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Project: Hunter Sports High – Major Capital Works Upgrade

Stormwater Management Plan

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Contents

Appendices

1 Introduction

1.1 Background

Aurecon has been engaged by EJE Architecture to assist with the preparation of documentation for a Development Application for Hunter Sports High School.

This Stormwater Management Plan provides an overview of the treatment and conveyance systems provided for the development in order to achieve the required flow retardation and stormwater quality outcomes for the development.

1.2 Site Description

The site is located in Gateshead NSW, consisting of an existing Public Secondary School with a street frontage on the Pacific Highway. A number of aged multi storey classroom buildings are located on the Northern end of the site, with a new Gymnasium building and COLA in the centre, and playing fields to the Western and Southern boundaries.

The total site area is approximately 91055m^2, of which 25470m^2 lies to the North of the existing service road and encompasses the area proposed new development. The site currently has a below ground piped stormwater system that discharges to Johnsons Creek to the Southwest of the site.

A new Gymnasium complex was built in 2010 which provided a 60kL rainwater tank for irrigation reuse on the site. This system is currently not being used by the school. Additionally, this development is connected to an on-site detention system providing 55 cumecs of below ground storage to manage the stormwater outflows from the site.

Refer to Appendix A for Site Analysis sketch.

1.3 Proposed Re-development

The proposed development based on architectural plans produced by EJE Architecture comprises the following principal features:

- Staged replacement of existing buildings to the Northern end of the site utilizing a Milestone breakup of works to enable the school to remain operational.
- New single storey Movement Complex
- A number of Multi storey classroom and administration buildings
- New paved footpaths, landscaping and mass planting areas
- No planned work to the existing Gymnasium, COLA and playing fields

Refer to the architectural drawings prepared by EJE Architecture for further details.

2 Proposed Stormwater Systems

2.1 Minor Drainage

The piped minor drainage system will be designed to accommodate the 1 in 20yr flows and will be distributed throughout the development to capture flows from roof downpipes along with landscaped and paved surfaces. All stormwater pipes will be directed to an onsite detention tank located adjacent to Block T and to the North of the existing service roadway. This system is documented on the Civil Stormwater Plan CV-001 provided in Appendix A.

Due to the recent additions to the site and the large areas of playing fields, only the area to the North of the existing service road has been included in the current stormwater analysis for the proposed development. (As agreed with Mr Greg Field from LMCC) This area captures the full extent of the proposed new works.

Note that the existing stormwater system below the service road will be retained unaltered. This area includes the following:

- Existing below ground piped drainage system discharging into Johnsons Creek to the Western boundary of the site
- Existing rainwater collection tank (60kL) attached to the Gymnasium roof. (currently not in use)
- Existing below ground detention tanks (45kL & 10kL) adjacent to the Gymnasium
- Overland flow paths directing surface flows towards the Southwestern boundary along pipe drainage routes.

2.2 Major Drainage

The major stormwater flows from rainfall events up to a 100 year ARI that cannot be accommodated by the below ground pipe network will be conveyed through the new development on the surface via overland flow along the line of the below ground system. Piped flows will pass through the detention system and discharge at the rates as below. Bypass flows unable to be directed to, and accommodated by the tank will be intercepted by the existing kerbed access road to the South of the new works. Flows will be directed by formed kerbs to the pit at the low point of the road where it will be detained until it is either empties through the piped network, or overflows into the above ground drainage swales. In both cases the water will be directed to the existing discharge point in the Southwestern part of the site adjacent to Johnsons Creek.

2.3 Detention Storage

A volume of detention storage will be provided appropriate to store peak flows from the proposed new development and limit discharges such that post developed flows will be limited to the pre developed flow for all storm events. All outflows from the detention tank will be discharged through the existing stormwater system to Johnsons Creek.

Note that as there has been a Nett decrease in the impervious area with the proposed new development, the Post developed flows will actually be slightly less than the Pre developed flows. Whilst this satisfies the Lake Macquarie City Council requirements, an On-site detention (OSD) tank has been adopted in the proposed system to further manage major storm events by storing peak inflows and releasing them at rates able to be managed by the piped system. This will both restrict the site flows from all storms in the Post developed case, and improve safety by minimizing any surface overflows during major storm events. The analysis of the upper school catchment and detention system has been carried out using the DRAINS software. The upper catchment was modelling for the predeveloped case to determine existing site flows, and then the post developed case was modelled using a detention storage which was adjusted to ensure the peak outflows were able to be conveyed from the tank with no overflows.

The following Storage and Discharge requirements are applicable:

Storm ARI	Storage Required (m^3)	Site Discharge – Pre Development (L/s)	Site Discharge – Post Development (L/s)	Over flows from Detention Tank (L/s)
2	38.9	54	44	0
5	39.6	75	45	0
20	40.4	102	45	0
100	44.3	124	47	0

Table 1 – Storage and Discharge from Detention Tank

Note: High Early Discharge weir provided at RL 1m.

2.4 Stormwater Quality Improvement and Reuse

All new stormwater pits on the site will incorporate EnviroPod™ 200micron filter inserts to remove contaminants from the stormwater by the mechanism of direct screening. The inserts act as a Gross Pollutant Trap and allow for pollutants and coarse sediments to be captured at the source. Given the educational nature of the development, it is anticipated that litter will be the primary pollutant which will be captured at the pit and not allowed to be transmitted through the system to the outfall.

Additional Oil Absorbent Media pouches are also specified to new pits in trafficable areas. These pouches will capture first flush oil and grease deposits to improve the water quality at the source.

It is also proposed that the out of service rainwater tank connected to the Gymnasium will be recommissioned. The water will be reused for the main building toilet flushing and for irrigation of the new landscaped areas. (Note that the recycled rainwater is not proposed to be used to irrigate the existing playing fields)

2.5 Erosion and Sediment Control

Erosion and sediment controls will be required during the construction phase to capture, control and treat sediment laden water leaving the site. Sediment and erosion controls will consist of various sediment control elements installed around the lower extents of the works, and will include:

- Stabilised entry/exit point consisting of large diameter crushed rock pad. Approx 5m x 3m.
- Sediment fences along lower edges of construction work areas
- Stormwater pit protection barriers
- Designated material stockpile locations

As the works are to be broken up into Milestones, the erosion and sediment control measures will need to be moved to suit the disturbed construction areas relative to the current Milestone.

As the post developed flows are being reduced from pre developed flow, and the discharges are being conveyed via the existing piped network, it is not proposed to carry out any works at the site discharge point near Johnsons creek, nor any below the existing service road. Additionally, due to this flow reduction, it is not expected that any detrimental effects such as erosion will occur at the site discharge point and there are unlikely to be any impacts to Johnsons creek as a result of the development.

Refer Appendix C for details of control measures.

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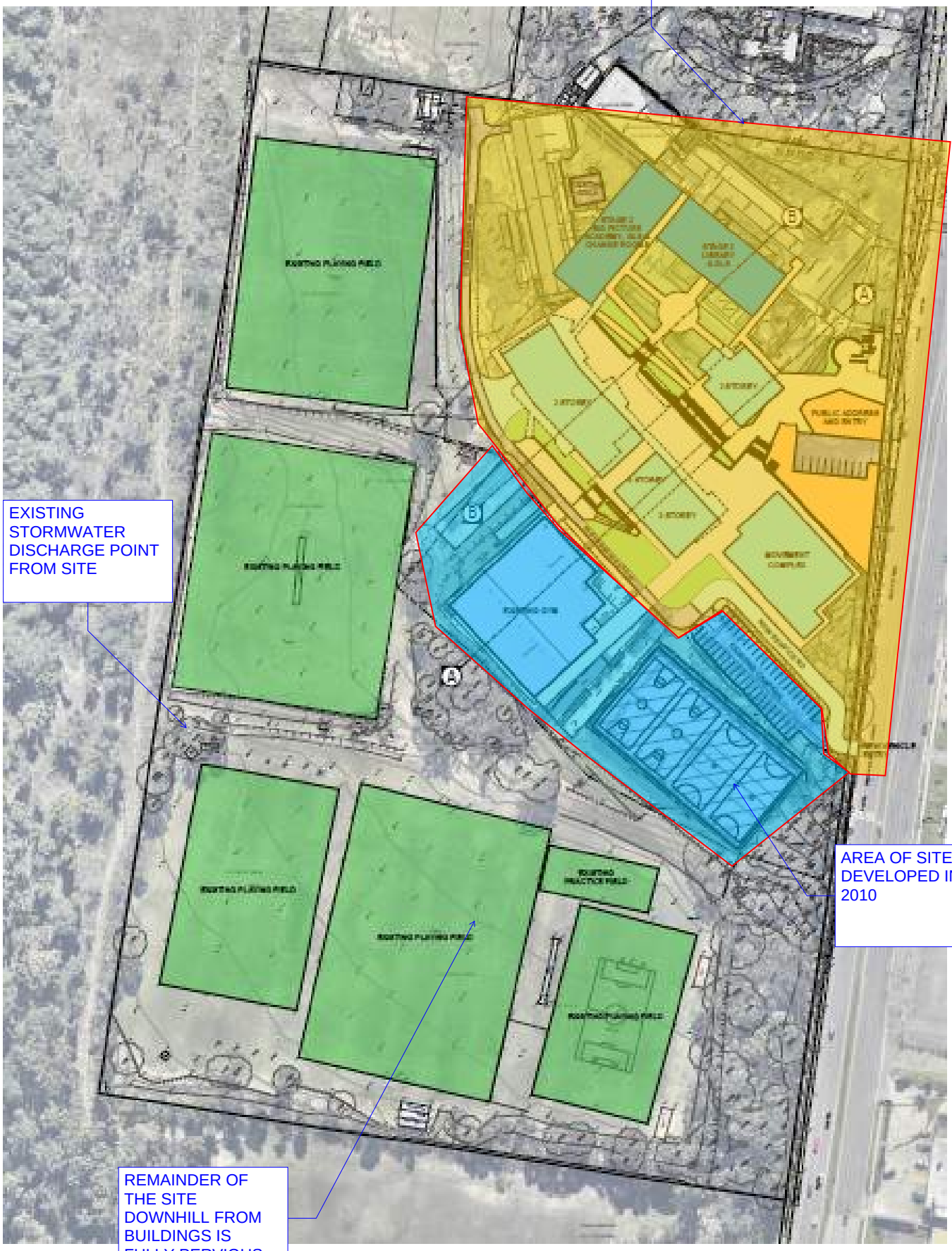
Appendix A
Site Analysis Sketch

AREA OF SITE BEING DEVELOPED. FULL AREA ABOVE SERVICE ROAD.



EXISTING STORMWATER DISCHARGE POINT FROM SITE

AREA OF SITE DEVELOPED IN 2010

REMAINDER OF THE SITE DOWNHILL FROM BUILDINGS IS FULLY PERVIOUS

SITE ANALYSIS

Appendix B
Stormwater and Civil Drawings

HUNTER SPORTS HIGH SCHOOL MAJOR CAPITAL WORKS UPGRADE

CIVIL ENGINEERING

GENERAL NOTES

G1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS, THE SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.

G2 THE PRINCIPALS AUTHORISED PERSON IS REFERRED TO AS THE SUPERINTENDENT IN THE STRUCTURAL STANDARD NOTES.

