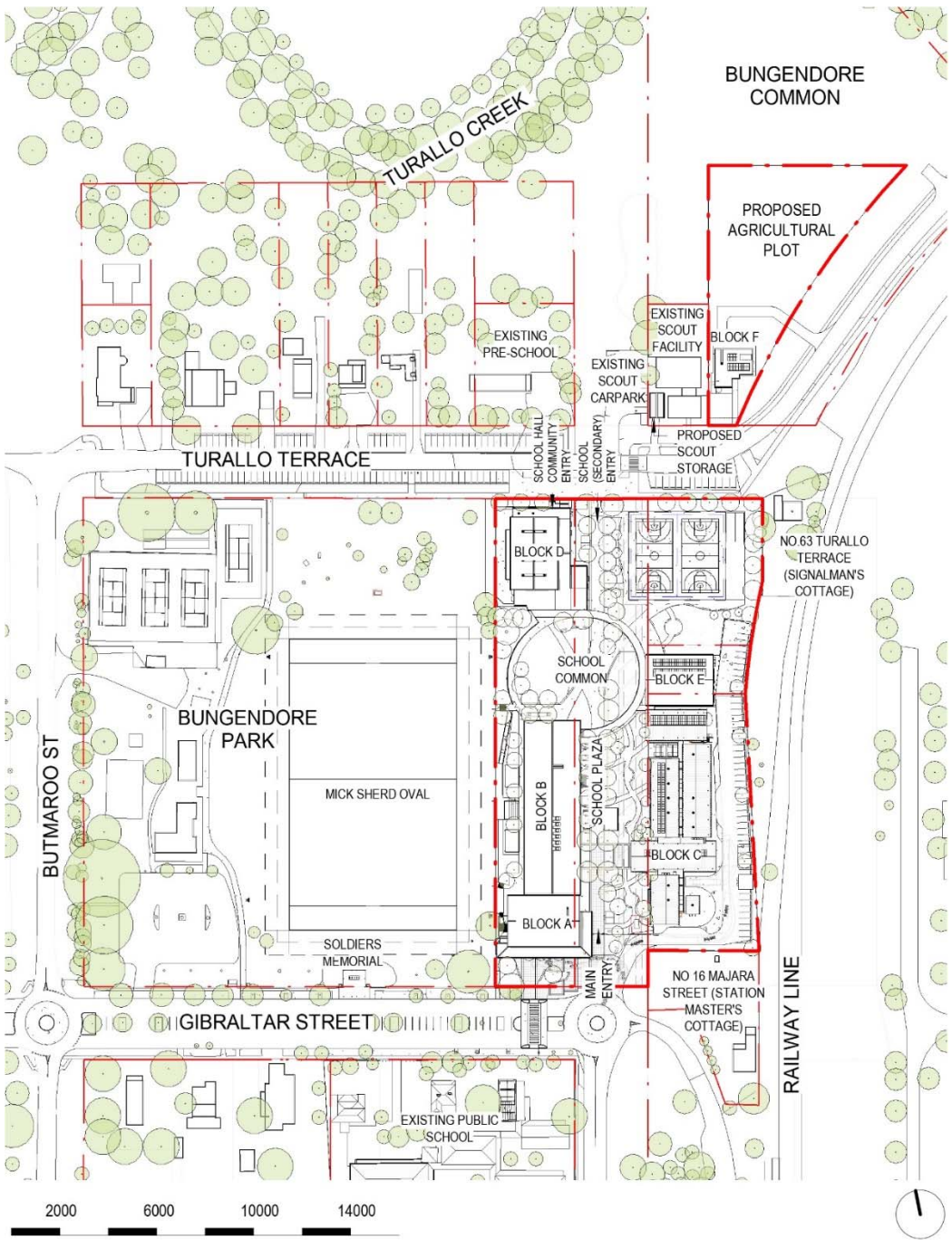
The site is approximately 25,350m<sup>2</sup> in area and consists of a relatively flat topography. It contains existing Council buildings. The land is mostly cleared of vegetation with some mature trees intersperse throughout subject lots.

The surrounding area generally includes low density residential developments to the north and west, an existing rail line to the east and Bungendore Public School and the Bungendore train station to the south and south west respectively.

Table 2 – New high school in Bungendore legal descriptions		
Property Address	Existing Lot and DP	Proposed Lot and DP
6-14 Butmaroo Street	Part Lot 701 DP1027107	Lot 1 DP1276282
2 Majara Street	Lot 12 DP1139067	Lot 12 DP1139067
4-6 Majara Street	Lot 13 DP1139067 Lot 14 DP1139067	Lot 13 DP1139067 Lot 14 DP1139067
10 Majara Street	Lot 3 DP830878	Lot 3 DP830878
Butmaroo Street	Part Lot 701 DP96240	Lot 1 DP 1276285
Portion of Majara Street (between Turallo Terrace and Gibraltar Street)	N/A	Lot 1 DP 1276279



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*Fig. 2 Proposed Architectural Overall Site Plan (Source: TKD Architects)*



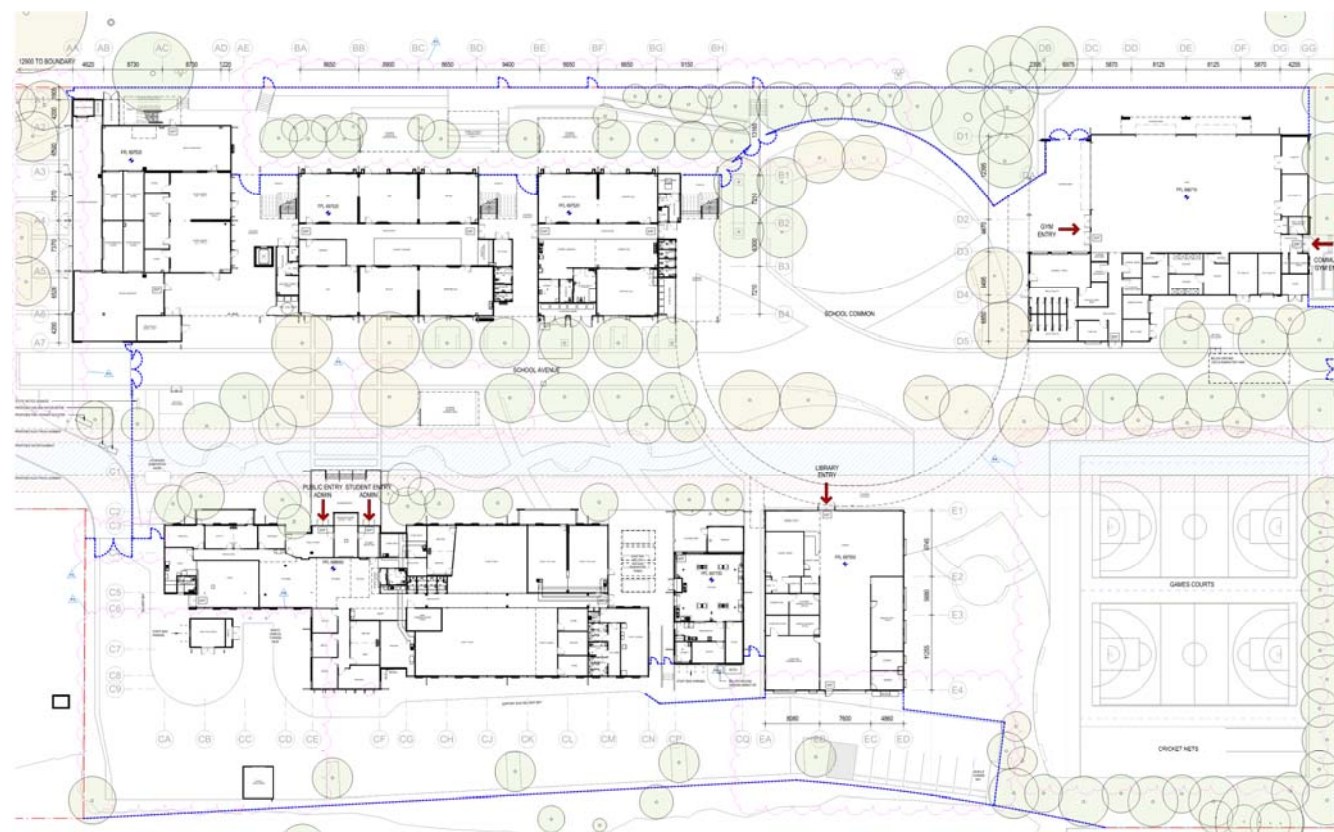


Fig. 3 Proposed Architectural Ground Floor Plan for BHS (Source: TKD Architects)

The proposed development is comprised of the following design packages:

- Development of the new Bungendore High School Buildings A, B and D, and modification to existing buildings C and E.

#### 1.4. Locality and Access to Site

The project site is in a relatively central location to the town area with railway line to the east, Bungendore station to the South east and Turallo Creek to the north of the site.

The proposed site of the new BHS is located on the eastern side of the Mick Sherd oval on Majara Street & incorporates the existing Council Chambers Building. The site is surrounding by a medium density residential suburb to the North, & West. To the East is the Council Chambers building which forms part of the study site as a joint community / education Facility.

There are three main existing site access roads to the site; Turallo Terrace to the North, Majara Street to the East & Gibraltar Street to the South. There is carparking available on all 3 streets around the site and, on site, adjacent to the Council Building.

The site is located within the Queanbeyan Palerang Regional Council (QPRC) Local Government Area (LGA). The school site is approximately 2.6 ha in area.

The largest vehicle by EcCell entering the site will be a refuse vehicle. The waste management plan for Bungendore High School by *SUEZ RECYCLING & RECOVERY PTY LTD* indicates a maximum Refuse Vehicle length of 10.4m. Referring to AS 2890.2:2018 Part2: Off-street commercial vehicle facilities, a 12.5m Heavy Rigid Vehicle (HRV) is adopted for checking site access for refuse vehicles.

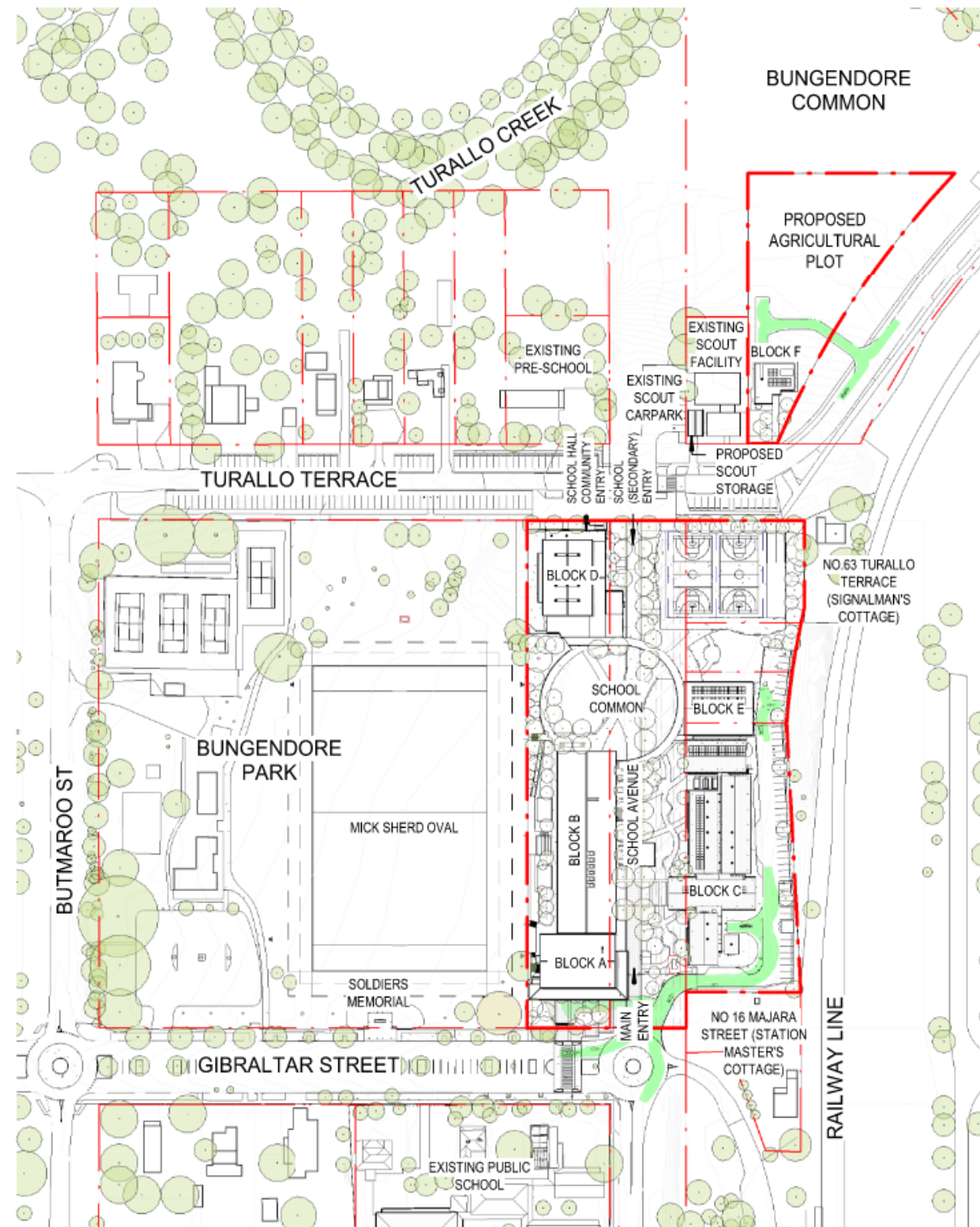
The refuse vehicle will enter the site from the proposed roundabout at the intersection of Gibraltar Street and Majara street located to the south-west of the site. The refuse vehicle will use the internal access road to drive through the site to the north of Building C where a turning head is located adjacent to the bin storage area allowing for front or rear pickup of bins.

The 12.5m HRV is also adopted to confirm bus access to Gibraltar Street. The proposed roundabout at the intersection of Gibraltar Street and Butmaroo Street allows for all movements using the 12.5m HRV including U-turn capabilities. The proposed roundabout at the intersection of Majara Street and Gibraltar street allows for site entry and exit from Gibraltar Street and Majara Street for a 12.5m HR. A left turn from Majara Street onto Gibraltar Street for a 12.5m HRV is possible. However, a 12.5m HRV cannot make a U-turn at the roundabout From Majora Street.

On Turallo Terrace, where Building F is located, a passenger vehicle and boat trailer combination is shown entering the site from the West and East bound directions. The Vehicle and trailer enter the Boat Shed for loading/unloading and then exit the site onto Turallo Terrace in both directions.

For further details on vehicle traffic movements refer to drawings by TKD Architects (figure 4) shown on the following page.





NOT TO SCALE

Fig. 4 Traffic Sweep Paths (Source: TKD Architects)



## 1.5. Existing Services

A site survey has been conducted by Project Surveyors dated July 2021 that indicates existing utilities including stormwater, electrical, water, telecommunication and gas lines located within and around the site boundary. The existing services within the footprint of the proposed buildings will have to be relocated or decommissioned, as per the advice of services consultant.



Fig. 5 Existing Site Survey, BHS (Source: Project Surveyors)



1.6. Existing Stormwater Network

Based on the maps provided by Queanbeyan Palerang Regional Council (QPRC), figure 6 below is the information around existing stormwater network in the vicinity of the proposed new high school:



Fig. 6 Existing Stormwater Drainage Network (In vicinity of proposed new high school)



2. FLOODING

2.1. Existing Flooding Conditions

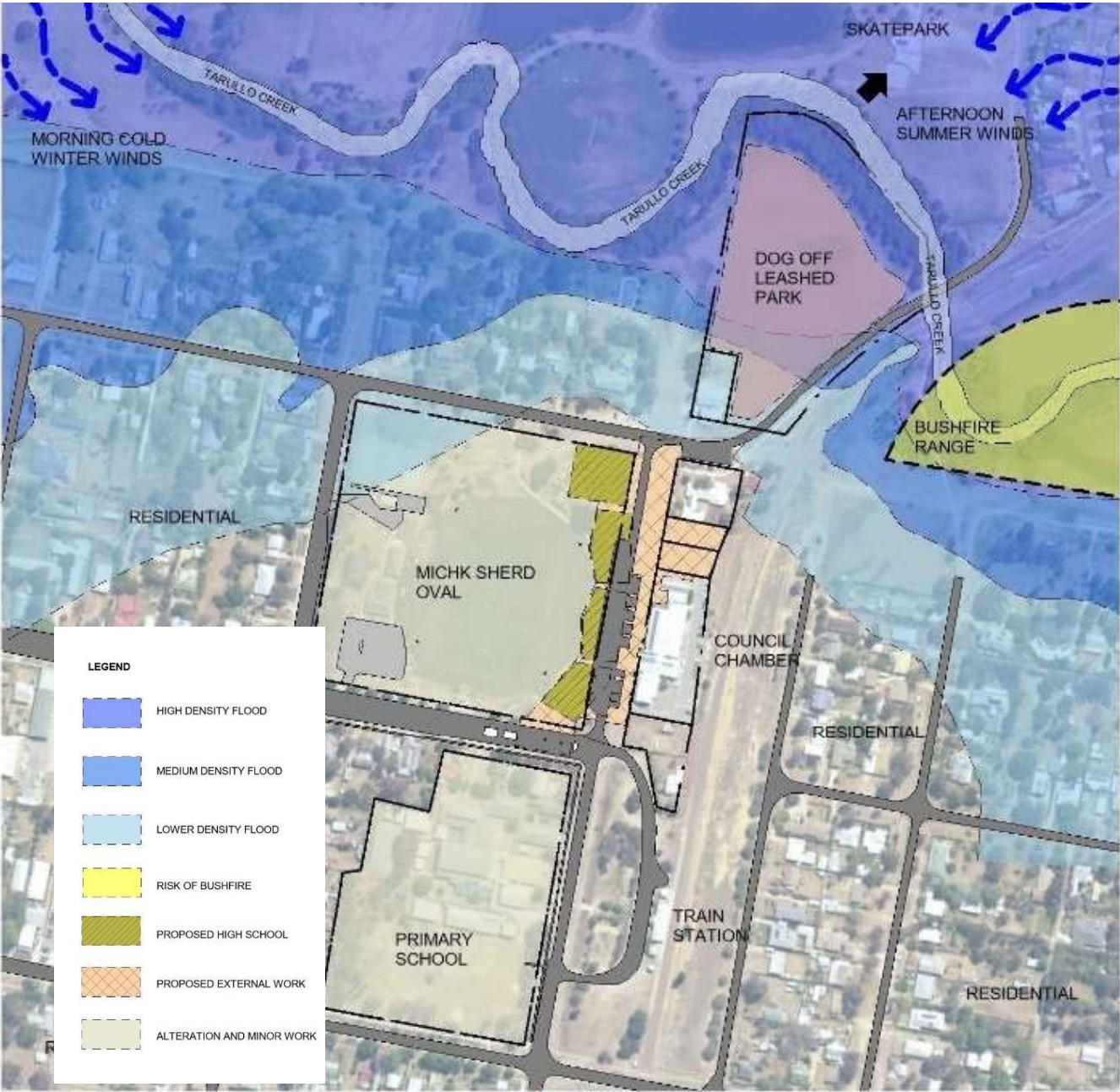


Fig. 7 Flood Extent for Mainstream Flooding (Source: Masterplanning Report)

Based on the information provided by Council flood map above, the High School Site is not affected by flooding. For detailed assessment reference shall be made to the flood report by Martens Consulting Engineers (Report Ref: P2008007JR01V02 Dated July 2021).

3. EARTHWORKS

The earthwork quantities associated with the proposed development of the new Bungendore High School to station are provided in the figures below. Majority of the earthworks involve cut and will require proper disposal of excess cut material. Further details of earthworks can be found in Appendix B of this report.

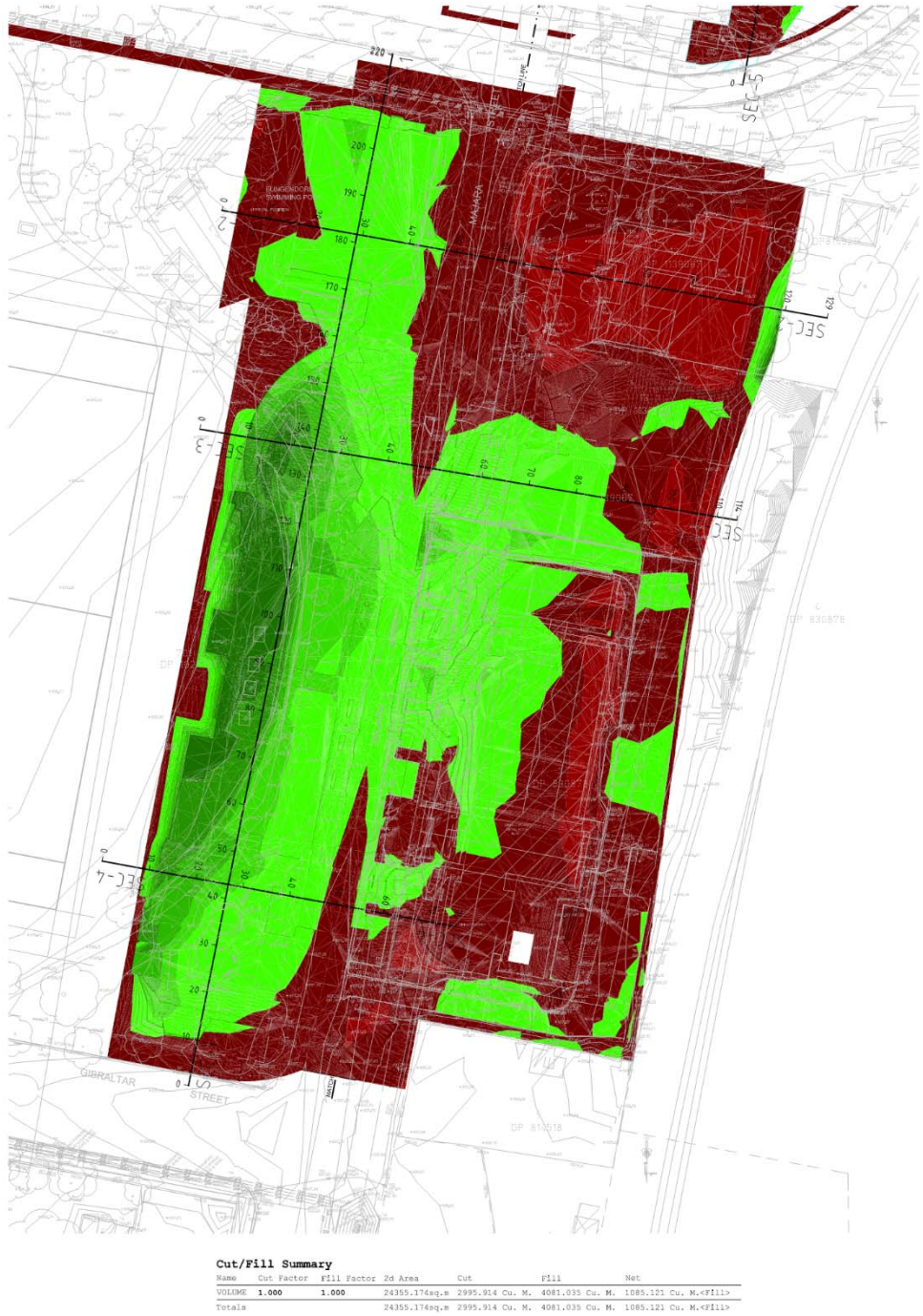


Fig. 8 Earthworks Plan and Quantities for proposed building envelopes



## 4. STORMWATER MANAGEMENT

### 4.1 Stormwater Drainage Strategy

In accordance with QPRC, calculations to determine peak flows for non-urban catchment shall be carried out in accordance with the Book 9 of Australian Rainfall and Runoff, Commonwealth of Australia (Geoscience Australia), 2016 (AR&R) and the requirements of QPRC Drainage Design Specifications.

An on-site detention (OSD) system is required for any developments with additional impervious surface area to ensure there is no adverse impact from increased stormwater runoff on downstream properties as a result of new developments or redevelopments during all storm events up to and including the 100-year Annual Recurrence Interval (ARI) event. The OSD storages are to be designed to meet the Permissible Site Discharge as indicated in Table D5.5 of QPRC Drainage Design guidelines.

The existing site is approximately 50% impervious. The development increases impervious based on the proposed schematic design details. An underground Onsite Detention (OSD) tank will be required to limit the post-development flows to the pre-development conditions as outlined in Table D5.5 of QPRC Drainage Design guidelines.

The preliminary analysis undertaken using DRAINS computer software indicates a volume of approximately 100 m<sup>3</sup> of detention storage is required. Please refer figure 9 below for the preliminary DRAINS layout and estimated stormwater flows for the High School Site.

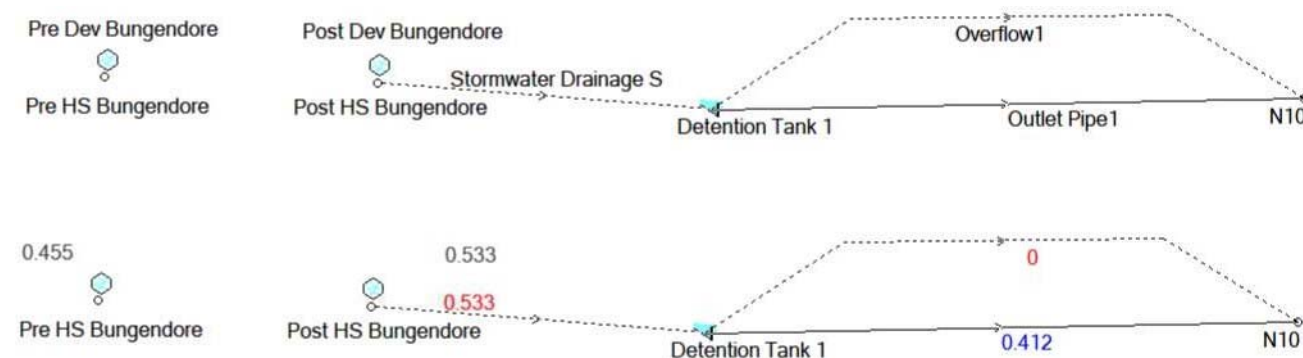


Fig. 9 High School Site Preliminary DRAINS Layout and the 1 in 20 yr. ARI flows

A major system is also required for the proposed development in the form of overland flow paths. The major system should be designed to convey flows surcharged from the underground drainage system for storm events up to 100-year ARI. The overland flow is to be directed away from the buildings and carparks and towards the public road kerb and gutter provided.

No drainage is proposed to be discharged to existing rail corridor hence no adverse impact on rail infrastructure is expected.

In accordance with Council's Development Design Specification D5 – Stormwater Drainage Design, new developments are to provide a stormwater major/minor system. The "major" system shall provide safe, well-defined overland flow paths for rare and extreme storm runoff events while the "minor" system shall be capable of carrying and controlling flows from frequent runoff events.

Additionally, as outlined in the Educational Facilities Standards & Guidelines (EFSG), the proposed development is required to install/upgrade the minor stormwater drainage system including pits, underground pipes and kerb and gutter to cater for storm events up to the 20-year Average Recurrence Interval (ARI).



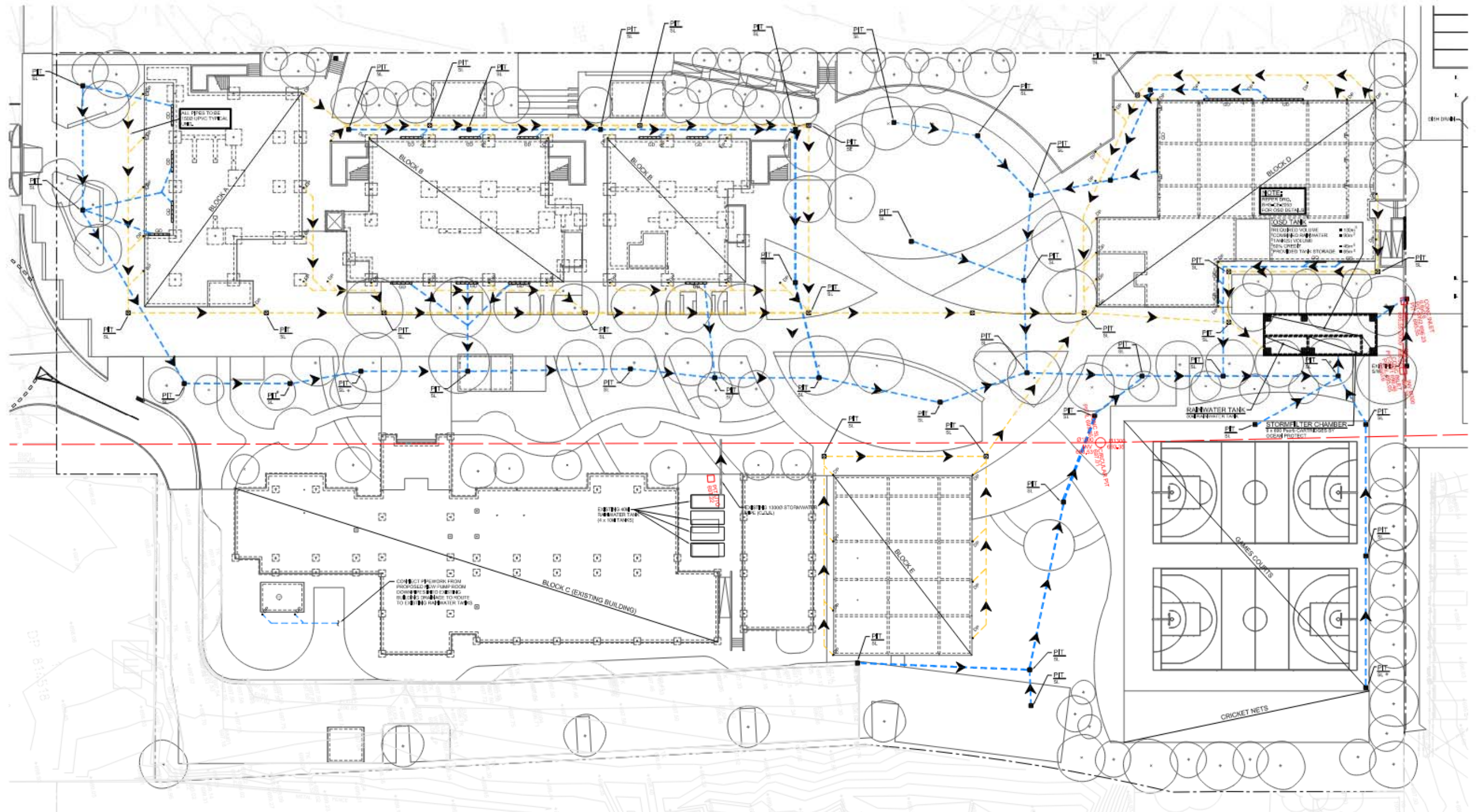


Fig. 10 High School Site Stormwater Drainage Plan - REFER APPENDIX B FOR FULL DRAWING(S)



## 4.2. Stormwater Quality Management Strategy

To protect the existing ecology, the development will be required to satisfy the water quality requirements over the full range of rainfall events to maintain the long-term protection of the pre-determined Environmental Values. The Council's Development Design Specification D7 - Erosion Control and Stormwater Management, outlines that any development except for single dwelling houses and dual occupancy housing must undertake a stormwater quality assessment to demonstrate that the development will achieve the post development pollutant load standards indicated below:

Pollutant	Objective
Suspended Solids SS	80% retention of average annual load
Sediment	100% retention of sediment greater than 0.125mm for flows up to the 3 month ARI peak flow
Oil & Grease	No visible oils for flows up to the 3 month ARI peak flow
Litter	100% retention of litter greater than 5 mm for flows up to the 3 month ARI peak flow
Total Phosphorus (TP)	65% retention of average annual load
Total Nitrogen (TN)	65% retention of average annual load

*Table 3 - QRPC's Pollution Reduction Targets (DCP 2008)*

Proprietary water quality treatment products including Litter Baskets and Filtration cartridges within the OSD tank are proposed for the site as water quality treatment devices. For the benefit of reducing the demand on water supply, a rainwater harvesting system is proposed onsite via the provision of a rainwater tank. Refer Infrastructure Management Plan produced by Services Engineer.

Alternative methods of water treatment adopting the use of more organic processes is also feasible for the proposed development. These include the use of bio-retention basins and swales which capture sediments and nutrients in the stormwater run-off and filter them through biologically active media layers, effectively reducing the pollutant loading in the stormwater run-off.

Further details of the above proposed treatment methods are further discussed later in this section of the report.

"MUSIC" software by eWater Pty Ltd will be used to assess the performance of the treatment devices in achieving the pollution reduction targets outlined in the QRPC DCP 2008. A Music Template with a 6-minute time step will be adopted in the design of the WSUD elements.

### BIO-RETENTION BASINS/SWALES

The proposed stormwater management strategy can adopt bio-retention basins/swales that can be integrated into the drainage network to treat runoff from impervious surfaces. These systems will be aimed at reducing the pollutants present in these flows to the nominated targets outlined previously in the report.

Stormwater is routed to the bio-retention basins (or through swales), either directly or via an inlet pit and pipe. The water is then filtered through a vegetated and biologically active media layer and is collected in slotted subsoil drainage pipes below the garden beds.

The benefits of these bio-retention basins/swales include:

- Effective removal of fine and soluble pollutants;
- Effective removal of sediment and heavy metals;
- Effective removal of nutrients (Phosphorus & Nitrogen) and bacteria;
- Reduction in impervious areas for the proposed development site;
- Living plants provide an ecosystem for wildlife; and
- Basin volumes assist in the management of stormwater quantity control.

The vegetation incorporated into these basins for the treatment of stormwater are to be core functional bioretention plant species. A list of acceptable species can be found in table 19 of the document by Water by Design – Bioretention Technical Design Guidelines Version 1.1, October 2014. The selection of plant species is to be approved by the design engineer prior to construction.

### STORMWATER FILTRATION CARTRIDGES

Stormwater filtration cartridges are an underground stormwater treatment device comprised of one or more structures that house rechargeable, media-filled cartridges that trap particulates and absorb pollutants from stormwater run-off such as total suspended solids, hydrocarbons, nutrients, metals and other common pollutants. Filtered (treated) stormwater run-off is collected in underdrain pipes below the cartridges and are directed towards an outlet structure. In major storm events, an overflow-weir of high-flow bypass allows excessive run-off to bypass the system and prevent damage or overloading on the treatment devices.

### LITTER BASKETS (PIT INSERTS)

Litter baskets capture pollutants at drainage entry points and consist of a capture basket and an overflow bypass flap(s). The basket is fitted below the invert of the gutter inside the drainage inlet pit, and importantly does not obstruct flow in the outlet pipe. Solid pollutants enter the litter basket with the stormwater from roadside or other run-off areas and the pollutants aquaplane across the flow plate into the capture basket. The filtered stormwater then passes into the drainage network with minimal head/hydraulic loss through the unit. These litter baskets can be retrofitted into pre-cast pits and positioned below inlet pipes (with sufficient depth above outlet pipes), so that stormwater pollutants that have already entered the system can be captured at a downstream pit.



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#### RAINWATER TANKS

Rainwater tanks serve to benefit the stormwater drainage design through harvesting and re-use. The re-use of stored rainwater from roofed surfaces reduces the demand of potable water and provide assists in water conservation, whilst the storage provided within these tanks assists in the restoration of flow regimes towards the pre-development conditions. Rainwater tanks also assist in the removal of contaminants such as Suspended Solids, Phosphorous and Nitrogen.

Special consideration is also given to the water quality impacts on the Lake George catchment. The stormwater quality improvement elements that are to be incorporated into the stormwater drainage design for the site are to reach the pollutant reduction targets outlined in QRPC's DCP 2008 as a minimum requirement. In addition to reaching these targets, regular inspections and ongoing maintenance of these assets are required to monitor performance and to ensure that these elements are performing as intended. A management schedule for these elements can be developed in accordance with the *Maintenance Guidelines for Stormwater Treatment Measures Version 1, September 2020* by Stormwater NSW, to be reviewed during the detailed design stage of the project.



## 5. EROSION & SEDIMENT CONTROL (DURING CONSTRUCTION)

Prior to any earthworks commencing on site, soil and water management control measures will need to be put in place generally in accordance with *Managing Urban Stormwater – Soils and Construction*, 4<sup>th</sup> Edition (2004) by Landcom.

The contractor will be responsible to attain all necessary licenses, permits or approvals prior to the commencement of the works.

The contractor will be responsible for the implementation and maintenance of the Erosion and Sediment Control measure used during construction of the works.

The temporary measures contained in this report are to be implemented and maintained throughout the construction phase of the project, until such a time when permanent measures can be put in place.

Soil and water management requirements are not limited to the advice contained in this report and as such this document outlines the minimum requirements that are to be implemented by the contractor.

The final design and implementation of all maintenance works is the sole responsibility of the contractor.

Further assessment of the permanent stormwater management controls outlined in this report are required. This may require some revision to the measures, which is to be confirmed during the detailed design stage of the project.

The measures are to be installed as per the requirements contained in the documents referenced above and those outlined below:

- Clearly visible barrier, site fencing and hoarding shall be installed at the discretion of the superintendent to ensure site security, safety of the public, manage traffic control and prohibit any unnecessary site disturbance. Vehicular access to the site shall be limited to only what is essential for the construction activities and shall enter the site only through the stabilized access points.
- All disturbed areas are to be stabilised within 14 working days of the completion of earthworks. All disturbed areas are to be protected so that the land is permanently stabilised within six months.
- Proprietary silt fencing shall be installed by the contractor in accordance with the final approved erosion and sediment control plan and elsewhere at the discretion of the site superintendent to contain sedimentation to as near as possible to the original source.
- Sediment removed from any sediment trapping device shall be relocated where further pollution to downslope lands and waterways cannot occur.
- Stockpiles shall be located by the contractor in accordance with the final approved erosion and sedimentation control plan and elsewhere at the discretion of the project manager and/or superintendent. Where stockpiles are to be in place longer than 30 days they shall be stabilised.
- Water shall be prevented from entering the permanent drainage system unless it is sediment free. Drainage pits are to be protected in accordance with the final approved erosion and sedimentation control plan.
- Temporary sediment traps located at pits shall be retained throughout the early works stage and until the appropriate replacement measures for the subsequent stages are installed.

### DURING WET WEATHER CONSTRUCTION

Soil and water management measures are to be incorporated into the construction works during wet weather construction works. These include, but are not limited, to:

- All plant and equipment are to be relocated away from edges of batters and edges of excavations.
- Construct temporary earth V-drains to direct surface water away from top of batters, edges of excavations batters and temporary shoring
- Inspect all batters and temporary shoring and undertake remedial works as required.
- Inspect all erosion and sediment control measures and repair as necessary.
- Check to ensure that sufficient supply of flocculant is on site for water treatment prior to discharge from site.
- Ensure all vehicle access tracks are in good condition. Undertake repairs and top with gravel/ballast as required.

### LAKE GEORGE CATCHMENT (DURING CONSTRUCTION)

Special consideration is given towards the water quality impacts on the environmental values of the Lake George catchment during the construction phase of the proposed works. Unsatisfactory management of disturbed areas allow for pollutants such as sediments to escape into downstream environments, carrying nutrients and oxygen demanding materials that present an array of issues including a reduction in:

- Light penetration of water;
- Suitability of habitats for some aquatic flora and fauna;
- Suitability for recreation, irrigation etc, particularly if toxic algae is present; and
- Aesthetic appeal of the water.

In accordance with the guidelines presented in *Managing Urban Stormwater – Soils and Construction Volume 1* by Landcom (2004), some general recommendations are provided to minimise the water quality impacts on Lake George, situated North of the site. A summary of these recommendations is listed below:

- Design structures to minimise land disturbance.
- Pass any potential sediment-laden stormwater runoff through a trap or basin.
- Where possible, do not construct sediment basins on line on a watercourse.
- Design of any sediment retention basins to ensure that water is not diverted from its intended flow path.
- Where practical, place sediment control measures:
  - So that only waters polluted by on-site land disturbance activities enter them;
  - Off-line, so that trunk drainage carries only relatively clean water;
  - Away from normal construction operations; and
  - Upstream of any receiving waters.
- Ensure that the design of sediment control measures have adequate capacity to trap and store sediment and allow for adequate time for the settlement of desired particle sizes.
- Do not decommission temporary sediment control measures until the permanent works have been completed and fully stabilised for more than 90% of the contributing catchment.

For further details and proposed erosion and sediment control strategies, refer Fig. 10 and Appendix B of this report.