G3 ANY DISCREPANCY ON THE DRAWINGS OR BETWEEN THE DRAWINGS AND/OR THE SPECIFICATION AND/OR THE SPECIFIED SAA STANDARD SHALL BE REFERRED TO THE SUPERINTENDENT AND A WRITTEN INSTRUCTION RECEIVED PRIOR TO PROCEEDING WITH THE WORK. DURING TENDERING THE TENDER SHALL ASSUME THE LARGER/GREATER CRITERIA IN TERMS OF COST IN THE ABSENCE OF OTHER INSTRUCTIONS.

G4 WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT CURRENT AUSTRALIAN STANDARDS INCLUDING ALL AMENDMENTS, AND THE REQUIREMENTS OF THE LOCAL STATUTORY AUTHORITIES, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

G5 ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.

G6 AURECON'S ENGAGEMENT IS TO PROVIDE DESIGN WITHIN OUR AREA OF EXPERTISE AND AS SUCH THE DOCUMENTED DESIGN IS FOR THE PERMANENT CONDITION SUITABLE FOR THE DOCUMENTED INTENDED OCCUPANCY USE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE AND ANY ADJACENT STRUCTURES IN A SAFE AND STABLE CONDITION AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR IS TO DEVELOP A DETAILED SAFE WORK METHOD STATEMENT OUTLINING THE CONSTRUCTION SEQUENCE AND METHODOLOGY. THE CONTRACTOR IS TO ENGAGE A QUALIFIED AND SUITABLY EXPERIENCED ERECTION ENGINEER TO REVIEW THE CONSTRUCTION METHODOLOGY AND PROVIDE DESIGN OF TEMPORARY WORKS (SUCH AS PROPPING AND TEMPORARY BRACING) TO SUIT THE CONSTRUCTION SEQUENCE AND METHODOLOGY, CHOSEN BY THE BUILDER.

G7 THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE SUPERINTENDENT BUT IT IS NOT AN AUTHORISATION FOR A VARIATION. ANY CLAIM FOR A VARIATION MUST BE SUBMITTED TO THE SUPERINTENDENT BEFORE THE WORK COMMENCES.

FOOTING NOTES

F1 THE MINIMUM SAFE BEARING CAPACITY OF THE FOUNDATION MATERIAL IS TO BE:
100 kPa FOR DETENTION TANK SLAB
REFER TO GEOTECHNICAL REPORT BY DOUGLAS PARTNERS FOR GUIDANCE.
FOR BORED PIERS/PILES REFER TO THE GEOTECHNICAL REPORT
COFFEY TO CONFIRM BEARING CAPACITY ON SITE

F2 BEFORE ANY REINFORCEMENT OR CONCRETE IS PLACED, THE SAFE BEARING CAPACITY OF THE GROUND IS TO BE VERIFIED BY THE GEOTECHNICAL ENGINEER. EXCAVATION SHALL CONTINUE UNTIL THE REQUIRED BEARING CAPACITY IS FOUND. THE OVER-EXCAVATION SHALL BE BACK-FILLED WITH BLINDING CONCRETE TO THE ASSUMED FOUNDING LEVEL.

F3 THE CONTRACTOR IS TO ALLOW FOR THE ENGAGEMENT OF THE GEOTECHNICAL ENGINEER TO VERIFY THE FOUNDING MATERIAL.

F4 OVER-EXCAVATION WITHIN THE INFLUENCE ZONE (45 DEGREE LINE DOWN FROM BASE OF WALL) OF ANY RETAINING WALL IS NOT ALLOWED WITHOUT THE PRIOR APPROVAL OF THE EXCAVATION SEQUENCE BY THE SUPERINTENDENT.

EXISTING SERVICES NOTES

EX1. THE LOCATIONS OF ALL EXISTING SURFACE PITS, VALVE COVERS, ETC. SHOWN ON DRAWINGS HAVE BEEN REPRODUCED FROM SURVEY. THE LOCATIONS OF UNDERGROUND SERVICES HAVE BEEN NOTED FROM EXISTING RECORDS. AS DIFFERENCES WITH RECORDS MAY EXIST COMPLETE ACCURACY CANNOT BE GUARANTEED. ALL EXISTING SERVICES LOCATIONS SHALL BE VERIFIED ON SITE BY THE CONTRACTOR BEFORE COMMENCING WORK.

EX2. PRIOR TO ANY WORK ON SITE THE CONTRACTOR SHALL REVIEW ALL CONSULTANT DISCIPLINE DRAWINGS TO ASCERTAIN PROPOSED LOCATION & WORKS TO EXISTING SERVICES.

EX3. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE THE CONTRACTOR SHALL CONTACT THE RELEVANT AUTHORITIES TO ASCERTAIN THE POSSIBLE LOCATION OF FURTHER SERVICES AND DETAILED LOCATION AND DEPTH OF ALL SERVICES AND ARRANGE FOR THEIR RELOCATION WHERE NECESSARY.

EX4. ALL SERVICES ARE TO BE PROTECTED DURING CONSTRUCTION. ATTENTION IS DRAWN TO MINIMUM COVER REQUIREMENTS OVER EXISTING SERVICES. IN THE CASE OF PROPOSED SERVICES, FILL TO MINIMUM REQUIRED DEPTH ABOVE THE TOP OF THE SERVICE PRIOR TO TRENCH EXCAVATION.

DRAINAGE GENERAL NOTES

D1. WHERE PROPOSED STORMWATER PIPES INTERFERE WITH EXISTING SERVICES, ADVISE THE CONTRACTOR BEFORE PROCEEDING WITH THE WORKS.

D2. ALL CONCRETE WORKS SHALL BE IN ACCORDANCE WITH AS 3600.
STEEL REINFORCEMENT SHALL BE IN ACCORDANCE WITH AS/NZS 4671

D3. ALL LEVELS ARE TO AHD AND IN METERS. ALL DIMENSIONS ARE IN MILLIMETRES. U.N.O.

D4. CONSTRUCTION OF ALL DRAINAGE WORKS TO BE IN ACCORDANCE WITH LAKE MACQUARIE CITY COUNCIL GUIDELINES OR SPECIFICATIONS.

D5. CONNECTIONS TO THE BUILDING DOWNPIPES ARE TO COMPRISE COLLARED CONNECTIONS PROVIDED BY THE STORMWATER CONTRACTOR. COLLARED CONNECTIONS ARE TO BE COMPLETED AFTER INSTALLATION OF THE DOWNPIPES.

D6. FOR SETOUT REFER TO ARCHITECTS DRAWINGS UNLESS SHOWN OTHERWISE ON THIS DRAWING.

D7. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH AS 3500.

D8. ALL PIPES TO BE LAID AT A MINIMUM GRADE OF 1%.

D9. DOWNPIPE LOCATIONS NOT SHOWN. REFER TO HYDRAULIC ENGINEERS DRAWINGS FOR FINAL NUMBER & LOCATION. ALL DOWNPIPES TO BE CONNECTED TO NEW STORMWATER SYSTEM

D10. SUBSOIL DRAINAGE TO BE PROVIDED BEHIND ALL VERTICAL STEPS IN LEVEL & AS SPECIFIED BY THE LANDSCAPE ARCHITECT.

D11. ALL STORMWATER PIPES TO HAVE FLEXIBLE JOINTS INTO PITS & TANKS TO ACCOMMODATE ANY GROUND MOVEMENTS RELATED TO MINE SUBSIDENCE.

D12. ALL STORMWATER INLET PITS TO HAVE AN ENVIROPOD SERIES 200 FILTER INSTALLED TYP. PITS IN TRAFFICABLE AREAS SHALL ALSO HAVE OIL ABSORBENT MEDIA OPTION INCLUDED.

CONCRETE NOTES

C1. ALL WORKSMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF AS3600 INCLUDING AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

C2. BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE SLAB THICKNESS. BEAMS AND SLABS ARE TO BE POURED TOGETHER UNLESS NOTED OTHERWISE.

C3. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.

C4. NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT PRIOR APPROVAL OF THE SUPERINTENDENT.

C5. CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN ON THE DRAWINGS OR SPECIFICALLY APPROVED BY THE SUPERINTENDENT.

C6. ALL EXPOSED CONCRETE CORNERS TO HAVE 15mm CHAMFER U.N.O.

C7. FORMWORK AND BACK PROPPING SHALL BE DESIGNED, CONSTRUCTED AND STRIPPED IN ACCORDANCE WITH AS3610. REFER TO ARCHITECTURAL DRAWINGS AND THE SPECIFICATION FOR CLASSES OF SURFACE FINISH.

C8. CONCRETE COMPONENTS AND QUALITY SHALL BE AS FOLLOWS: U.N.O

ELEMENT	f'c (MPa)
SLABS	32
FOOTINGS / RETAINING WALLS	32

MAXIMUM AGGREGATE SIZE SHALL BE 20mm

C9. ALL CEMENT IS TO BE "GP" GENERAL PURPOSE PORTLAND CEMENT OR "GB" GENERAL PURPOSE BLENDED CEMENT OR TYPE "SR" SULPHATE-RESISTING CEMENT AS REQUIRED COMPLYING WITH AS3972 UNLESS NOTED OTHERWISE ON THE DRAWINGS. EXTRA RAPID HARDENING SUPERSULPHATED AND HIGH ALUMINA CEMENTS AND CEMENTS CONTAINING CHLORIDE SHALL NOT BE USED. THE USE OF FLY ASH AND/OR SILICA FUME AS A CEMENT SUBSTITUTE, OTHER THAN THAT PROPORTION ALLOWED AS PART OF THE "GB" CEMENT CONTENT WILL ONLY BE PERMITTED AS PART OF A DESIGNED CONCRETE MIX WHICH HAS BEEN APPROVED IN WRITING BY THE SUPERINTENDENT.

C10. (D) DENOTES SPECIAL DURABLE CONCRETE WHERE THE ELEMENT HAS AT LEAST ONE FACE EXPOSED TO THE WEATHER OR POSSIBLE CORROSIVE ATTACK. THIS CONCRETE REQUIRES A SPECIAL TOLERANCE FOR THE COVERS OF - 0mm + 10mm.
SPECIAL PRECAUTIONS ARE REQUIRED TO IMPROVE THE LONG TERM PERFORMANCE OF THESE FACES OF CONCRETE. IN PARTICULAR, NO METAL INSERTS, METAL BAR CHAIRS OR METAL FORM SPACERS OF ANY KIND ARE TO BE PLACED IN THE COVER ZONES WITHOUT THE EXPRESS PERMISSION OF THE SUPERINTENDENT. TAKE SPECIAL CARE TO AVOID SCRAP TIE WIRE OR OTHER MATERIAL BEING PRESENT. REFER DRAWINGS FOR LOCATIONS.

C11. REFER GREENSTAR NOTES FOR ADDITIONAL CONCRETE REQUIREMENTS.

C12. CONCRETE SLUMP TO BE A MAXIMUM OF 80mm UNLESS NOTED OTHERWISE ON THE DRAWINGS.

C13. FREE DROPPING OF CONCRETE FROM A HEIGHT GREATER THAN 1000mm IS NOT PERMITTED.

C14. SURFACES RECEIVING GROUT SHALL BE LEFT ROUGH AND FREE OF LAITANCE.

C15. CONCRETE MUST BE CURED BY AN APPROVED METHOD IN ACCORDANCE WITH THE SPECIFICATION FOR SEVEN DAYS AFTER POURING.

C16. DRYING SHRINKAGE (MAXIMUM INCLUDING TOLERANCES) AT 56 DAYS: 600 µM FOR CONCRETE UP TO AND INCLUDING STRENGTH GRADE 32; 650 µM FOR HIGHER STRENGTH GRADES UNLESS NOTED OTHERWISE

C17. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY SHOWN IN TRUE PROJECTION OR SCALE.

C18. REINFORCEMENT SYMBOLS:
N
NORMAL DUCTILITY CLASS HOT ROLLED DEFORMED BARS OR MESH TO AS/NZS 4671 WITH fsy=500 MPa.
R
NORMAL DUCTILITY CLASS 250N PLAIN ROUND BAR TO AS/NZS 4671 WITH fsy=250 MPa.
L
LOW DUCTILITY CLASS 500L REINFORCING MESH OR BAR TO AS/NZS 4671 WITH fsy=500 MPa.
LOW DUCTILITY CLASS L REINFORCEMENT IS NOT TO BE USED OTHER THAN WHERE SHOWN ON DRAWINGS.
THE NUMBER FOLLOWING THE BAR SYMBOL IS THE NORMAL BAR DIAMETER IN MILLIMETERS.

C19. PULL OUT BARS OR OTHER BARS WHICH ARE SHOWN ON THE DRAWING TO BE RE-BENT ON SITE SHALL BE MADE FROM QUENCHED AND SELF TEMPERED STEEL. THE BARS SHALL BE POSITIONED WITH THE INITIAL BEND CLEAR OF THE CONCRETE FACE.

C20. SITE BENDING OF REINFORCEMENT BARS SHALL BE DONE WITHOUT HEATING USING A PROPPER BAR RE-BENDING TOOL. THE BARS SHALL BE RE-BENT AGAINST A FLAT SURFACE OR A PIN WITH A DIAMETER NOT LESS THAN THE MINIMUM PIN SIZE PRESCRIBED IN AS 3600 - 2001. BARS SHOULD BE RE-BENT ONCE ONLY.

C21. MINIMUM COVER (mm) TO ALL REINFORCEMENT EXCEPT F41 MESH UNLESS OTHERWISE SHOWN SHALL BE AS FOLLOWS:

ELEMENT	FORMED & NOT EXPOSED TO WEATHER	FORMED & EXPOSED TO GROUND WATER & WEATHER	NOT FORMED, CAST AGAINSED GROUND ETC.
SLABS	25	40	50
FOOTINGS / RETAINING WALLS	-	40	50

C22. SPLICES IN REINFORCEMENT SHALL BE MADE IN THE POSITIONS SHOWN OR AS OTHERWISE APPROVED BY THE SUPERINTENDENT. MINIMUM LAP FOR ALL FABRICS SHALL BE THE SPACING OF TWO TRANSVERSE WIRES PLUS 25mm. GRADE 500N BARS SHALL BE LAPPED IN ACCORDANCE WITH THE STANDARD LAP LENGTH TABLE IF NOT STATED OTHERWISE ON THE DRAWINGS.

C23. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

C24. ALL REINFORCEMENT SHALL BE SECURELY SUPPORTED IN ITS CORRECT POSITION DURING CONCRETING BY APPROVED BAR CHAIRS, SPACERS OR SUPPORT BARS AT 1000mm MAXIMUM CENTRES. THE CHAIR MATERIAL SHALL SUIT THE EXPOSURE CONDITIONS.

C25. 2N12 DIAGONAL CORNER BARS 1200mm LONG ARE REQUIRED AT ALL RE-ENTRANT CORNERS OF OPENINGS IN SLABS AND WALLS.

C26. REINFORCEMENT LENGTHS INDICATED ARE IN MILLIMETERS AND ARE PLAN LENGTH ONLY. TURN DOWNS AND CRANKS ARE NOT INCLUDED IN THE DIMENSION.

C27. BARS SHOWN STAGGERED ON PLAN SHALL BE PLACED ALTERNATELY.

C28. BARS SHALL BE EVENLY DISTRIBUTED OVER THE WIDTH OF THE STRIP INDICATED ON THE DRAWINGS UNLESS NOTED OTHERWISE.

C29. ALL EMBEDMENTS SHALL BE HOT DIP GALVANIZED.

C30. CONCRETE SHALL BE SEPARATED FROM SUPPORTING MASONRY BY TWO LAYERS OF MALTHOID (OR AN APPROVED EQUIVALENT). VERTICAL FACES OF CONCRETE SHALL BE KEPT FREE OF ADJOINING SURFACES BY 10mm THICKNESS OF ABLEFLEX (OR AN APPROVED EQUIVALENT) UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL NON-LOADBEARING WALLS SHALL BE KEPT CLEAR OF THE UNDERSIDE OF SLABS AND BEAMS BY 20mm UNLESS NOTED OTHERWISE ON THE DRAWINGS.

C31. MASONRY WALLS OR PARTITIONS MUST NOT BE BUILT ON CONCRETE SLABS OR BEAMS UNTIL SUPPORTING FORMWORK HAS BEEN REMOVED.

MASONRY NOTES

M1. ALL WORKMANSHIP SHALL COMPLY WITH AS 3700, AND THE SPECIFICATIONS.

M2. ALL BLOCKS SHALL CONFORM TO AS 2733.

M3. STRENGTHS OF BRICKS, BLOCKS, AND TYPE OF MORTAR SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE.

TYPE OF MASONRY	EXPOSURE CONDITION REFER TABLE 5.1 AS3700	MATERIAL	MIN UNCONF. COMPRESSIVE STRENGTH f'uc (MPa)	MORTAR CLASSIFICATION TO TABLE 10.1
REINFORCED BLOCKWORK	ALL	CONCRETE	15	M4
LOADBEARING UNREINFORCED BLOCKWORK	SEVERE	CONCRETE	12	M4
	NOT SEVERE		12	M3
LOADBEARING SOLID BLOCKWORK, FULLY BEDDED	SEVERE	CONCRETE	10	M4
	NOT SEVERE		10	M3
NON LOADBEARING BLOCKWORK	SEVERE	CONCRETE	10	M3
	NOT SEVERE		10	M3
BRICKWORK	SEVERE	BRICK-EXPOSURE GRADE	15	M4
BRICKWORK	NOT SEVERE	BRICK-GENERAL PURPOSE GRADE	15	M3

M4. MORTAR SHALL COMPLY WITH TABLES 5.1 AND 10.2 OF AS3700.
CEMENT SHALL BE TYPE GP.
M3 MORTAR PROPORTIONS : C1 : L1 : S6 OR C1 : S5 + WATER THICKENER
M4 MORTAR PROPORTIONS : C1 : L0.25 : S3 OR C1 : S4 + WATER THICKENER
THE WATER THICKENER SHALL BE DYNEX OR APPROVED EQUIVALENTADDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

M5. ALL MASONRY WALLS AND PIERS SUPPORTING SLABS AND BEAMS SHALL HAVE A PRE-GREASED GALVANISED STEEL SLIP JOINT BETWEEN THE CONCRETE SOFFIT AND THE TOP OF THE MASONRY ELEMENT.

M6. NON LOAD BEARING WALLS SHALL BE SEPARATED FROM CONCRETE ABOVE BY 15mm THICK CLOSED CELL POLYETHYLENE STRIP AND TIED TO THE SLAB USING APPROVED MFA ANCHORS UNLESS NOTED OTHERWISE.

M7. THE TOP COURSE IN HOLLOW BLOCK WALLS SHALL BE LAID IN SOLID BLOCK. UNLESS NOTED OTHERWISE ON THE DRAWINGS.

M8. ALL MASONRY SUPPORTING OR SUPPORTED BY CONCRETE FLOORS SHALL BE PROVIDED WITH VERTICAL CONTROL JOINTS TO MATCH ANY CONTROL JOINTS IN THE CONCRETE FLOORS.

M9. NO CHASES OR RECESSES ARE PERMITTED IN LOAD BEARING MASONRY WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

M10. ALL BONDING, TYING AND FIXING OF MASONRY SHALL COMPLY WITH CLAUSE 4.11 OF AS3700.

M11. DO NOT CONSTRUCT MASONRY WALLS ON SUSPENDED CONCRETE SLABS UNTIL SLAB HAS BEEN STRIPPED AND DEPROPPED.

M12. PROVIDE VERTICAL CONTROL JOINTS AT 10m MAX CENTRES, AND 5m MAXIMUM FROM CORNERS IN ALL MASONRY WALLS, UNLESS SHOWN OTHERWISE ON THE STRUCTURAL DRAWINGS. SEAL THE JOINTS WITH AN APPROVED SEALANT.

M13. REINFORCED CONCRETE BLOCKWORK SHALL COMPLY WITH THE FOLLOWING:
- PROVIDE CLEANOUT HOLES AT BASE OF ALL WALLS AND ROD CORE HOLES TO REMOVE PROTRUDING MORTAR FINS.
- CORE FILLING GROUT TO HAVE A CHARACTERISTIC STRENGTH OF 20 MPa, 10mm MAXIMUM AGGREGATE, 230mm SLUMP (± 30mm) WITH A MINIMUM PORTLAND CEMENT CONTENT OF 300kg/m3.
- COMPACT THE GROUT WITH A VIBRATOR.
- PROVIDE 65mm COVER TO REINFORCING BARS FROM THE OUTSIDE FACE OF THE BLOCKWORK TO ALLOW ADEQUATE GROUT COVER.

M14. MASONRY WALLS SHALL BE TIED TO ABUTTING CONCRETE AND STEEL COLUMNS WITH 38x1.6x300 LONG CRIMPED GALVANISED STEEL STRAPS AT MAXIMUM 350 CENTRES VERTICALLY, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS. FIX STRAPS TO COLUMNS WITH 2/ No.12 SELF DRILLING STEEL FASTENERS INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALTERNATIVE FIXINGS MAY BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL.

M15. MASONRY FLEXIBLE OR SLIDING ANCHORS SHALL BE TYPE MFA (FROM BRUNSWICK SALES) OR AN APPROVED EQUIVALENT.

M16. WHERE COLUMN TIES OR OTHER ANCHORS CONNECT TO BED JOINTS IN HOLLOW BLOCK WALLS, USE SOLID BLOCKS OR CORE FILLED BLOCKS IN THE EMBEDMENT AREA.

BULK EARTHWORKS NOTES

BE1. CONTRACTOR TO ALLOW FOR THE EXPOSED SUBGRADE TO BE INSPECTED BY A GEOTECHNICAL ENGINEER TO PROVIDE ADVICE ON COMPACTION & FILLING REQUIREMENTS.

BE2. CONTRACTOR TO ALLOW FOR THE FOLLOWING FILLING AND COMPACTION REQUIREMENTS. THESE ARE TO BE CONFIRMED BY A QUALIFIED GEOTECHNICAL ENGINEER AS IN NOTE BE1.