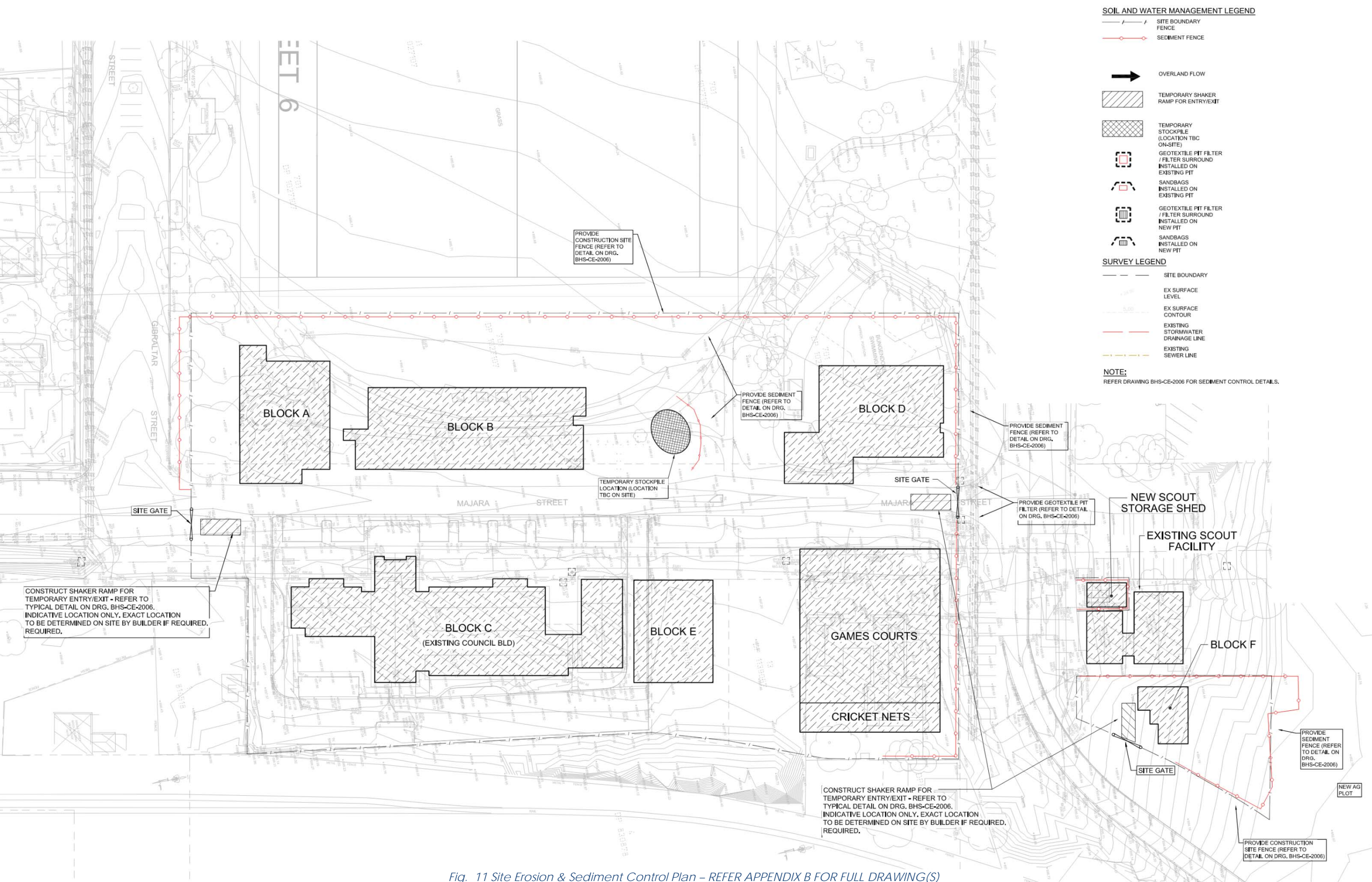


Fig. 11 Site Erosion & Sediment Control Plan – REFER APPENDIX B FOR FULL DRAWING(S)



# Appendix A - Site Survey





\* THE LOT 2 SEC 9 DP 758183 TITLE NOTES  
1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)  
2. LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER

\* THE LOT 4 SEC 9 DP 758183 TITLE NOTES  
1. LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN  
2. DEDICATED AS SITE FOR SCHOOL OF ARTS BY GOV. GAZ. 30.5.1890

\* THE LOT 5 SEC 9 DP 758183 TITLE NOTES  
1. LAND EXCLUDES MINERALS - SEE MEMORANDUM S700000A  
2. RESERVE NO. R15432 FOR PUBLIC SCHOOL PURPOSES VIDE NOTIFIN. IN GOV. GAZ. DATED 2.4.1892 FOLIO 2745

\* THE LOT 14 SEC 9 DP 758183 TITLE NOTES  
1. LAND EXCLUDES MINERALS - SEE MEMORANDUM S700000A  
2. RESERVE NO. R15432 FOR PUBLIC SCHOOL PURPOSES VIDE NOTIFIN. IN GOV. GAZ. DATED 26.9.1975 FOLIO 3957

\* THE LOT 701 DP 1027107 TITLE NOTES  
1. THE LAND IS A PRESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER  
2. LIMITED TITLE, LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.  
3. THE LAND IS DEDICATED FOR A PUBLIC PURPOSE.

LEGEND

- ELP - ELECTRIC LIGHT POLE

HYD - HYDRANT

TW - TOP WALL

TK - TOP KERB

TG - TOP GUTTER

PP - POWER POLE

SMH - SEWER MANHOLE

SP - SIGN POST

CONC - CONCRETE

SL - SEALED LID
- SV - STOP VALVE

TEL - TELSTRA PIT

VC - VEHICLE CROSSING

DP - DOWNPIPE

RDG - ROOF RIDGE

EOT - END OF TRACE

UTO - UNABLE TO OPEN

W - WATER PIT

GL - GRATED LID
- C - COMMUNICATION

W - WATER LINE

G - GAS LINE

E - ELECTRICITY

SW - STORMWATER PIPE

OP - OVERHEAD POWER

STRING NAME	SERVICE TYPE	QUALITY LEVEL	ASSET OWNER	COMMENT
WM01	Water Main line	D	Icon	Water main approx depth of .4 to 1.2
WY01	Water - house connection	D	Private	Water service school feed approx 0.4m deep
GM01	Gas main	D	Evoenergy	1x63mm pe main approx 0.7m deep
YG01	Gas line	D	Private	Gas service school feed approx 0.5m deep
MT01	Communication	A	Telstra	1xp50mm conduit approx 0.4m deep empty conduit
IRR01	Irrigation	B	Private	Irrigation line located approx 0.3m deep
EU01	Electricity	B	Evoenergy	Electric line approx depth of .5 to 1.0
EU02	Electricity	B	Private	Shelter lights Electric line approx depth of 3 to .8
EU03	Electricity	B	Private	Oval flood lights electric line approx depth of .6 to 1.0
EU04	Electricity	B	Private	Car park light poles approx depth of .4 to .8
EU05	Electricity	B	Private	Memorial Electric line Approx depth of .3 to .7
TN01	Communication	B	Telstra	Telstra mains cables approx depth of .3 to 1.1
TN02	Communication	B	Telstra	Telstra line approx depth of .3 to .7
TN03	Communication	B	Telstra	Telstra / optic fibre approx depth of .3 to .9
GM01	Gas main	D	Evoenergy	Gas main approx depth of .3 to .9
GM02	Gas main	D	Evoenergy	Gas main approx depth of .3 to 1.0
GM03	Gas main	D	Evoenergy	Gas main approx depth of .3 to 1.0

NOTES :

- \* BOUNDARIES HAVE NOT BEEN DEFINED BY SURVEY AND ARE DIAGRAMMATIC ONLY
- \* LAND DIMENSIONS AND AREAS HAVE BEEN COMPILED FROM PLANS OBTAINED FROM LPM
- \* BEARINGS RELATE TO MGA NORTH ORIGINATING FROM SCIMS MARKS
- \* LEVEL DATUM IS AHD ORIGINATING FROM PM40278 RL 696.187
- \* THE EXISTENCE OF UNDERGROUND SERVICES HAS BEEN ESTABLISHED IN AGREED SCOPE.
- \* EXISTENCE OF SERVICES MUST BE VERIFIED BY CONTACTING DIAL BEFORE YOU DIG (DBYD) 1100.COM.AU
- \* CRITICAL SERVICES MUST BE EXPOSED AND LOCATED.
- \* NEIGHBOURING HOUSES , WINDOWS AND ROOF POSITIONS ARE APPROXIMATELY ONLY.
- \* FLOOR LEVELS GENERALLY SURVEYED AT DOOR THRESHOLDS. INTERNAL ROOMS NOT SURVEYED.
- \* CONTOURS SHOWN ARE INDICATIVE OF LAND FORM. SPOT LEVELS SHOULD TAKE PRECEDENCE.
- \* REFER TO FACE OF PLAN FOR SUBJECT TITLE NOTATIONS.
- \* THIS TITLEBLOCK IS AN INTEGRAL PART OF THIS DRAWING AND SHOULD NOT BE REMOVED.

LOCATING QUALITY LEVELS PURSUANT TO AS5488-2013

- QL-A QUALITY LEVEL A. VISUALISATION / CONFIRMATION OF A SERVICE, POSITION AND DEPTH, BY NON DESTRUCTIVE DIGGING METHODS OR POINTS OF ENTRY TO PITS OR
- QL-B QUALITY LEVEL B. LOCATING OF SERVICES USING RADIO DETECTION METHODS OR GROUND PENETRATION RADAR. ACCEPTABLE RANGE OF ACCURACY FOR QUALITY B IS 300mm FOR POSITION AND 500mm IN DEPTH.
- QL-C QUALITY LEVEL C. SERVICES MARKED OUT USING ONLY SURFACE FEATURES THAT HAVE BEEN MEASURED IN THE FIELD. THIS INCLUDES HYDRANTS, GAS MARKERS, PITS LIDS ETC. NO INDICATION OF SERVICE LOCATION OR DEPTH CAN BE OBTAINED FROM QUALITY LEVEL C.
- QL-D QUALITY LEVEL D. SERVICES MARKED UP USING DBYD PLANS ONLY. NO INDICATION OF SERVICE CONFIRMATION CAN BE GIVEN.

UNDERGROUND SERVICES ALONG HILL ROAD WERE DETECTED BY ASTREA PTY LTD ON 16.03.2021  
SURVEY INFORMATION ABOUT SERVICES SHOULD BE READ TOGETHER WITH ASTREA REPORT: ASTREA-BUN-1.PDF, ASTREA-BUN-2.PDF,



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SHEET 1 OF 7 - DETAIL SURVEY

CLIENT : HINDMARSH

JOB REF. : B04901  
DRAWING No. B04901-BUN-A  
SURVEYOR: BC  
CHECKED: NM  
REGISTERED LAND SURVEYOR  
DATE: 30/03/2021  
DATUM: A.H.D.  
ORIGIN: PM40278 RL 696.187  
REFERENCE SYSTEM: GDA 2020

PLAN OF: BUNGENDORE HIGH SCHOOL  
300 Lanyon Drive ACT

SHOWING: GENERAL DETAIL AND  
SITE LEVELS

PURPOSE: ARCHITECTURAL DESIGN  
COUNCIL SUBMISSION

BELLA VISTA

PO Box 7419 BAULKHAM HILLS NSW 2153  
SUITE 405, LEVEL 4 14 LEXINGTON DRIVE,  
BELLA VISTA NSW 2153  
PHONE : 9056 1900  
email: office@projectsurveyors.com.au



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# Appendix B - Civil Engineering Drawings



12785-02C - NEW HIGH SCHOOL IN BUNGENDORE  
MAJARA ST, BUNGENDORE, NSW 2621  
CIVIL & STORMWATER

DRAWING No.	DESCRIPTION
BHS-CE-2001	DRAWING REGISTER AND LOCALITY PLAN
BHS-CE-2002	CONSTRUCTION NOTES
BHS-CE-2005	SEDIMENT & EROSION CONTROL PLAN
BHS-CE-2006	SEDIMENT & EROSION CONTROL DETAILS
BHS-CE-2009	BULK EARTHWORKS GENERAL ARRANGEMENT PLAN
BHS-CE-2010	BULK EARTHWORKS DETAIL PLAN - SHEET 1
BHS-CE-2011	BULK EARTHWORKS DETAIL PLAN - SHEET 2
BHS-CE-2012	BULK EARTHWORKS LONGITUDINAL SECTIONS
BHS-CE-2015	AG PLOT - BULK EARTHWORKS PLAN
BHS-CE-2016	AG PLOT - BULK EARTHWORKS LONGITUDINAL SECTIONS
BHS-CE-2030	GENERAL ARRANGEMENTS PLAN
BHS-CE-2031	STORMWATER DRAINAGE PLAN - SHEET 1
BHS-CE-2032	STORMWATER DRAINAGE PLAN - SHEET 2
BHS-CE-2034	STORMWATER DRAINAGE PLAN - SHEET 3
BHS-CE-2035	STORMWATER DRAINAGE PLAN - SHEET 4
BHS-CE-2051	STORMWATER DRAINAGE DETAILS SHEET 1 OF 2
BHS-CE-2052	STORMWATER DRAINAGE DETAILS SHEET 2 OF 2
BHS-CE-2059	SITEWORKS AND PAVEMENT GENERAL ARRANGEMENT PLAN
BHS-CE-2060	SITEWORKS AND PAVEMENT PLAN - SHEET 1
BHS-CE-2061	SITEWORKS AND PAVEMENT PLAN - SHEET 2
BHS-CE-2062	SITEWORKS AND PAVEMENT PLAN - SHEET 3
BHS-CE-2063	SITEWORKS AND PAVEMENT PLAN - SHEET 4
BHS-CE-2065	RETAINING WALL DETAILS
BHS-CE-2071	SITEWORKS DETAILS - SHEET 1
BHS-CE-2091	PAVEMENT DETAILS
BHS-CE-2120	ROAD CIVIL WORKS PAVING GENERAL ARRANGEMENT PLAN
BHS-CE-2121	ROAD CIVIL WORKS PAVING DETAIL PLAN SHEET 1
BHS-CE-2122	ROAD CIVIL WORKS PAVING DETAIL PLAN SHEET 2
BHS-CE-2130	ROAD CIVIL WORKS PAVING DETAIL PLAN SHEET 3
BHS-CE-2200	WOMBAT CROSSING PLAN AND DETAILS
BHS-CE-2201	ROUNDBOUT AND MISCELLANEOUS CIVIL ROAD DETAILS



LOCALITY PLAN  
SCALE N.T.S.

BUILDER

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Architect

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**Norman Disney & Young**  
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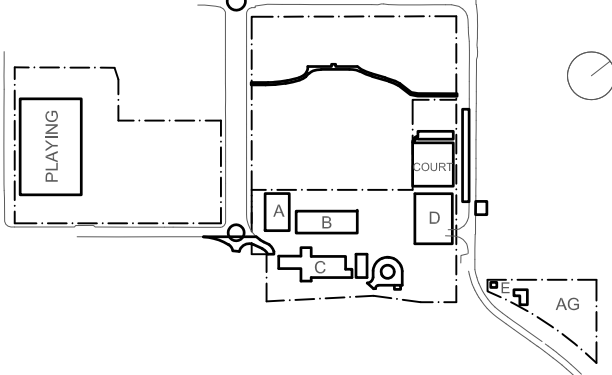
Landscape Architecture

**Context**  
T+ 61 2 8244 8900

Acoustic

**Acoustic Logic**  
T+ 61 2 8339 9000

KEY



Rev	Date	Description	Chkd	Auth.
A	24.03.21	DRAFT SCHEMATIC DESIGN		
B	16.04.21	SCHEMATIC DESIGN		
C	30.04.21	SCHEMATIC DESIGN		
D	07.05.21	SCHEMATIC DESIGN		
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G	10.12.21	ISSUED FOR DD		
H	14.02.22	GENERALLY REVISED		
I	14.07.22	ISSUED FOR RT'S REVISED DESIGN		
J	21.07.22	ISSUED FOR RT'S REVISED DESIGN		

Project

New High School in Bungendore

MAJARA STREET,  
BUNGENDORE NSW 2621

Drawing Title

DRAWING REGISTER AND  
LOCALITY PLAN

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	NTS
Drawing No.			Revision
BHS-CE-2001			J

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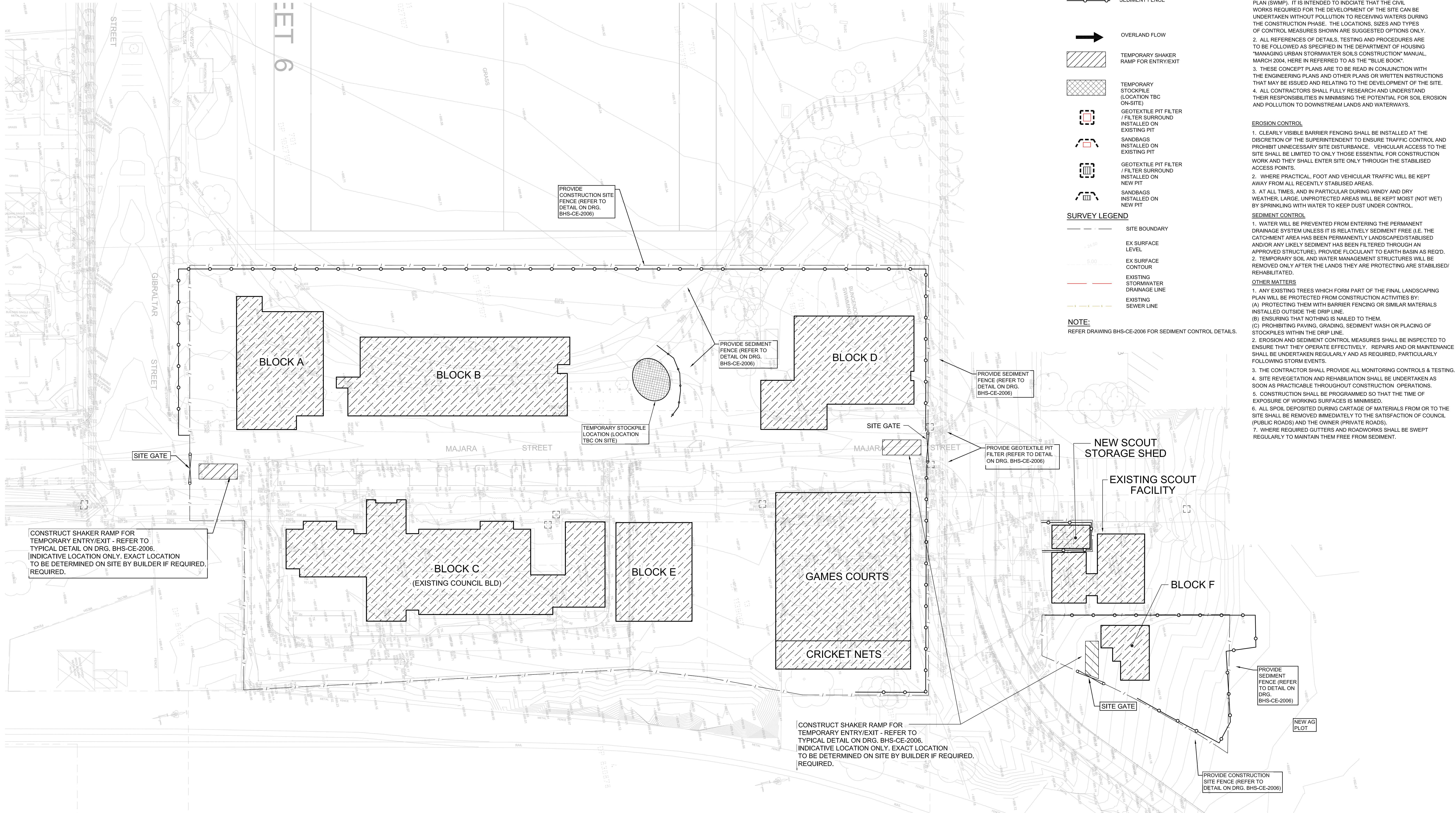
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SOIL AND WATER MANAGEMENT LEGEND

- SITE BOUNDARY FENCE
- SEDIMENT FENCE

- OVERLAND FLOW
- TEMPORARY SHAKER RAMP FOR ENTRY/EXIT
- TEMPORARY STOCKPILE (LOCATION TBC ON-SITE)
- GEOTEXTILE PIT FILTER / FILTER SURROUND INSTALLED ON EXISTING PIT
- SANDBAGS INSTALLED ON EXISTING PIT
- GEOTEXTILE PIT FILTER / FILTER SURROUND INSTALLED ON NEW PIT
- SANDBAGS INSTALLED ON NEW PIT

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EXISTING STORMWATER DRAINAGE LINE
- EXISTING SEWER LINE

NOTE:  
REFER DRAWING BHS-CE-2006 FOR SEDIMENT CONTROL DETAILS.

SOIL AND WATER MANAGEMENT NOTES

INTRODUCTORY NOTES

- THIS IS A CONCEPTUAL SOIL AND WATER MANAGEMENT PLAN (SWMP). IT IS INTENDED TO INDICATE THAT THE CIVIL WORKS REQUIRED FOR THE DEVELOPMENT OF THE SITE CAN BE UNDERTAKEN WITHOUT POLLUTION TO RECEIVING WATERS DURING THE CONSTRUCTION PHASE. THE LOCATIONS, SIZES AND TYPES OF CONTROL MEASURES SHOWN ARE SUGGESTED OPTIONS ONLY.
- ALL REFERENCES OF DETAILS, TESTING AND PROCEDURES ARE TO BE FOLLOWED AS SPECIFIED IN THE DEPARTMENT OF HOUSING "MANAGING URBAN STORMWATER SOILS CONSTRUCTION" MANUAL, MARCH 2004, HERE IN REFERRED TO AS THE "BLUE BOOK".
- THESE CONCEPT PLANS ARE TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS AND OTHER PLANS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED AND RELATING TO THE DEVELOPMENT OF THE SITE.
- ALL CONTRACTORS SHALL FULLY RESEARCH AND UNDERSTAND THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSTREAM LANDS AND WATERWAYS.

EROSION CONTROL

- CLEARLY VISIBLE BARRIER FENCING SHALL BE INSTALLED AT THE DISCRETION OF THE SUPERINTENDENT TO ENSURE TRAFFIC CONTROL AND PROHIBIT UNNECESSARY SITE DISTURBANCE. VEHICULAR ACCESS TO THE SITE SHALL BE LIMITED TO ONLY THOSE ESSENTIAL FOR CONSTRUCTION WORK AND THEY SHALL ENTER SITE ONLY THROUGH THE STABILISED ACCESS POINTS.
- WHERE PRACTICAL, FOOT AND VEHICULAR TRAFFIC WILL BE KEPT AWAY FROM ALL RECENTLY STABILISED AREAS.
- AT ALL TIMES, AND IN PARTICULAR DURING WINDY AND DRY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.

SEDIMENT CONTROL

- WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE (I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED/STABILISED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE). PROVIDE FLOCCULANT TO EARTH BASIN AS REQ'D.
- TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE STABILISED/REHABILITATED.

OTHER MATTERS

- ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:  
(A) PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE.  
(B) ENSURING THAT NOTHING IS NAILED TO THEM.  
(C) PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED TO ENSURE THAT THEY OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN REGULARLY AND AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.
- THE CONTRACTOR SHALL PROVIDE ALL MONITORING CONTROLS & TESTING.
- SITE REVEGETATION AND REHABILITATION SHALL BE UNDERTAKEN AS SOON AS PRACTICABLE THROUGHOUT CONSTRUCTION OPERATIONS.
- CONSTRUCTION SHALL BE PROGRAMMED SO THAT THE TIME OF EXPOSURE OF WORKING SURFACES IS MINIMISED.
- ALL SPOIL DEPOSITED DURING CARTAGE OF MATERIALS FROM OR TO THE SITE SHALL BE REMOVED IMMEDIATELY TO THE SATISFACTION OF COUNCIL (PUBLIC ROADS) AND THE OWNER (PRIVATE ROADS).
- WHERE REQUIRED GUTTERS AND ROADWORKS SHALL BE SWEEPED REGULARLY TO MAINTAIN THEM FREE FROM SEDIMENT.

SEDIMENT AND EROSION CONTROL PLAN  
SCALE 1:400

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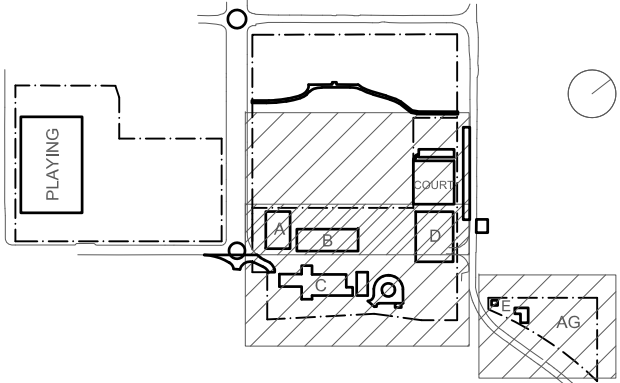
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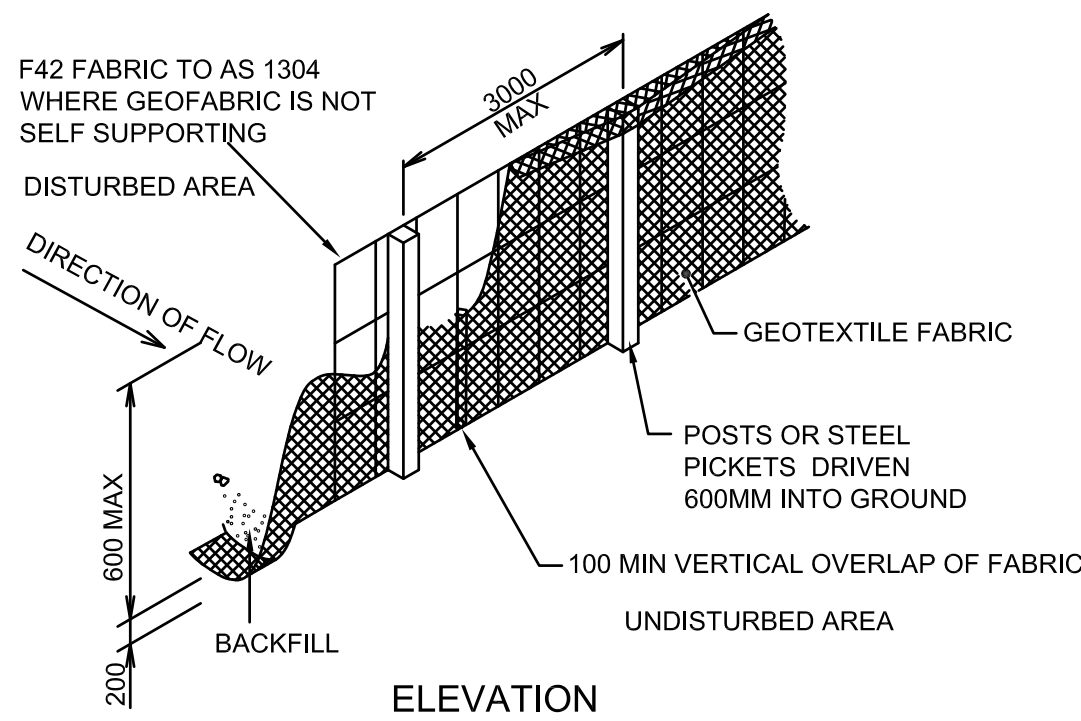
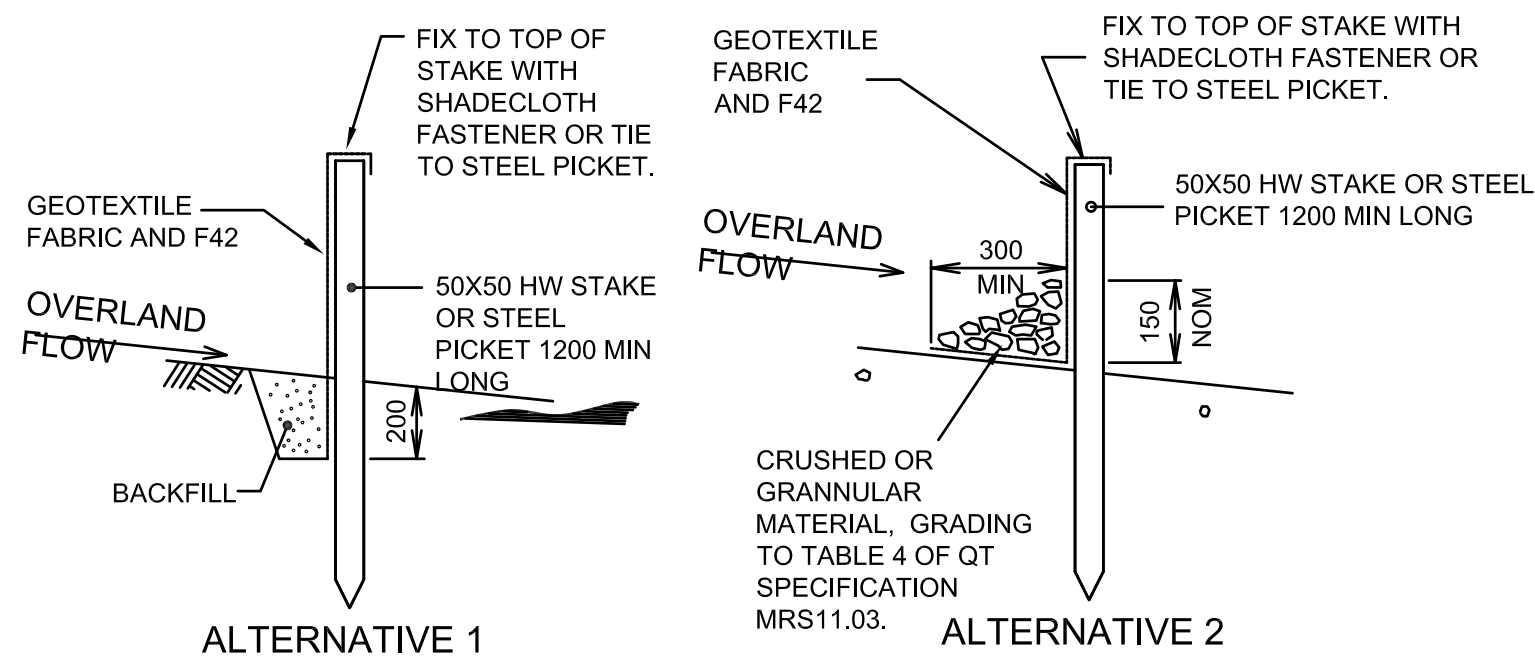
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I	14.07.22	ISSUED FOR RTS REVISED DESIGN		

Project  
New High School in Bungendore  
MAJARA STREET,  
BUNGENDORE NSW 2621  
Drawing Title  
**SEDIMENT & EROSION  
CONTROL PLAN**

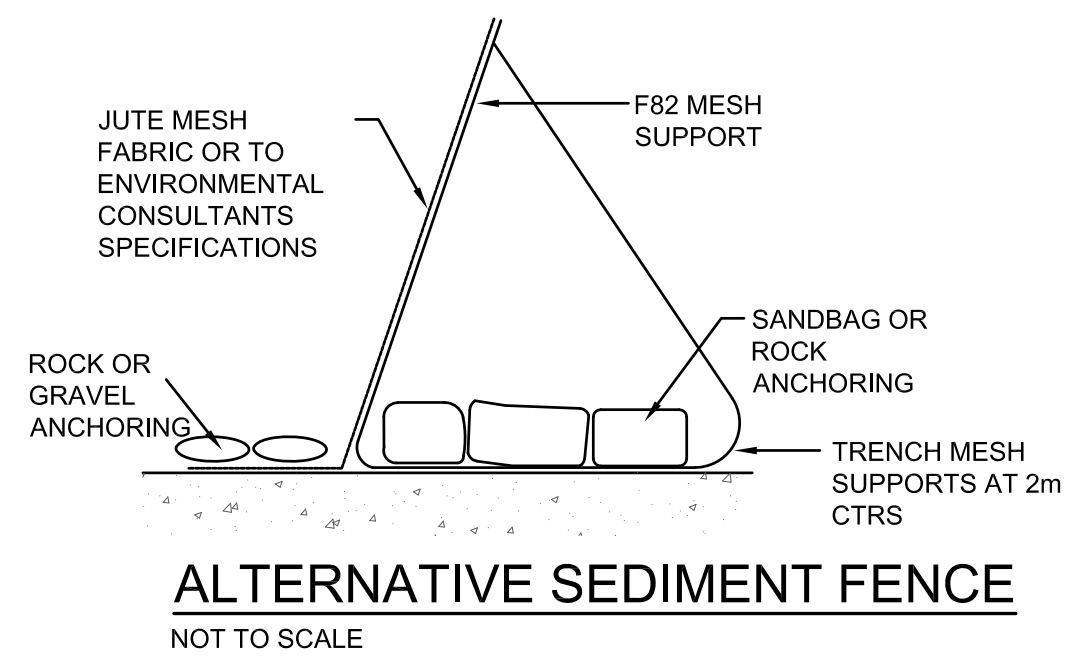
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Job No.	Status	Date	Scale
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Drawing No.	Revision		
BHS-CE-2005	I		

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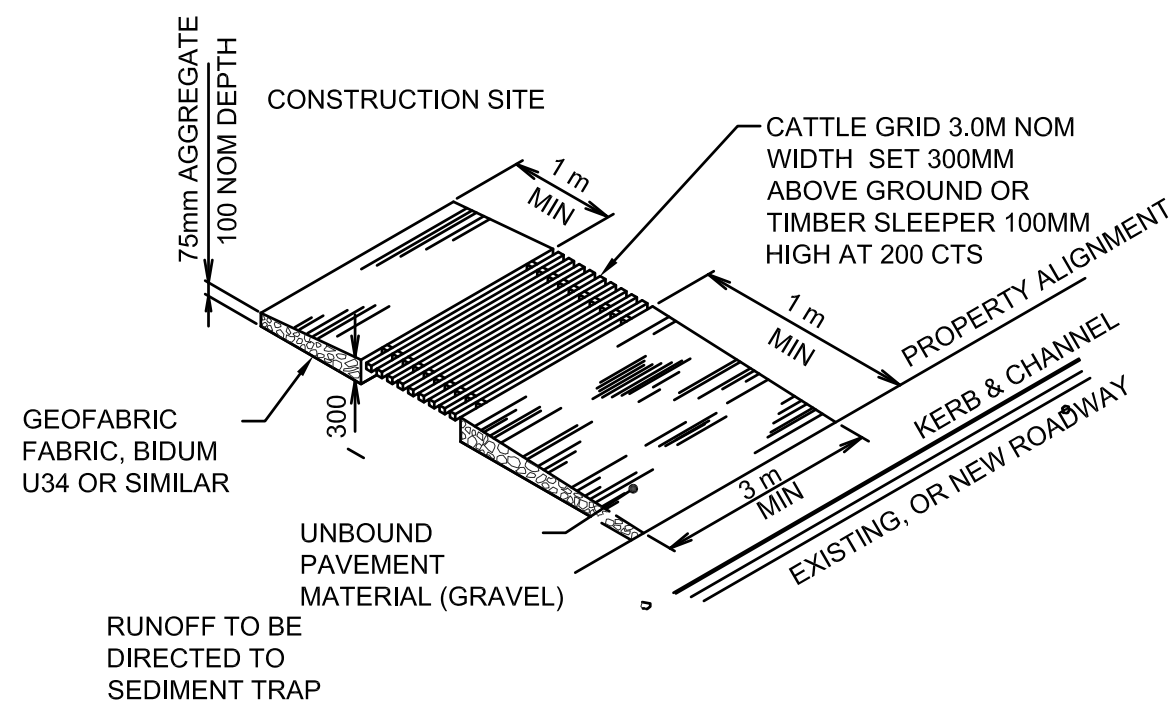


SEDIMENT FENCE  
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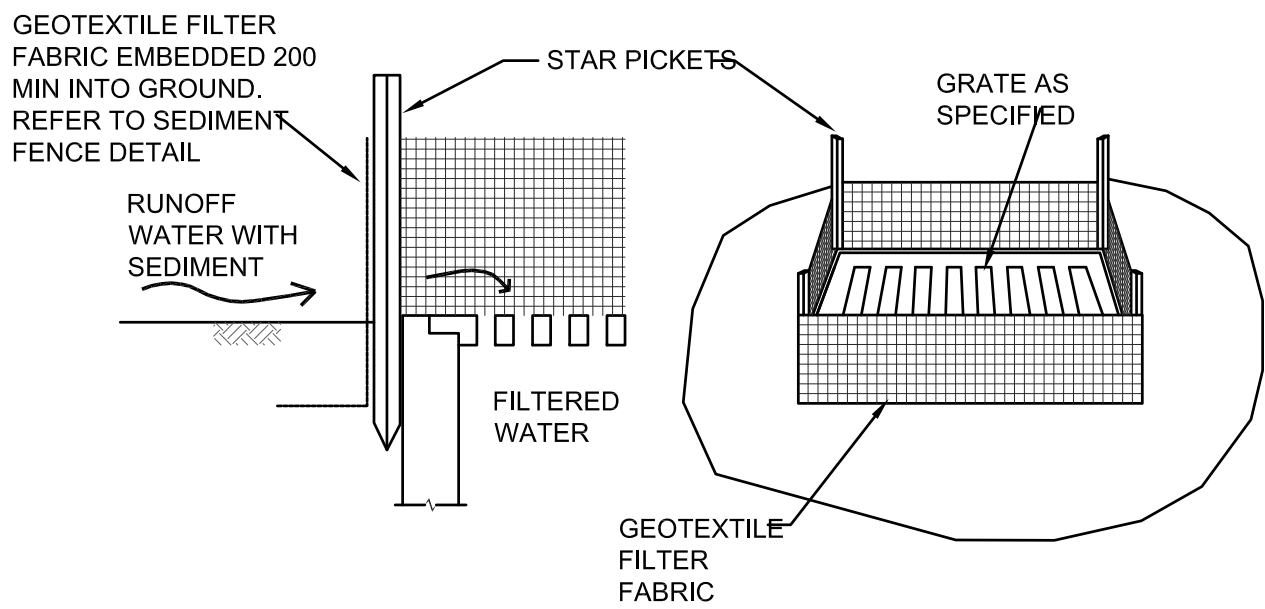


ALTERNATIVE SEDIMENT FENCE NOTES

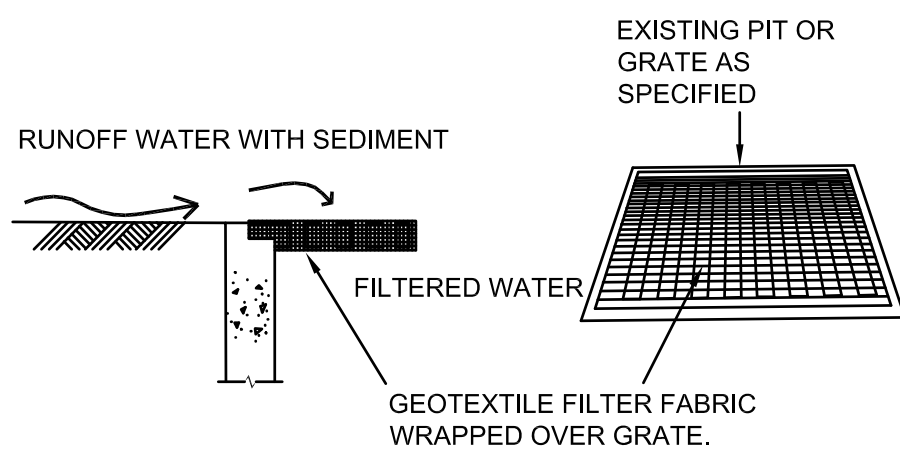
1. INSTALL THIS TYPE OF SEDIMENT FENCE WHEN USE OF SUPPORT POSTS IS NOT DESIRABLE OR NOT POSSIBLE. SUCH CONDITIONS MIGHT APPLY, FOR EXAMPLE, WHERE APPROVAL IS GRANTED FROM THE APPROPRIATE AUTHORITIES TO PLACE THESE FENCES IN HIGHLY SENSITIVE ESTUARINE AREAS.
2. USE BENT TRENCH MESH TO SUPPORT THE F82 WELDED MESH FACING AS SHOWN ON THE DRAWING ABOVE. ATTACH THE JUTE MESH TO THE WELDED MESH FACING USING UV-RESISTANT CABLE TIES.
3. STABILISE THE WHOLE STRUCTURE WITH SANDBAG OR ROCK ANCHORING OVER THE TRENCH MESH AND THE LEADING EDGE OF THE JUTE MESH. THE ANCHORING SHOULD BE SUFFICIENTLY LARGE TO ENSURE STABILITY OF THE STRUCTURE IN THE DESIGN STORM EVENT, USUALLY THE 10 YEAR EVENT.



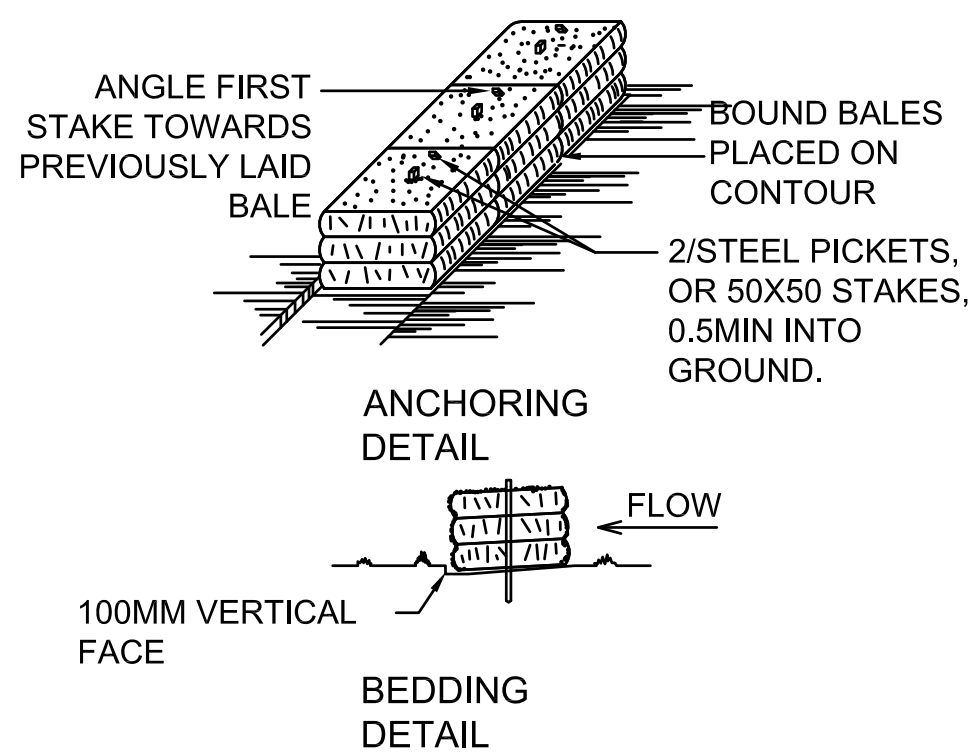
TEMPORARY CONSTRUCTION VEHICLE ENTRY/EXIT SEDIMENT TRAP  
NOT TO SCALE



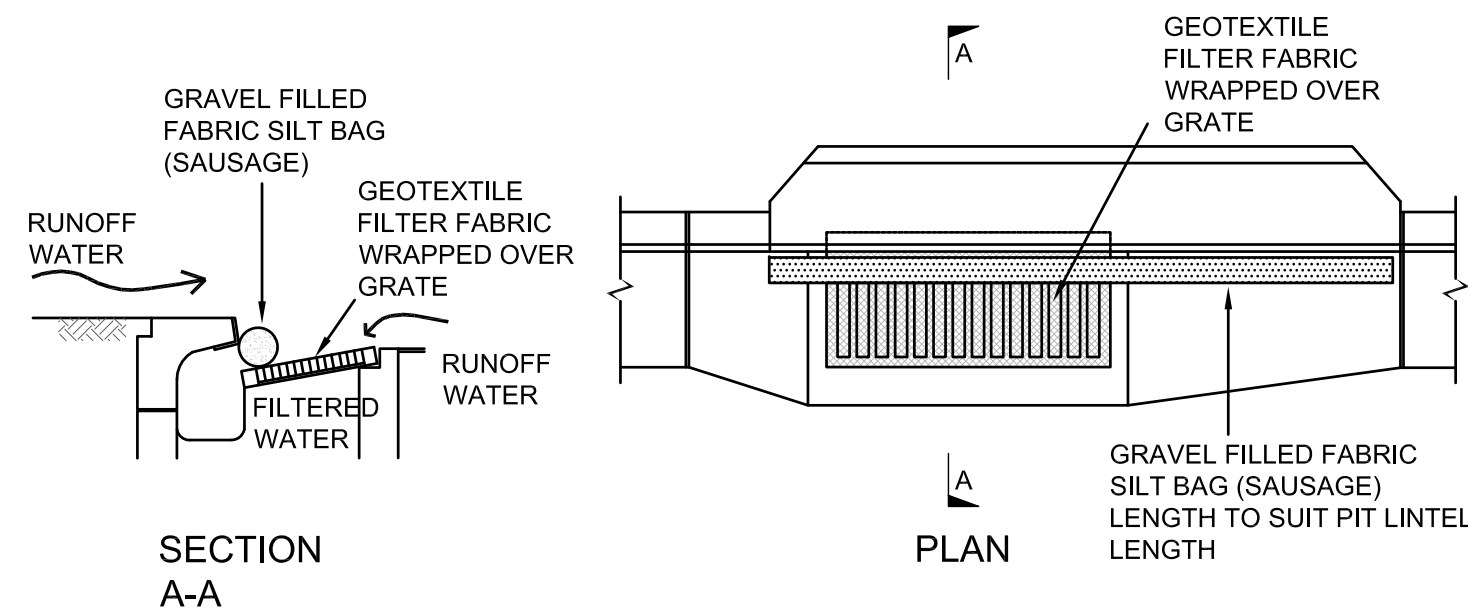
GEOTEXTILE PIT FILTER 1  
NOT TO SCALE



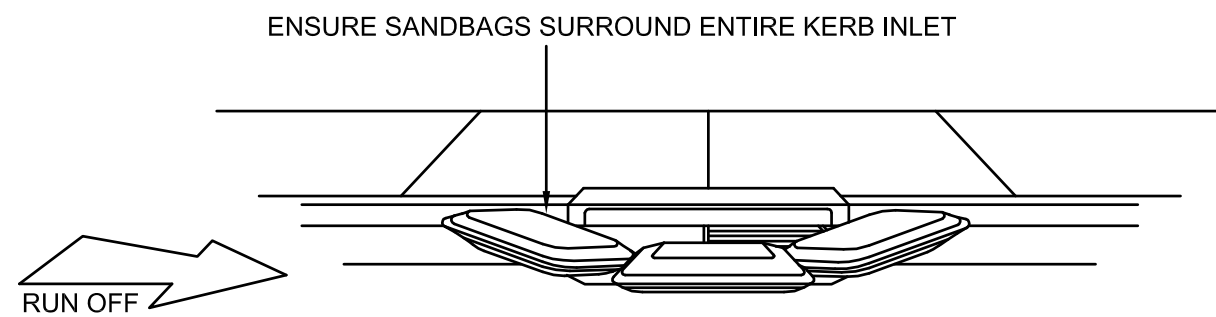
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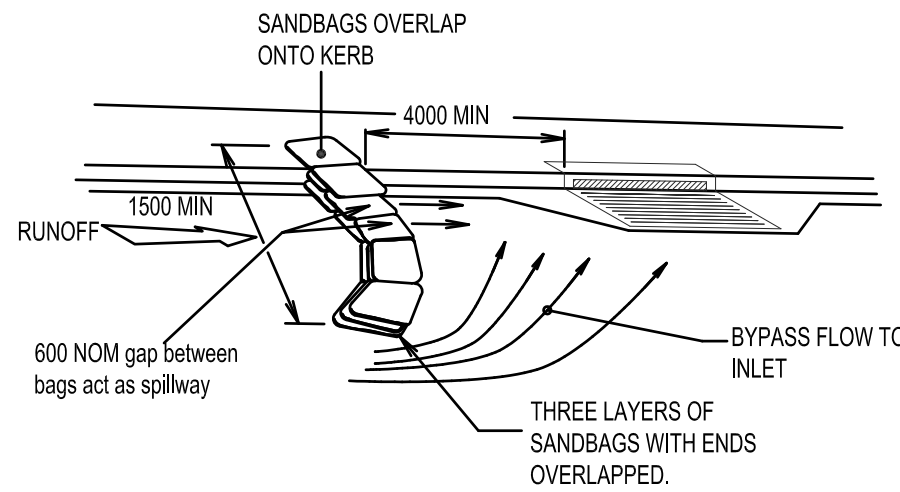
STRAW BALE BANK SEDIMENT CONTROL  
NOT TO SCALE



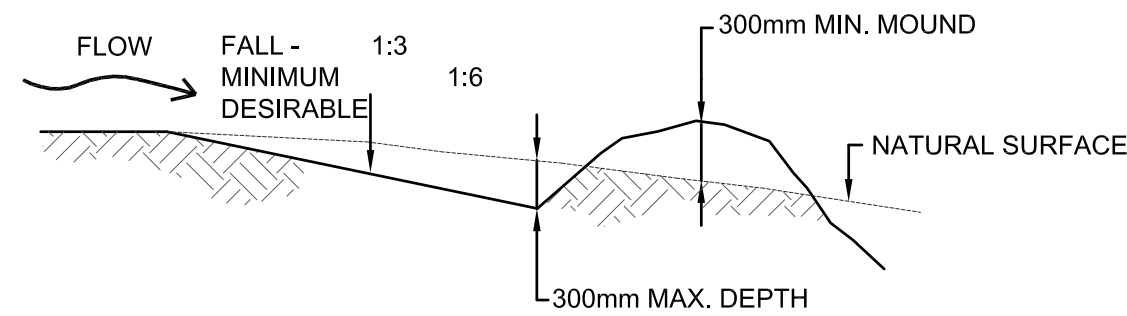
KERB INLET SEDIMENT TRAP  
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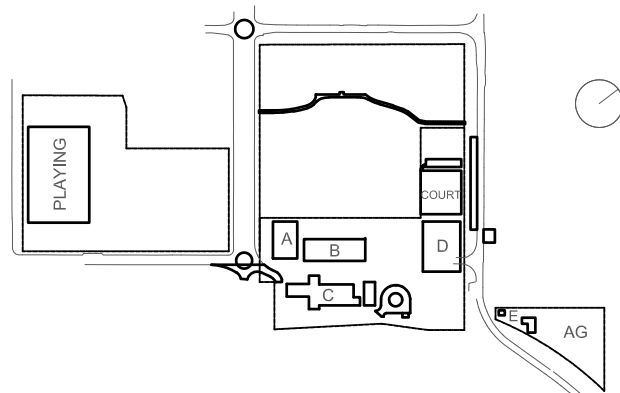
SANDBAG KERB INLET SEDIMENT TRAP  
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Project  
New High School in Bungendore

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BUNGENDORE NSW 2621

Drawing Title  
SEDIMENT & EROSION CONTROL DETAILS

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5555	SSDA	OCT '21	AS NOTED AT B1
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BHS-CE-2006	H		

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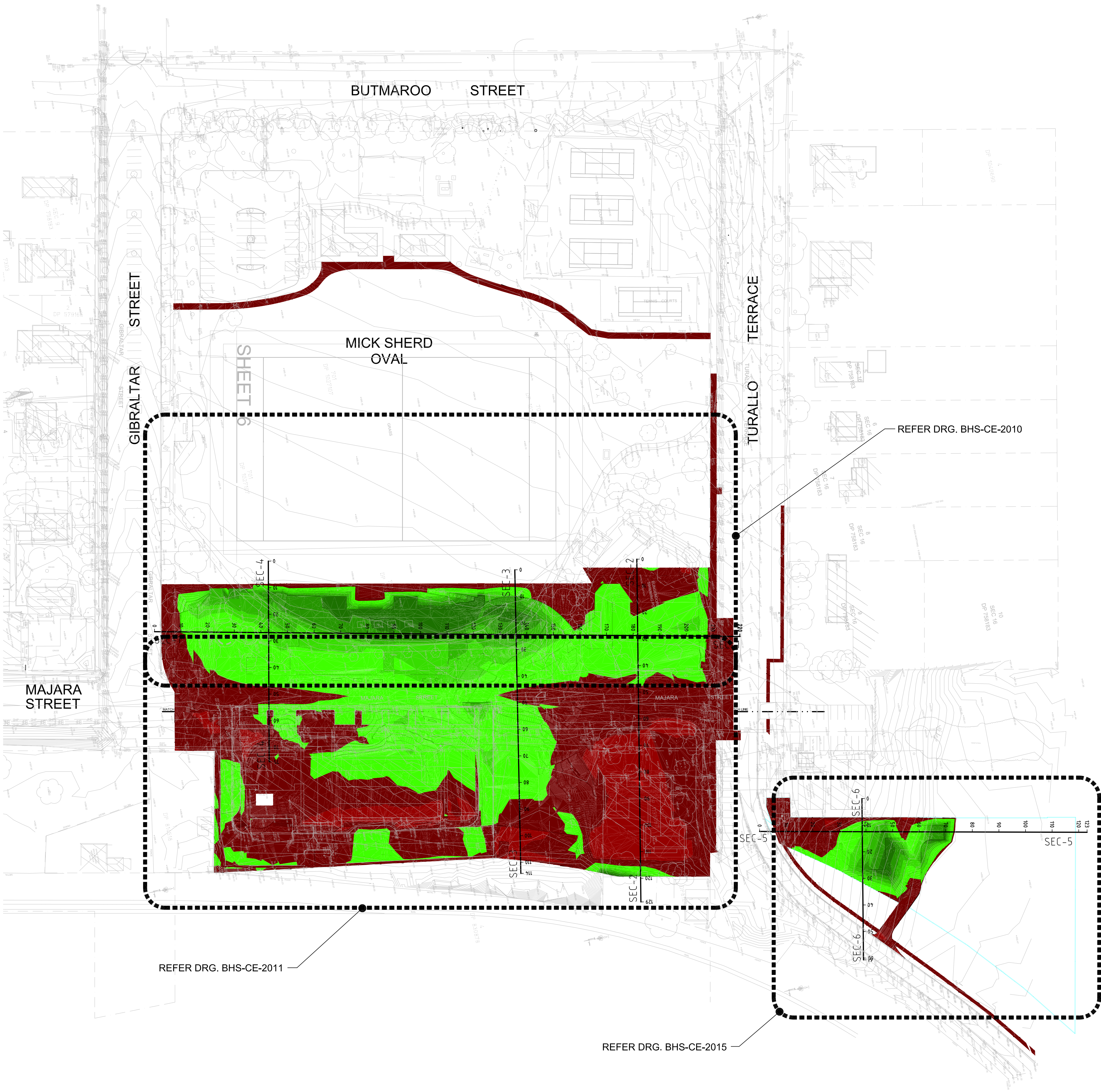
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Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1		-2.000	-1.800
2		-1.800	-1.600
3		-1.600	-1.400
4		-1.400	-1.200
5		-1.200	-1.000
6		-1.000	-0.800
7		-0.800	-0.600
8		-0.600	-0.400
9		-0.400	-0.200
10		-0.200	0.000
11		0.000	0.200
12		0.200	0.400
13		0.400	0.600
14		0.600	0.800
15		0.800	1.000
16		1.000	1.200
17		1.200	1.400

Cut/Fill Summary						
Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
VOLUME	1.000	1.000	24355.174sq.m	2995.914 Cu. M.	4081.035 Cu. M.	1085.121 Cu. M.<Fill>
Totals			24355.174sq.m	2995.914 Cu. M.	4081.035 Cu. M.	1085.121 Cu. M.<Fill>

- EXCAVATION NOTES**
- E1 VOLUMES ARE APPROXIMATE ONLY AND DO NOT INCORPORATE BULKING AND SHRINKAGE FACTORS.
  - E2 GROUND WATER SEEPAGE MAY OCCUR IN EXCAVATED AREAS. DE-WATERING MAY BE REQUIRED IN THIS INSTANCE.
  - E3 THIS DRAWING ONLY DETAILS EXCAVATION ASSOCIATED WITH THE BUILDING SLAB (IGNORING STRUCTURAL FOOTINGS, BEAMS AND COLUMNS). IN ADDITION TO MAKING NO ALLOWANCE FOR TRENCH BACKFILL, TREE ROOTBALLS OR DETAILED EXCAVATION.
  - E4 PROVIDE TEMPORARY MAXIMUM 1 IN 1 BATTERS U.N.O. GEOTECH TO CONFIRM BATTER ACCEPTABILITY DURING CONSTRUCTION.
  - E5 THE EXCAVATED MATERIAL IS TO BE TEMPORARILY STOCKPILED WITHIN THE LANDSCAPED AREAS (TO BE CONFIRMED ON-SITE) AND RE-USED USING VALIDATED MATERIALS AS LANDSCAPING SOIL BUILD-UP/BACKFILL IN ACCORDANCE WITH LANDSCAPE ARCHITECT'S AND SOIL AND WATER MANAGEMENT PLAN (SWMP).
  - E6 REFER TO ARBORIST REPORT FOR TREE PROTECTION MEASURES IF REQUIRED.
  - E7 500mm ZONE OFFSET FROM BUILDING HAS BEEN ALLOWED FOR FORM WORK.
  - E8 SITE SURVEY SUPPLIED BY 'PROJECT SURVEYORS' PTY LTD JOB REFERENCE No. B04901 DRAWING No. B04901-BUN-REV K-1 REVISION K DATED 06.06.2022.
  - E9 EARTHWORKS TO PROVIDE A BUILDING PLATFORM BENCH WITH A MINIMUM ALLOWABLE BEARING PRESSURE OF 150 kPa. GEOTECHNICAL ENGINEER TO CONFIRM.
  - E10 ALL EARTHWORKS TO COMPLY WITH AS 3798-2007 GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS.
  - E11 LEVEL 2 INSPECTION AND TESTING OF EARTHWORKS TO AS 3798-2007.

**NOTE:**  
EXCESS FILL TO BE REUSED ON SITE

**BULK EXCAVATION GENERAL ARRANGEMENT PLAN**  
SCALE 1:750

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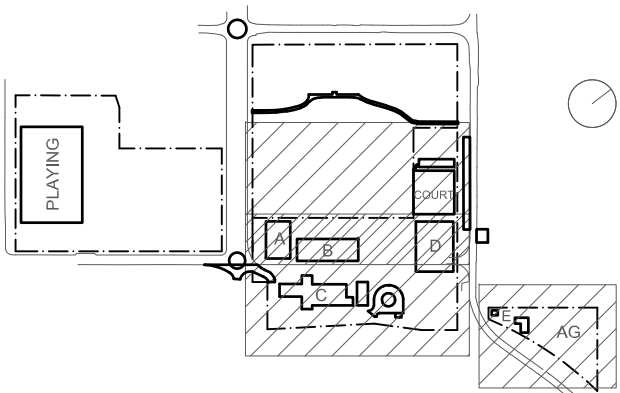
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**KEY**



Rev	Date	Description	Chkd	Auth.
A	14.12.21	ISSUED FOR DD		
B	14.02.22	GENERALLY REVISED		
C	14.07.22	ISSUED FOR RTS REVISED DESIGN		

**Project**  
New High School in Bungendore

**Drawing Title**  
BULK EARTHWORKS  
GENERAL ARRANGEMENT  
PLAN

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:750

**Drawing No.**  
BHS-CE-2009

**Revision**  
C

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(PO Box 1656, NSW 2059)

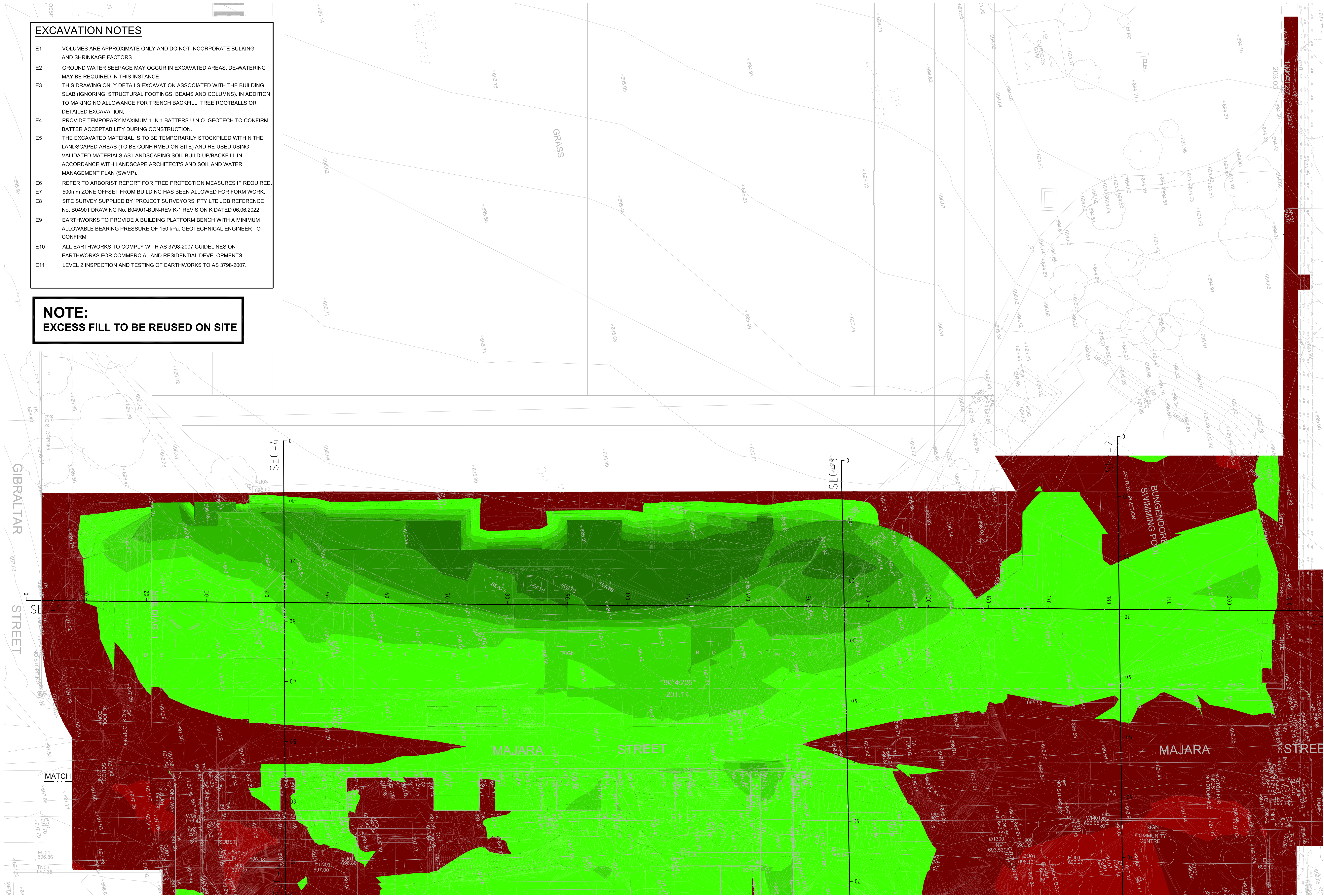


EXCAVATION NOTES

- E1 VOLUMES ARE APPROXIMATE ONLY AND DO NOT INCORPORATE BULKING AND SHRINKAGE FACTORS.
- E2 GROUND WATER SEEPAGE MAY OCCUR IN EXCAVATED AREAS. DE-WATERING MAY BE REQUIRED IN THIS INSTANCE.
- E3 THIS DRAWING ONLY DETAILS EXCAVATION ASSOCIATED WITH THE BUILDING SLAB (IGNORING STRUCTURAL FOOTINGS, BEAMS AND COLUMNS), IN ADDITION TO MAKING NO ALLOWANCE FOR TRENCH BACKFILL, TREE ROOTBALLS OR DETAILED EXCAVATION.
- E4 PROVIDE TEMPORARY MAXIMUM 1 IN 1 BATTERS U.N.O. GEOTECH TO CONFIRM BATTER ACCEPTABILITY DURING CONSTRUCTION.
- E5 THE EXCAVATED MATERIAL IS TO BE TEMPORARILY STOCKPILED WITHIN THE LANDSCAPED AREAS (TO BE CONFIRMED ON-SITE) AND RE-USED USING VALIDATED MATERIALS AS LANDSCAPING SOIL BUILD-UP/BACKFILL IN ACCORDANCE WITH LANDSCAPE ARCHITECT'S AND SOIL AND WATER MANAGEMENT PLAN (SWMP).
- E6 REFER TO ARBORIST REPORT FOR TREE PROTECTION MEASURES IF REQUIRED.
- E7 500mm ZONE OFFSET FROM BUILDING HAS BEEN ALLOWED FOR FORM WORK.
- E8 SITE SURVEY SUPPLIED BY 'PROJECT SURVEYORS' PTY LTD JOB REFERENCE No. B04901 DRAWING No. B04901-BUN-REV K-1 REVISION K DATED 06.06.2022.
- E9 EARTHWORKS TO PROVIDE A BUILDING PLATFORM BENCH WITH A MINIMUM ALLOWABLE BEARING PRESSURE OF 150 kPa. GEOTECHNICAL ENGINEER TO CONFIRM.
- E10 ALL EARTHWORKS TO COMPLY WITH AS 3798-2007 GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS.
- E11 LEVEL 2 INSPECTION AND TESTING OF EARTHWORKS TO AS 3798-2007.

NOTE:  
EXCESS FILL TO BE REUSED ON SITE

Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1		-2.000	-1.800
2		-1.800	-1.600
3		-1.600	-1.400
4		-1.400	-1.200
5		-1.200	-1.000
6		-1.000	-0.800
7		-0.800	-0.600
8		-0.600	-0.400
9		-0.400	-0.200
10		-0.200	0.000
11		0.000	0.200
12		0.200	0.400
13		0.400	0.600
14		0.600	0.800
15		0.800	1.000
16		1.000	1.200
17		1.200	1.400

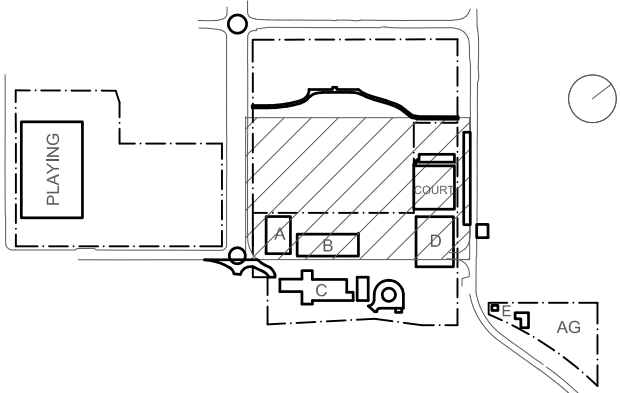


FOR CONTINUATION REFER DRG. BHS-CE-2011

PART BULK EXCAVATION PLAN

SCALE 1:250

KEY



Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
VOLUME	1.000	1.000	24355.174sq.m	2995.914 Cu. M.	4081.035 Cu. M.	1085.121 Cu. M.<Fill>
Totals			24355.174sq.m	2995.914 Cu. M.	4081.035 Cu. M.	1085.121 Cu. M.<Fill>

Rev	Date	Description	Chkd	Auth.
A	24.03.21	DRAFT SCHEMATIC DESIGN ISSUE		
B	08.04.21	SCHEMATIC DESIGN		
C	16.04.21	SCHEMATIC DESIGN		
D	30.04.21	SCHEMATIC DESIGN		
E	07.05.21	SCHEMATIC DESIGN		
F	12.05.21	SCHEMATIC DESIGN		
G	10.12.21	ISSUED FOR DD		
H	14.02.22	GENERALLY REVISED		
I	14.07.22	ISSUED FOR RT'S REVISED DESIGN		

Project  
New High School in Bungendore

MAJARA STREET  
BUNGENDORE NSW 2621

Drawing Title  
BULK EARTHWORKS  
DETAIL PLAN  
SHEET 1

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:250

Drawing No.  
BHS-CE-2010

Revision  
1

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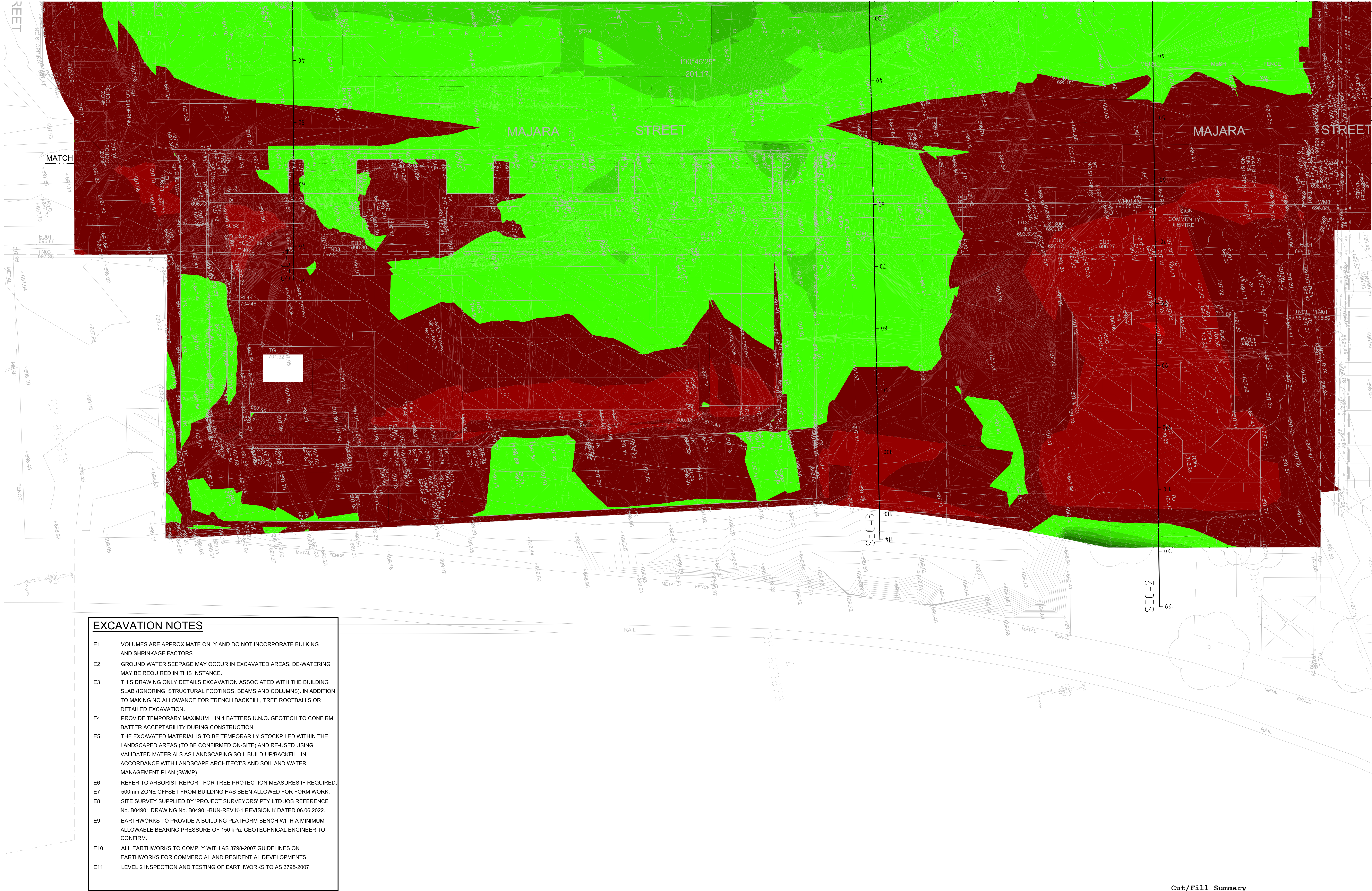
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Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1		-2.000	-1.800
2		-1.800	-1.600
3		-1.600	-1.400
4		-1.400	-1.200
5		-1.200	-1.000
6		-1.000	-0.800
7		-0.800	-0.600
8		-0.600	-0.400
9		-0.400	-0.200
10		-0.200	0.000
11		0.000	0.200
12		0.200	0.400
13		0.400	0.600
14		0.600	0.800
15		0.800	1.000
16		1.000	1.200
17		1.200	1.400

EXCAVATION NOTES

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NOTE:  
EXCESS FILL TO BE REUSED ON SITE

PART BULK EXCAVATION PLAN  
SCALE 1:250

Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
VOLUME	1.000	1.000		24355.174sq.m	2995.914 Cu. M.	4081.035 Cu. M.
Totals			24355.174sq.m	2995.914 Cu. M.	4081.035 Cu. M.	1085.121 Cu. M.<Fill>

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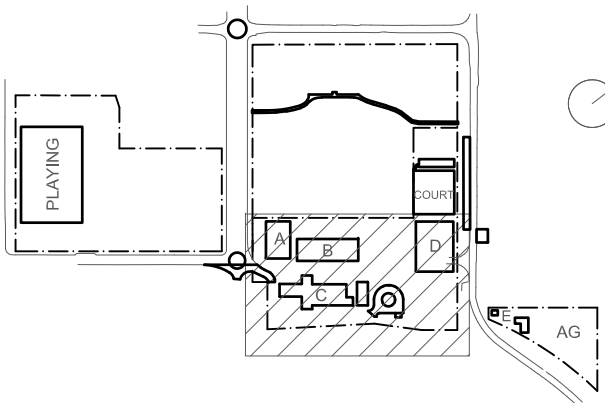
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**Context**

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Acoustic  
**Acoustic Logic**

T+ 61 2 8339 9000

KEY



Rev	Date	Description	Chkd	Auth
A	24.03.21	DRAFT SCHEMATIC DESIGN ISSUE		
B	09.04.21	SCHEMATIC DESIGN		
C	16.04.21	SCHEMATIC DESIGN		
D	30.04.21	SCHEMATIC DESIGN		
E	07.05.21	SCHEMATIC DESIGN		
F	12.05.21	SCHEMATIC DESIGN		
G	10.12.21	ISSUED FOR DD		
H	14.02.22	GENERALLY REVISED		
I	14.07.22	ISSUED FOR RT'S REVISED DESIGN		

Project  
**New High School in Bungendore**

MAJARA STREET,  
BUNGENDORE NSW 2621

Drawing Title  
**BULK EARTHWORKS  
DETAIL PLAN  
SHEET 2**

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1

Job No. 5555

Status SSDA

Date OCT '21

Scale 1:250

Drawing No. BHS-CE-2011

Revision I

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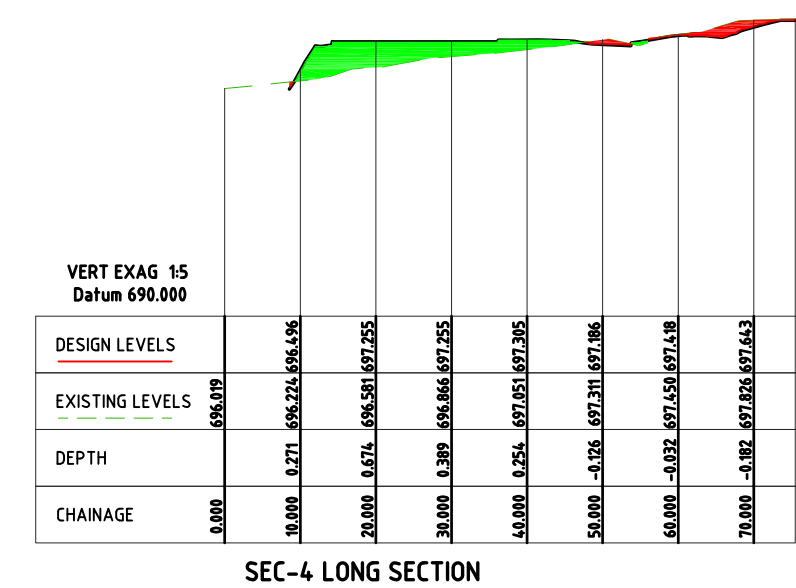
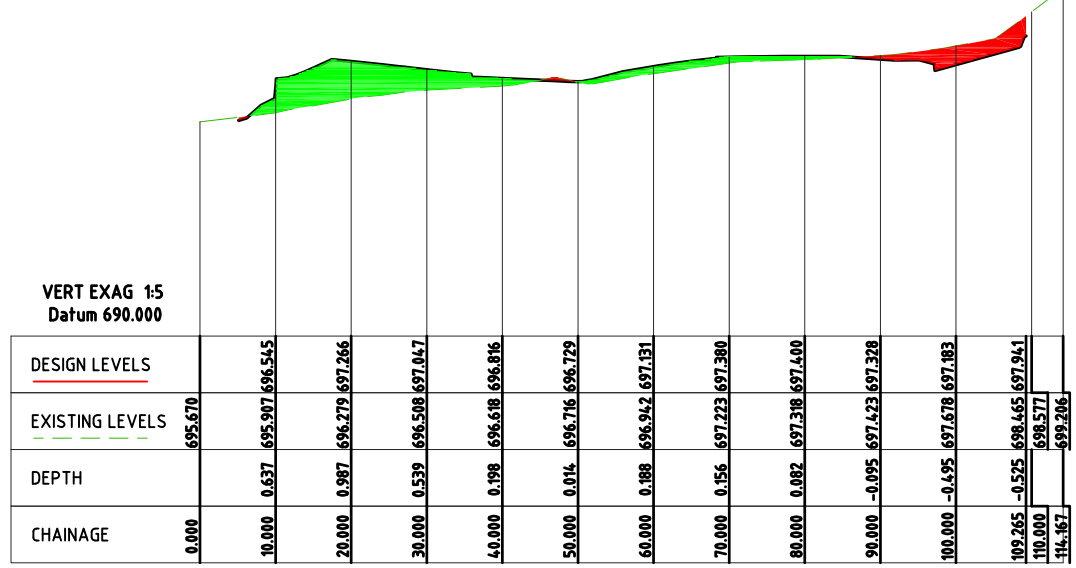
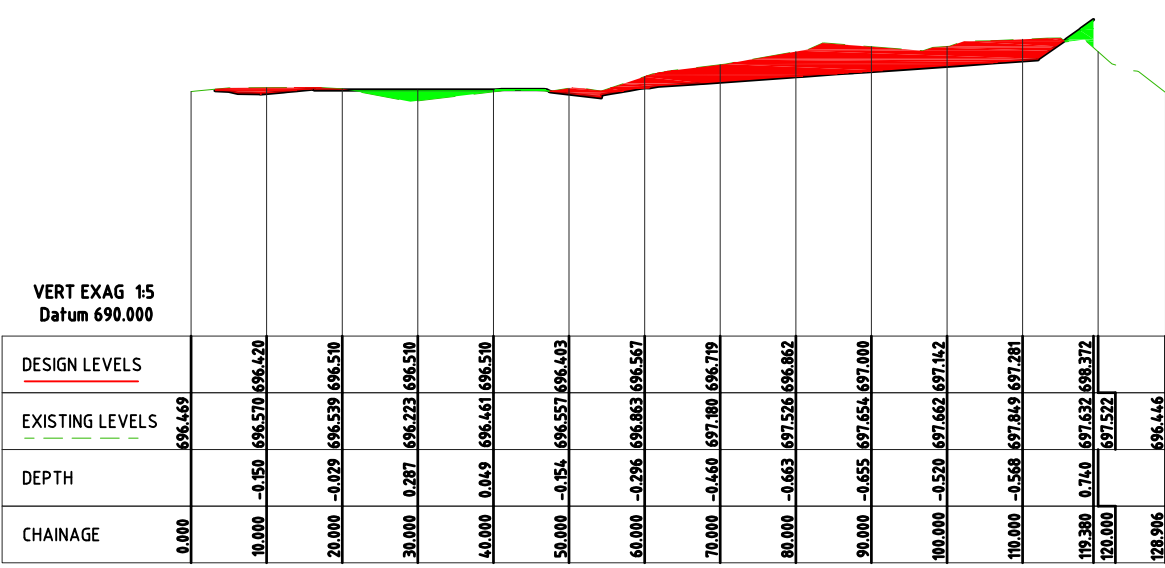
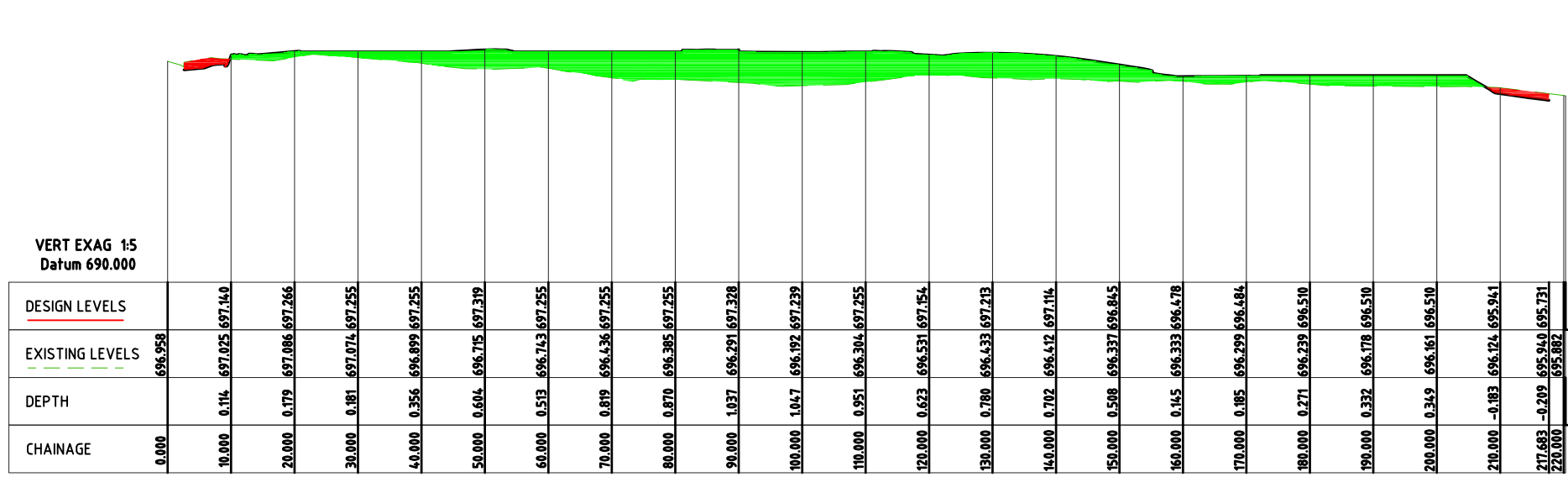
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Surface Analysis Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1	Red	-2.000	-1.800
2	Red	-1.800	-1.600
3	Red	-1.600	-1.400
4	Red	-1.400	-1.200
5	Red	-1.200	-1.000
6	Red	-1.000	-0.800
7	Red	-0.800	-0.600
8	Red	-0.600	-0.400
9	Red	-0.400	-0.200
10	Red	-0.200	0.000
11	Green	0.000	0.200
12	Green	0.200	0.400
13	Green	0.400	0.600
14	Green	0.600	0.800
15	Green	0.800	1.000
16	Green	1.000	1.200
17	Green	1.200	1.400

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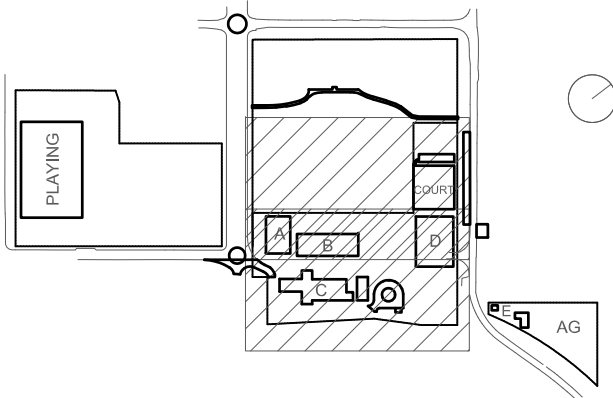
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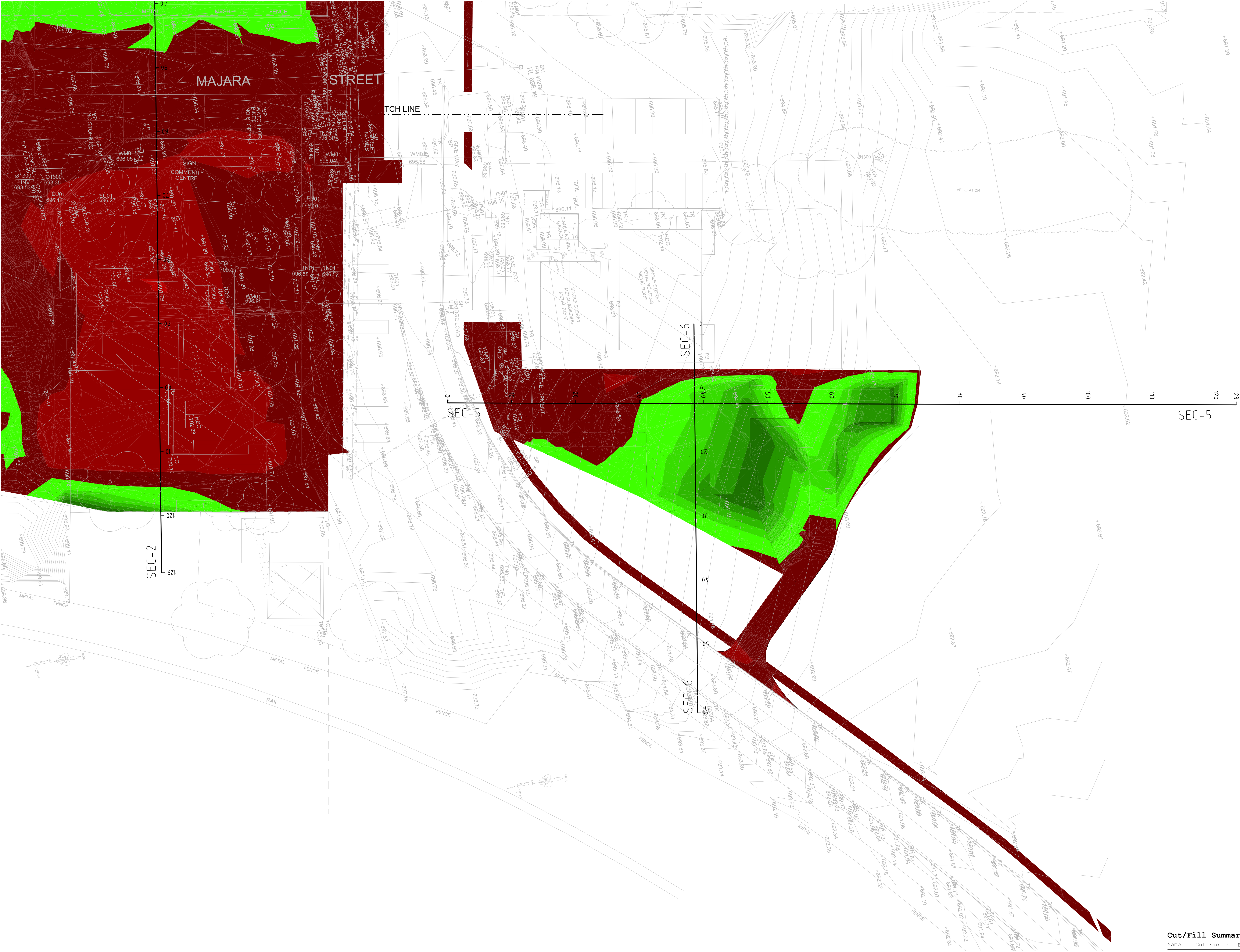
**Project**  
New High School in Bungendore  
**MAJARA STREET**  
BUNGENDORE NSW 2621  
**Drawing Title**  
BULK EARTHWORKS  
LONGITUDINAL SECTIONS

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:500
Drawing No.		Revision	
BHS-CE-2012		I	

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Member Firm  
AUSTRALIAN STEEL INSTITUTE  
REGISTERED  
AUSTRALIAN INSTITUTE  
REGISTERED





Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1		-2.000	-1800
2		-1800	-1600
3		-1600	-1400
4		-1400	-1200
5		-1200	-1000
6		-1000	-800
7		-800	-600
8		-600	-400
9		-400	-200
10		-200	0.000
11		0.000	0.200
12		0.200	0.400
13		0.400	0.600
14		0.600	0.800
15		0.800	1.000
16		1.000	1.200
17		1.200	1.400

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- E11 LEVEL 2 INSPECTION AND TESTING OF EARTHWORKS TO AS 3798-2007.