- EXCAVATE TO DESIGN SUBGRADE LEVEL
- BREAK UP AND REMOVE EXISTING CONCRETE SLABS. REMOVE ANY ADDITIONAL TOPSOIL, UNCONTROLLED FILLING OR DELETERIOUS MATERIALS. TREE STUMPS / ROOTS SHALL BE REMOVED AND BACKFILLED WITH APPROVED SELECT SUBGRADE MATERIAL
- THE EXPOSED AREA SHALL THEN BE PROOF ROLLED TO ASSESS MOISTURE CONTENT AND SOFT ZONES. REMOVE SOFT ZONES AND REPLACE WITH APPROVED FILLING. MOISTURE CONTENTS SHOULD BE IN THE RANGE -4% (DRY) TO -1% (DRY) OMC, FOR PAVEMENTS WHERE OMC IS THE OPTIMUM MOISTURE CONTENT AT STANDARD COMPACTION. IF WET SUBGRADE CONDITIONS ARE ENCOUNTERED, THE MATERIAL SHOULD EITHER BE TYNED AND ALLOWED TO DRY OR REMOVED AND REPLACED WITH SELECT SUBGRADE (CBR>15%). THE DEPTH OF ANY EXCAVATION SHOULD BE CONFIRMED BY GEOTECHNICAL INSPECTION.
- COMPACT THE NATURAL SUBGRADE TO A MINIMUM DRY DENSITY RATIO OF 100% STANDARD (AS 1289.5.1.1). THE COMPACTED CLAY SUBGRADE SHOULD BE LEFT EXPOSED FOR A MINIMUM AMOUNT OF TIME PRIOR TO PLACEMENT OF PAVEMENT LAYERS TO MINIMISE THE OCCURENCE OF DESICCATION CRACKING IN DRY WEATHER, OR SOFTENING IN WET WEATHER.
- IF RAISING OF THE SUBGRADE LEVEL IS REQUIRED, ALL DELETERIOUS MATERIALS SHOULD BE REMOVED. APPROVED FILLING SHOULD THEN BE PLACED IN LAYERS NOT EXCEEDING 250MM LOOSE THICKNESS AND COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 100% STANDARD AT THE MOISTURE CONTENT DESCRIBED ABOVE.
- BENEATH SLAB ON GRADE PROVIDE 50 SAND LAYER AND VAPOUR PROOF BARRIER AS SHOWN ON DRAWINGS.

CIVIL GENERAL NOTES

G1. ALL CONCRETE TO HAVE 32MPa COMPRESSIVE STRENGTH UNLESS NOTED OTHERWISE.

G2. PAVEMENT JOINTS TO BE PROVIDED AT 4m CTS. MAXIMUM TYP.

G3. REFER TO DRAWINGS CV-004, CV-005 & CV-006 FOR DETAILS

G4. SLAB THICKENINGS FOR LANDSCAPE ARCHITECTS FURNITURE AND HANDRAIL NOT SHOWN ON PLAN. REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR EXTENTS.

G5. REFER TO LANDSCAPE ARCHITECT DRAWINGS FOR FINISHES, COLOURED ADDITIVES, ADDITIONAL LEVELS AND DETAILS.

G6. SUBSOIL DRAINAGE TO BE PROVIDED BEHIND ALL VERTICAL STEPS IN LEVEL AND AS SPECIFIED BY LANDSCAPE ARCHITECT.

GREENSTAR NOTES

GS1. PROVIDE ALL REQUIRED SUBMISSION, DOCUMENTATION, RECEIPTS AND THE LIKE TO COMPLETE THE GREEN STAR SUBMISSION. REFER TO TARGET GREEN STAR CREDIT REPORT FOR FURTHER DETAILS.

GS2. ALL PVC CONTAINING PRODUCTS USED SHALL BE BEST PRACTICE PVC AND SHALL HAVE EITHER AN INDEPENDENTLY AUDITED ISO 14001, ENVIRONMENTAL MANAGEMENT SYSTEMS OR AN INDEPENDENTLY AUDITED PRODUCT DECLARATION.

GS3. CONCRETE REQUIREMENTS
PORTLAND CEMENT
THE PORTLAND CEMENT CONTENT SHALL BE REDUCED BY 30% MEASURED BY MASS ACROSS ALL CONCRETE USED IN THE PROJECT COMPARED TO THE REFERENCE CASE. THE CONCRETE SUB-CONTRACTOR AND SUPPLIERS SHALL BE REQURIED TO ESTABLISH THE REDUCTION IN PORTLAND CEMENT USE AGAINST THE REFERENCE CASE.
RECYCLED MIX WATER
AT LEAST 50% OF THE MIX WATER FOR ALL CONCRETE USED IN THE PROJECT SHALL BE CAPTURED OR RECLAIMED WATER. (mEASURED ACROSS ALL CONCRETE MIXES IN THE PROJECT)
AGGREGATE
AT LEAST 30% OF COURSE AGGREGATE IN CONCRETE SHALL BE CRUSHED SLAG AGGREGATE (MEASURED ACROSS ALL CONCRETE MIXES IN THE PROJECT). THE USE OF CRUSHED SLAG AGGREGATE MUST NOT INCRESE THE USE OF PORTLAND CEMENT BY OVER 5 KILOGRAMS PER CUBIC METER (5 kg/m3) OF CONCRETE.

REFERENCES

CV-000	COVER SHEET & NOTES
CV-001	CIVIL STORMWATER PLAN
CV-002	CIVIL PAVEMENT PLAN
CV-003	SEDIMENT CONTROL & EXISTING STORMWATER PLAN
CV-004	CIVIL DETAILS - SHEET 1
CV-005	CIVIL DETAILS - SHEET 2
CV-006	CIVIL DETAILS - SHEET 3

CONTRACT No. WS692136689

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NSW GOVERNMENT Public Works
EJE architecture

REV	DATE	REVISION DETAILS	APPROVAL
A	18.04.16	ISSUE FOR TENDER	GU

SCALE 1 : 1 | SIZE A1
DRAWN L. GANDY
DESIGNED M. BLYTH
CHECKED B. ALLADO

TENDER DOCUMENT
NOT FOR CONSTRUCTION
APPROVED
DATE
G. UNIE

PROJECT: HUNTER SPORTS HIGH SCHOOL MAJOR CAPITAL WORKS UPGRADE
TITLE: COVER SHEET & NOTES
DRAWING No. PROJECT No 249335 - WBS 000 - TYPE CV - DISC - NUMBER 000 - REV A

P4 - 900 PIT
SL 28.50
IL 24.35

P3
SL 28.50
IL 27.67

P2
SL 28.50
IL 27.87

P1
SL 28.52
IL 28.07

P20
SL 28.60
IL 28.15

P21
SL 28.43
IL 27.94

P22
SL 28.31
IL 27.80

P27
SL 27.65
IL 27.20

RETAIN EXISTING
CARPARK DRAINAGE

P9
SL 28.51
IL 28.06

P10
SL 28.35
IL 27.82

P11
SL 28.36
IL 27.52

P17
SL 28.30
IL 27.85

P12 - 900 PIT
SL 28.40
IL 27.40

P16
SL 28.33
IL 27.70

P15
SL 28.33
IL 27.78

P14
SL 28.50
IL 27.95

P5 - 900 PIT
SL 28.60
IL 27.02

EXISTING PIT

CONNECT EXISTING
PIT TO PIT P6 DURING
MILESTONE 7
WORKS.

300 mm UPVC

P32
SL 25.92
IL 25.47

P28 - 900 PIT
SL 28.35
IL 25.00

P23
SL 25.35
IL 24.55

150mm UPVC CONNECT
GRATED DRAIN TO PIT P23

GRATED DRAIN (GD)

P30
SL 25.35
IL 24.90

FW
100 mm UPVC
IO

P7 - 900 PIT
SL 25.31
IL 24.22

P13
SL 25.24
IL 24.37

P19
SL 25.22
IL 24.57

P18
SL 25.22
IL 24.77

P29
SL 25.22
IL 24.77

P24
SL 25.22
IL 24.37

P6
SL 25.40
IL 24.80

TEMPORARILY
CONNECT EXISTING PIT
TO PIT P8 DURING
MILESTONE 4 WORKS.

P31
SL 25.35
IL 24.90

P25 - 900 PIT
SL 25.30
IL 24.14

P8 - 900 PIT
SL 25.40
IL 23.95

300 mm UPVC (SEWER GRADE)

P26 - 900 PIT
SL 25.30
IL 24.03

RETAIN EXISTING
CARPARK DRAINAGE

CONNECT NEW LINES
TO EXISTING PIT

EXISTING IL 22.38

EXISTING STORMWATER
REFER CV-003 FOR DETAILS

LIMIT OF WORK
BELOW PIT

45000L STORMWATER
TANK (11x3.5m INTERNAL)
SL 24.50
IL 22.70

TEMPORARILY
CONNECT PIT P27 TO
EXISTING PIT DURING
MILESTONE 1 WORKS.

LEGEND

- DENOTES STORMWATER PIT 600x600 TYPICAL U.N.O REFER CV-004 FOR DETAILS
- DENOTES STORMWATER PIPE 225mm UPVC UNLESS NOTED OTHERWISE
- IO DENOTES STORMWATER INSPECTION OPENING
- FW DENOTES FLOOR WASTE 150mm
- (GD) DENOTES GRATED DRAIN ACO KLASSIKDRAIN K200 OR EQUIVALENT

DOWNPIPES (DP) NOT SHOWN. DP TO BE LOCATED AT GROUND LEVEL AS PER THE ARCHITECTURAL AND HYDRAULIC DRAWINGS. DP PIPE SIZE SHALL BE CONTINUED BELOW GROUND AND CONNECTED TO THE NEAREST STORMWATER PIT. PIPE DIAMETER TO BE INCREASED TO THE NEXT SIZE UP IF IT PICKS UP MORE THAN 3 OTHER DOWNPIPES PRIOR TO REACHING PIT.

REFERENCES

CV-000	COVER SHEET & NOTES
CV-001	CIVIL STORMWATER PLAN
CV-002	CIVIL PAVEMENT PLAN
CV-003	SEDIMENT CONTROL & EXISTING STORMWATER PLAN
CV-004	CIVIL DETAILS - SHEET 1
CV-005	CIVIL DETAILS - SHEET 2
CV-006	CIVIL DETAILS - SHEET 3

CIVIL STORMWATER LAYOUT

1 : 300

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G	12.04.16	ISSUE FOR PRE TENDER ESTIMATE	
F	02.02.16	REVISED 90% SUBMISSION	
E	19.02.16	90% SUBMISSION	
D	17.12.15	MINE SUBSIDENCE BOARD REVIEW ISSUE	
C	01.12.15	50% SCHEMATIC SUBMISSION	
B	30.11.15	DRAFT REVISED	
A	02.11.15	DRAFT	