NOTE:  
EXCESS FILL TO BE REUSED ON SITE

AG PLOT BULK EXCAVATION PLAN  
SCALE 1:250

Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
VOLUME	1.000	1.000	24355.174sq.m	2995.914 Cu. M.	4081.035 Cu. M.	1085.121 Cu. M.<Fill>
Totals			24355.174sq.m	2995.914 Cu. M.	4081.035 Cu. M.	1085.121 Cu. M.<Fill>

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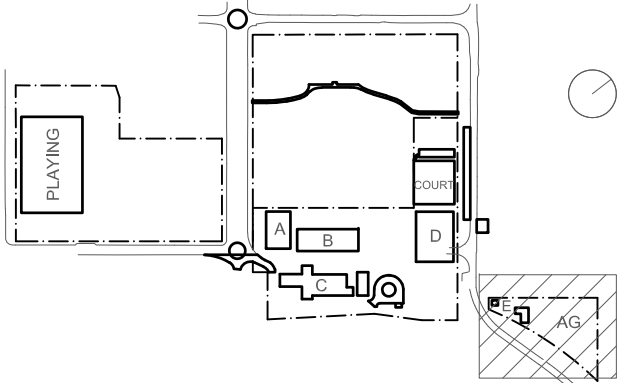
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Rev	Date	Description	Chkd	Auth.
A	11.05.21	SCHEMATIC DESIGN		
B	10.12.21	ISSUED FOR DD		
C	14.02.22	GENERALLY REISED		
D	14.07.22	ISSUED FOR RT'S REVISED DESIGN		

**Project**  
New High School in Bungendore  
MAJARA STREET,  
BUNGENDORE NSW 2621  
Drawing Title  
AG PLOT  
BULK EARTHWORKS PLAN

Designed  
MW  
Reviewed  
SCM  
Drawn  
MW  
Sheet  
B1  
Job No.  
5555  
Status  
SSDA  
Date  
OCT '21  
Scale  
1:250  
Drawing No.  
BHS-CE-2015  
Revision  
D

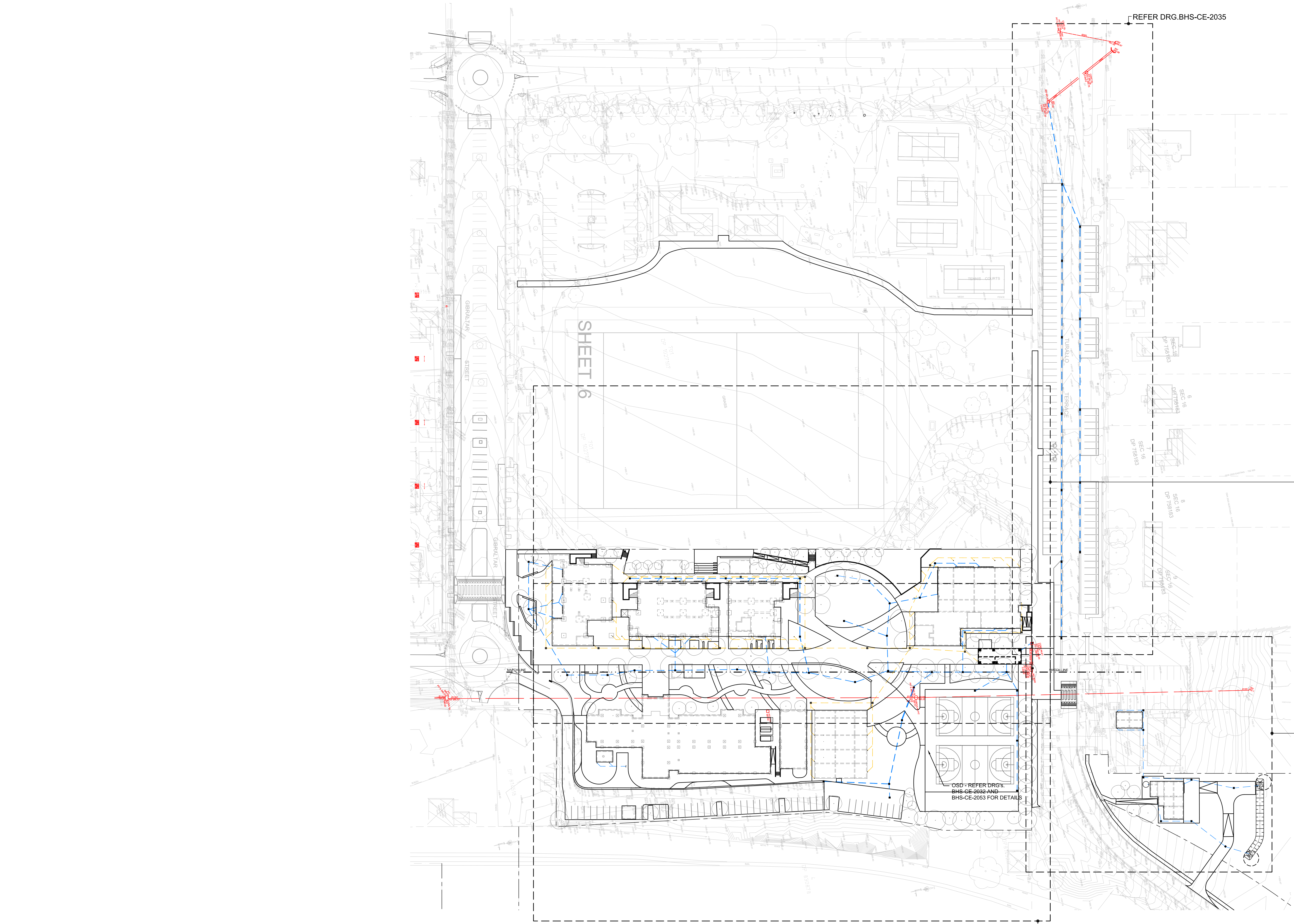
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CONSULT AUSTRALIA  
Member Firm  
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MEMBER









- DRAINAGE LEGEND**
- EXISTING SURFACE/PAVEMENT LEVEL
  - + 8.05 PROPOSED SURFACE/PAVEMENT LEVEL
  - EXISTING CONTOUR
  - PROPOSED CONTOUR
  - EXISTING STORMWATER PIPE AND PIT
  - PROPOSED UPVC STORMWATER PIPE AND JUNCTION PIT
  - PROPOSED UPVC STORMWATER PIPE AND SURFACE INLET PIT
  - PROPOSED UPVC STORMWATER PIPE AND JUNCTION PIT (DRAINING TO RW TANK)
  - PROPOSED UPVC STORMWATER PIPE AND SURFACE INLET PIT (DRAINING TO RW TANK)
  - PROPOSED 1000 SUBSOIL PIPE
  - PROPOSED DOWNPIPE
  - INVERT LEVEL OF PIPE
  - GUTTER OVERFLOW (SPITTER) INTO COURTYARD
  - PROPOSED FLUSHING POINT
  - PROPOSED SUMP POINT
  - OVERLAND FLOW PATH
  - GRATED DRAIN
  - DIRECTION OF FALL
  - FINISHED FLOOR LEVEL
  - RAINWATER OUTLET
  - CONFIRM ON SITE
  - PROPOSED SEDIMENT FENCE
  - GEOTEXTILE FABRIC TO PIT

**STORMWATER GENERAL ARRANGEMENT PLAN**  
SCALE 1:250

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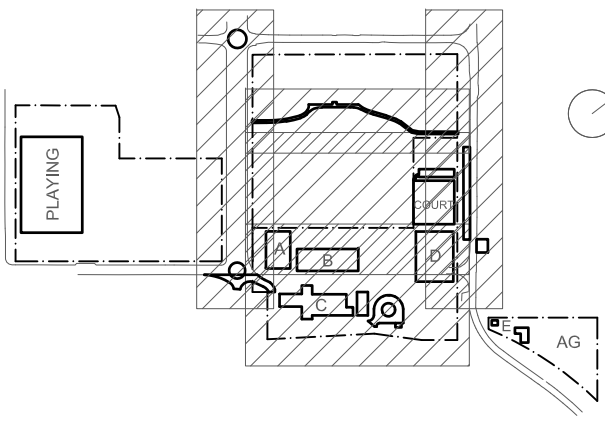
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Do not scale drawings. Verify all dimensions on site.

Rev	Date	Description	Chkd	Auth.
D	07.05.21	SCHEMATIC DESIGN		
E	12.05.21	SCHEMATIC DESIGN		
F	24.11.21	50% DD ISSUE		
G	10.12.21	ISSUED FOR DD		
H	21.12.21	ISSUED FOR DD		
I	14.02.22	GENERALLY REVISED		
J	14.07.22	ISSUED FOR RTS REVISED DESIGN		
K	21.07.22	ISSUED FOR RTS REVISED DESIGN		
L	25.07.22	ISSUED FOR RTS REVISED DESIGN		
M	27.07.22	ISSUED FOR RTS REVISED DESIGN		

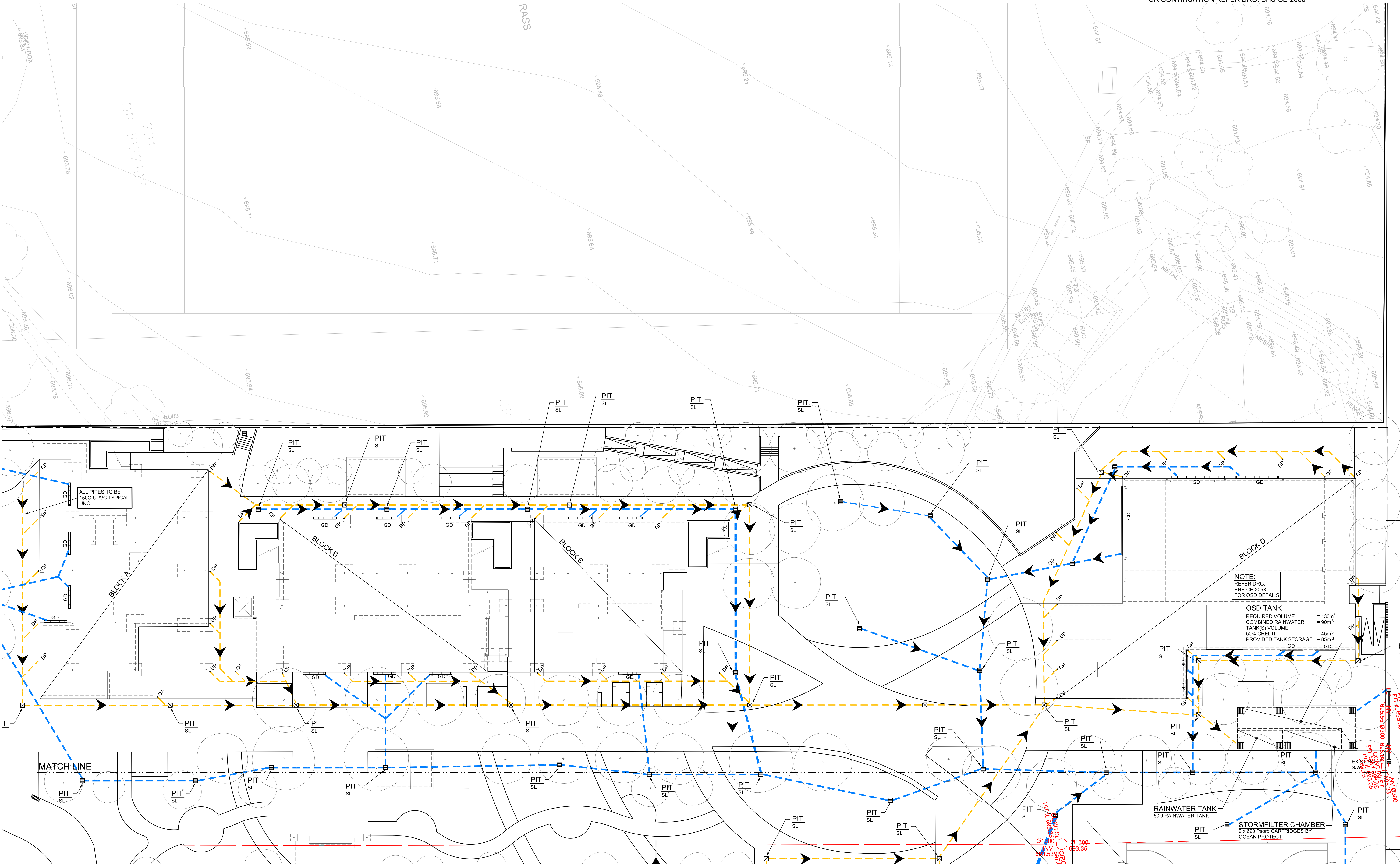
**Project**  
New High School in Bungendore  
**MAJARA STREET**  
BUNGENDORE NSW 2621  
**Drawing Title**  
**STORMWATER DRAINAGE**  
**GENERAL ARRANGEMENT**  
**PLAN**

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:250
Drawing No.			Revision
BHS-CE-2030			M

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FOR CONTINUATION REFER DRG. BHS-CE-2032

**STORMWATER DRAINAGE PLAN**

SCALE 1:200

NOTE:  
FOR DRAINAGE LEGEND REFER DRG. BHS-CE-2030.

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

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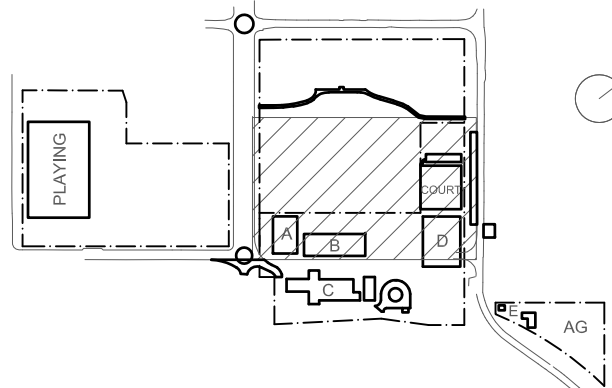
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Rev	Date	Description	Chkd	Auth.
A	24.03.21	DRAFT SCHEMATIC DESIGN ISSUE		
B	16.04.21	SCHEMATIC DESIGN		
C	30.04.21	SCHEMATIC DESIGN		
D	07.05.21	SCHEMATIC DESIGN		
E	12.05.21	SCHEMATIC DESIGN		
F	24.11.21	50% DO ISSUE		
G	10.12.21	ISSUED FOR DD		
H	21.12.21	ISSUED FOR DD		
I	14.02.22	GENERALLY REVISED		
J	14.07.22	ISSUED FOR RTS REVISED DESIGN		

**Project**  
New High School in Bungendore

MAJARA STREET,  
BUNGENDORE NSW 2621

Drawing Title  
**STORMWATER DRAINAGE  
PLAN  
SHEET 1**

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:200

Drawing No.  
**BHS-CE-2031**

Revision  
**J**

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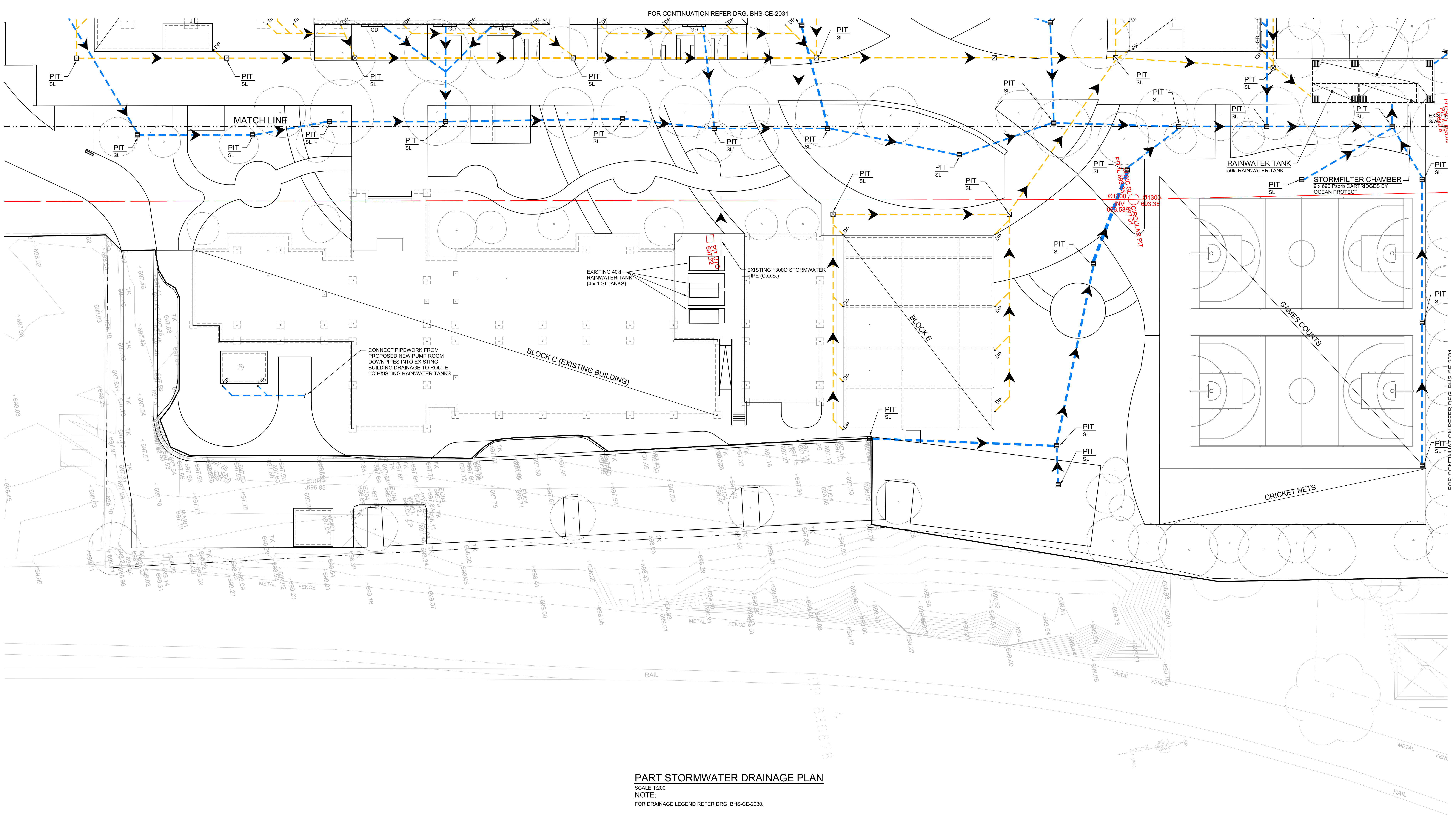
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PART STORMWATER DRAINAGE PLAN  
SCALE 1:200  
NOTE:  
FOR DRAINAGE LEGEND REFER DRG. BHS-CE-2030.

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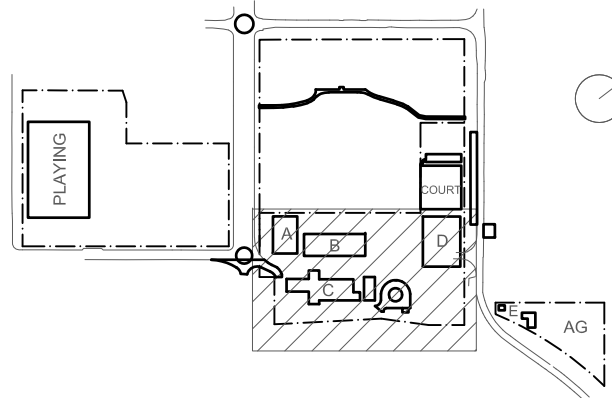
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Rev	Date	Description	Chkd	Auth.
B	16.04.21	SCHEMATIC DESIGN		
C	30.04.21	SCHEMATIC DESIGN		
D	07.05.21	SCHEMATIC DESIGN		
E	12.05.21	SCHEMATIC DESIGN		
F	11.06.21	SCHEMATIC DESIGN		
G	24.11.21	50% DO ISSUE		
H	10.12.21	ISSUED FOR DD		
I	21.12.21	ISSUED FOR DD		
J	14.02.22	GENERALLY REVISED		
K	14.07.22	ISSUED FOR RTS REVISED DESIGN		

**Project**  
New High School in Bungendore  
MAJARA STREET,  
BUNGENDORE NSW 2621  
**Drawing Title**  
STORMWATER DRAINAGE  
PLAN  
SHEET 2

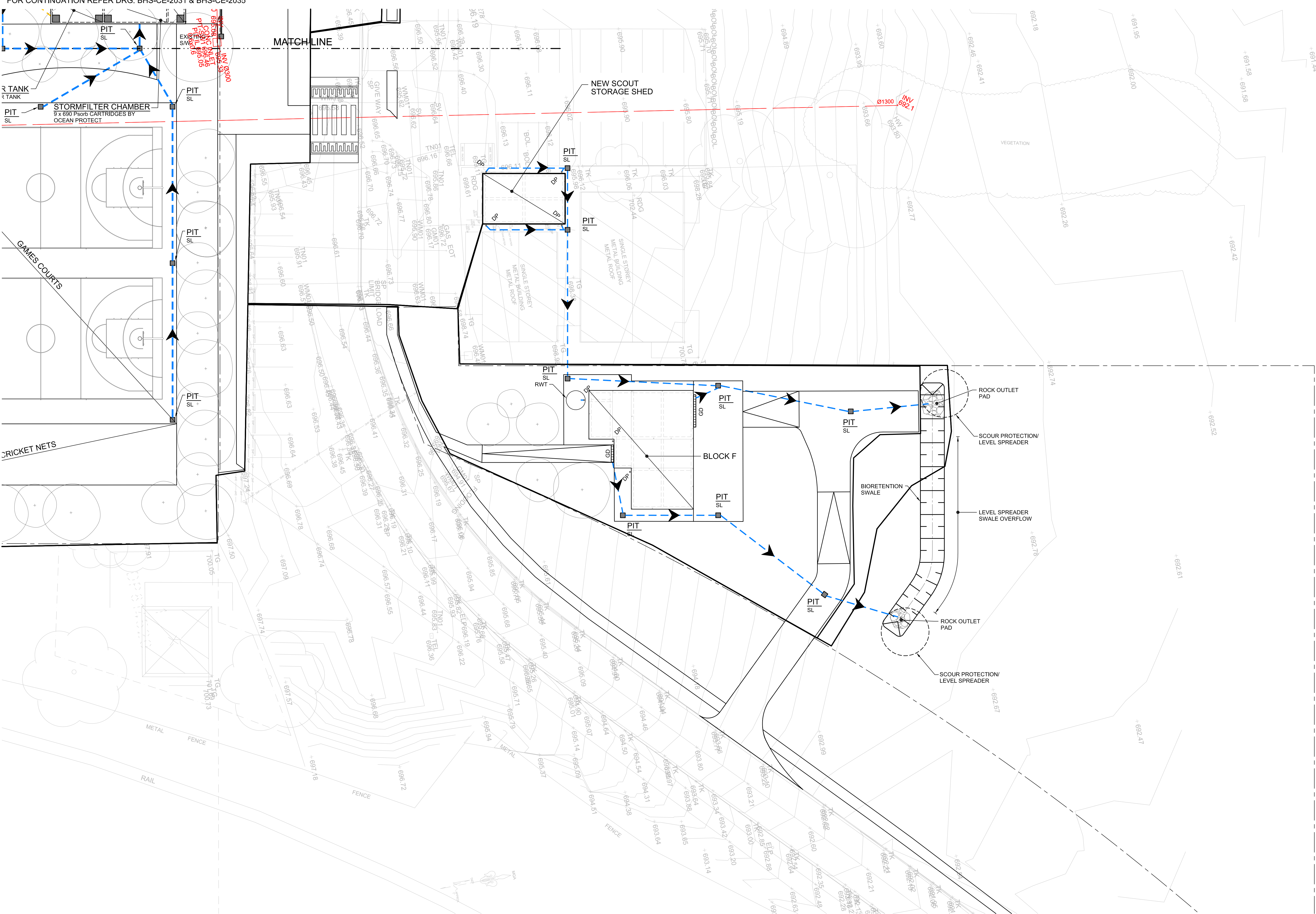
Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:200
<b>Drawing No.</b>	<b>BHS-CE-2032</b>	<b>Revision</b>	<b>K</b>

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FOR CONTINUATION REFER DRG. BHS-CE-2031 & BHS-CE-2032



**PART STORMWATER DRAINAGE PLAN**

SCALE 1:200

**NOTE:**

FOR DRAINAGE LEGEND REFER DRG. BHS-CE-2030.

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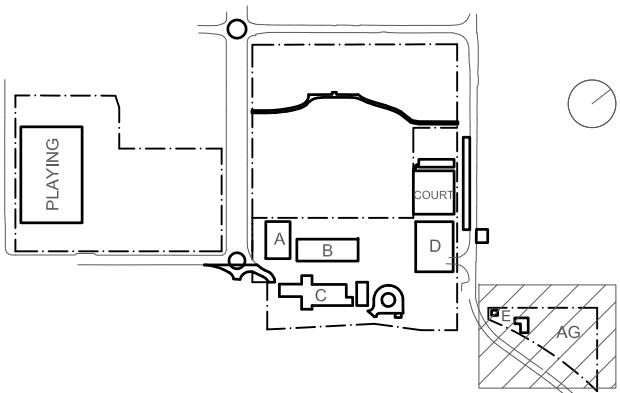
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Rev	Date	Description	Chkd	Auth.
A	30.04.21	SCHEMATIC DESIGN		
B	07.05.21	SCHEMATIC DESIGN		
C	07.05.21	SCHEMATIC DESIGN		
D	12.05.21	SCHEMATIC DESIGN		
E	10.12.21	ISSUED FOR DD		
F	14.12.21	DRG. NUMBER REVISED - ISSUED FOR DD		
G	21.12.21	ISSUED FOR DD		
H	14.02.22	GENERALLY REVISED		
I	14.07.22	ISSUED FOR RTS REVISED DESIGN		

Project  
New High School in Bungendore

MAJARA STREET  
BUNGENDORE NSW 2621

Drawing Title  
**STORMWATER DRAINAGE**  
**PLAN**  
**SHEET 3**

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:200

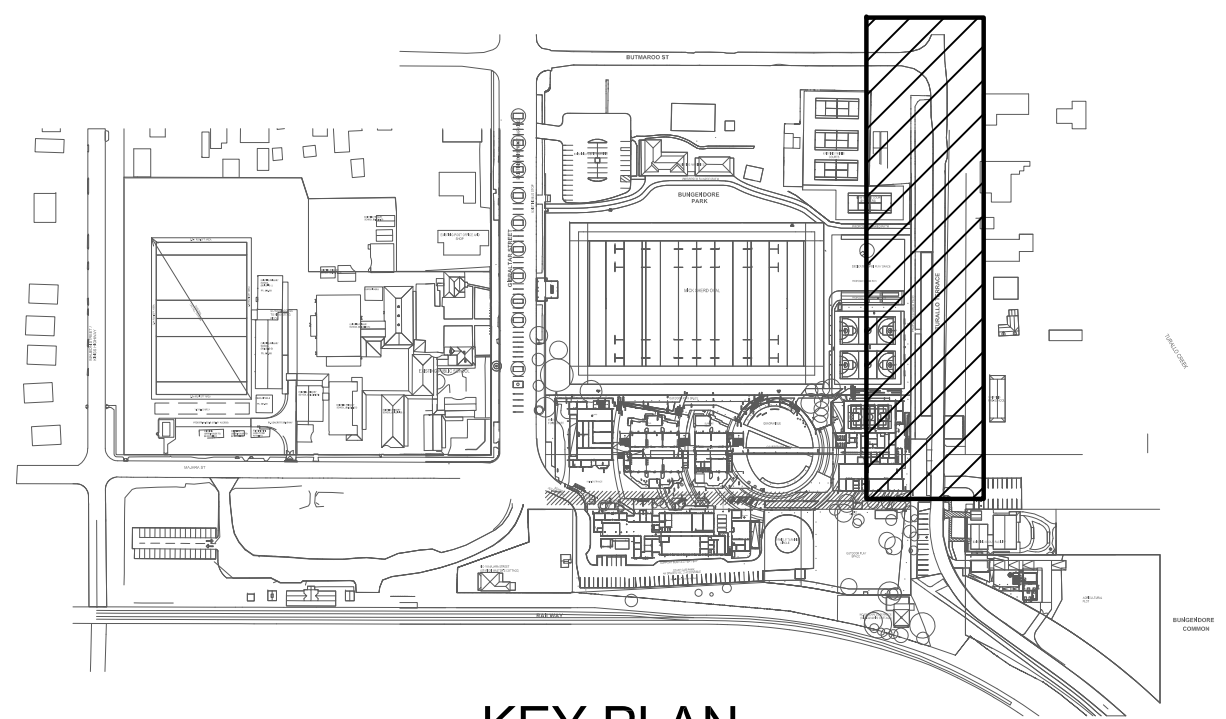
Drawing No.  
**BHS-CE-2034**

Revision  
**I**

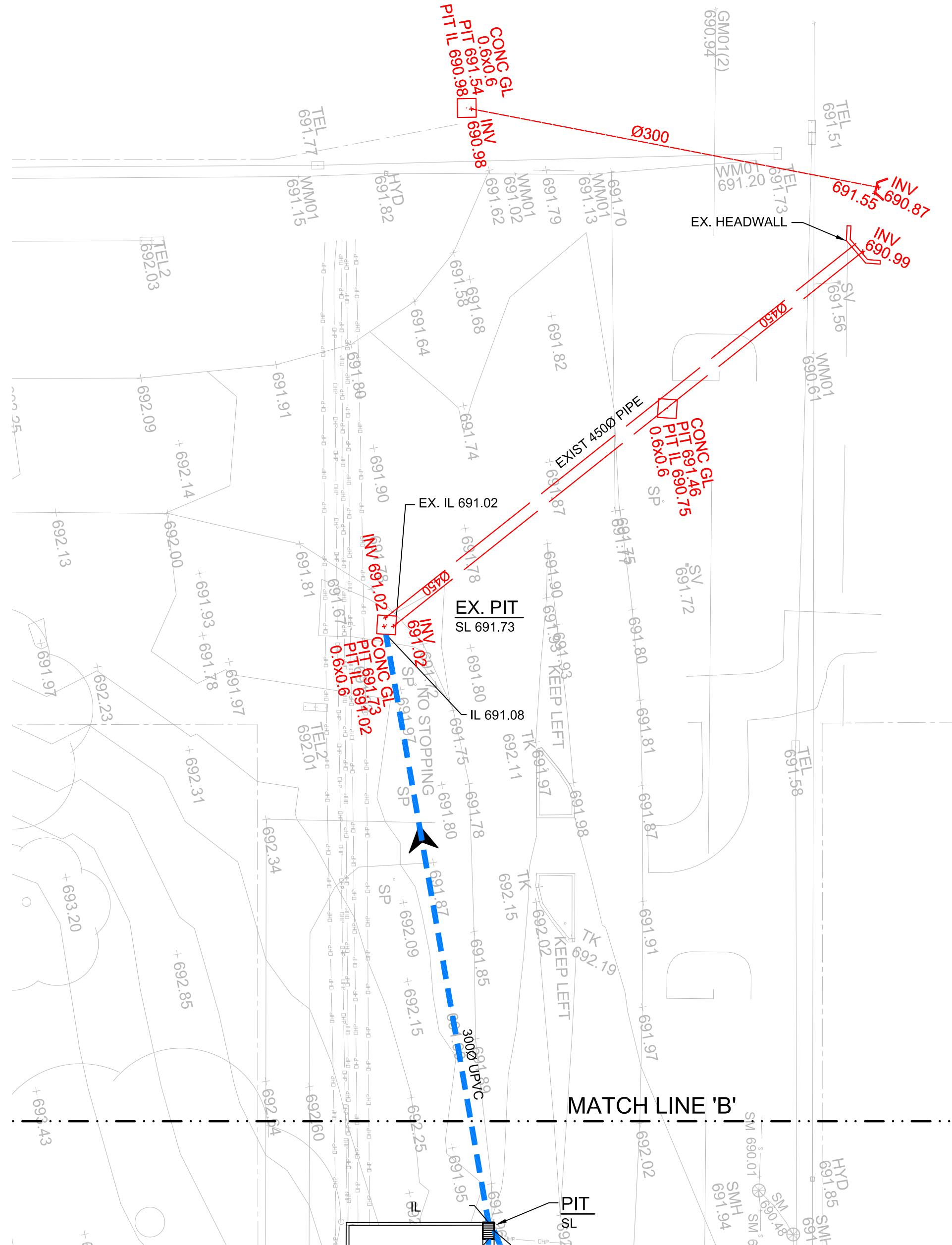
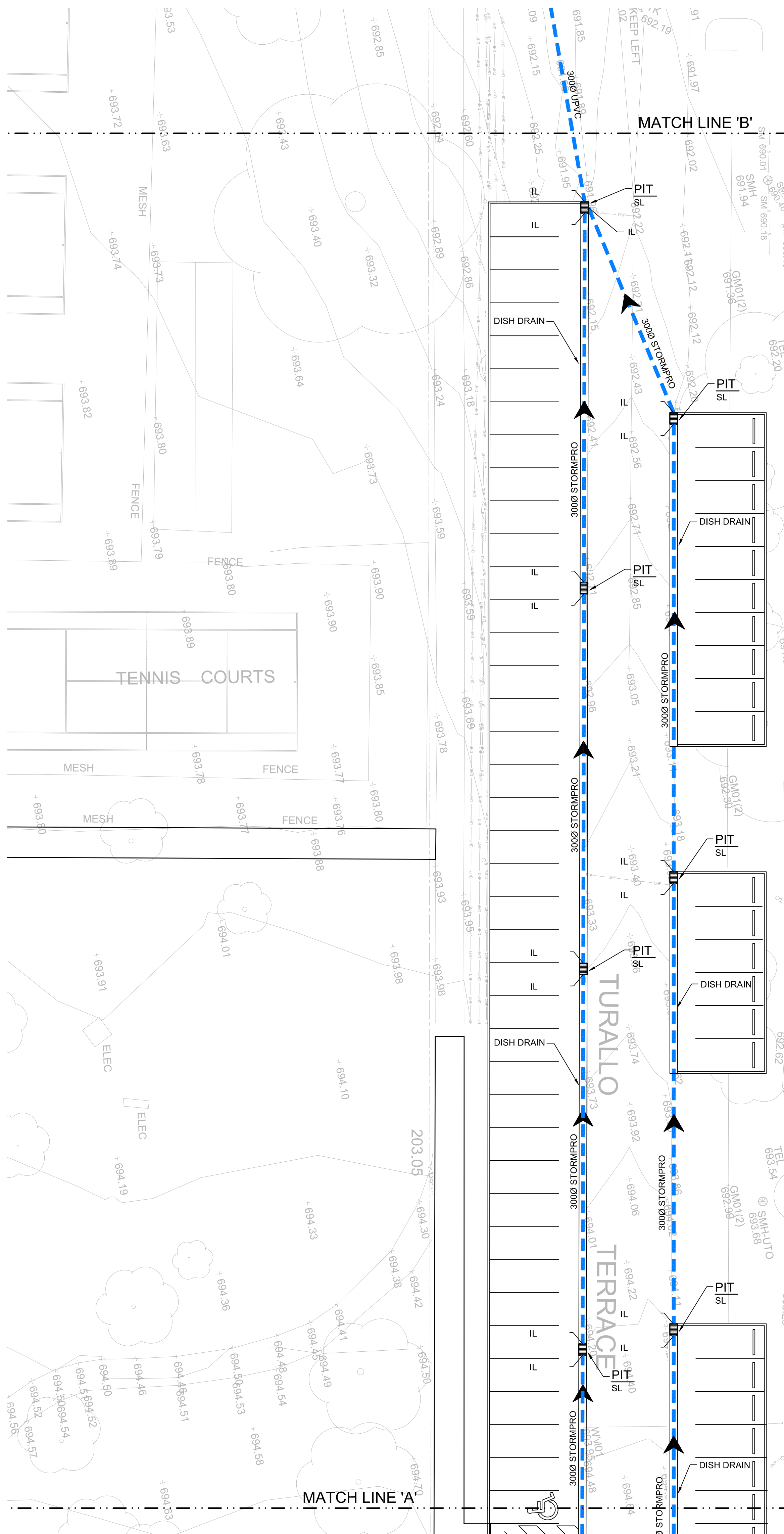
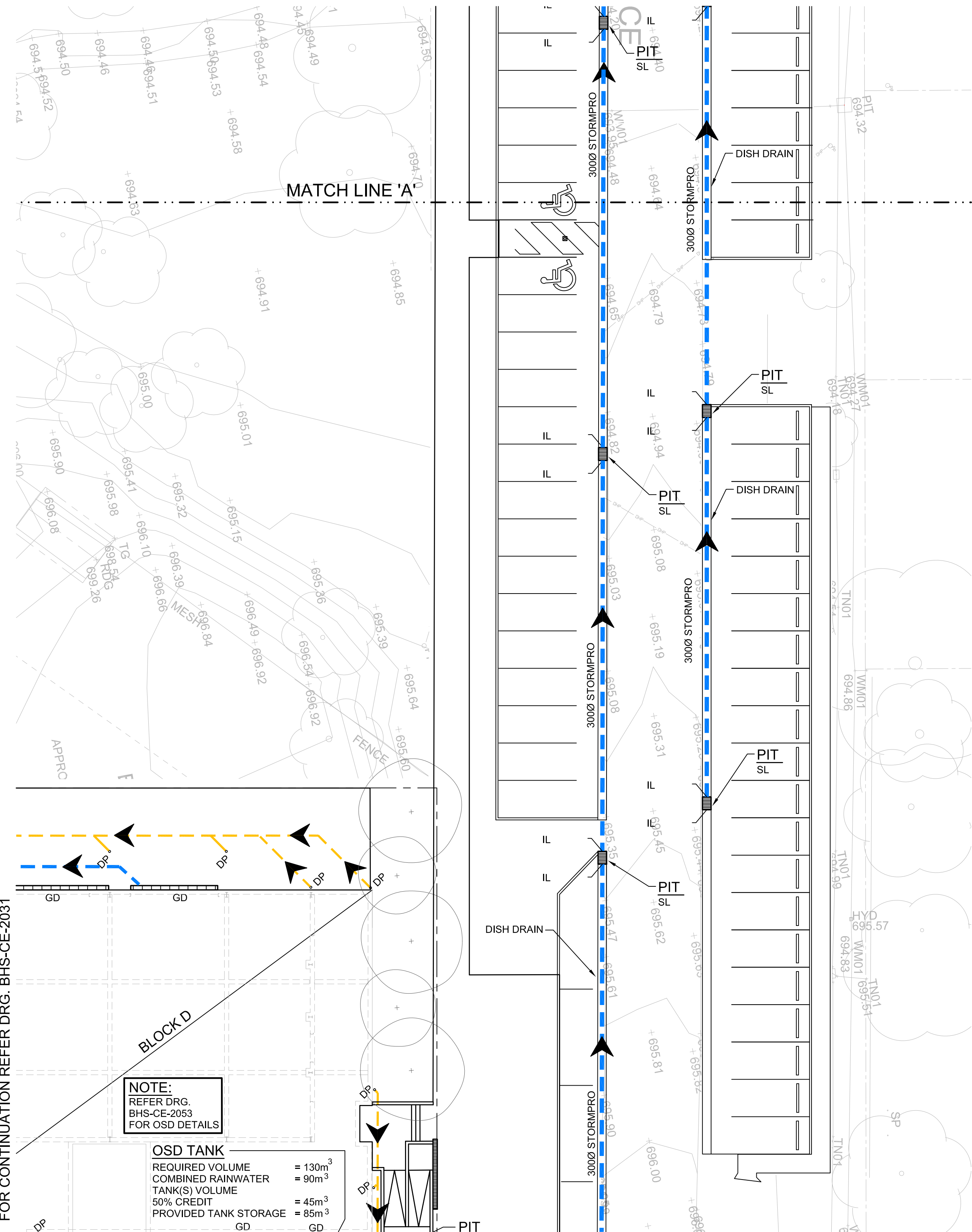
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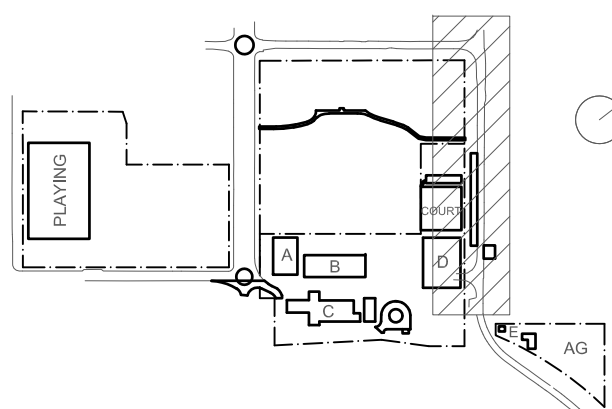
KEY PLAN  
NTS.