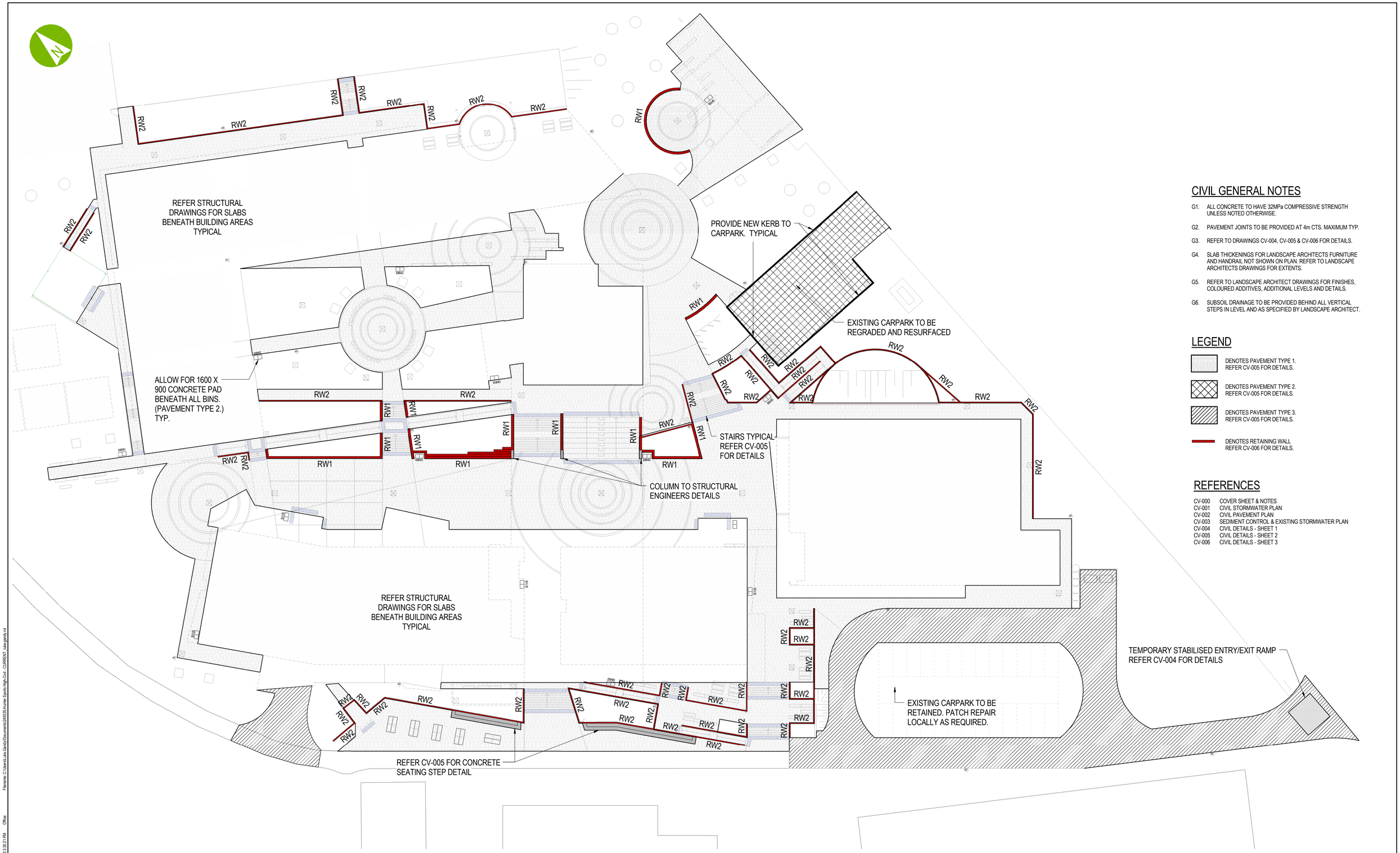
SCALE	As indicated
SIZE	A1
DRAWN	L. GANDY
DESIGNED	M. BLYTH
CHECKED	B. ALLADO
APPROVED	G. UNIE
DATE	

TENDER DOCUMENT
NOT FOR CONSTRUCTION

PROJECT: HUNTER SPORTS HIGH SCHOOL MAJOR CAPITAL WORKS UPGRADE

TITLE: CIVIL STORMWATER PLAN

DRAWING No. PROJECT No 249335 - WBS 001 - TYPE CV - DISC - NUMBER 001 - REV H



CIVIL PAVEMENT PLAN
1 : 300

CIVIL GENERAL NOTES

G1. ALL CONCRETE TO HAVE 32MPa COMPRESSIVE STRENGTH UNLESS NOTED OTHERWISE.

G2. PAVEMENT JOINTS TO BE PROVIDED AT 4m CTS. MAXIMUM TYP.

G3. REFER TO DRAWINGS CV-004, CV-005 & CV-006 FOR DETAILS.

G4. SLAB THICKENINGS FOR LANDSCAPE ARCHITECTS FURNITURE AND HANDRAIL NOT SHOWN ON PLAN. REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR EXTENTS.

G5. REFER TO LANDSCAPE ARCHITECT DRAWINGS FOR FINISHES, COLOURED ADDITIVES, ADDITIONAL LEVELS AND DETAILS.

G6. SUBSOIL DRAINAGE TO BE PROVIDED BEHIND ALL VERTICAL STEPS IN LEVEL AND AS SPECIFIED BY LANDSCAPE ARCHITECT.

LEGEND

- DENOTES PAVEMENT TYPE 1. REFER CV-005 FOR DETAILS.
- DENOTES PAVEMENT TYPE 2. REFER CV-005 FOR DETAILS.
- DENOTES PAVEMENT TYPE 3. REFER CV-005 FOR DETAILS.
- DENOTES RETAINING WALL REFER CV-006 FOR DETAILS.

REFERENCES

CONTRACT No. WS692136689

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E	19.02.16	90% SUBMISSION	
D	17.12.15	MINE SUBSIDENCE BOARD REVIEW ISSUE	
C	01.12.15	50% SCHEMATIC SUBMISSION	
B	30.11.15	DRAFT REVISED	
A	02.11.15	DRAFT	

SCALE	As indicated
SIZE	A1
DRAWN	L. GANDY
DESIGNED	M. BLYTH
CHECKED	B. ALLADO

TENDER DOCUMENT
NOT FOR CONSTRUCTION

APPROVED
DATE
G. UNIE

PROJECT	HUNTER SPORTS HIGH SCHOOL MAJOR CAPITAL WORKS UPGRADE
TITLE	CIVIL PAVEMENT PLAN

DRAWING No. PROJECT No 249335 – WBS 001 – TYPE CV – DISC - NUMBER 002 – REV H

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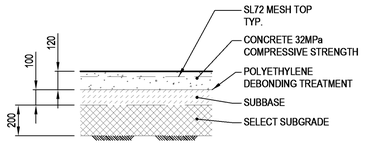
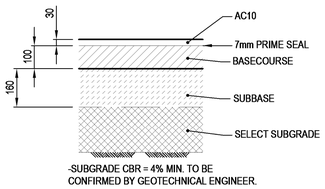
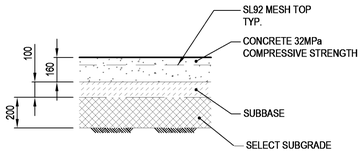


PAVEMENT TYPE 1
NTS



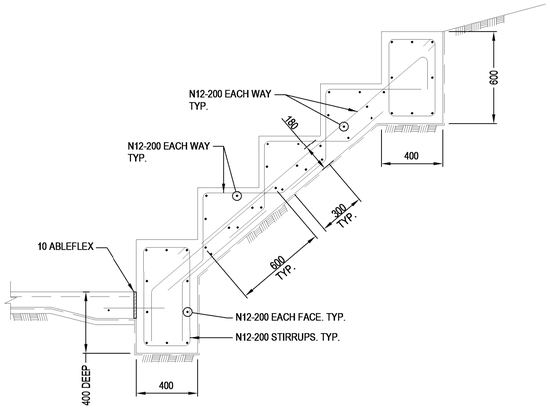
PAVEMENT TYPE 2
NTS



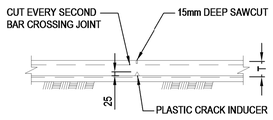
PAVEMENT TYPE 3
NTS

TYPICAL PAVEMENT TYPES

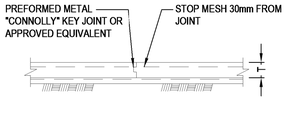
- MATERIAL AND COMPACTION REQUIREMENTS TO BE IN ACCORDANCE WITH DOUGLAS PARTNERS GEOTECHNICAL REPORT DATED OCTOBER 2015.



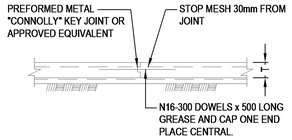
TYPICAL EXTERNAL WALL SEATING
1:20



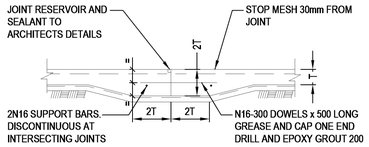
SAW CUT JOINT - SC
NTS



KEYED JOINT - KJ
NTS



DOWELED KEYED JOINT - DKJ
NTS

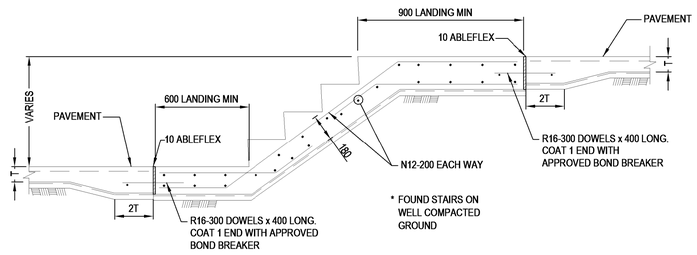


DOWELED JOINT - DJ
NTS

TYPICAL PAVEMENT JOINTS

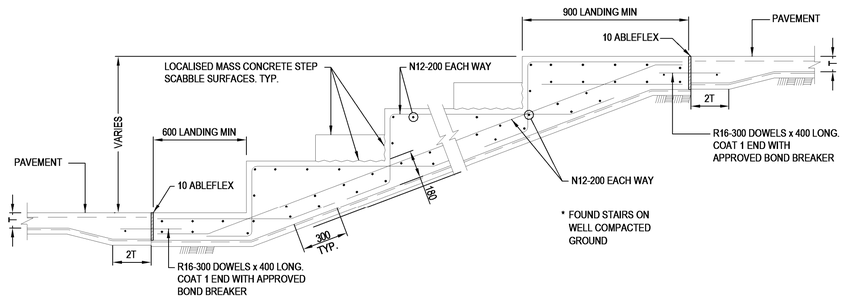
- ALLOW FOR SAW CUT JOINTS (SC) AT MAXIMUM 4m CRS. EACH WAY
- ALLOW FOR DOWELED JOINTS (DJ) AT MAXIMUM 8m CRS. EACH WAY

ALTERNATE EXTERNAL STAIR BASE DETAIL
1:20

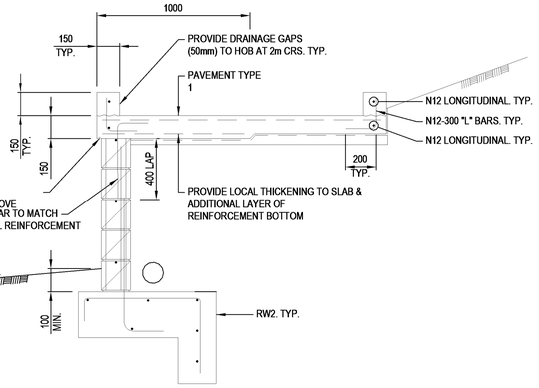


TYPICAL EXTERNAL STAIR SECTION
1:20

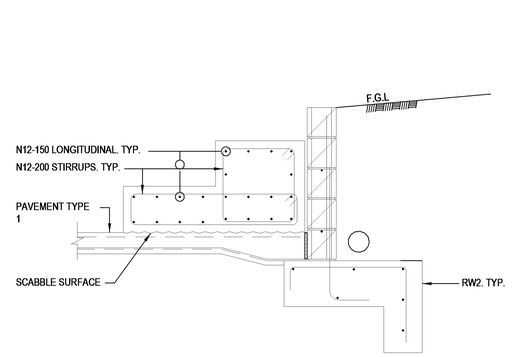
NOTE: PROVIDE 200 WIDE CONCRETE DOWNTURN TO EDGE OF STAIR AS REQUIRED TO MATCH NEW GROUND LEVEL, N12-200 EACH WAY EXTERNAL FACE