STORMWATER DRAINAGE PLAN  
SCALE 1:200

NOTE:  
FOR DRAINAGE LEGEND REFER DRG. BHS-CE-2030.

KEY



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Rev	Date	Description	Chkd	Auth
A	10.12.21	ISSUED FOR DD		
B	21.12.21	ISSUED FOR DD		
C	14.02.22	GENERALLY REVISED		
D	15.02.22	GENERALLY REVISED		
E	14.07.22	ISSUED FOR RTS REVISED DESIGN		
F	27.07.22	ISSUED FOR RTS REVISED DESIGN		

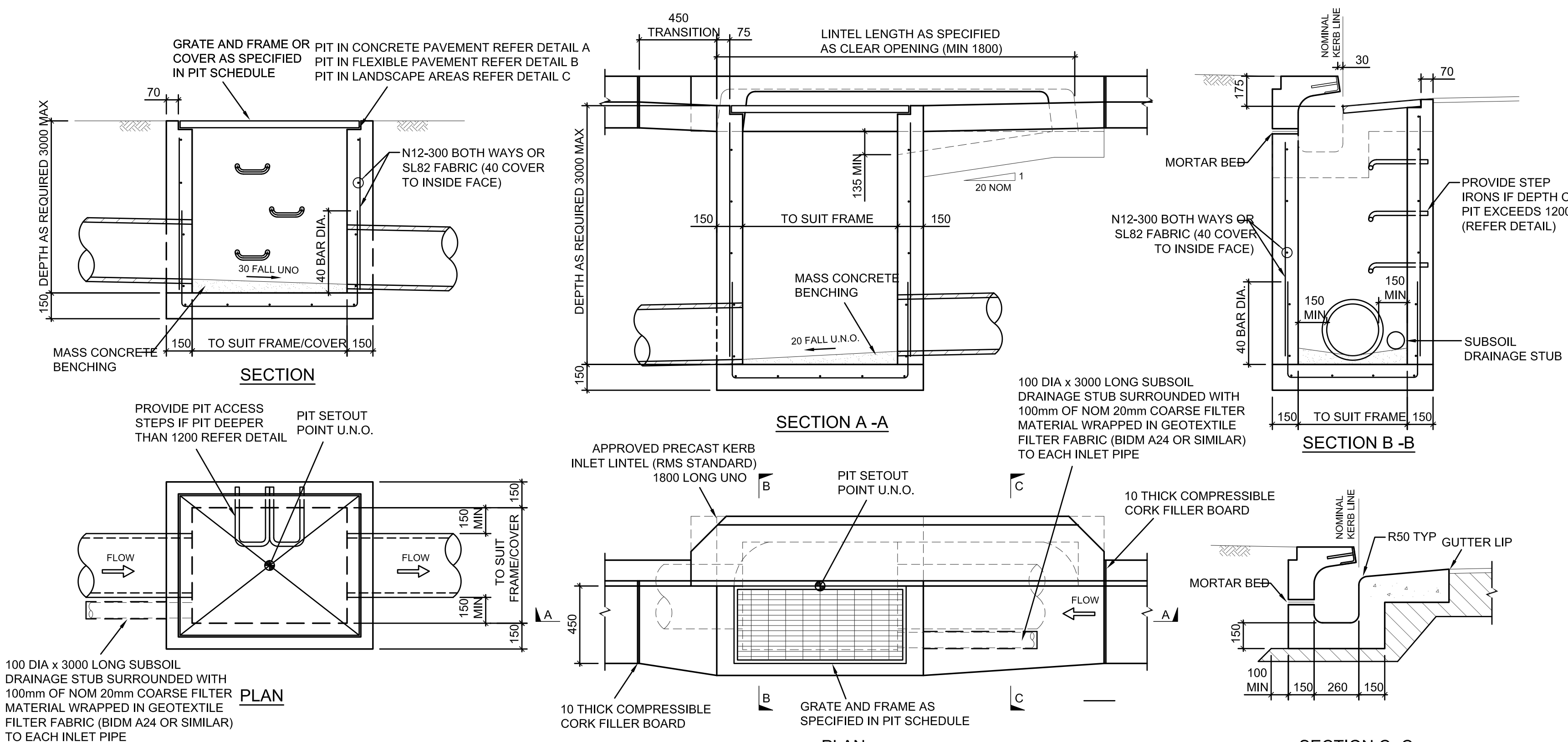
**Project**  
New High School in Bungendore  
MAJARA STREET,  
BUNGENDORE NSW 2621  
**Drawing Title**  
STORMWATER DRAINAGE  
PLAN  
SHEET 4

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:200
<b>Drawing No.</b>	<b>BHS-CE-2035</b>	<b>Revision</b>	<b>F</b>

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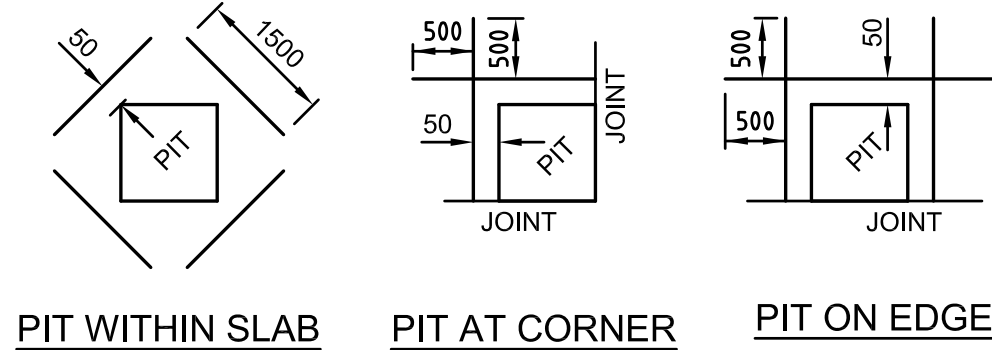




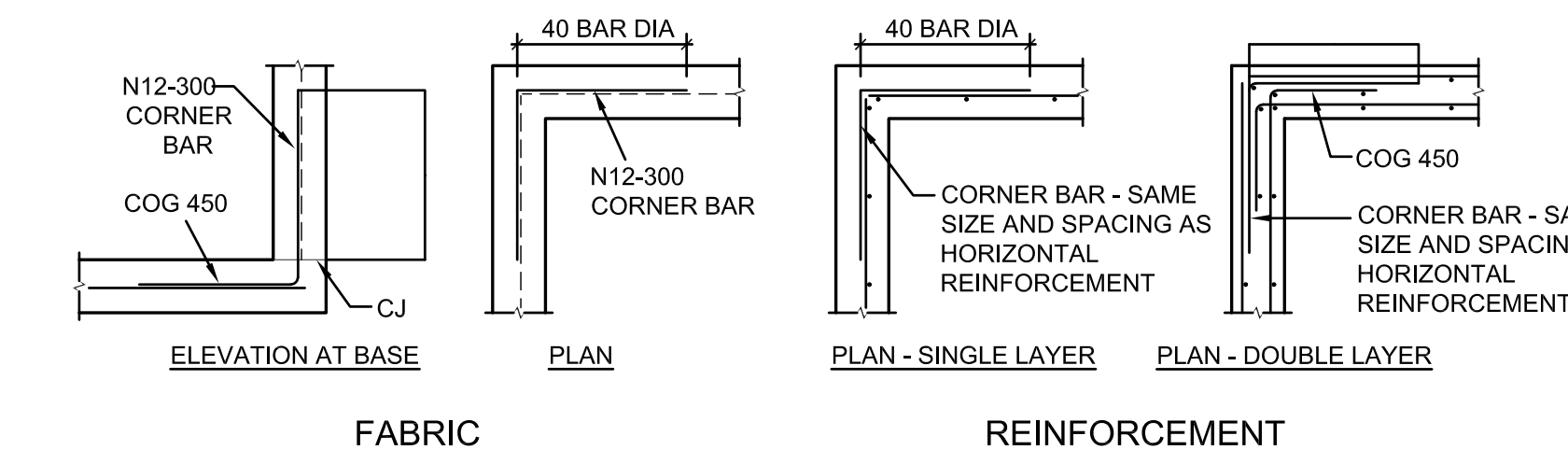
**SURFACE INLET/JUNCTION PIT DETAIL**  
SCALE 1:20

**KERB INLET PIT DETAIL**  
SCALE 1:20

- STORMWATER PIT NOTES**
1. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH (F<sub>c</sub>) OF 25 MPa AT 28 DAYS.
  2. REINFORCEMENT NOT REQUIRED IF DEPTH OF PIT IS LESS THAN 1000mm. PITS GREATER THAN 3000mm DEEP TO HAVE WALL AND BASE 200mm THICK REINFORCED WITH N12-250 EACH WAY EACH FACE WITH CONCRETE STRENGTH F<sub>c</sub> = 40 MPa.
  3. PROVIDE STEP IRONS AT MAX 350mm CTRS IF DEPTH OF PIT EXCEEDS 1200mm.
  4. IF REINFORCING FABRIC IS TO BE USED REFER TO WALL AND CORNER DETAILS
  5. PRECAST PITS ARE TO GENERALLY COMPLY WITH THESE DETAILS.
  6. PRECAST PIT MAY BE USED SUBJECT TO ENGINEERS APPROVAL.
  7. ALL PITS TO BE LOCKABLE.
  8. FINAL INTERNAL PIT DIMENSIONS ARE TO COMPLY WITH AS 3500.

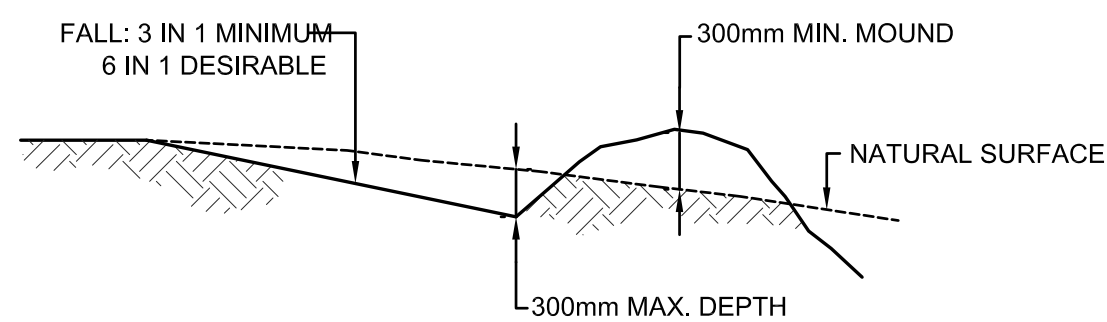


**DETAIL OF SLAB REINFORCEMENT AT PITS IN CONCRETE PAVEMENT**  
N.T.S.

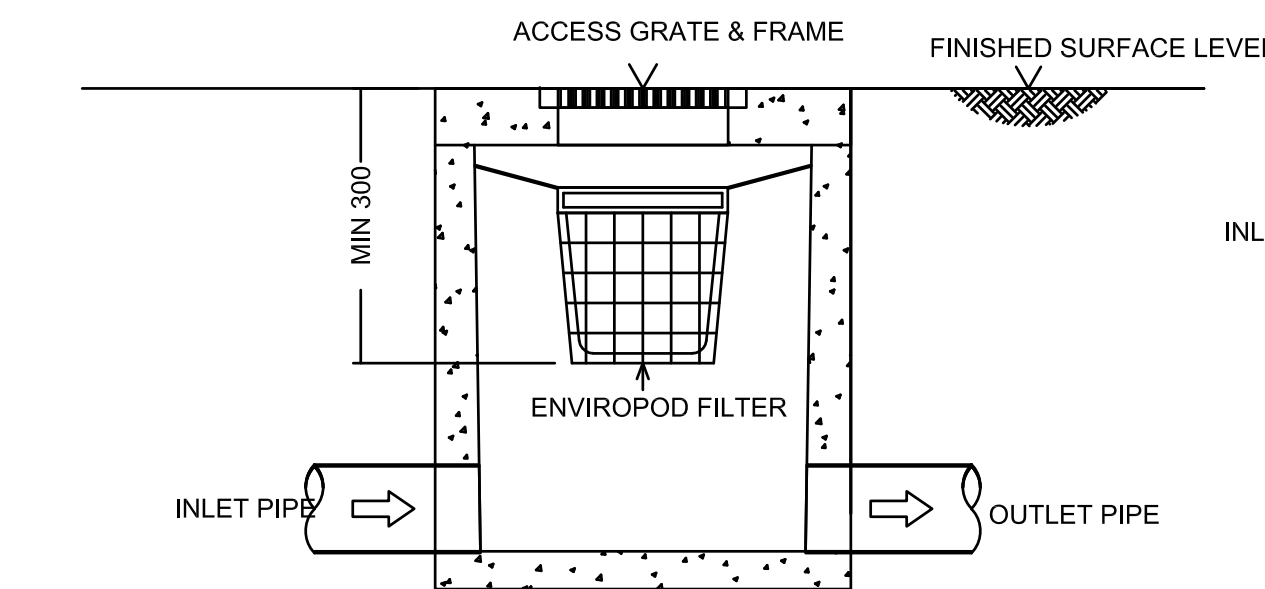


**PIT CORNER DETAILS**  
SCALE 1:20

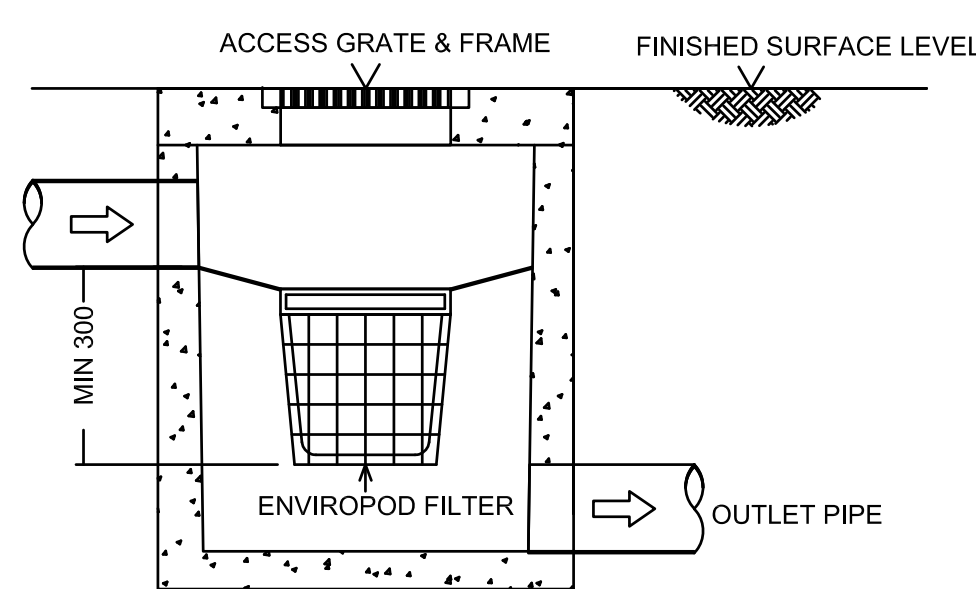
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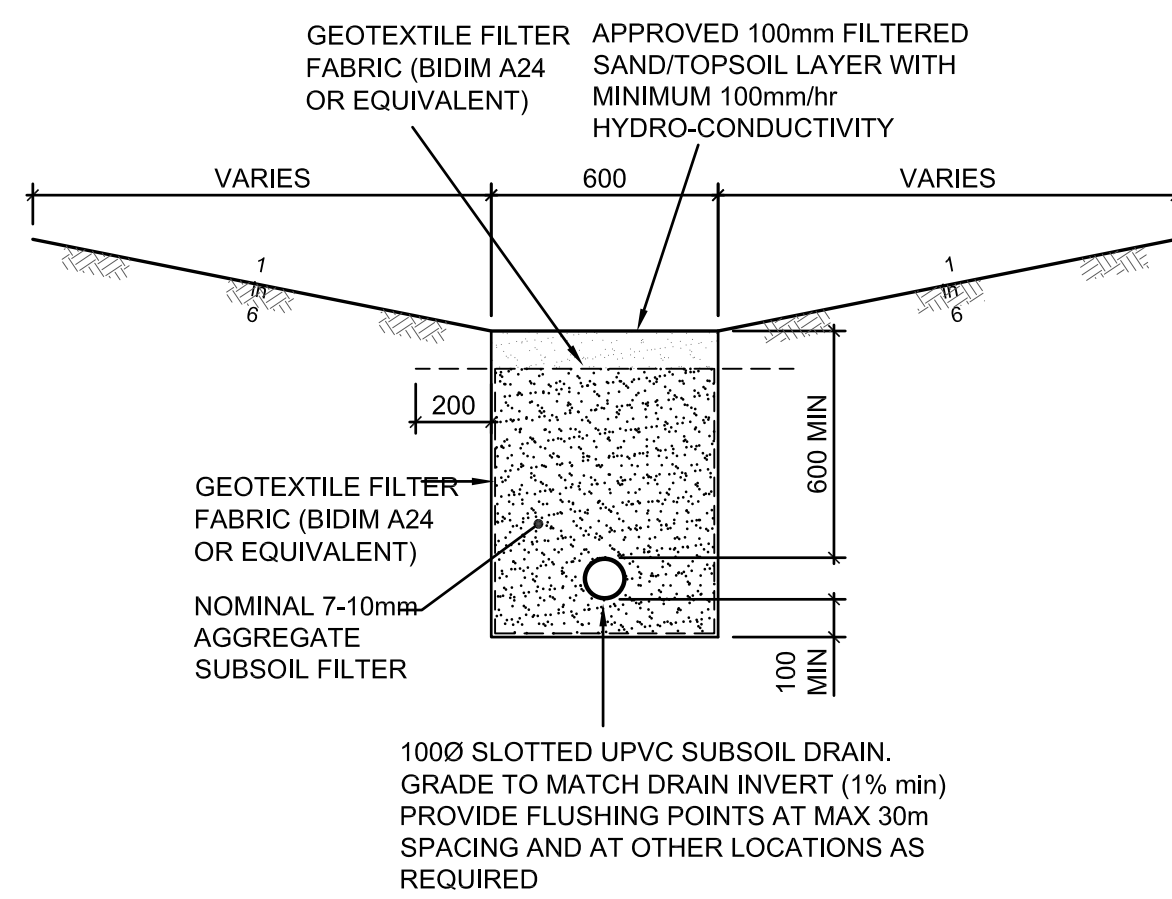
**TYPICAL CATCH DRAIN**  
N.T.S.



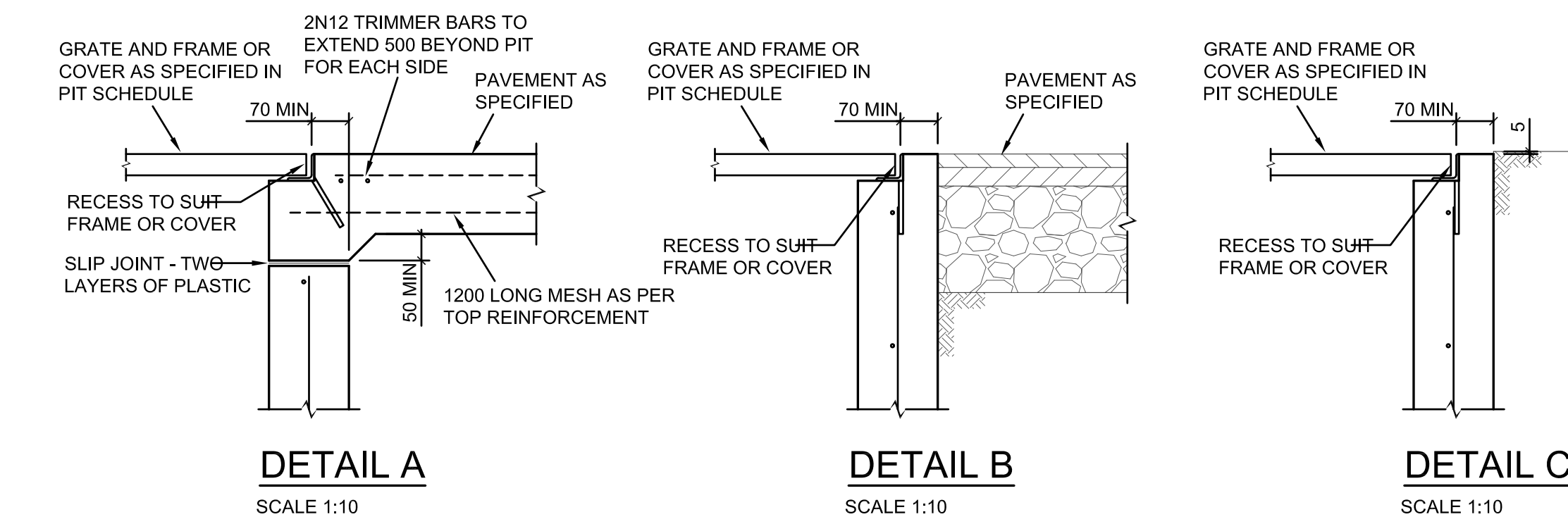
STANDARD ENVIROPOD CONFIGURATION SECTION



DROP PIPE ENVIROPOD CONFIGURATION SECTION



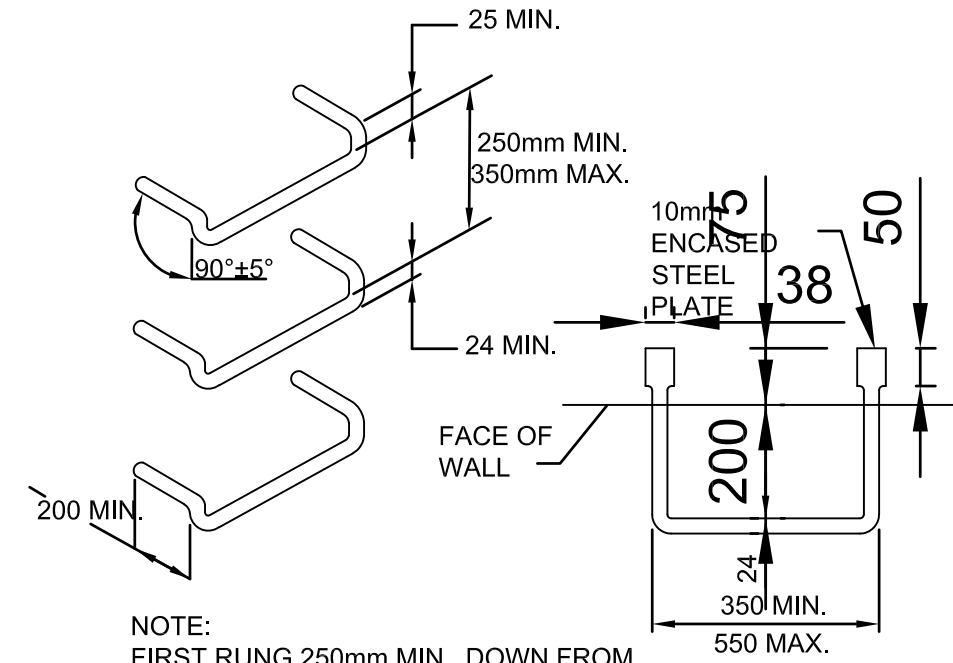
**TURFED SWALE DETAIL**  
SCALE 1:20



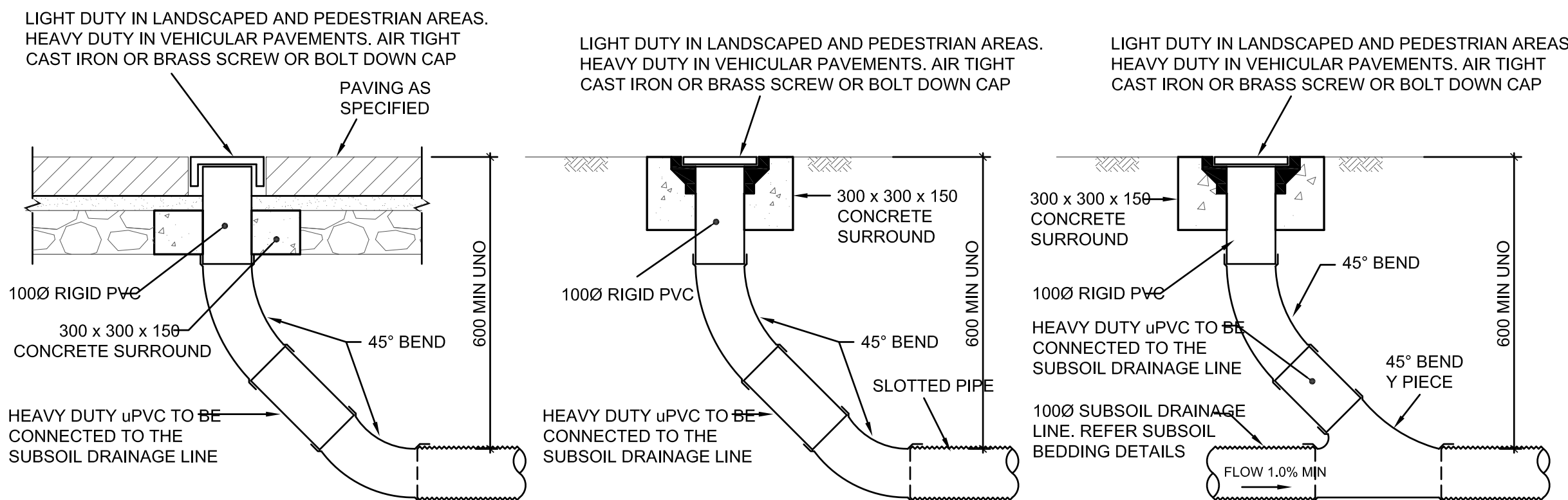
**DETAIL A**  
SCALE 1:10

**DETAIL B**  
SCALE 1:10

**DETAIL C**  
SCALE 1:10



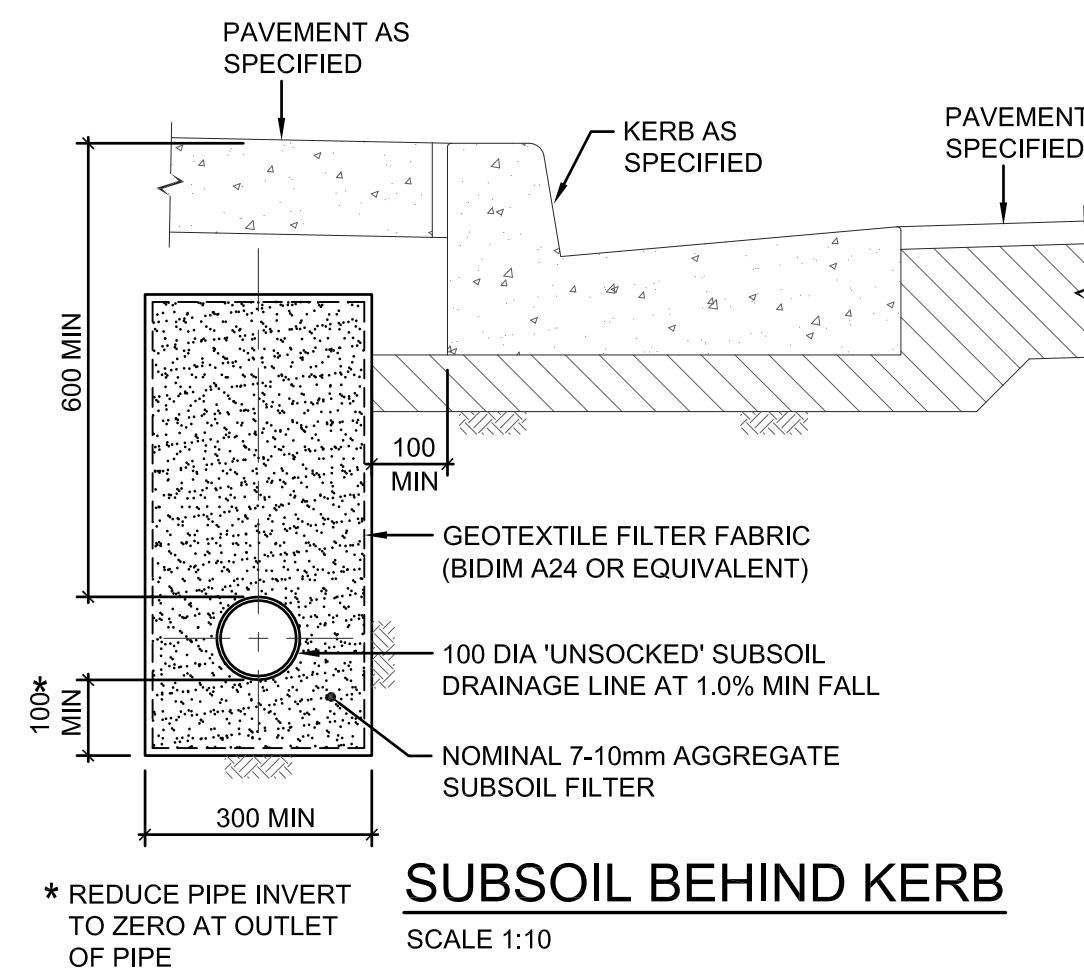
**STEP IRONS FOR DRAINAGE PITS**  
N.T.S.



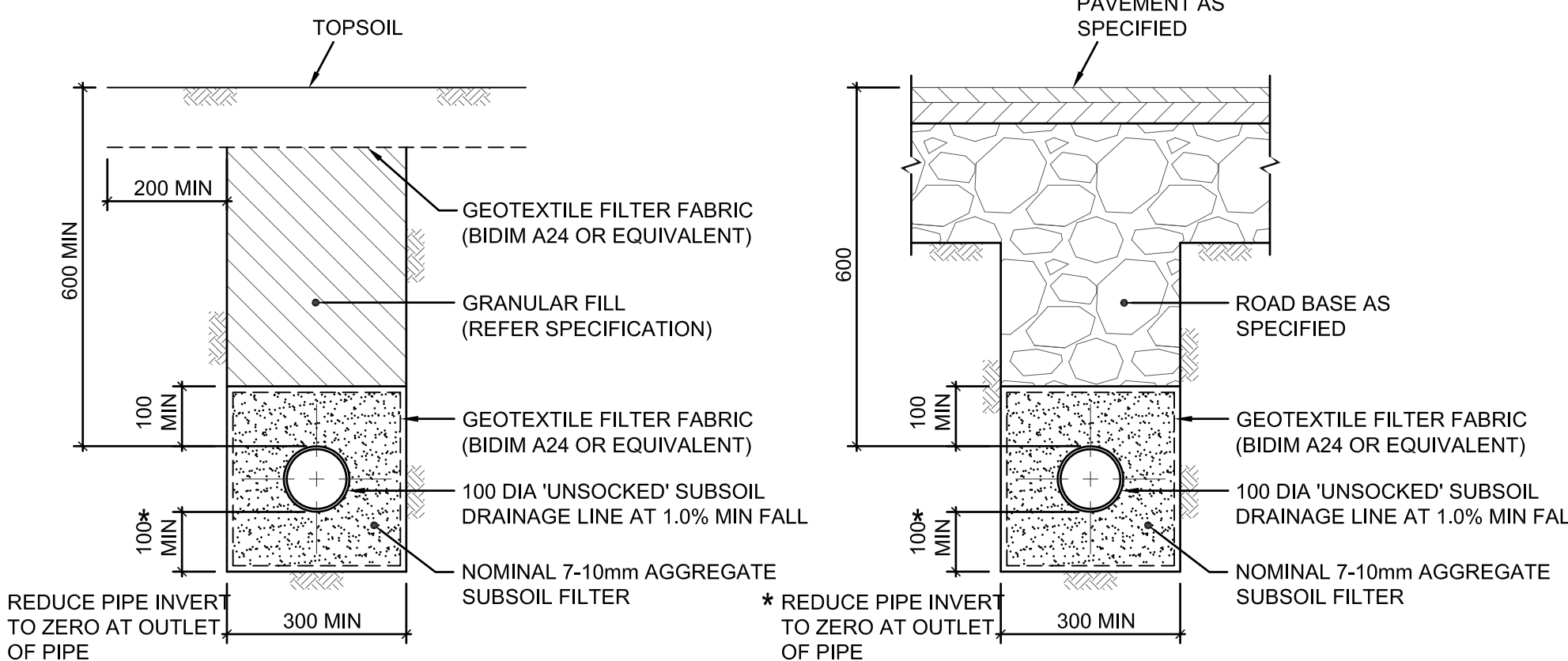
**FLUSHOUT RISER (FOR) IN PAVING BRICKS**  
SCALE 1:10