EXTERNAL SEATING STAIR SECTION
1:20



RETAINED FOOTPATH DETAIL
1:20



CONCRETE SEATING STEP DETAIL
1:20

TYPICAL CARPARK KERB DETAILS
1:20

REFERENCES

CV-000	COVER SHEET & NOTES
CV-001	CIVIL STORMWATER PLAN
CV-002	CIVIL PAVEMENT PLAN
CV-003	SEDIMENT CONTROL & EXISTING STORMWATER PLAN
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CV-006	CIVIL DETAILS - SHEET 3

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E	19.02.16	90% SUBMISSION	
D	17.12.15	MINE SUBSIDENCE BOARD REVIEW ISSUE	
C	01.12.15	50% SCHEMATIC SUBMISSION	
B	30.11.15	DRAFT REVISED	
A	02.11.15	DRAFT	

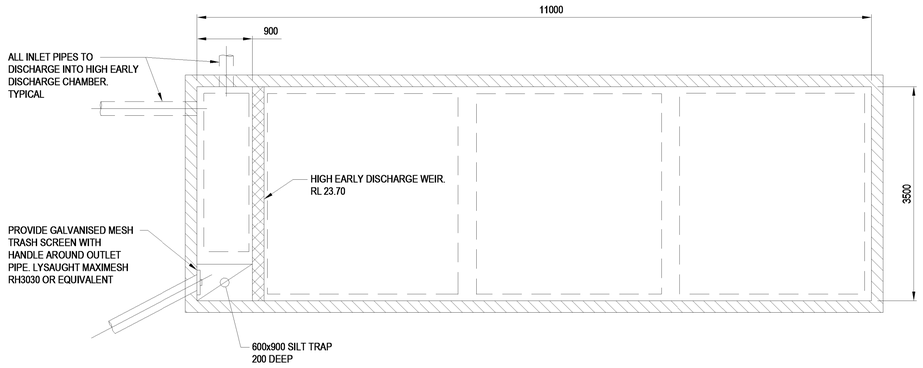
SCALE	As indicated
SIZE	A1
DRAWN	L. GANDY
DESIGNED	M. BLYTH
CHECKED	B. ALLADO

TENDER DOCUMENT
NOT FOR CONSTRUCTION

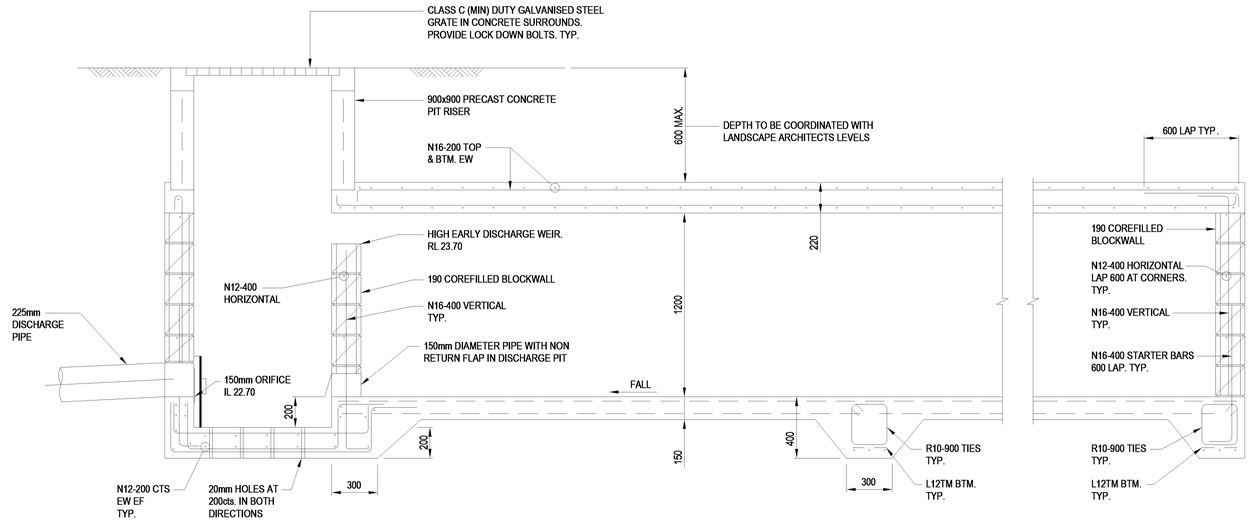
APPROVED
DATE
G. UNIE

PROJECT	HUNTER SPORTS HIGH SCHOOL MAJOR CAPITAL WORKS UPGRADE
TITLE	CIVIL DETAILS - SHEET 2 TYPICAL PAVEMENT & RETAINING WALL DETAILS

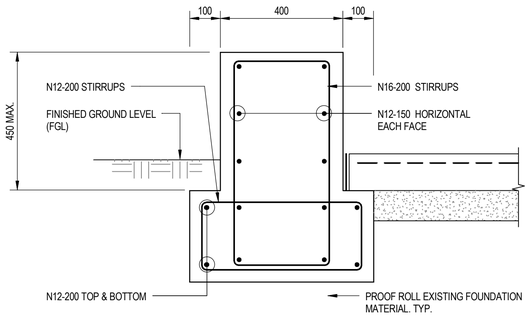
DRAWING No. 249335 - 001 - CV - 005 - H
(PROJECT No | WBS | TYPE | DISC - NUMBER | REV)



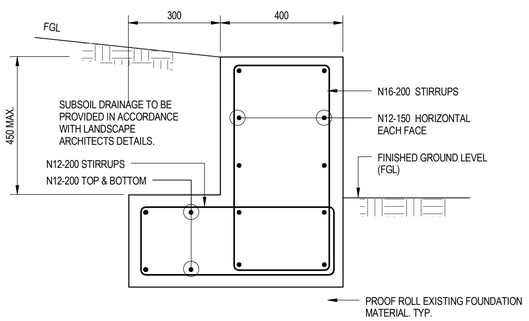
DETENTION TANK PLAN
1:50



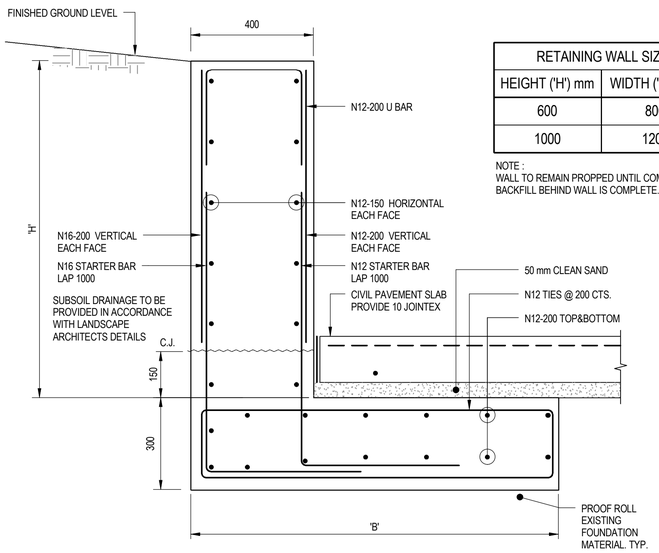
DETENTION TANK TYPICAL SECTION
1:20



ALTERNATIVE RW1 (NON RETAINING)



RETAINING WALL - RW1 (0 - 450 HIGH)
1 : 10

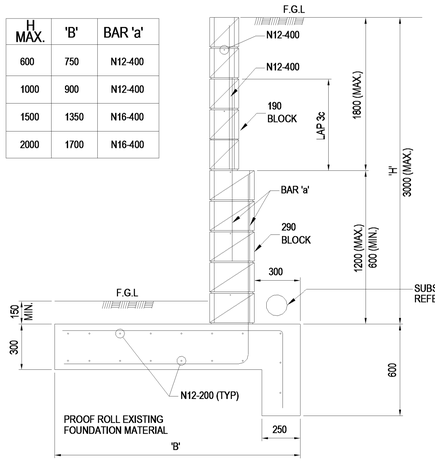


RETAINING WALL - RW1 (450 - 1000 HIGH)
1 : 10

RETAINING WALL SIZE	
HEIGHT ('H') mm	WIDTH ('W') mm
600	800
1000	1200

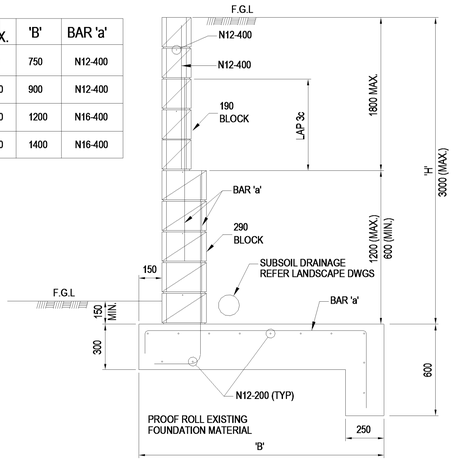
NOTE :
WALL TO REMAIN PROPPED UNTIL COMPACTION OF BACKFILL BEHIND WALL IS COMPLETE.

H MAX.	'B'	BAR 'a'
600	750	N12-400
1000	900	N12-400
1500	1350	N16-400
2000	1700	N16-400



BLOCK WALL TYPE A
1:20

H MAX.	'B'	BAR 'a'
600	750	N12-400
1000	900	N12-400
1500	1200	N16-400
2000	1400	N16-400



BLOCK WALL TYPE B
1:20

RETAINING WALL - RW2
FREESTANDING CANTILEVER REINFORCED BLOCKWORK
REFER TO LANDSCAPE ARCHITECT DRAWINGS FOR FINISHES & COLOURED ADDITIVES

REFERENCES

CV-000	COVER SHEET & NOTES
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CV-003	SEDIMENT CONTROL & EXISTING STORMWATER PLAN
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CONTRACT No. WS692136689

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REV	DATE	REVISION DETAILS	APPROVAL
B	18.04.16	ISSUE FOR TENDER	GU
A	12.04.16	ISSUE FOR PRE TENDER ESTIMATE	

SCALE	SIZE
As indicated	A1

DRAWN: D. BATES
DESIGNED: M. BLYTH
CHECKED: B. ALLADO

TENDER DOCUMENT
NOT FOR CONSTRUCTION

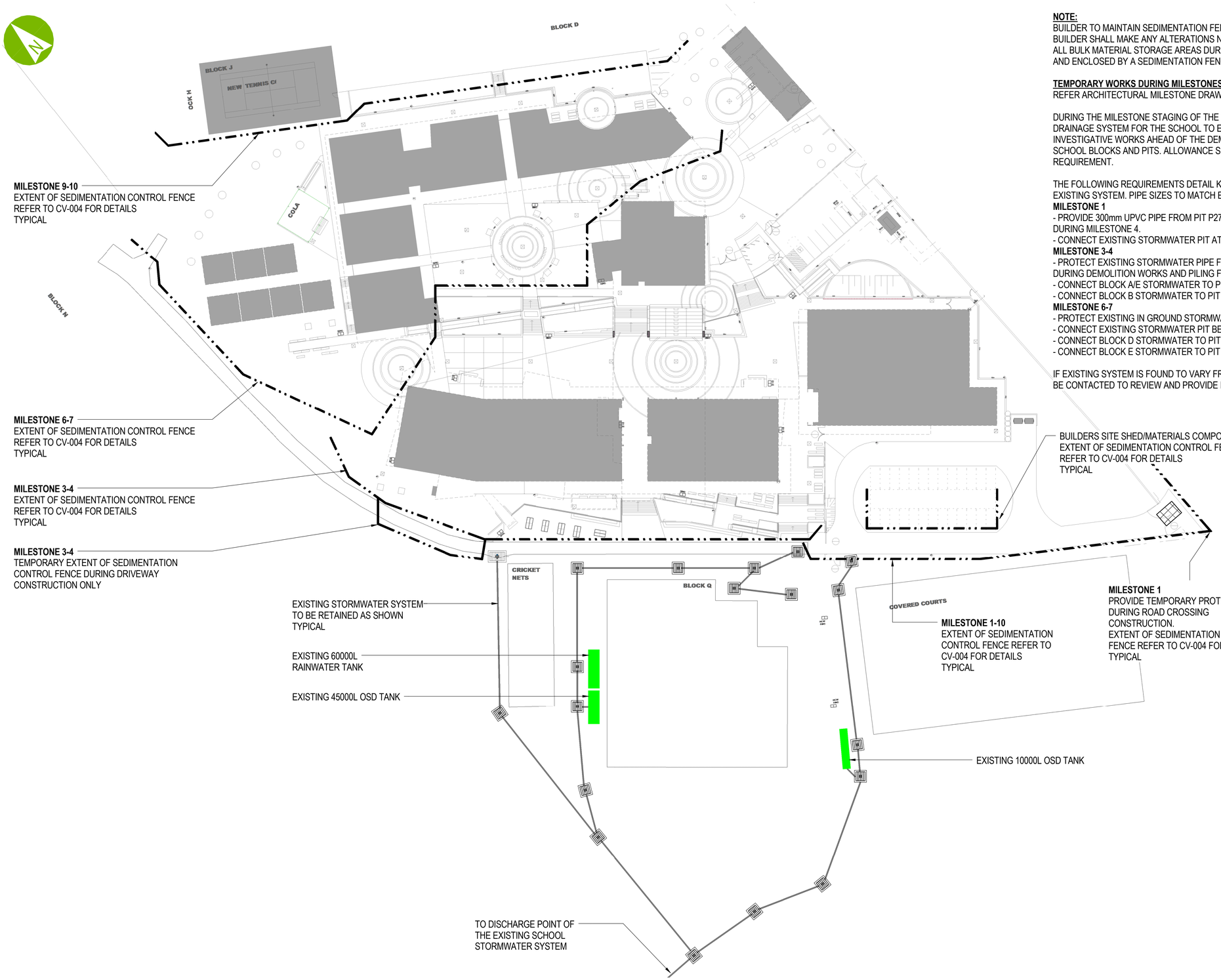
APPROVED
DATE
G. UNIE

PROJECT: HUNTER SPORTS HIGH SCHOOL MAJOR CAPITAL WORKS UPGRADE

TITLE: CIVIL DETAILS - SHEET 3 STORMWATER TANK DETAILS

DRAWING No. | PROJECT No | WBS | TYPE | DISC - NUMBER | REV
249335 - 001 - CV - 006 - B

Appendix C
Sediment and Erosion Control Plan



NOTE:
BUILDER TO MAINTAIN SEDIMENTATION FENCES THROUGHOUT THE PROJECT. INDICATIVE MILESTONES LOCATIONS SHOWN. BUILDER SHALL MAKE ANY ALTERATIONS NECESSARY TO COVER ALL CURRENT AREAS OF WORK AND DISTURBED SOIL ZONES. ALL BULK MATERIAL STORAGE AREAS DURING ANY MILESTONE THROUGHOUT THE CONTRACT PERIOD SHALL BE STABILISED AND ENCLOSED BY A SEDIMENTATION FENCE.

TEMPORARY WORKS DURING MILESTONES.
REFER ARCHITECTURAL MILESTONE DRAWINGS FOR FURTHER INFORMATION REGARDING CONSTRUCTION STAGING.

DURING THE MILESTONE STAGING OF THE PROPOSED WORKS, THE BUILDER SHALL MAINTAIN THE EXISTING STORMWATER DRAINAGE SYSTEM FOR THE SCHOOL TO ENSURE THE EXISTING SYSTEM IS NOT CUT OFF OR BLOCKED. THIS MAY INVOLVE INVESTIGATIVE WORKS AHEAD OF THE DEMOLITION WORKS TO DETERMINE THE EXACT DIRECTION OF PIPE FLOW FROM SCHOOL BLOCKS AND PITS. ALLOWANCE SHALL BE MADE FOR INVESTIGATION AND CONNECTIONS TO ACHIEVE THE ABOVE REQUIREMENT.

THE FOLLOWING REQUIREMENTS DETAIL KNOWN MODIFICATIONS TO THE SYSTEM THAT WILL BE REQUIRED TO MAINTAIN THE EXISTING SYSTEM. PIPE SIZES TO MATCH EXISTING, OR PROPOSED SIZES AS APPROPRIATE.

MILESTONE 1
- PROVIDE 300mm UPVC PIPE FROM PIT P27 TO EXISTING STORMWATER PIT BELOW SERVICE ROAD. DECOMMISSION PIPE DURING MILESTONE 4.
- CONNECT EXISTING STORMWATER PIT AT SOUTH EAST CORNER OF BLOCK A TO PIT 28.

MILESTONE 3-4
- PROTECT EXISTING STORMWATER PIPE FROM SOUTH EAST CORNER OF BLOCK F TO PIT ADJACENT TO THE CRICKET NETS DURING DEMOLITION WORKS AND PILING FOR BLOCK T. CONNECT PIPE TO PIT P8 AS PART OF MILESTONE 4 WORKS.
- CONNECT BLOCK A/E STORMWATER TO PIT P21
- CONNECT BLOCK B STORMWATER TO PIT P15

MILESTONE 6-7
- PROTECT EXISTING IN GROUND STORMWATER SYSTEM FROM BLOCK D
- CONNECT EXISTING STORMWATER PIT BEHIND EXISTING COLA TO PIT P6
- CONNECT BLOCK D STORMWATER TO PIT P4
- CONNECT BLOCK E STORMWATER TO PIT P21

IF EXISTING SYSTEM IS FOUND TO VARY FROM THE ABOVE ASSUMPTIONS DURING SITE WORKS, THE CIVIL ENGINEER SHOULD BE CONTACTED TO REVIEW AND PROVIDE FURTHER DIRECTION.

REFERENCES

CV-000	COVER SHEET & NOTES
CV-001	CIVIL STORMWATER PLAN
CV-002	CIVIL PAVEMENT PLAN
CV-003	SEDIMENT CONTROL & EXISTING STORMWATER PLAN
CV-004	CIVIL DETAILS - SHEET 1
CV-005	CIVIL DETAILS - SHEET 2
CV-006	CIVIL DETAILS - SHEET 3

SEDIMENT CONTROL & EXISTING STORMWATER LAYOUT
1 : 500

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CLIENT
EJE architecture
NSW GOVERNMENT Education
NSW GOVERNMENT Public Works

REV	DATE	REVISION DETAILS	APPROVAL
H	18.04.16	ISSUE FOR TENDER	GU
G	12.04.16	ISSUE FOR PRE TENDER ESTIMATE	
F	02.02.16	REVISED 90% SUBMISSION	
E	19.02.16	90% SUBMISSION	
D	17.12.15	MINE SUBSIDENCE BOARD REVIEW ISSUE	
C	01.12.15	50% SCHEMATIC SUBMISSION	
B	30.11.15	DRAFT REVISED	
A	02.11.15	DRAFT	

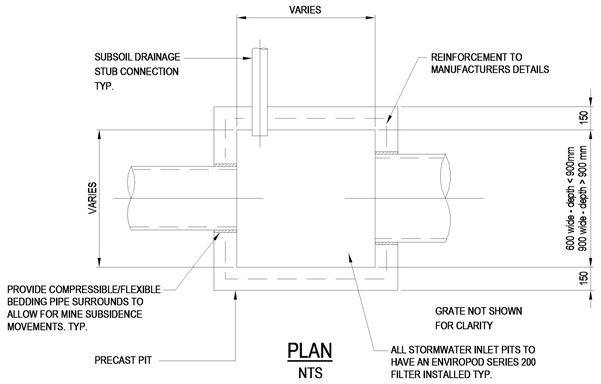
SCALE	As indicated
SIZE	A1
DRAWN	L. GANDY
DESIGNED	M. BLYTH
CHECKED	B. ALLADO
APPROVED	G. UNIE
DATE	

TENDER DOCUMENT
NOT FOR CONSTRUCTION

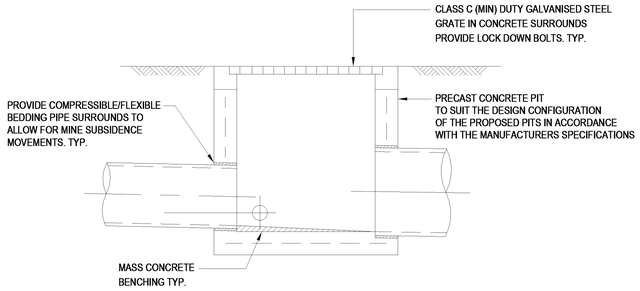
PROJECT: HUNTER SPORTS HIGH SCHOOL
MAJOR CAPITAL WORKS UPGRADE

TITLE: SEDIMENT CONTROL & EXISTING STORMWATER PLAN

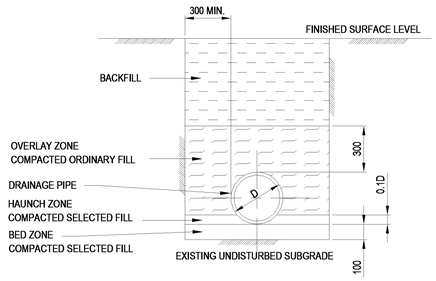
DRAWING No. 249335 - 001 - CV - 003 - H
(PROJECT No | WBS | TYPE | DISC - NUMBER | REV)