**FLUSHOUT RISER (FOR) INTERMEDIATE RISER**  
SCALE 1:10

**INTERMEDIATE RISER**  
SCALE 1:10



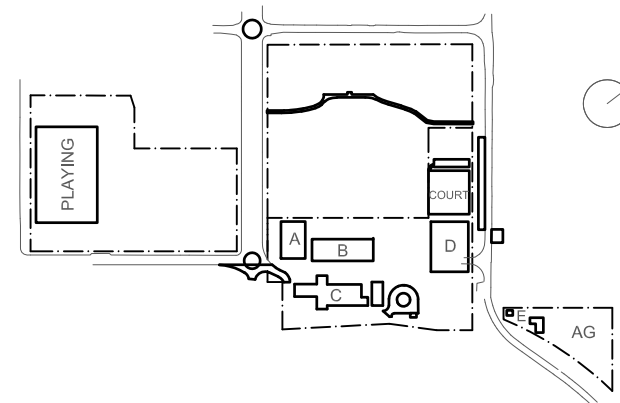
**SUBSOIL BEHIND KERB**  
SCALE 1:10



**SUBSOIL IN LANDSCAPED AREAS**  
SCALE 1:10

**SUBSOIL IN PAVED AREAS**  
SCALE 1:10

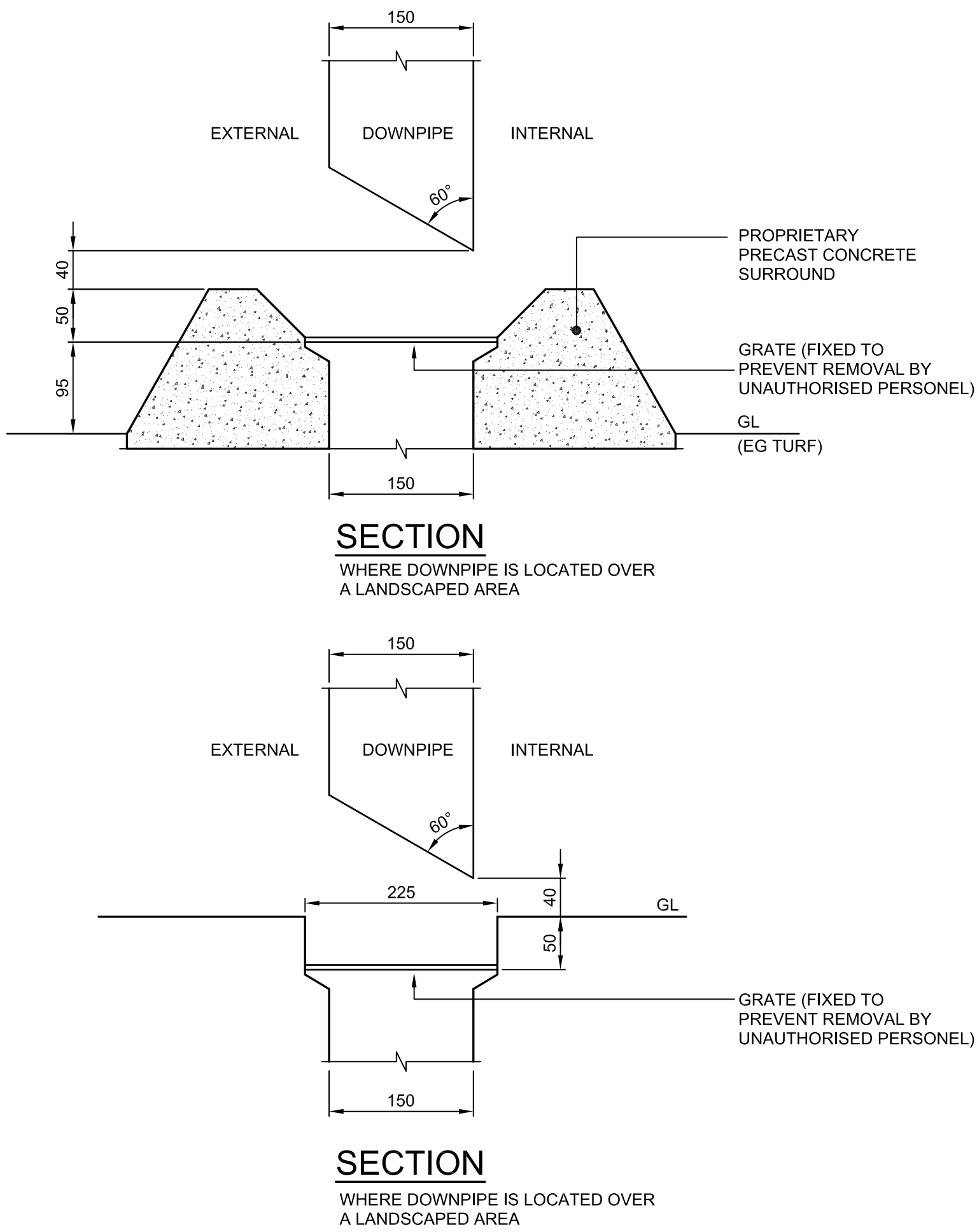
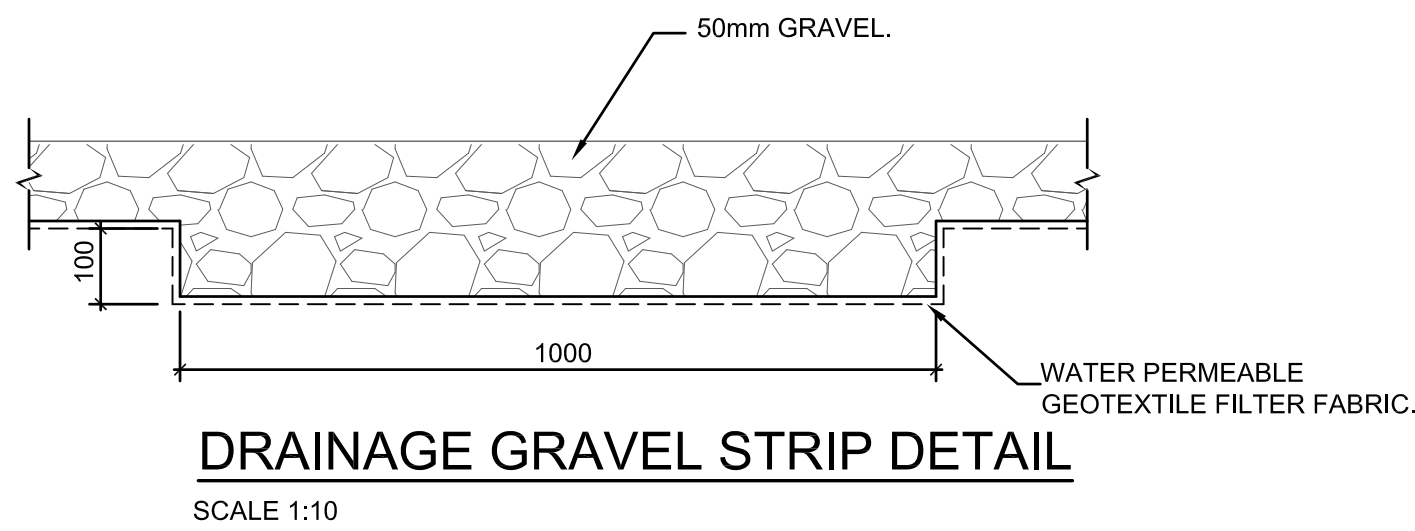
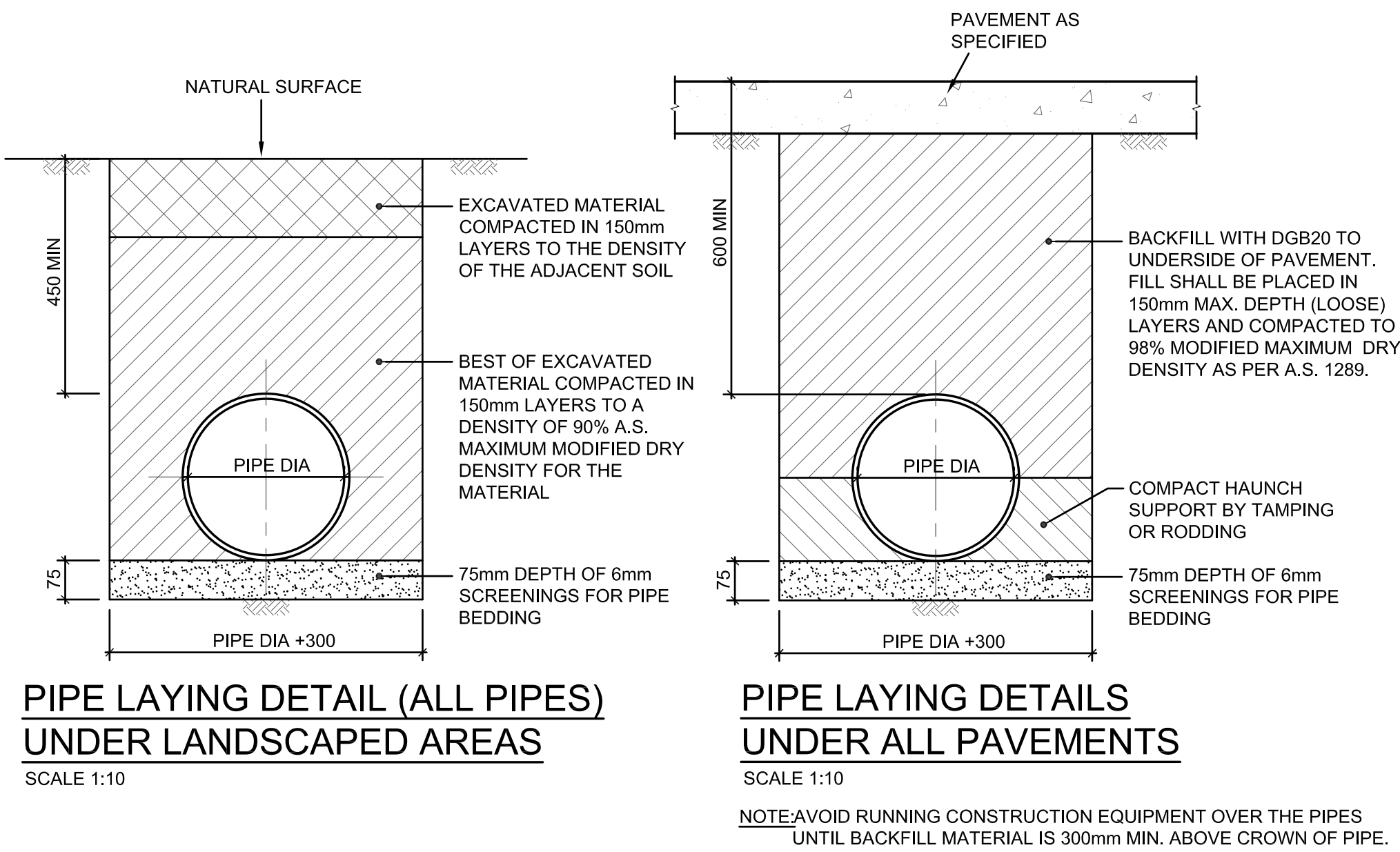
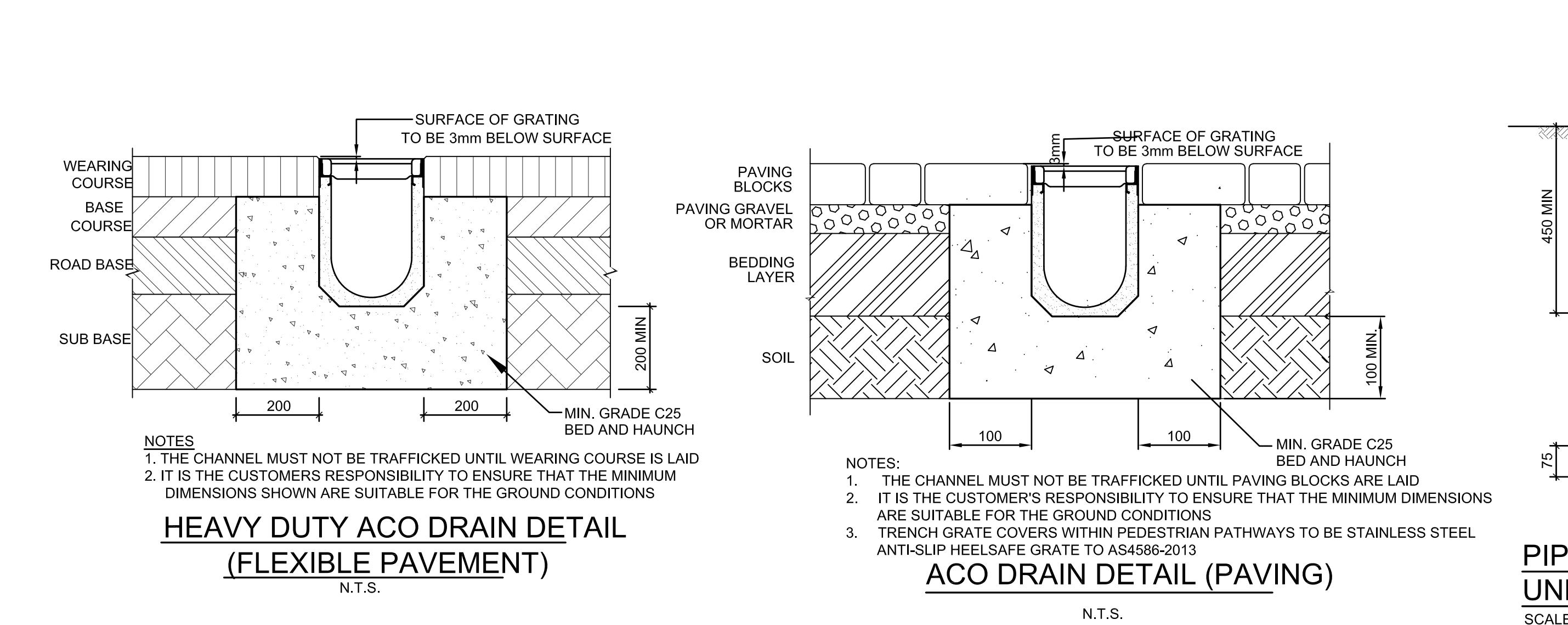
**TYPICAL ENVIROPOD OCEAN PROTECT PIT DETAILS**



Rev	Date	Description	Chkd	Auth.
A	24.03.21	DRAFT SCHEMATIC DESIGN ISSUE		
B	16.04.21	SCHEMATIC DESIGN		
C	30.04.21	SCHEMATIC DESIGN		
D	07.05.21	SCHEMATIC DESIGN		
E	12.05.21	SCHEMATIC DESIGN		
F	26.11.21	WORK IN PROGRESS		
G	08.12.21	ISSUED FOR DD		
H	14.07.22	ISSUED FOR RTS REVISED DESIGN		

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	AS NOTED AT B1
Drawing No.	Revision		
BHS-CE-2051	H		





## DOWNPIPE OUTLET DETAILS

NOT TO SCALE

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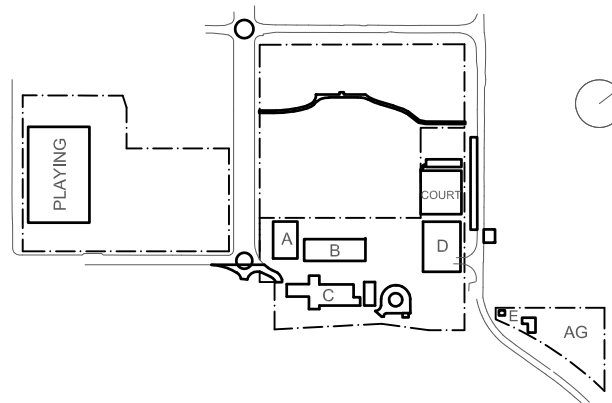
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Rev	Date	Description	Chkd	Auth.
A	26.11.21	WORK IN PROGRESS		
B	08.12.21	ISSUED FOR DD		
C	14.07.22	ISSUED FOR RTS REVISED DESIGN		

**Project**  
New High School in Bungendore

MAJARA STREET,  
BUNGENDORE NSW 2621

Drawing Title **STORMWATER DRAINAGE DETAILS SHEET 2 OF 2**

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1

Job No. 5555 Status SSDA Date OCT '21 Scale AS NOTED AT B1

Drawing No. **BHS-CE-2052**

Revision **C**

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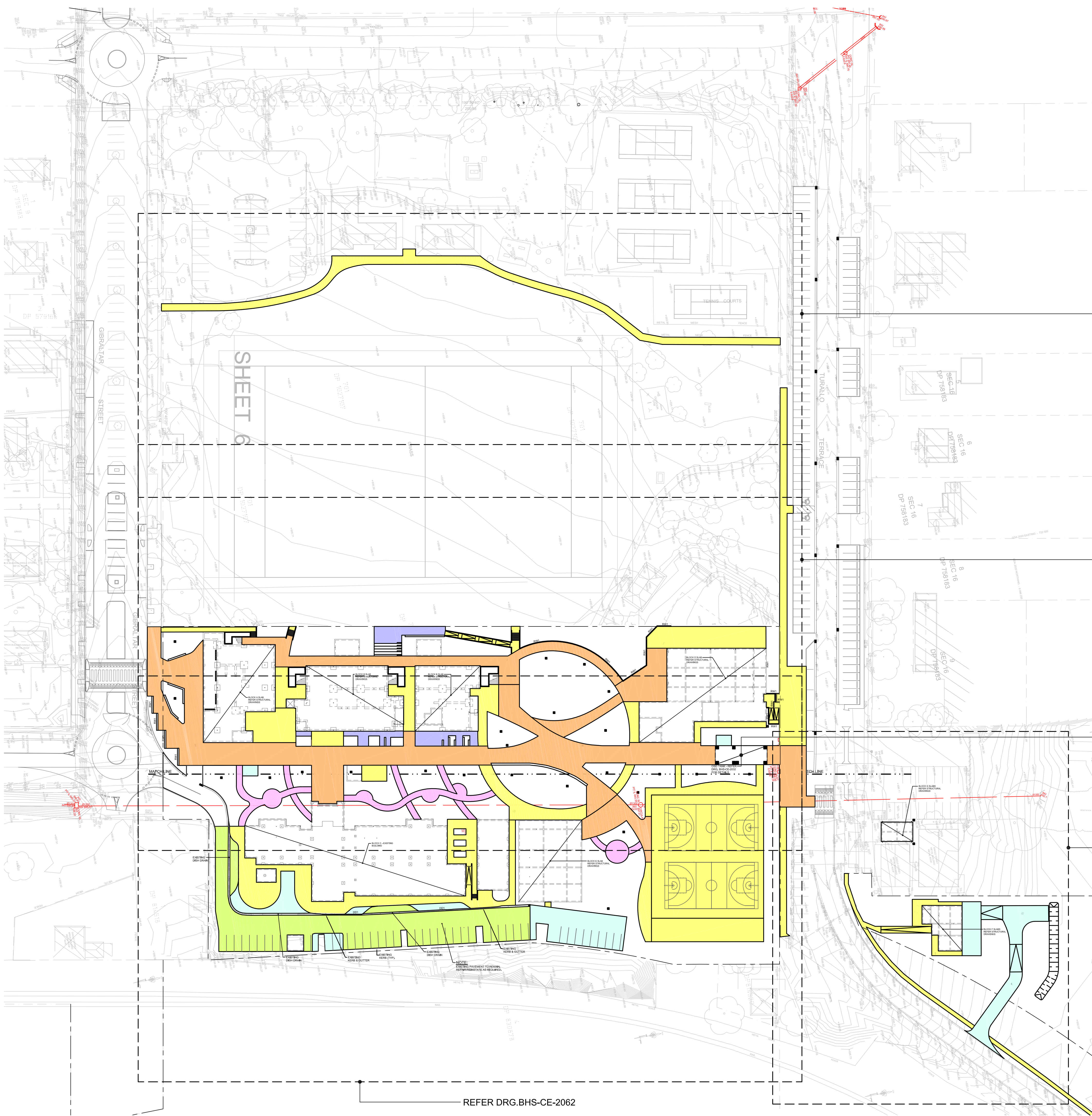
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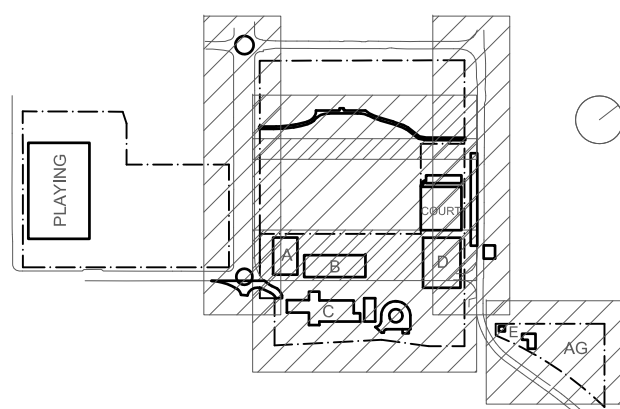
PAVEMENT LEGEND

- PAVEMENT TYPE 1 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 2 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 3 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 4 - REFER  
LANDSCAPE ARCHITECT'S  
DRAWINGS FOR DETAILS
- PAVEMENT TYPE 5 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- DENOTES EXISTING PAVEMENT  
TO REMAIN

STORMWATER GENERAL ARRANGEMENT PLAN

SCALE 1:250

KEY



Rev	Date	Description	Chkd	Auth.
A	14.02.22	ISSUED FOR DD		
B	14.07.22	ISSUED FOR RTS REVISED DESIGN		
C	21.07.22	ISSUED FOR RTS REVISED DESIGN		
D	21.07.22	ISSUED FOR RTS REVISED DESIGN		
E	27.07.22	ISSUED FOR RTS REVISED DESIGN		

Project  
New High School in Bungendore

MAJARA STREET  
BUNGENDORE NSW 2621  
Drawing Title  
SITeworks PAVEMENT  
GENERAL ARRANGEMENT  
PLAN

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:250

Drawing No.  
BHS-CE-2059

Revision  
E

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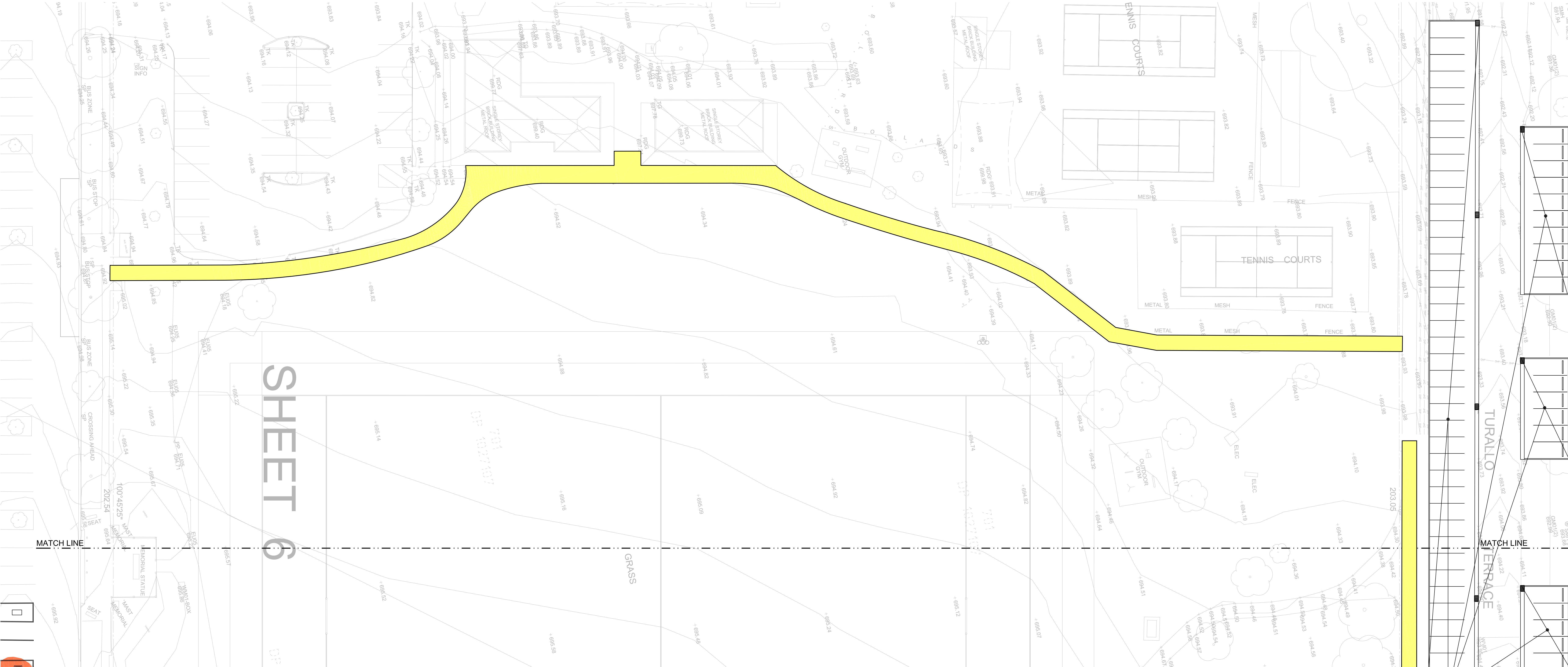
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FOR CONTINUATION REFER DRG. BHS-CE-2061  
PART SITEWORKS AND PAVEMENT PLAN

SCALE 1:250  
PAVEMENT LEGEND

- PAVEMENT TYPE 1 - REFER DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 2 - REFER DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 3 - REFER DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 4 - REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR DETAILS
- PAVEMENT TYPE 5 - REFER DRG. BHS-CE-2091 FOR DETAILS
- DENOTES EXISTING PAVEMENT TO REMAIN

FOR CARPARK PAVING REFER  
DRG. BHS-CE-2130

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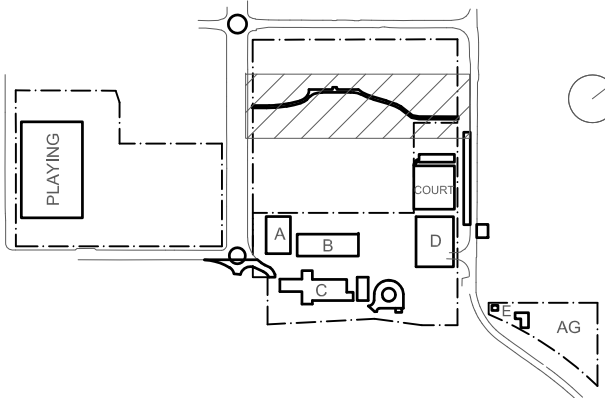
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KEY



Rev	Date	Description	Chkd	Auth.
A	10.12.21	ISSUED FOR DD		
B	21.12.21	ISSUED FOR DD		
C	14.02.22	GENERALLY REVISED		
D	14.07.22	ISSUED FOR RTS REVISED DESIGN		
E	21.07.22	ISSUED FOR RTS REVISED DESIGN		
F	26.07.22	ISSUED FOR RTS REVISED DESIGN		
G	27.07.22	ISSUED FOR RTS REVISED DESIGN		

**Project**  
New High School in Bungendore  
**MAJARA STREET**  
BUNGENDORE NSW 2621  
**Drawing Title**  
SITEWORKS & PAVEMENT  
PLAN  
SHEET 1

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:250
Drawing No.	Revision		
BHS-CE-2060	G		

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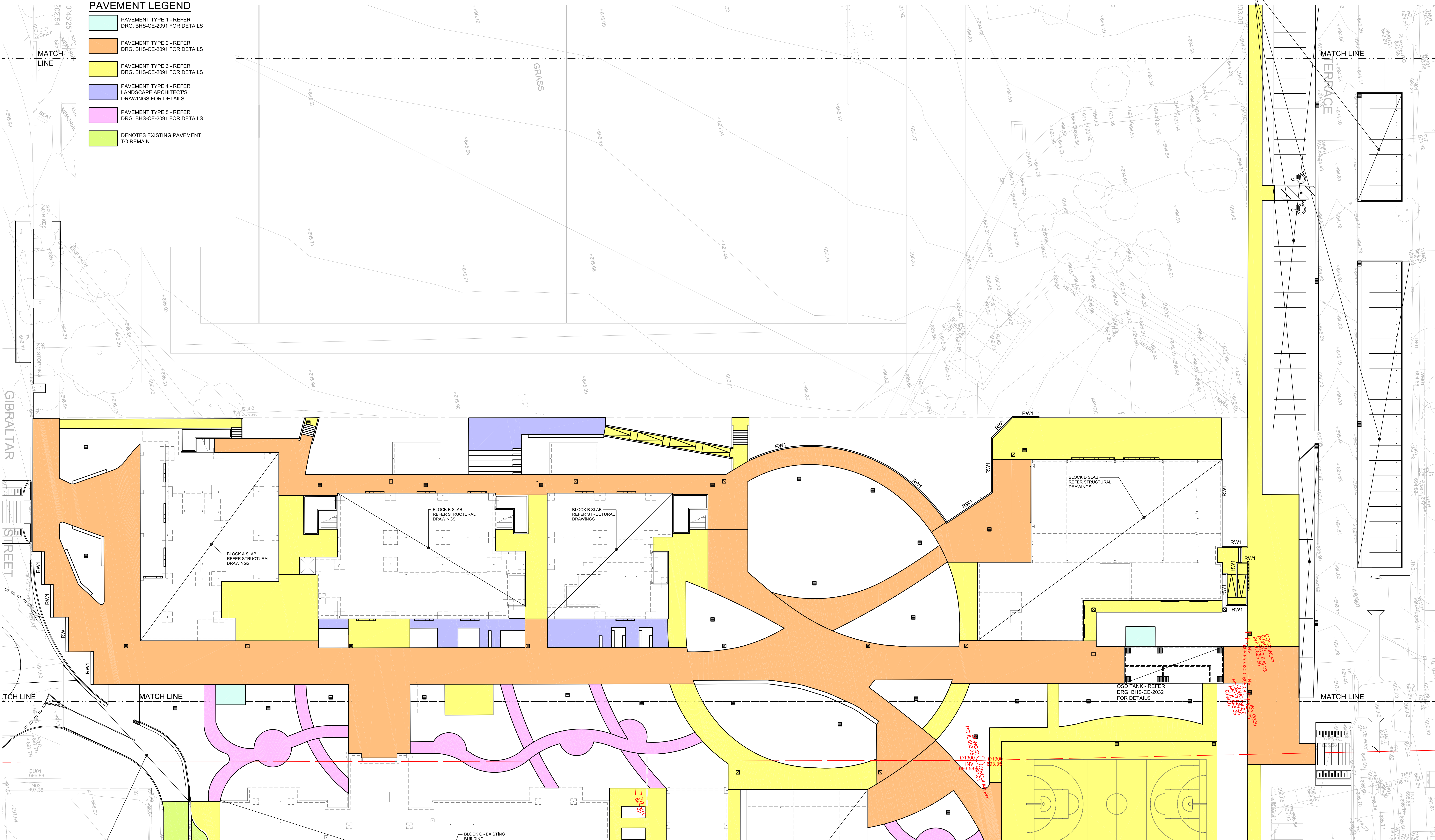


FOR CONTINUATION REFER DRG. BHS-CE-2060

FOR CARPARKKISS & DROP  
PAVING REFER DRG. BHS-CE-2130

### PAVEMENT LEGEND

- PAVEMENT TYPE 1 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 2 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 3 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 4 - REFER  
LANDSCAPE ARCHITECT'S  
DRAWINGS FOR DETAILS
- PAVEMENT TYPE 5 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- DENOTES EXISTING PAVEMENT  
TO REMAIN



FOR CONTINUATION REFER DRG. BHS-CE-2062

### PART SITeworks AND PAVEMENT PLAN

SCALE 1:250

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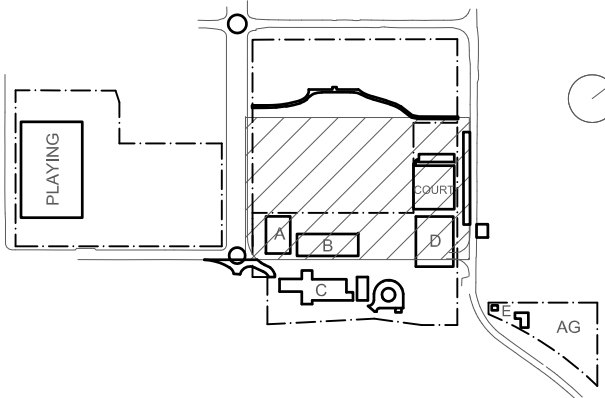
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### KEY



Rev	Date	Description	Chkd	Auth.
C	30.04.21	SCHEMATIC DESIGN		
D	07.05.21	SCHEMATIC DESIGN		
E	12.05.21	SCHEMATIC DESIGN		
F	24.11.21	50% DD ISSUE		
G	10.12.21	ISSUED FOR DD		
H	14.02.22	GENERALLY REVISED		
I	14.07.22	ISSUED FOR RTS REVISED DESIGN		
J	21.07.22	ISSUED FOR RTS REVISED DESIGN		
K	25.07.22	ISSUED FOR RTS REVISED DESIGN		
L	27.07.22	ISSUED FOR RTS REVISED DESIGN		

**Project**  
New High School in Bungendore  
MAJARA STREET  
BUNGENDORE NSW 2621  
Drawing Title **SITeworks & PAVEMENT**  
**PLAN**  
**SHEET 2**

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:250
Drawing No.			Revision
BHS-CE-2061			L

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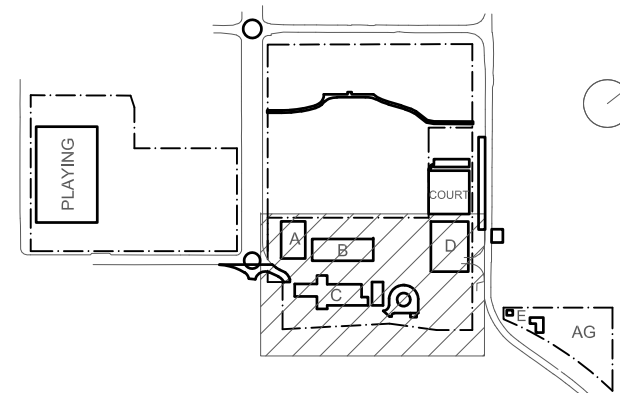


**PART SITESWORKS AND PAVEMENT PLAN**  
SCALE 1:250

**PAVEMENT LEGEND**

- PAVEMENT TYPE 1 - REFER DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 2 - REFER DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 3 - REFER DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 4 - REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR DETAILS
- PAVEMENT TYPE 5 - REFER DRG. BHS-CE-2091 FOR DETAILS
- DENOTES EXISTING PAVEMENT TO REMAIN

**KEY**



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Rev	Date	Description	Chkd	Auth
C	30.04.21	SCHEMATIC DESIGN		
D	07.05.21	SCHEMATIC DESIGN		
E	12.05.21	SCHEMATIC DESIGN		
F	11.06.21	SCHEMATIC DESIGN		
G	24.11.21	50% DD ISSUE		
H	10.12.21	ISSUED FOR DD		
I	21.12.21	ISSUED FOR DD		
J	14.02.22	GENERALLY REVISED		
K	14.07.22	ISSUED FOR RTS REVISED DESIGN		
L	27.07.22	ISSUED FOR RTS REVISED DESIGN		

**Project**  
New High School in Bungendore

MAJARA STREET,  
BUNGENDORE NSW 2621

Drawing Title  
**SITESWORKS & PAVEMENT  
PLAN  
SHEET 3**

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:250
Drawing No.			Revision
BHS-CE-2062			L

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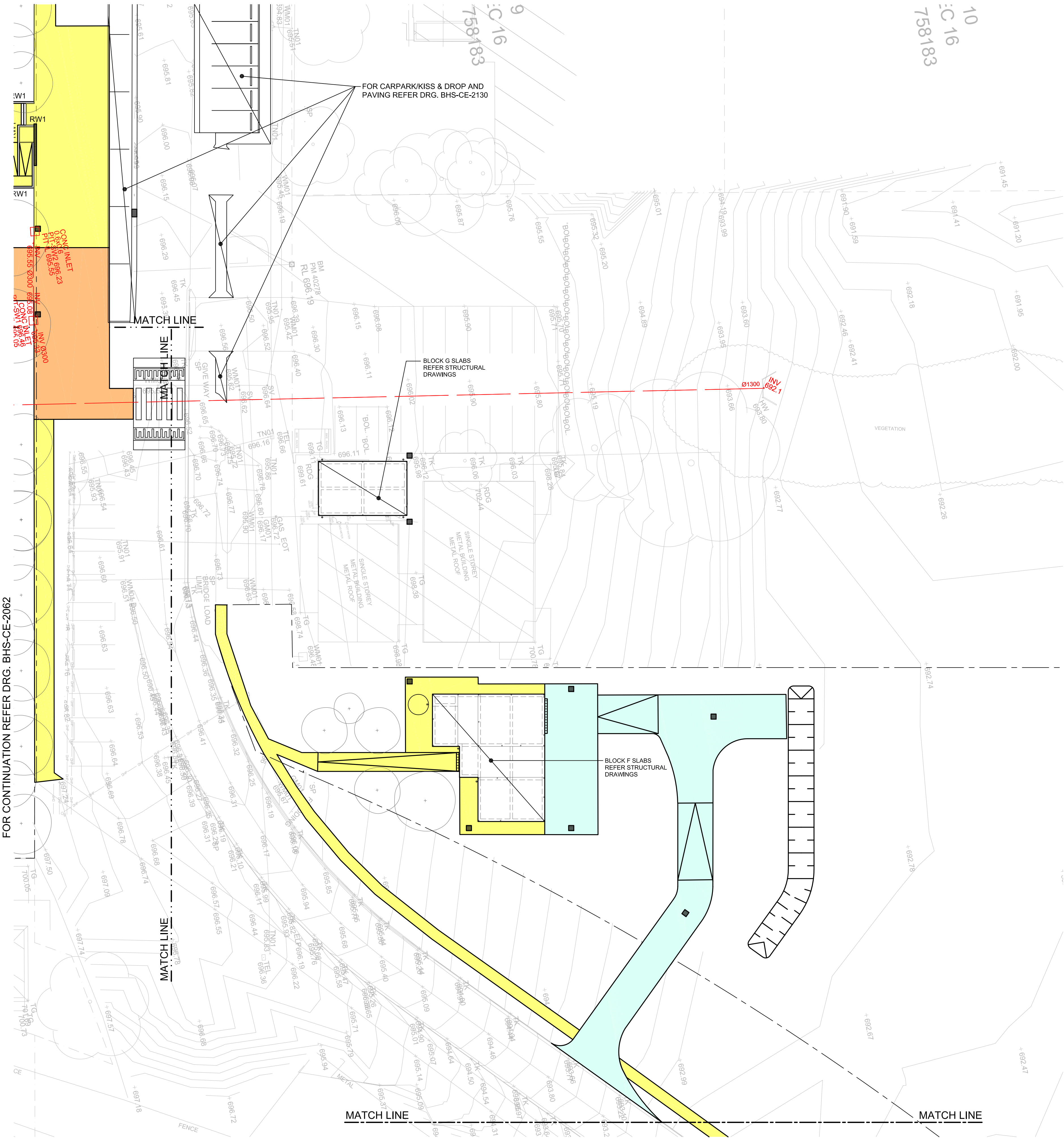
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PART SITEWORKS AND PAVEMENT PLAN  
SCALE 1:250

PAVEMENT LEGEND

- PAVEMENT TYPE 1 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 2 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 3 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 4 - REFER  
LANDSCAPE ARCHITECT'S  
DRAWINGS FOR DETAILS
- PAVEMENT TYPE 5 - REFER  
DRG. BHS-CE-2091 FOR DETAILS
- DENOTES EXISTING PAVEMENT  
TO REMAIN

MATCH LINE

PART SITEWORKS AND PAVEMENT PLAN  
SCALE 1:250

FOR CONTINUATION REFER DRG. BHS-CE-2062

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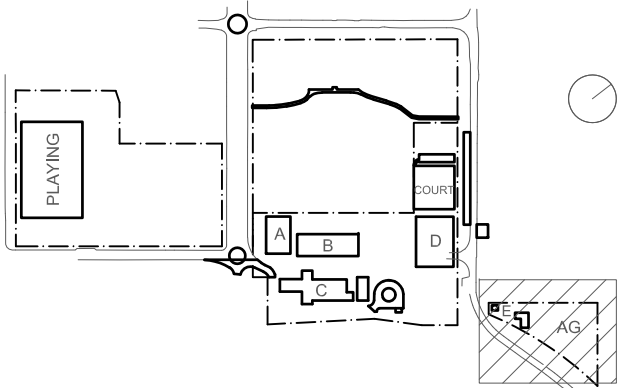
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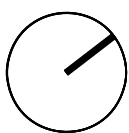
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Rev	Date	Description	Chkd	Auth.
A	10.12.21	ISSUED FOR DD		
B	21.12.21	ISSUED FOR DD		
C	14.02.22	GENERALLY REVISED		
D	14.02.22	ISSUED FOR RT'S REVISED DESIGN		
E	27.07.22	ISSUED FOR RT'S REVISED DESIGN		

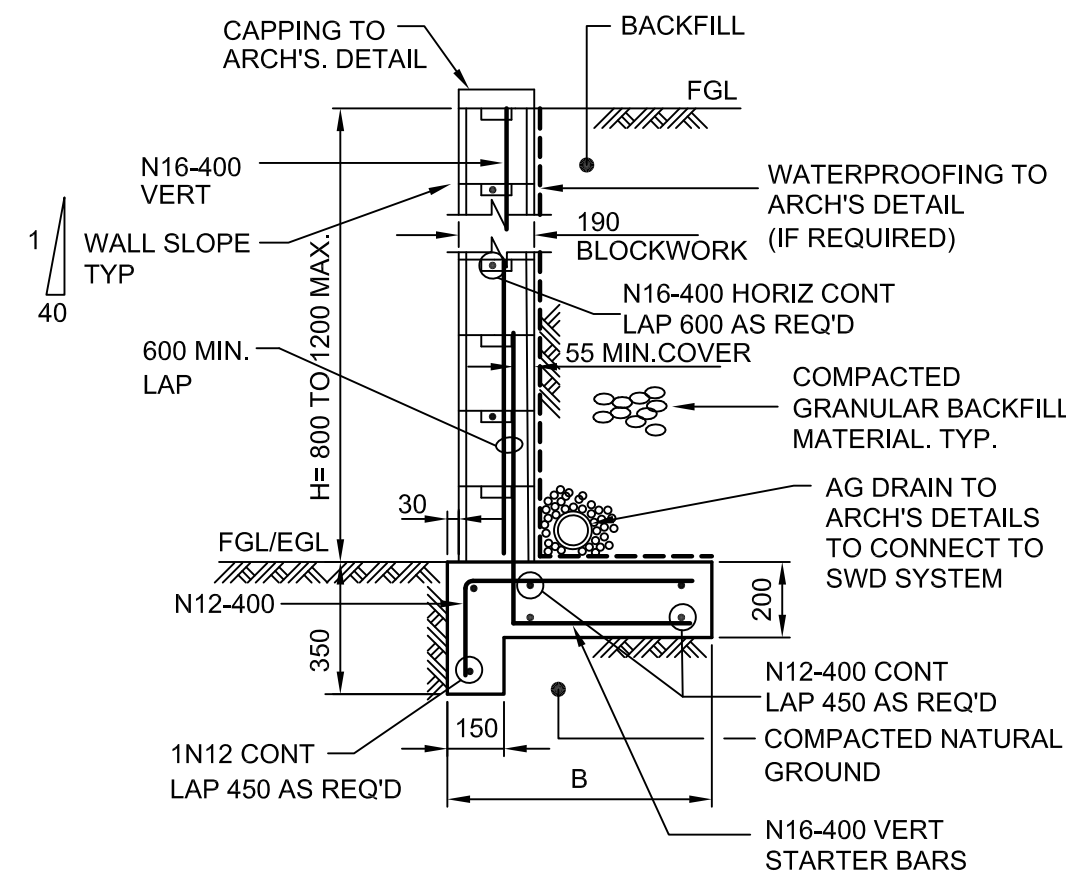
**Project**  
New High School in Bungendore  
MAJARA STREET,  
BUNGENDORE NSW 2621  
**Drawing Title**  
SITEWORKS & PAVEMENT  
PLAN  
SHEET 4

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:250
Drawing No.	Revision		
BHS-CE-2063	E		



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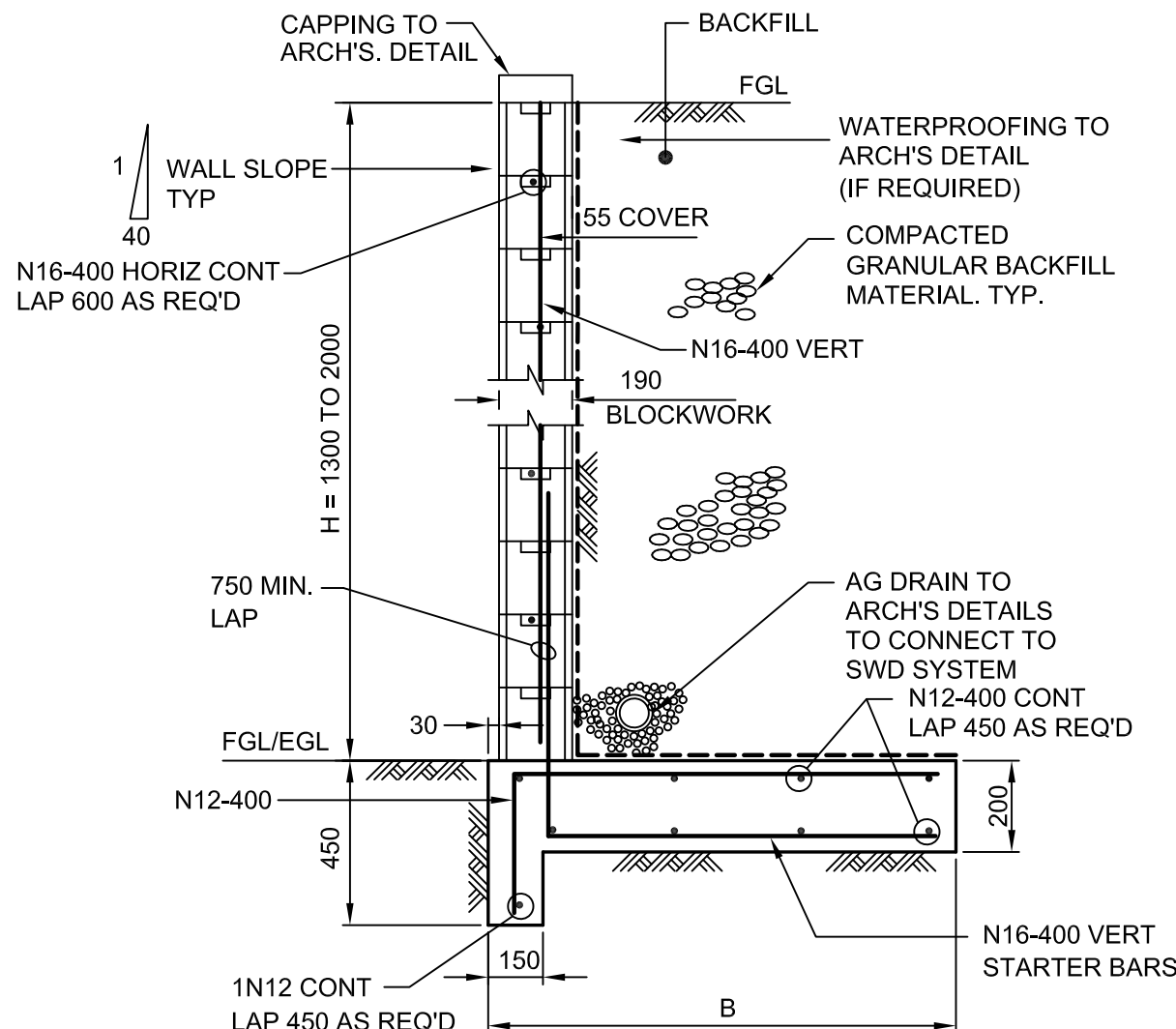