PLAN
NTS

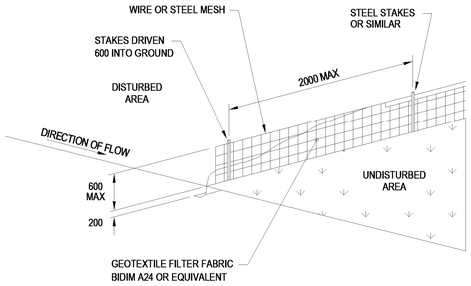


GRATED INLET PIT
NTS

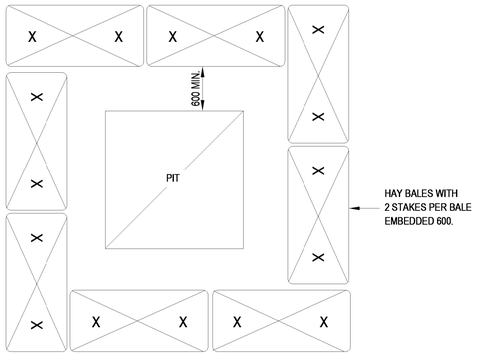


PIPE TRENCH DETAILS
NTS

TRENCHING BACKFILL, OVERLAY & BEDDING MATERIAL AND COMPACTION SHALL BE AS SPECIFIED IN AS3500.3-2003 SECTION 7.3.6

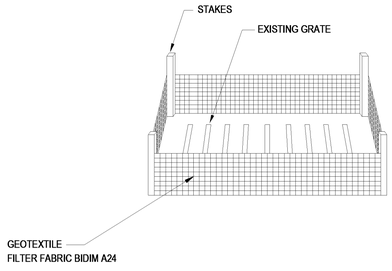


SEDIMENTATION CONTROL FENCE
NTS

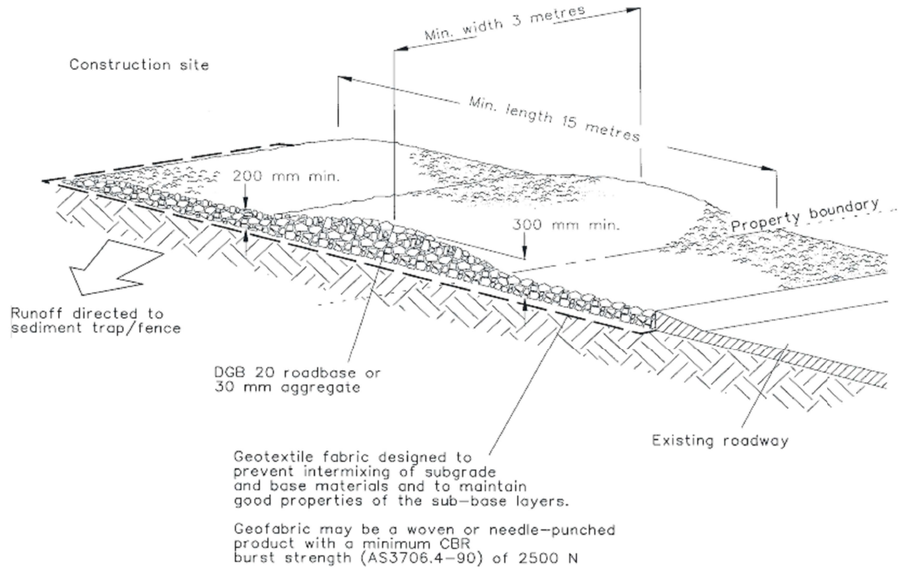


PROTECTION OF NEW STORMWATER INLETS
NTS

NOTE: SEDIMENTATION CONTROL REQUIRED DURING ALL EARTHWORKS OPERATIONS UNTIL PAVEMENT SURFACING PLACED.



PROTECTION OF EXISTING STORMWATER INLETS
NTS



STABILISED ENTRY/EXIT RAMP

SEDIMENT CONTROL PLAN

1. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES RELATING TO A PARTICULAR CATCHMENT PRIOR TO STRIPPING OF TOPSOIL FROM THAT CATCHMENT. WHERE IT IS NECESSARY TO UNDERTAKE STRIPPING IN ORDER TO CONSTRUCT A SEDIMENT CONTROL DEVISE ONLY SUFFICIENT GROUND SHALL BE STRIPPED TO ALLOW CONSTRUCTION.
2. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED AS INDICATED ON THESE DRAWINGS AND NOMINATED IN COUNCIL'S SPECIFICATION AS DIRECTED BY THE ENGINEER. LOCATION AND EXTENT OF SOIL AND WATER MANAGEMENT DEVICES IS DIAGRAMMATIC ONLY AND THE ACTUAL REQUIREMENTS SHALL BE RECONFIRMED ON SITE PRIOR TO COMMENCEMENT.
3. CONFORMITY WITH THIS PLAN SHALL IN NO WAY REDUCE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT AGAINST EROSION AND SEDIMENTATION DUE TO WATER AND WIND DAMAGE DURING THE COURSE OF THE CONTRACT. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT ANY NECESSARY CONTROL IS IN PLACE EVEN THOUGH SUCH CONTROL MAY NOT BE SHOWN ON THE PLAN.
4. THE CONTRACTOR SHALL INFORM ALL SUBCONTRACTORS AND ALL EMPLOYEES OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWN STREAM AREAS.
5. THE CONTRACTOR SHALL REGULARLY MAINTAIN SEDIMENT AND EROSION CONTROL STRUCTURES AND DESILT SUCH STRUCTURES PRIOR TO THE REDUCTION IN CAPACITY OF 60% DUE TO ACCUMULATED SILT OR AS DIRECTED. THE SEDIMENT SHALL BE DISPOSED OF ON THE SITE IN A MANNER APPROVED BY THE ENGINEER.
6. TOPSOIL AND SPOIL SHALL BE STOCKPILED IN NON-HAZARDOUS AREAS AND PROTECTED FROM SURFACE RUN-ON AND RUN-OFF BY DIVERSION DRAINS OR SIMILAR. STOCKPILES SHALL BE SURROUNDED ON DOWNSTREAM SIDE BY SILT FENCING. WHERE THE STOCKPILING PERIOD EXCEEDS FOUR (4) WEEKS, THE STOCKPILE SHALL BE SEEDED TO ENCOURAGE VEGETATION GROWTH.
7. TOPSOIL SHALL BE RE-SPREAD AND STABILISED AS SOON AS POSSIBLE. DISTURBED AREAS SHALL BE LEFT WITH A SCARIFIED SURFACE TO ENCOURAGE WATER INFILTRATION AND ASSIST KEYING IN TOPSOIL.
8. THE CONTRACTOR SHALL TEMPORARILY REHABILITATE WITHIN 20 DAYS ANY DISTURBED AREAS. WHERE FINAL SHIPPING HAS OCCURRED THE CONTRACTOR SHALL PROVIDE FINAL REHABILITATION WITHIN 20 DAYS.
9. THE CONTRACTOR SHALL PROVIDE A MULCH STRIP MINIMUM 1.2m WIDE BEHIND ALL KERB AND GUTTER AT COMPLETION OF FOOTPATH FORMATION.
10. THE CONTRACTOR SHALL PROVIDE INLET SEDIMENT TRAPS AT ALL PITS DURING CONSTRUCTION AND REPLACE WITH KERB INLET CONTROL AT COMPLETION OF LINTEL CONSTRUCTION.
11. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILISED AS QUICKLY AS POSSIBLE TO MINIMISE RISK OF EROSION.
12. VEHICULAR TRAFFIC SHALL BE CONTROLLED DURING CONSTRUCTION CONFINING ACCESS WHERE POSSIBLE TO THE PROPOSED OR EXISTING ROAD RESERVES. AREAS TO BE LEFT UNDISTURBED SHALL BE MARKED NO ACCESS AND CONTROLLED BY FENCING.
13. SITE ACCESS SHALL BE RESTRICTED TO A NOMINATED POINT. THE CONSTRUCTION OF A SHAKEDOWN AREA MAY BE REQUIRED DEPENDING UPON THE SOIL CONDITIONS. DEBRIS ON EXISTING ROAD SHALL BE SWEPT TO THE SATISFACTION OF COUNCIL'S SUPERVISOR.
14. SEDIMENT BASINS SHALL BE IN ACCORDANCE WITH 'MANAGING URBAN STORM WATER, SOILS AND CONSTRUCTION' - 3rd EDITION, AUGUST 1998, SECTION 6.3.
15. SEDIMENT BASINS SHALL BE MAINTAINED FOR THE ENTIRE DURATION OF THE PROJECT OR UNTIL SUCH TIME AS ALL DISTURBED AREAS ARE REVEGETATED TO THE SATISFACTION OF COUNCIL.
16. WHERE FLOCCULATION OF BASINS IS REQUIRED, FLOCCULATION IS TO BE IN ACCORDANCE WITH 'MANAGING URBAN STORM WATER, SOILS AND CONSTRUCTION' - 3rd EDITION, AUGUST 1998, APPENDIX E.
17. ANY DAMS TO BE DE-SILTED OF FILLED MATERIAL SHALL BE FLOCCULATED TO SETTLE ANY SUSPENDED SOLIDS. ANY NOXIOUS WEED PRESENT SHALL BE ERADICATED IN AN APPROVED MANNER PRIOR TO ANY WORKS COMMENCING . APPROVAL REQUIRED PRIOR TO PUMPING. CLEAR WATER SHALL THEN BE PUMPED OUT IN A MANNER THAT WILL NOT CAUSE DOWNSTREAM EROSION. THE DAM WALL SHALL THEN BE BREACHED AND ANY SILT REMOVED BE PLACED IN A SUITABLE CONSTRUCTED DRYING BASIN. WHEN DRY THE SILT SHALL BE REMOVED FROM SITE OR MIXED WITH TOPSOIL FOR FUTURE SPREADING.
18. THE CONTRACTOR SHALL MAINTAIN CONTROL THROUGH THE ENTIRE DURATION OF THE PROJECT.
19. THE CONTRACTOR SHALL MAINTAIN A LOG BOOK DETAILING;

    a. RECORDS OF ALL RAINFALL
    b. CONDITION OF SOIL AND WATER MANAGEMENT STRUCTURES
    c. ANY APPLICATION OF FLOCCULATING AGENTS TO SEDIMENT BASIN
    d. VOLUMES OF ALL WATER DISCHARGED FROM SEDIMENT BASINS
    e. ANY ADDITIONAL REMEDIAL WORKS REQUIRED.

    THE LOG BOOK SHALL BE MAINTAINED ON A WEEKLY BASIS AND BE MADE AVAILABLE TO ANY AUTHORISED PERSON UPON REQUEST. THE ORIGINAL LOG BOOK SHALL BE ISSUED TO THE PROJECTS MANAGER AT THE COMPLETION OF WORKS.

REFERENCES

CV-000	COVER SHEET & NOTES
CV-001	CIVIL STORMWATER PLAN
CV-002	CIVIL PAVEMENT PLAN
CV-003	SEDIMENT CONTROL & EXISTING STORMWATER PLAN
CV-004	CIVIL DETAILS - SHEET 1
CV-005	CIVIL DETAILS - SHEET 2
CV-006	CIVIL DETAILS - SHEET 3

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A	02.11.15	DRAFT	

SCALE	As indicated
SIZE	A1
DRAWN	L. GANDY
DESIGNED	M. BLYTH
CHECKED	B. ALLADO

TENDER DOCUMENT
NOT FOR CONSTRUCTION

APPROVED
DATE
G. UNIE

PROJECT	HUNTER SPORTS HIGH SCHOOL MAJOR CAPITAL WORKS UPGRADE
TITLE	CIVIL DETAILS - SHEET 1 EROSION & SEDIMENT CONTROL DETAILS

DRAWING No. PROJECT No 249335 - WBS 001 - TYPE CV - DISC - NUMBER 004 - REV H