TYPICAL RETAINING WALL DETAIL

H = 600 TO 1200 MAX

SCALE 1:20

BASE DIMENSIONS	
H	B
600	500
800	600
1000	700
1200	800

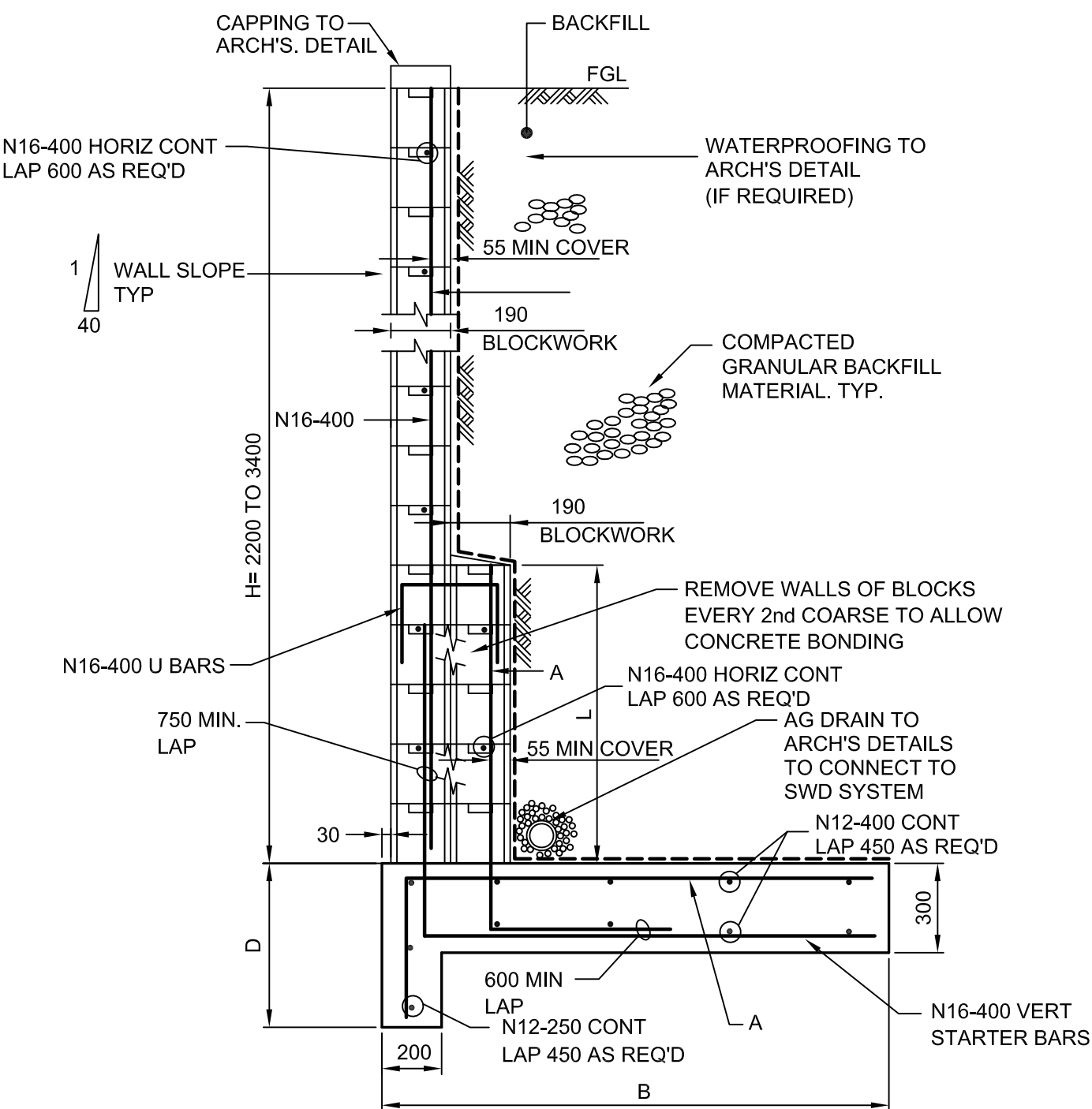


TYPICAL RETAINING WALL DETAIL

H = 1300 TO 1600 MAX

SCALE 1:20

BASE DIMENSIONS	
H	B
1400	1000
1600	1100
1800	1200



TYPICAL RETAINING WALL DETAIL

H = 2200 TO 3400 MAX

SCALE 1:20

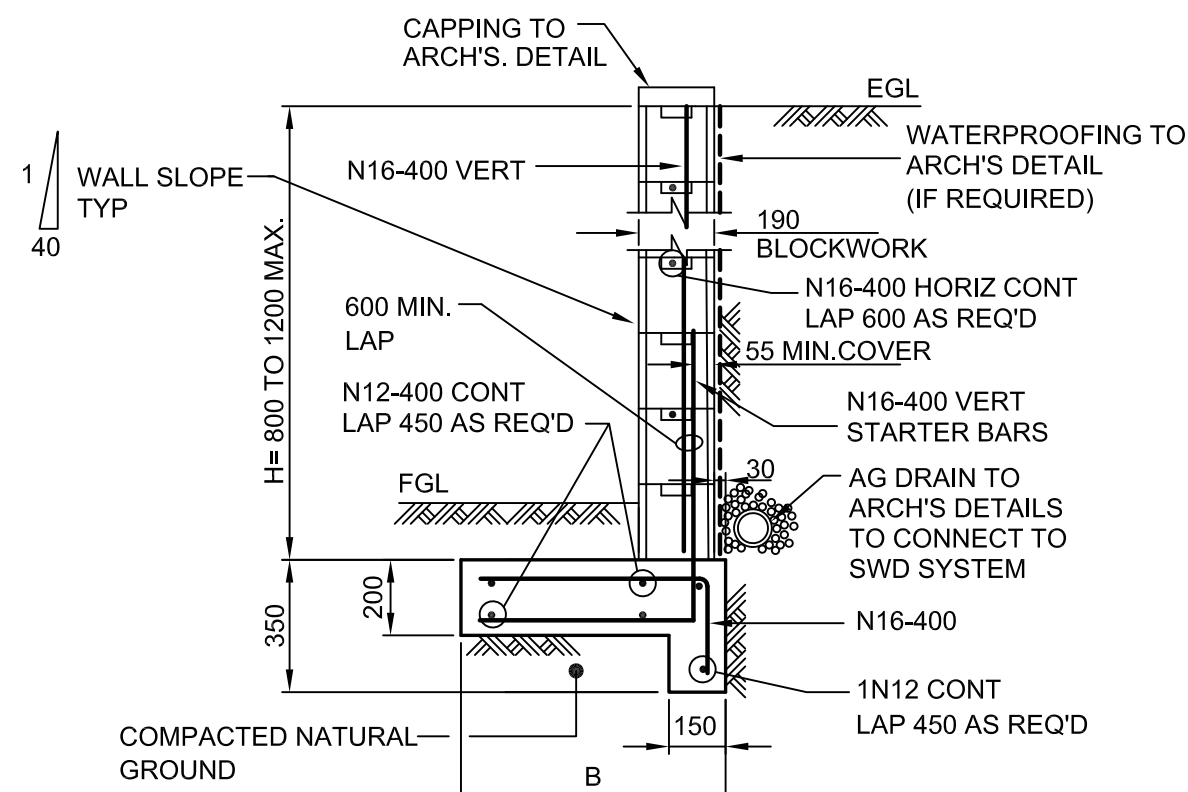
BASE DIMENSIONS				
H	B	L	A	D
2200	1400	600	N16-400	550
2400	1600	800	N16-400	550
2600	1800	1000	N16-400	550
2800	2000	1200	N16-400	550
3000	2300	1400	N20-400	750
3200	2600	1600	N20-400	750
3400	3000	1800	N20-400	750

#### BLOCKWORK NOTES:

- ALL BLOCKS TO BE 190 DOUBLE "U" BLOCKS. PROVIDE CLEAN OUT HOLES TO BTM. COURSE. FILL ALL CORES WITH CONCRETE: 10mm AGG. 15 MPa 225 SLUMP
- 50 MIN. COVER TO ALL BASE REINFORCEMENT.
- BACKFILL TO BE COMPACTED CLEAN GRANULAR FREE DRAINING MATERIAL.

#### TYPICAL RETAINING WALL DETAILS IN FILL

DENOTED RW1 ON PLANS

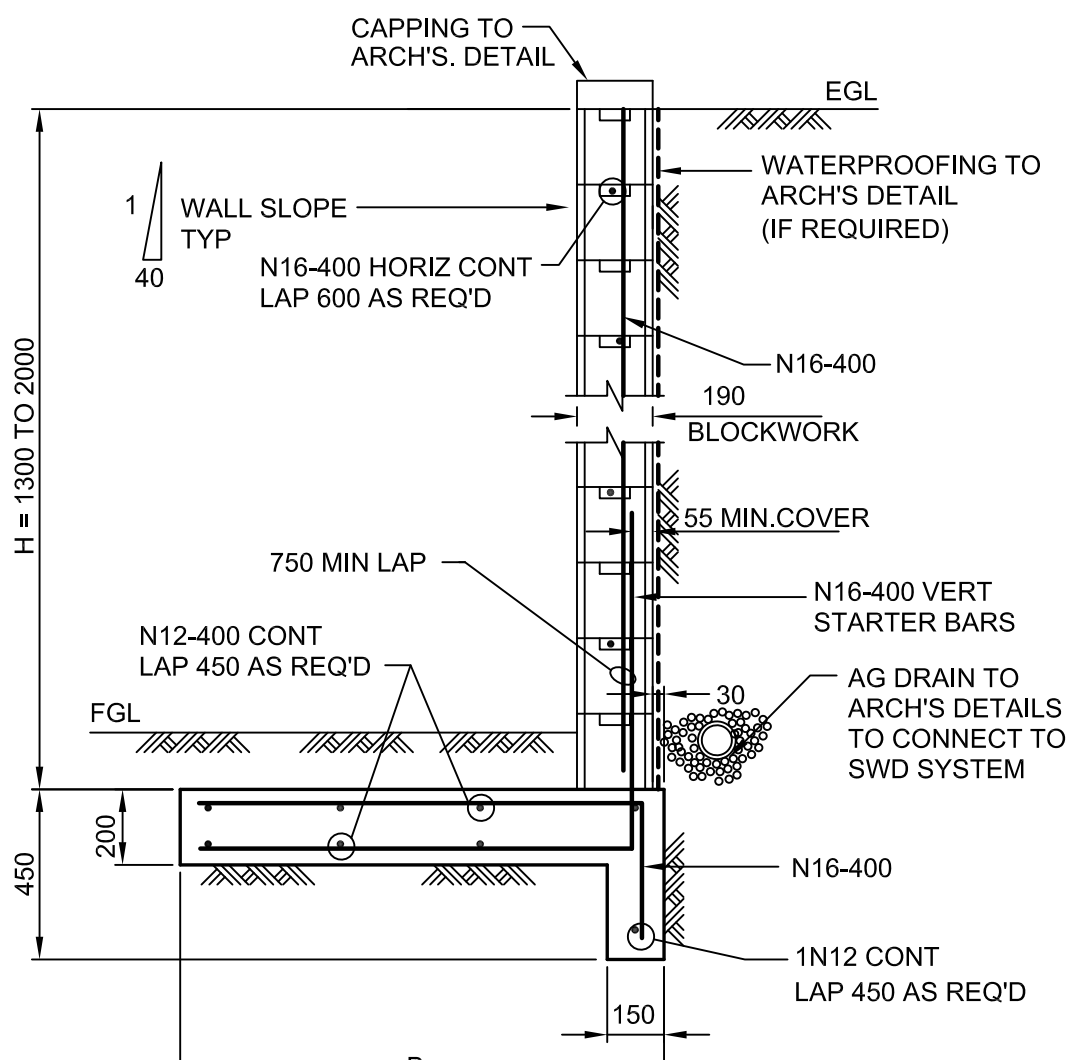


TYPICAL RETAINING WALL DETAIL

H = 600 TO 1200 MAX

SCALE 1:20

BASE DIMENSIONS	
H	B
600	500
800	600
1000	700
1200	800

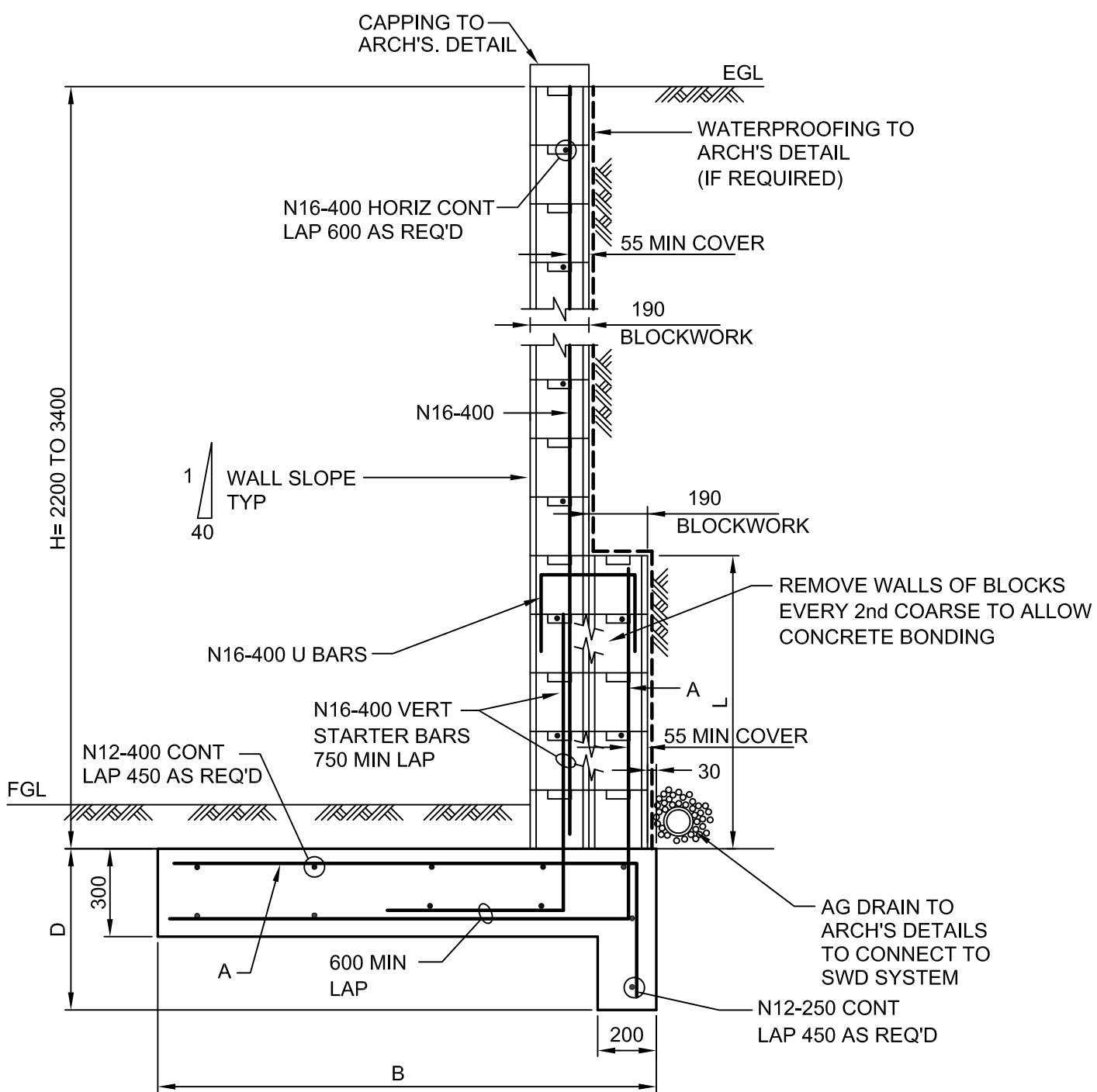


TYPICAL RETAINING WALL DETAIL

H = 1300 TO 1600 MAX

SCALE 1:20

BASE DIMENSIONS	
H	B
1400	1000
1600	1100
1800	1200



TYPICAL RETAINING WALL DETAIL

H = 2200 TO 3400 MAX

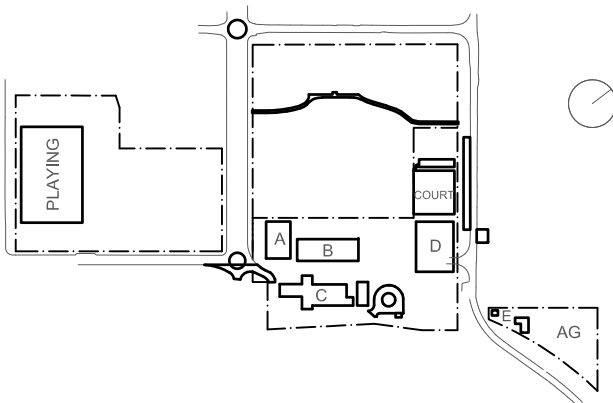
SCALE 1:20

BASE DIMENSIONS				
H	B	L	A	D
2200	1400	600	N16-400	550
2400	1600	800	N16-400	550
2600	1800	1000	N16-400	550
2800	2000	1200	N16-400	550
3000	2300	1400	N20-400	750
3200	2600	1600	N20-400	750
3400	3000	1800	N20-400	750

#### TYPICAL RETAINING WALL DETAILS IN CUT

DENOTED RW1 ON PLANS

#### KEY



Rev	Date	Description	Chkd	Auth.
A	10.12.21	ISSUED FOR DD		
B	14.02.22	GENERALLY REVISED		
C	14.07.22	ISSUED FOR RTS REVISED DESIGN		

**Project**  
New High School in Bungendore

MAJARA STREET,  
BUNGENDORE NSW 2621

**Drawing Title**  
**RETAINING WALL  
DETAILS**

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:20

**Drawing No.**  
**BHS-CE-2065**

**Revision**  
**C**

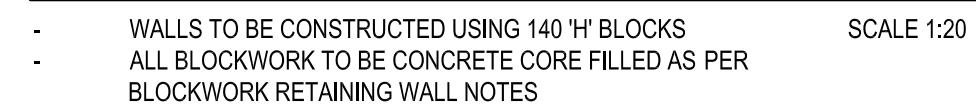
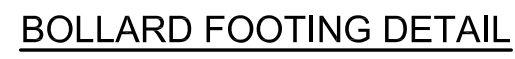
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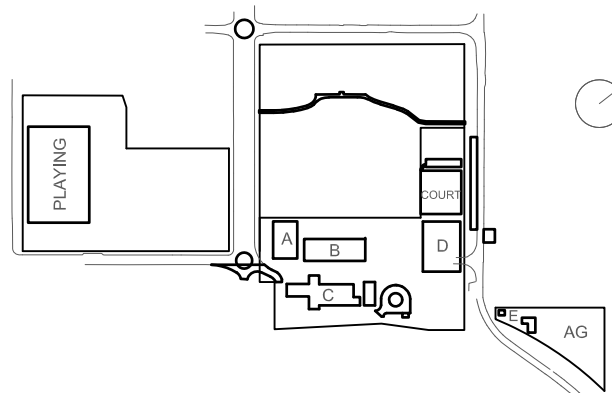
BASE DIMENSIONS	
'H' (HEIGHT mm)	'B' (BASE mm)
600	600
800	700
1000	900



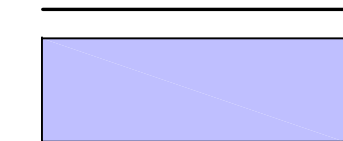
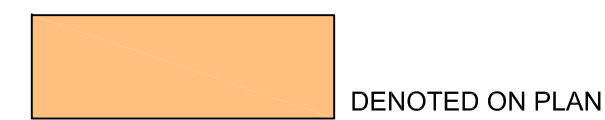
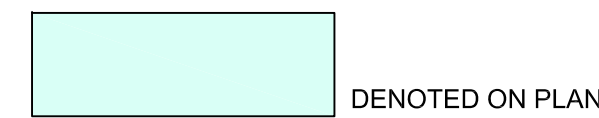
NTS

NOTES

1. THE RAMP AND SLOPING SIDES SHOULD BE SLIP RESISTANT AND OF A COLOUR THAT CONTRASTS WITH THE ADJOINING SURFACES.
2. A TACTILE INDICATOR, AS SPECIFIED IN AS1428.4 SHOULD BE INTEGRATED AND EXTENDED FOR 200mm AWAY FROM THE RAMP AT THE SHARP TRANSITION AT THE END AND BOTH SIDES OF THE RAMP. THIS COULD TAKE THE FORM OF ROUGH BROOMING OR SIMILAR TEXTURE WHICH WILL AID ORIENTATION FOR PEOPLE WITH A VISUAL IMPAIRMENT.
3. # WHERE CONSTRAINTS DICTATE THE ANGLE MAY BE REDUCED TO 30° IN ACCORDANCE WITH RMS STANDARD DRAWING NO. R0300-11.
4. MINIMUM 125mm THICKNESS OF CONCRETE REINFORCED WITH S8.2 MESH BOTTOM, 40mm COVER







1. SLAB MUST BE SAWCUT AS SOON AS PRACTICABLE AFTER FINISHING OF THE SLAB WITHOUT CAUSING DAMAGE TO THE SAWCUT EDGES - USUALLY 12-24 HOURS.
2. SLABS MUST NOT BE POURED IF TEMPERATURE EXCEEDS 32°
3. HOT WEATHER PLACING (25° AND OVER) MAY REQUIRE SLABS TO BE SAWCUT AS SOON AS 5-6 HOURS AFTER POURING.
4. ANY SLAB BAY IN WHICH SHRINKAGE CRACKS OCCUR DUE TO LATE SAWCUTTING MUST BE REMOVED AND REPLACED BY THE BUILDER/CONTRACTOR.





REFER DRG.BHS-CE-2121

REFER DRG.BHS-CE-2121

REFER DRG.BHS-CE-2122

ROAD CIVIL WORKSPAVENTMENT

LEGEND

PAVEMENT TYPE 1 - REFER  
DRG. BHS-CE-2091 FOR DETAILS

PAVEMENT TYPE 3 - REFER  
DRG. BHS-CE-2091 FOR DETAILS

PAVEMENT TYPE 6 - REFER  
DRG. BHS-CE-2091 FOR DETAILS

DENOTES NEW ROUNDABOUT  
PAVEMENT - REFER DRG.  
BHS-CE-2201 FOR DETAILS

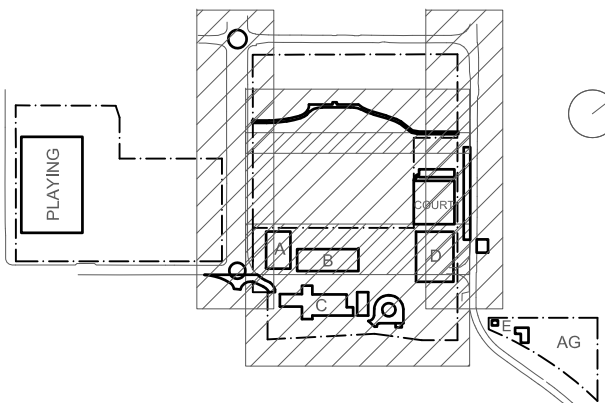
REFER DRG.BHS-CE-2130

REFER DRG.BHS-CE-2130

ROAD CIVIL WORKS PAVING GENERAL ARRANGEMENT PLAN

SCALE 1:500

KEY



Do not scale drawings. Verify all dimensions on site.

Rev	Date	Description	Chkd Auth.
A	21.12.21	ISSUED FOR DD	
B	14.02.22	GENERALLY REVISED	
C	14.07.22	ISSUED FOR RTIS REVISED DESIGN	
D	21.07.22	ISSUED FOR RTIS REVISED DESIGN	
E	25.07.22	ISSUED FOR RTIS REVISED DESIGN	
F	27.07.22	ISSUED FOR RTIS REVISED DESIGN	

Project  
New High School in Bungendore

MAJARA STREET  
BUNGENDORE NSW 2621

Drawing Title  
ROAD CIVIL WORKS  
PAVING GENERAL  
ARRANGEMENT PLAN

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:500

Drawing No.  
BHS-CE-2120

Revision  
F

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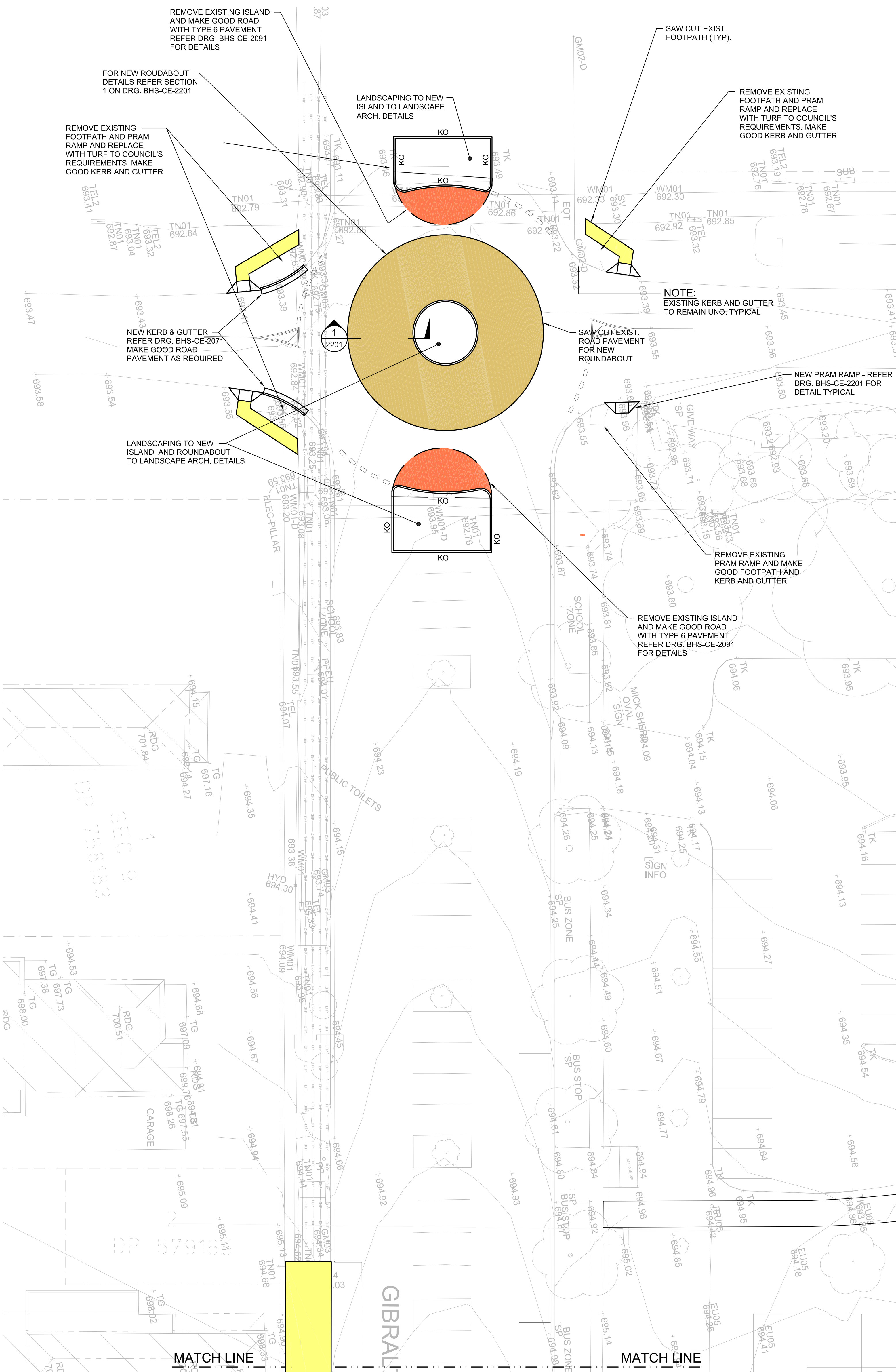
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Context

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Acoustic  
Acoustic Logic

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ROAD CIVIL WORKS PAVING DETAIL PART PLAN

SCALE 1:200

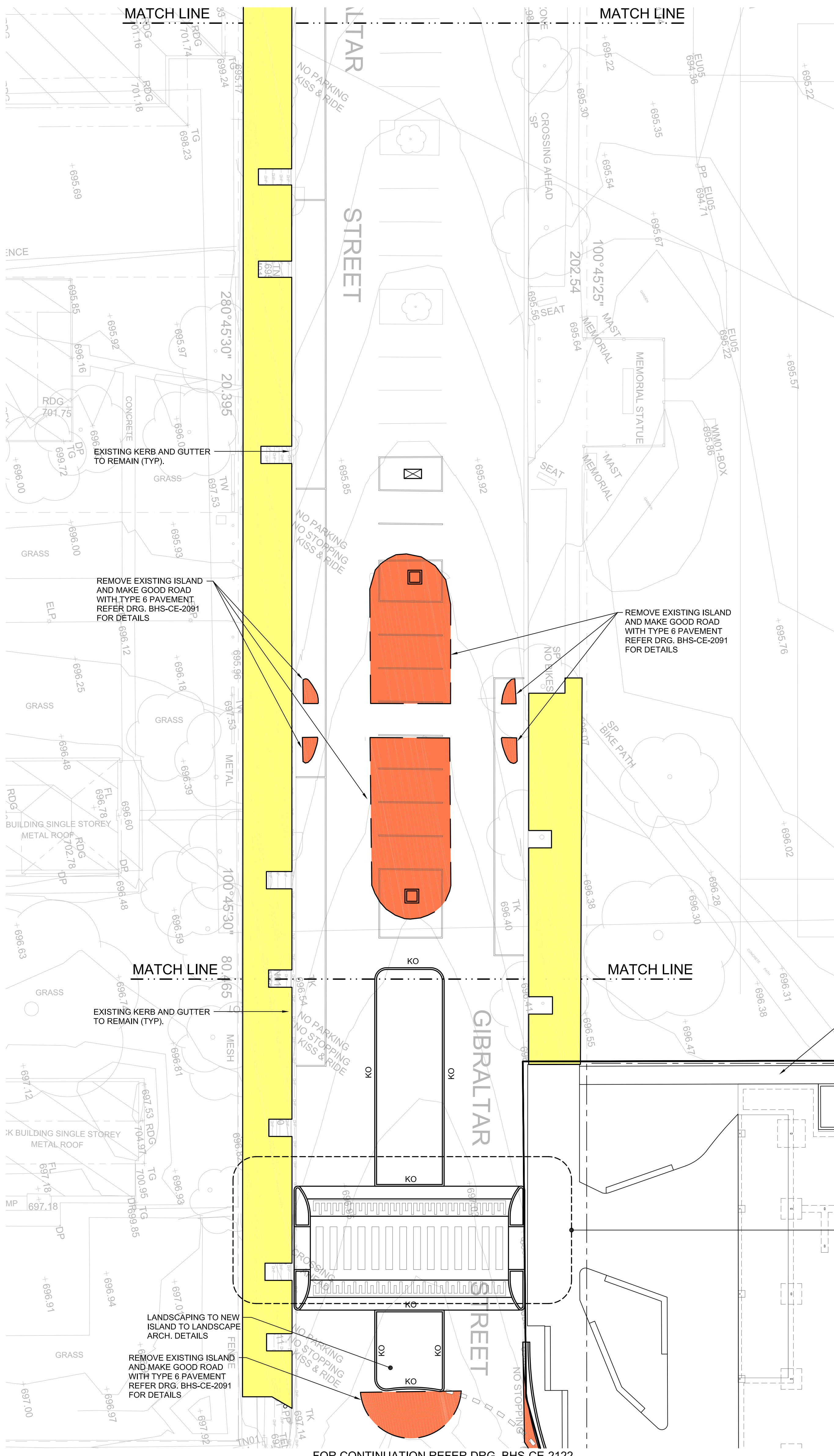
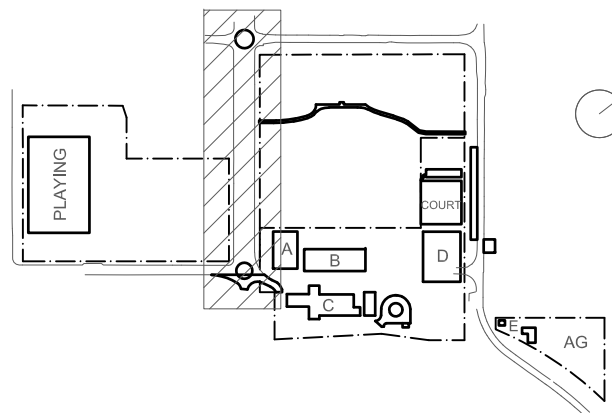
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ROAD CIVIL WORKS PAVING DETAIL PART PLAN

SCALE 1:200

Rev	Date	Description	Chkd	Auth
A	21.12.21	ISSUED FOR DD		
B	14.02.22	GENERALLY REVISED		
C	14.02.22	ISSUED FOR RTS REVISED DESIGN		
D	21.07.22	ISSUED FOR RTS REVISED DESIGN		
E	26.07.22	ISSUED FOR RTS REVISED DESIGN		

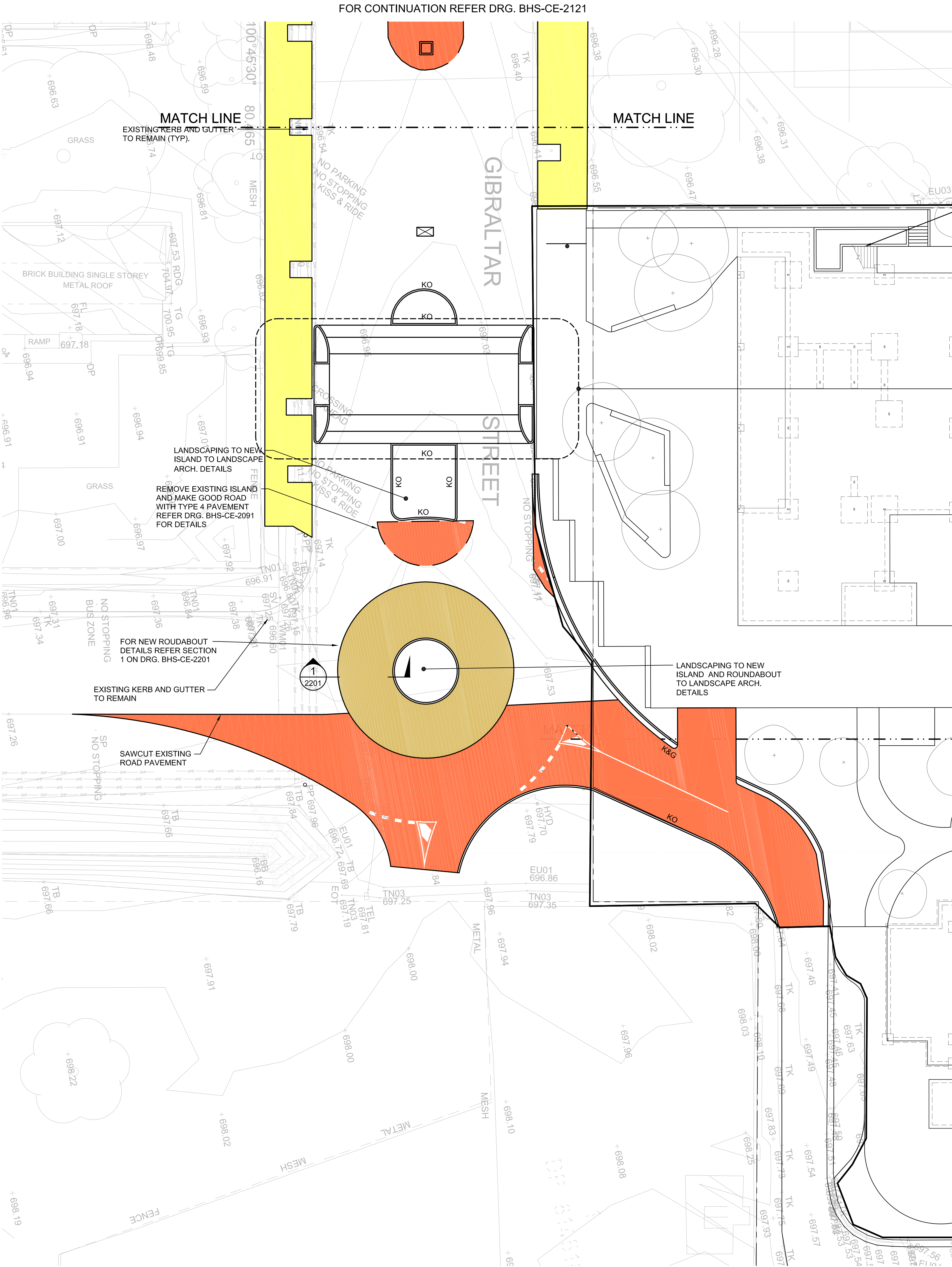
**Project**  
New High School in Bungendore  
**MAJARA STREET**  
BUNGENDORE NSW 2621  
**Drawing Title**  
ROAD CIVIL WORKS  
PAVING DETAIL PLAN  
SHEET 1

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:200
Drawing No.			
BHS-CE-2121			

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ROAD CIVL WORKSPAVENTMENT

LEGEND

- PAVEMENT TYPE 1 - REFER DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 3 - REFER DRG. BHS-CE-2091 FOR DETAILS
- PAVEMENT TYPE 6 - REFER DRG. BHS-CE-2091 FOR DETAILS
- DENOTES NEW ROUNDABOUT PAVEMENT - REFER DRG. BHS-CE-2201 FOR DETAILS

ROAD CIVIL WORKS PAVING DETAIL PART PLAN  
SCALE 1:200

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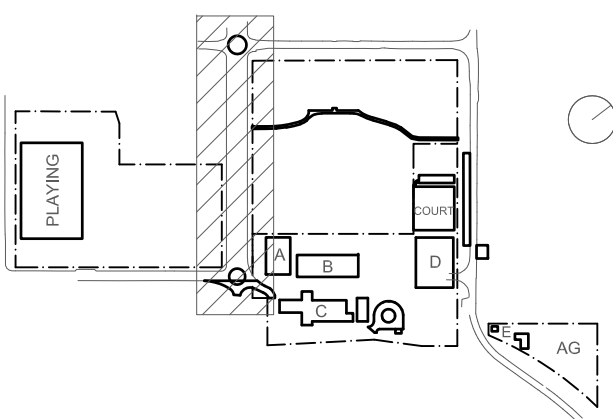
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**Context**  
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Do not scale drawings. Verify all dimensions on site.

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C	14.07.22	ISSUED FOR RTS REVISED DESIGN		
D	21.07.22	ISSUED FOR RTS REVISED DESIGN		

Project  
New High School in Bungendore

MAJARA STREET  
BUNGENDORE NSW 2621

Drawing Title  
**ROAD CIVIL WORKS  
PAVING DETAIL PLAN  
SHEET 2**

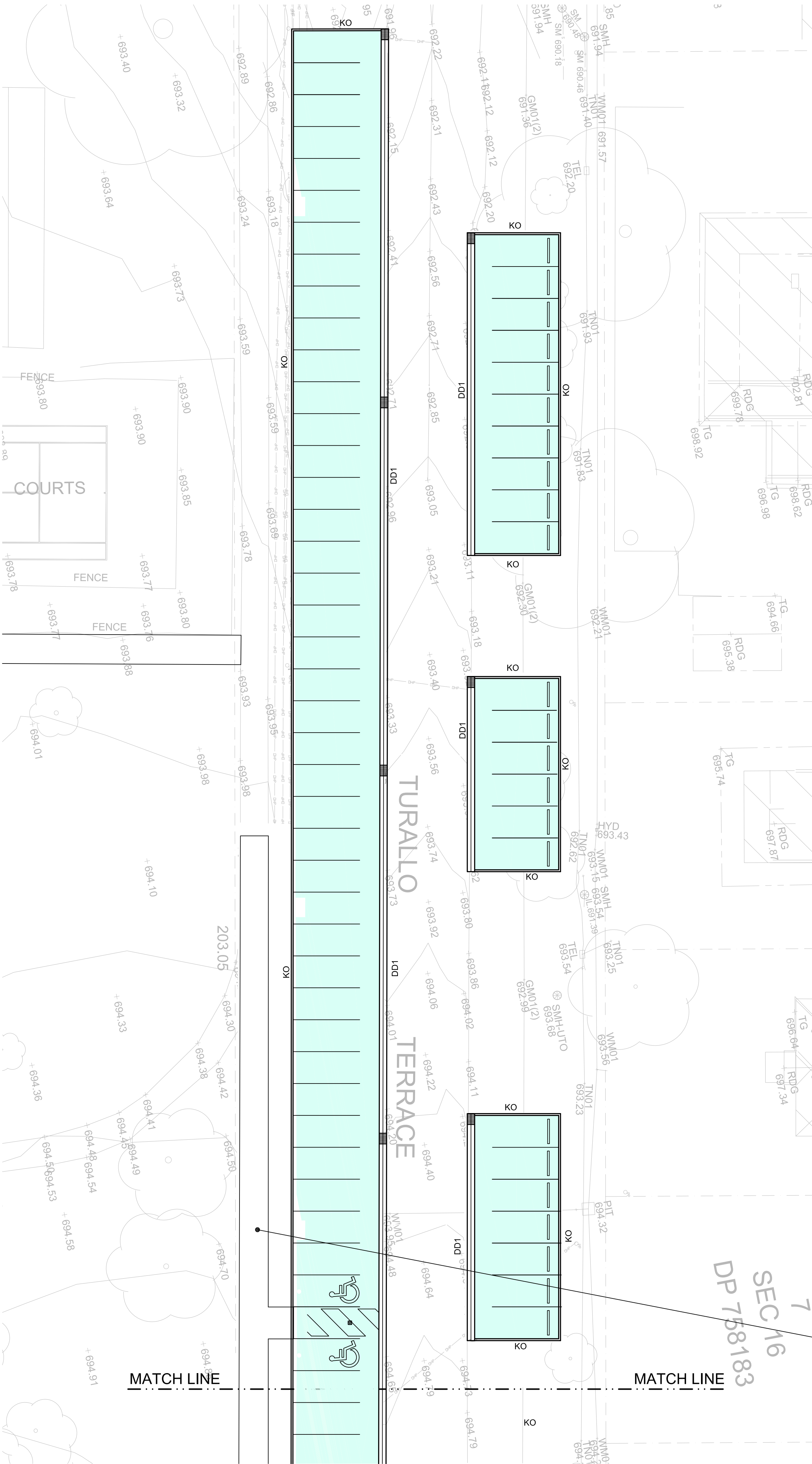
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Job No.	Status	Date	Scale
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Drawing No.	Revision		
BHS-CE-2122	D		

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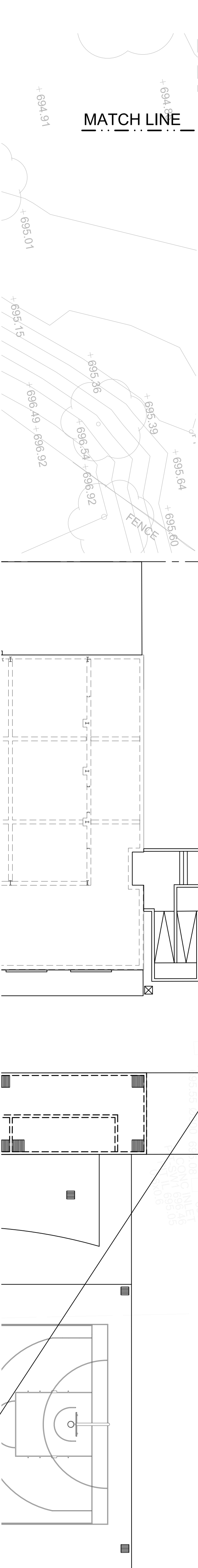
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REGISTERED  
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ROAD CIVIL WORKS PAVING DETAIL PART PLAN  
SCALE 1:200

**NOTE:**  
FOR ALL OTHER PAVEMENTS NOT  
SHOWN ON THIS DRAWING REFER  
SITEWORKS & PAVEMENT PLANS  
DRG's. BHS-CE-2059 TO BHS-CE-2063



ROAD CIVIL WORKS PAVING DETAIL PART PLAN  
SCALE 1:200

ROAD CIVIL WORKSPAVEMENT	
LEGEND	
	PAVEMENT TYPE 1 - REFER DRG. BHS-CE-2091 FOR DETAILS
	PAVEMENT TYPE 3 - REFER DRG. BHS-CE-2091 FOR DETAILS
	PAVEMENT TYPE 6 - REFER DRG. BHS-CE-2091 FOR DETAILS
	DENOTES NEW ROUNDABOUT PAVEMENT - REFER DRG. BHS-CE-2201 FOR DETAILS

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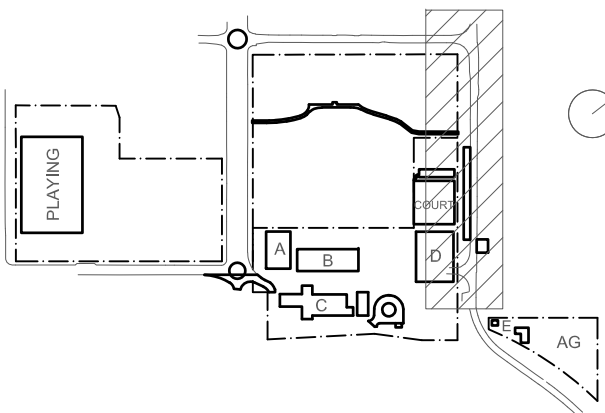
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C	14.07.22	ISSUED FOR RTIS REVISED DESIGN		
D	27.07.22	ISSUED FOR RTIS REVISED DESIGN		

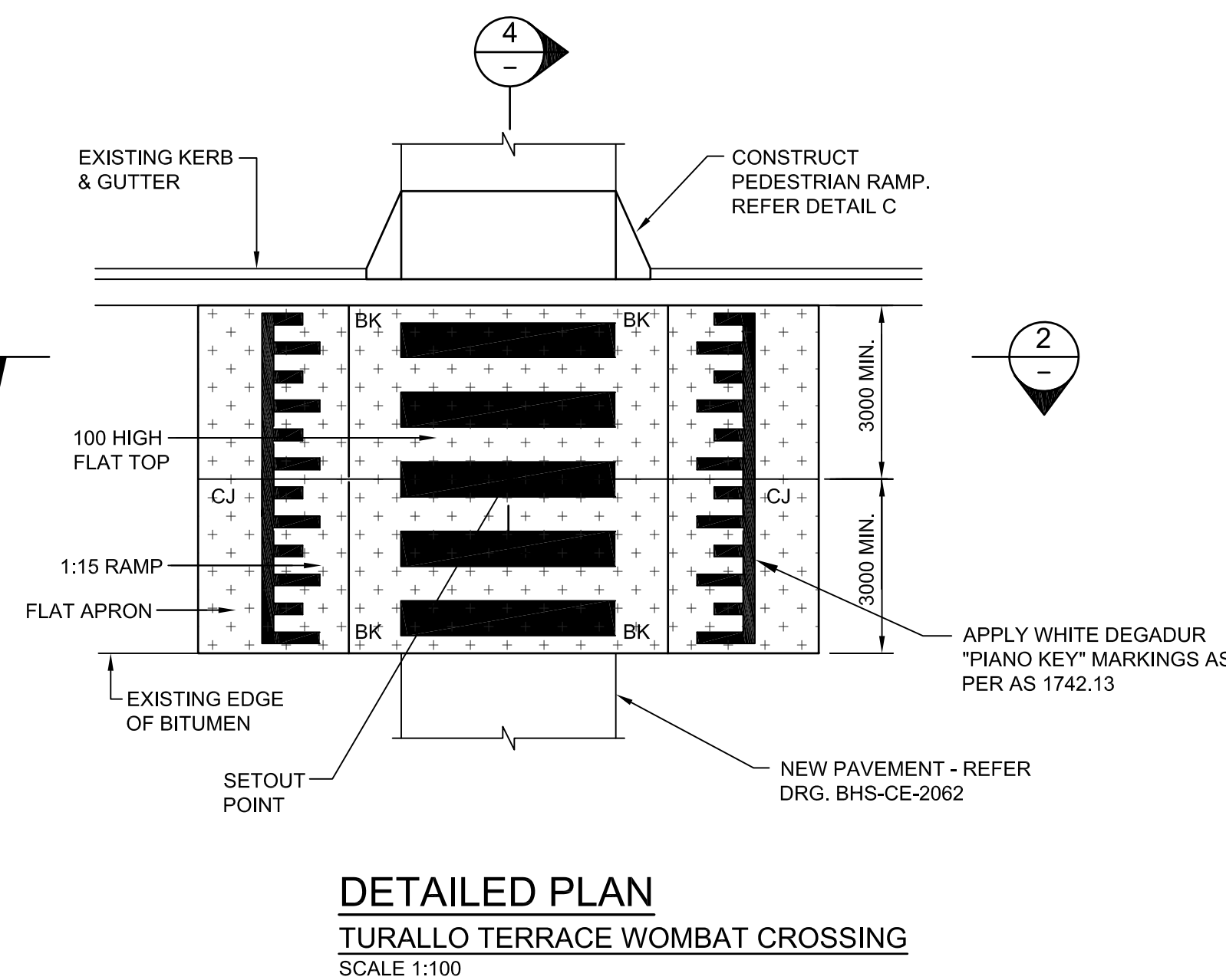
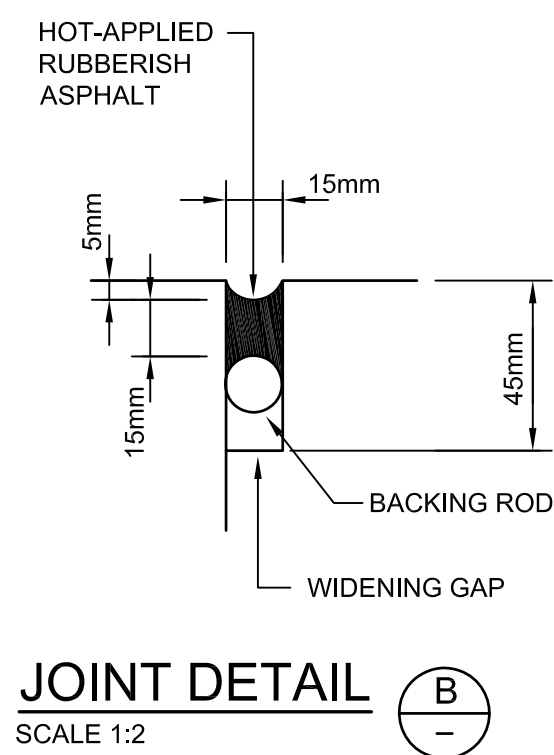
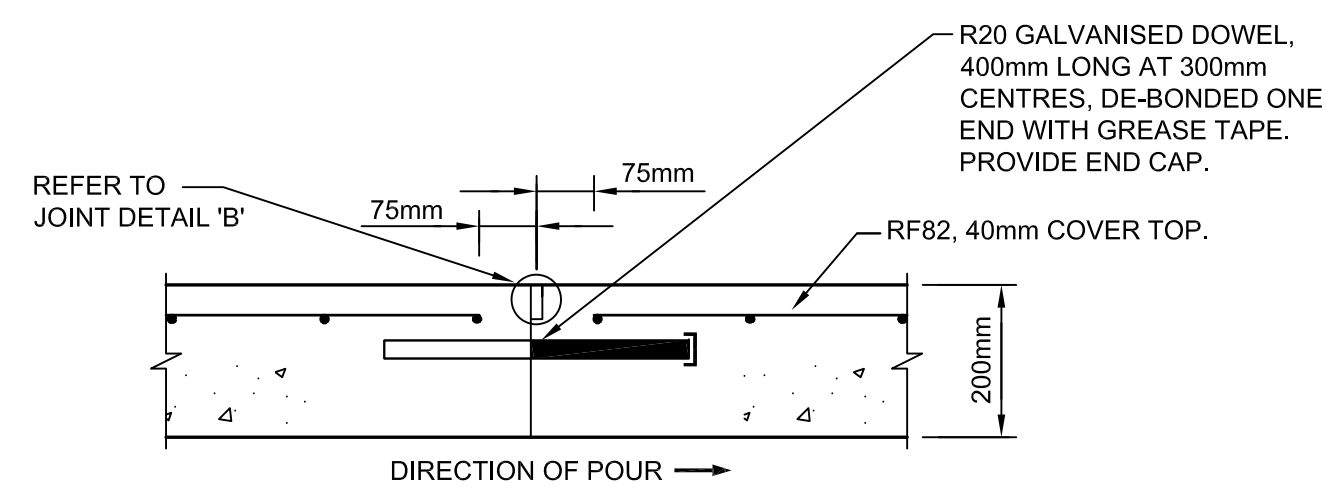
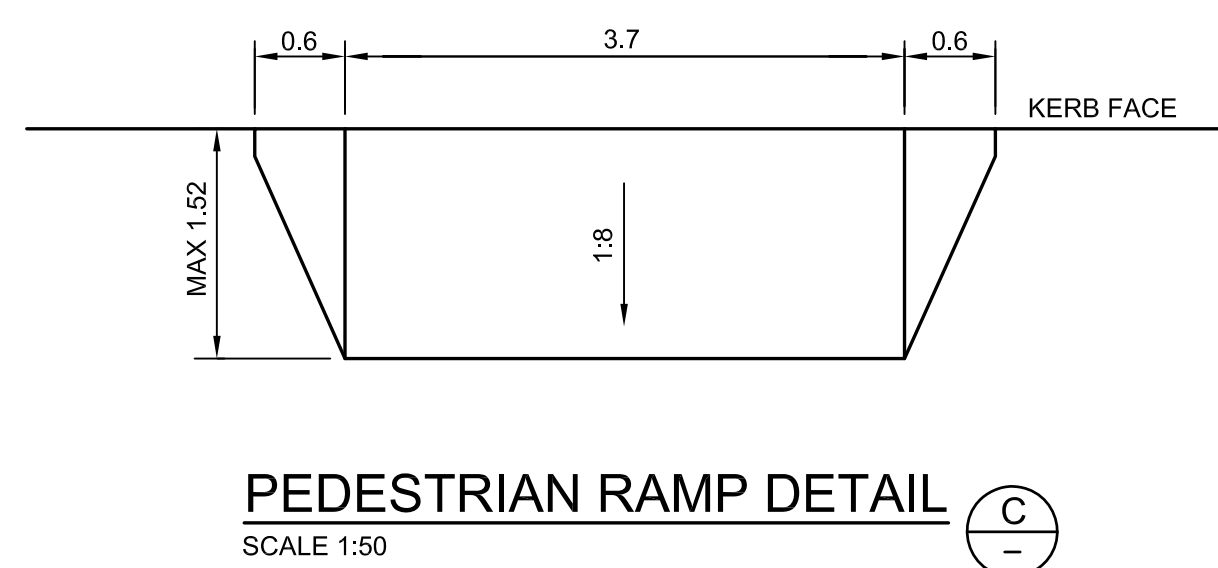
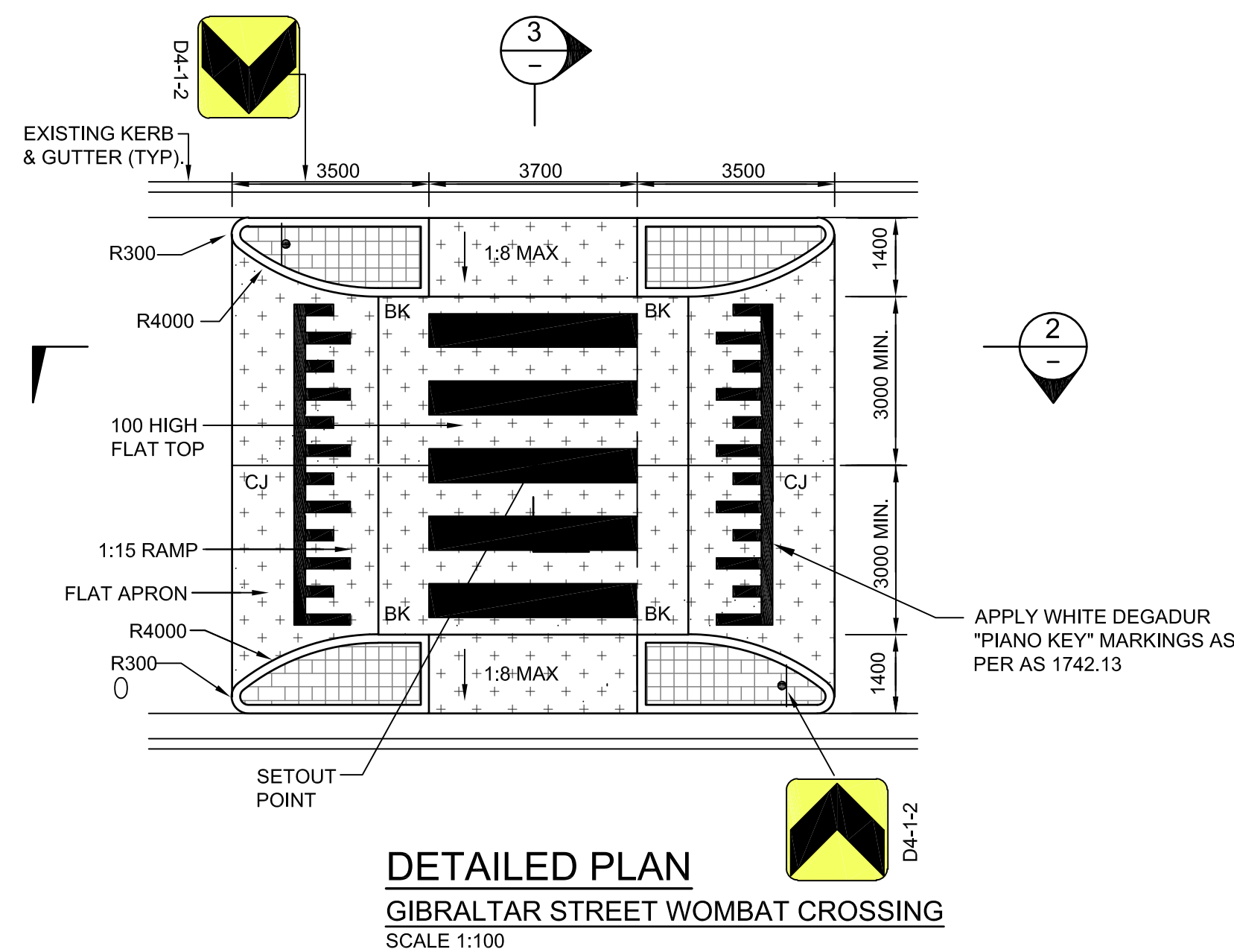
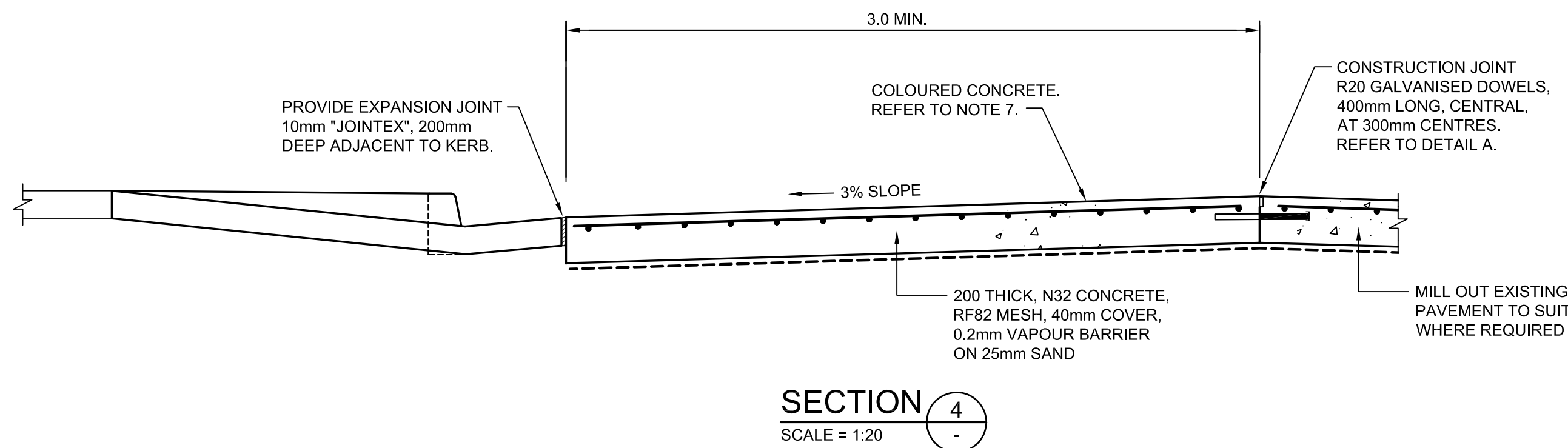
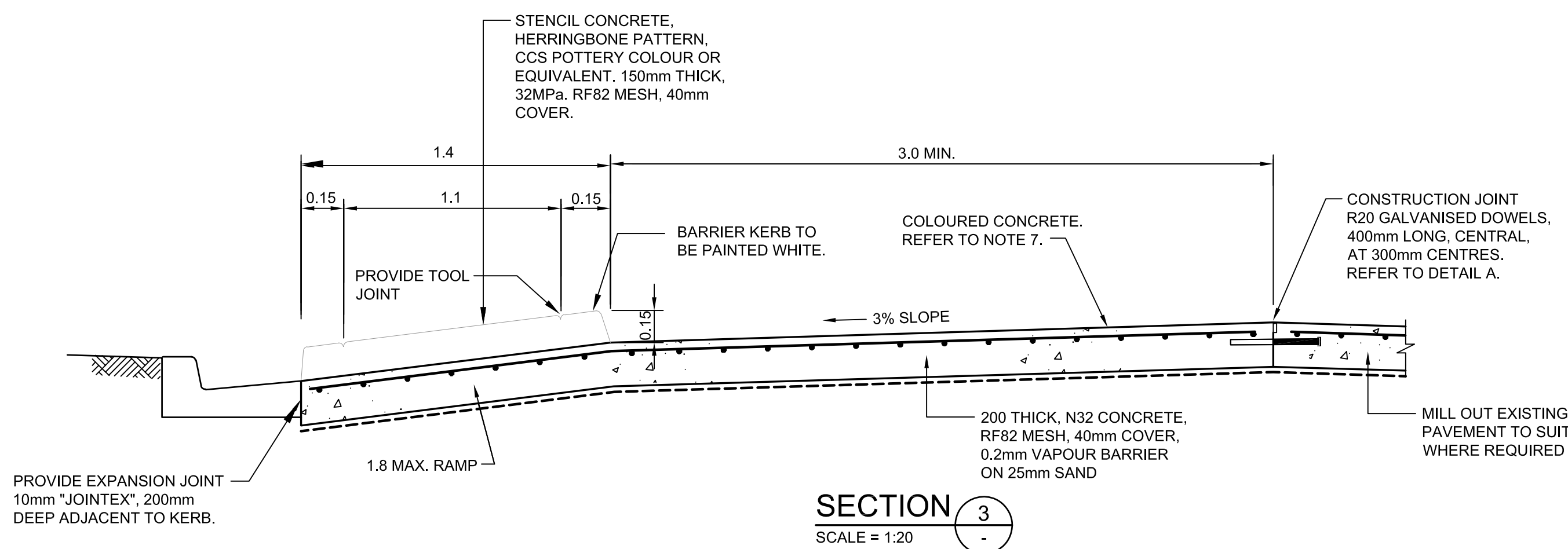
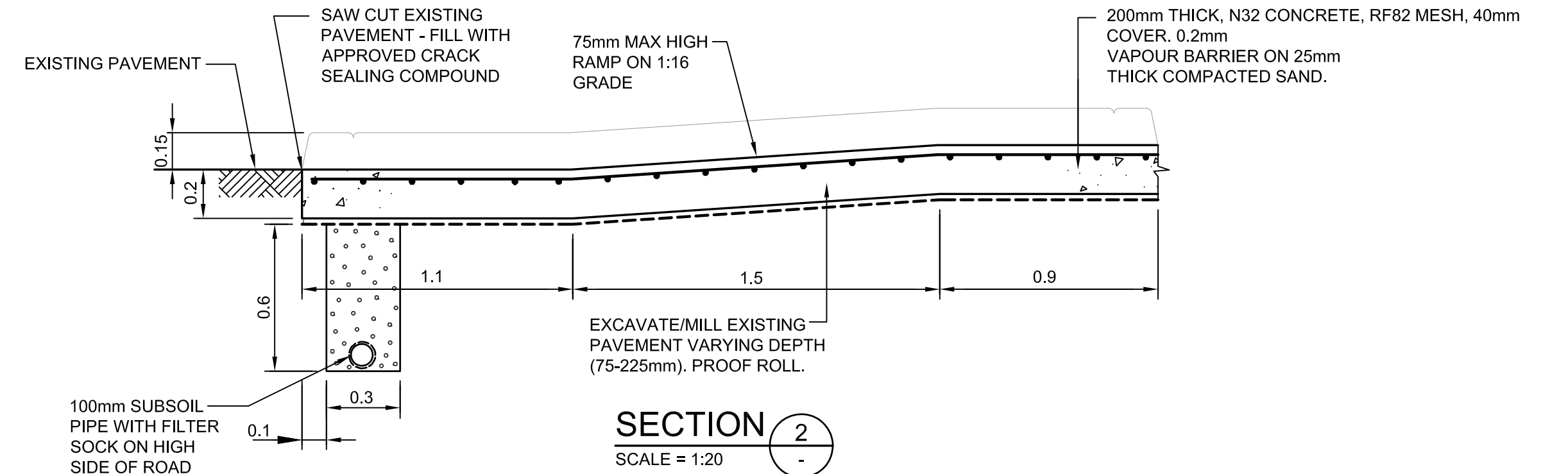
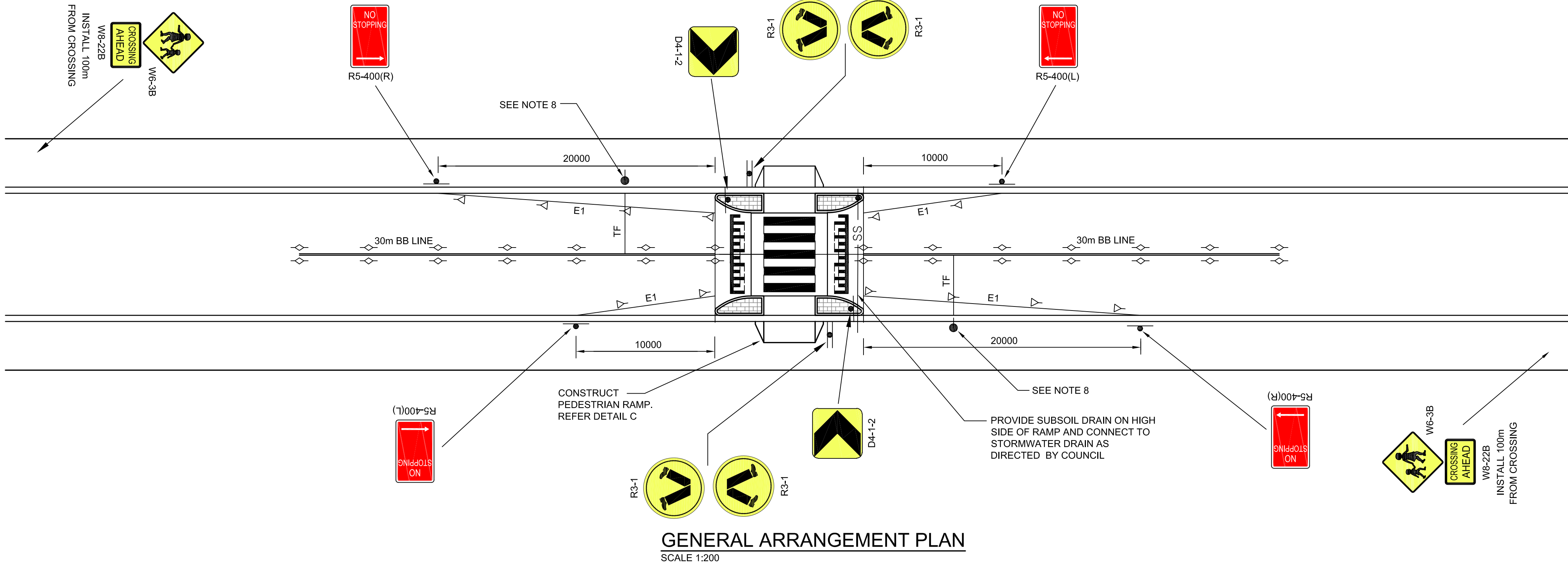
**Project**  
New High School in Bungendore  
MAJARA STREET  
BUNGENDORE NSW 2621  
**Drawing Title**  
ROAD CIVIL WORKS  
PAVING DETAIL PLAN  
SHEET 3

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	1:500
Drawing No.		Revision	
BHS-CE-2130		D	

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## LEGEND

- CONSTRUCT MEDIAN INFILL 150mm THICK STENCIL CONCRETE (CCS POTTERY COLOUR OR EQUIVALENT) 32MPa REINFORCED WITH RF82. 40mm COVER TOP
- CONSTRUCT 200mm THICK, N32 CONCRETE "ONYX" COLOURED CONCRETE TO RAMP AND RAISED PLATFORM. REFER TO NOTE 7.
- CONSTRUCT PEDESTRIAN RAMP IN ACCORDANCE WITH DETAIL C.
- INSTALL SIGN
- INSTALL POST FOR R3-3 FLAG
- APPLY 45° DIAGONAL CHEVRON LINEMARKING.
- APPLY CROSSING MARKING 3.7m LONG 0.6m WIDE, 0.6m GAP USING DEGADUR PAINT. APPLY SEALER PRIOR TO PLACEMENT.
- CONSTRUCT BARRIER KERB TO SD.14
- CONSTRUCTION JOINT
- CONSTRUCT SUBSOIL DRAIN AND FLUSHING POINT TO SD4. BACKFILL SUBSOIL DRAIN WITH NO FINES CONCRETE. SEE ALSO SECTION 2.
- PROVIDE "Y" RAISED PAVEMENT MARKERS
- PROVIDE "YY" RAISED PAVEMENT MARKERS
- PROVIDE "R" RAISED PAVEMENT MARKERS

## NOTES

- DIMENSIONS ARE IN METRES, UNLESS OTHERWISE.
- TAKE EXTREME CARE WHEN WORKING ABOVE EXISTING SERVICES TO AVOID DAMAGE TO SERVICES DUE TO VIBRATION AND LOADING.
- CONTRACTORS SHALL OBTAIN THEIR OWN 'DIAL BEFORE YOU DIG' INFORMATION, AND ASCERTAIN THE DEPTH OF ALL SERVICES, PRIOR TO WORK COMMENCING.
- ENSURE STREET LIGHTING MEETS THE REQUIREMENTS OF AS 1158.4.
- 45° DIAGONAL PAINTED MARKING TO BE 1.0m WIDE, 2.0m GAP.
- PAINT ALL PROPOSED BARRIER KERBS WHITE.
- GREY COLOURED CONCRETE SHALL BE OBTAINED BY ADDING 'ONYX' OXIDE, SUPPLIED BY CSR READYMIX. MIX PROPORTION SHALL BE 18kg OF 'ONYX' PER CUBIC METRE OF CONCRETE, MIXED AT BATCH PLANT. ALTERNATE SUPPLIERS WILL BE ALLOWED WHICH MATCH THIS COLOUR.
- INSTALL POST FOR R3-3 FLAG, AND STOP LINE (TF), AT DESIGNATED CHILDREN'S CROSSINGS, IN ACCORDANCE WITH AS1742.10

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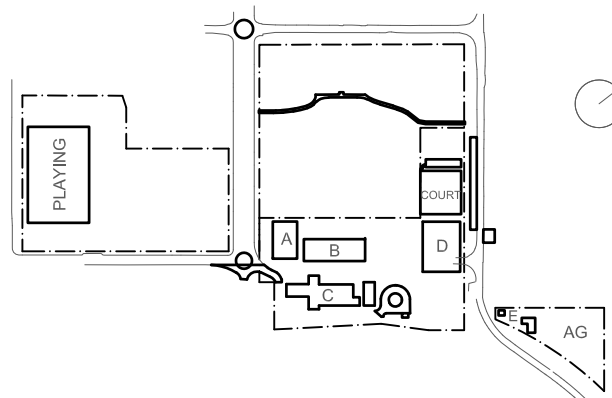
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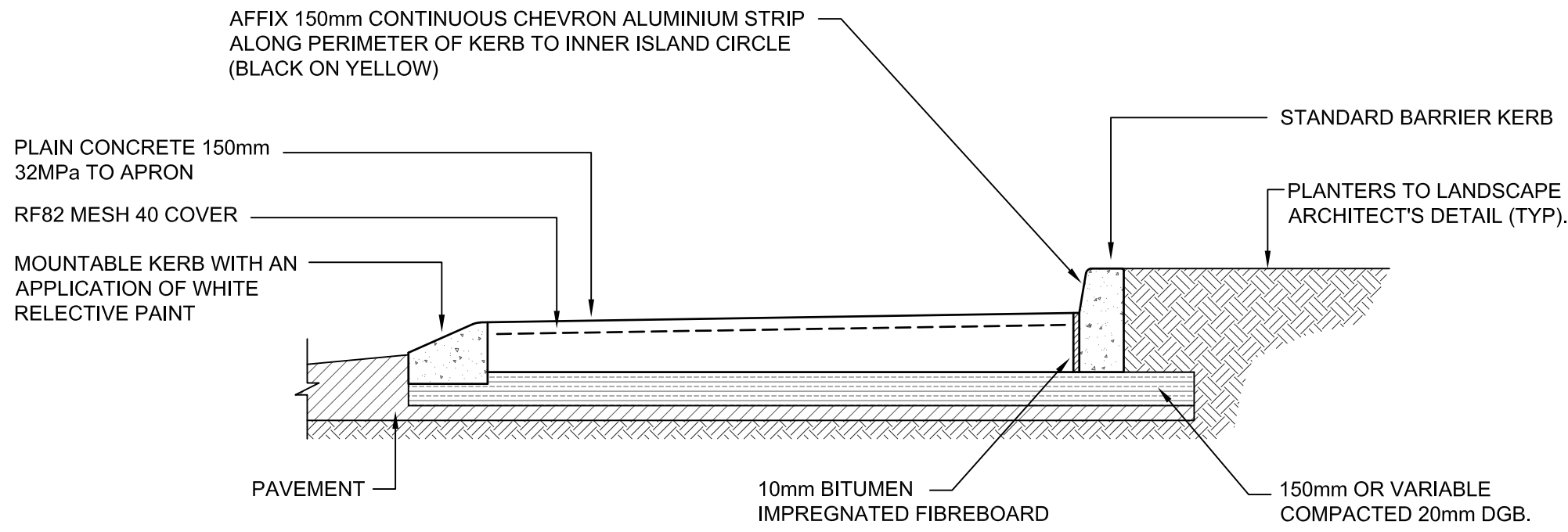
**Project**  
**New High School in Bungendore**  
MAJARA STREET,  
BUNGENDORE NSW 2621  
Drawing Title **WOMBAT CROSSING**  
**PLAN AND DETAILS**

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
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Drawing No.			Revision
BHS-CE-2200			C

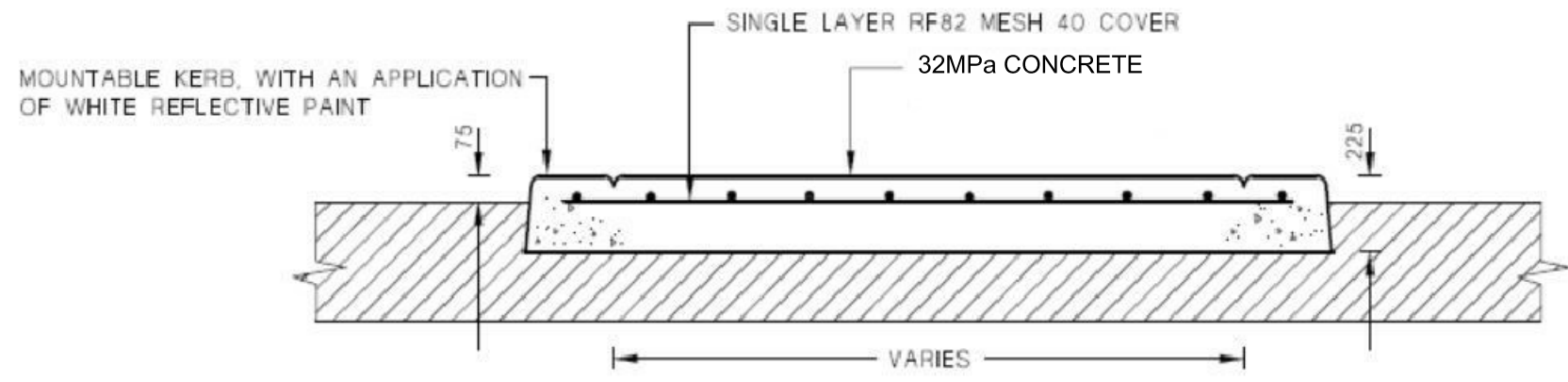
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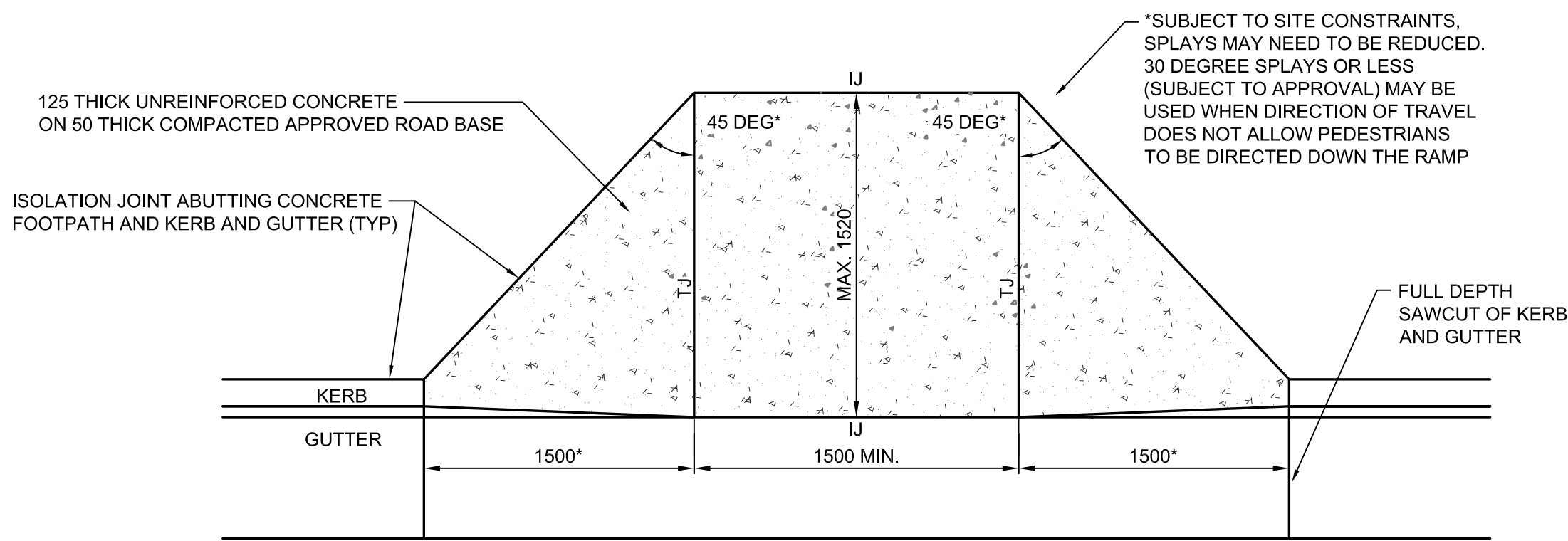




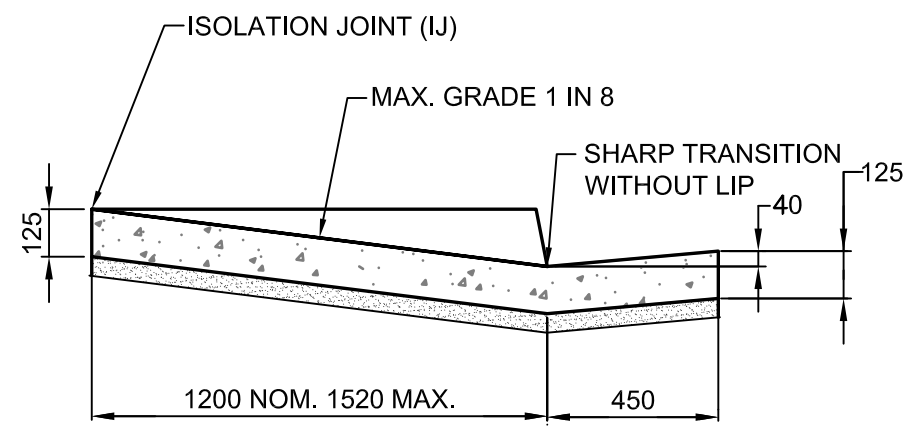
CENTRE ISLAND SECTION A-A NON TRAFFICABLE ANNULUS  
N.T.S



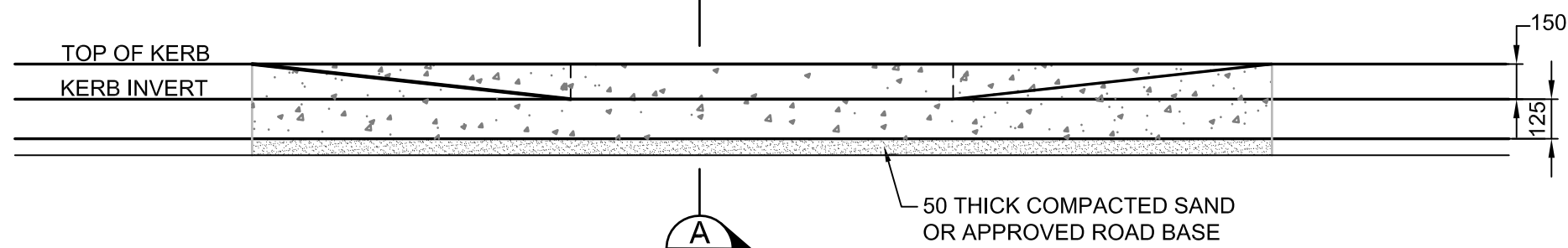
MOUNTABLE SPLITTER ISLAND SECTION B - B DETAIL  
NOT TO SCALE



PRAM RAMP PLAN  
N.T.S  
\*NOTE: ANGLED SPLAYS (<45 DEG) AND WINGS MAY NEED TO BE REDUCED DUE TO SITE CONSTRAINTS BUT SHOULD NOT BE LESS THAN 500 WHERE PRACTICAL



PRAM RAMP SECTION A-A  
N.T.S



PRAM RAMP ELEVATION  
N.T.S

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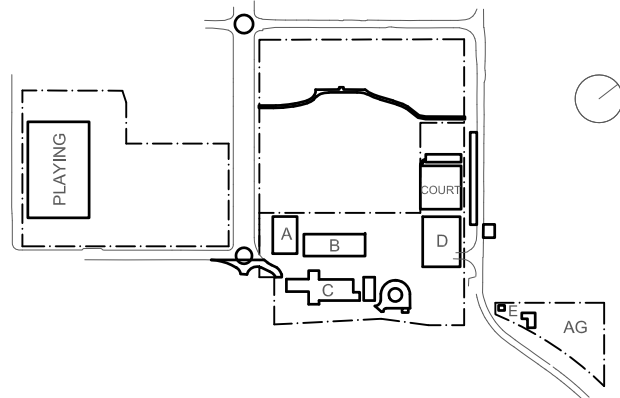
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Project  
New High School in Bungendore

MAJARA STREET,  
BUNGENDORE NSW 2621  
Drawing Title  
ROUNDAABOUT AND  
MISCELLANEOUS CIVIL  
ROAD DETAILS

Designed	Reviewed	Drawn	Sheet
MW	SCM	MW	B1
Job No.	Status	Date	Scale
5555	SSDA	OCT '21	NTS

Drawing No.  
BHS-CE-2201

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