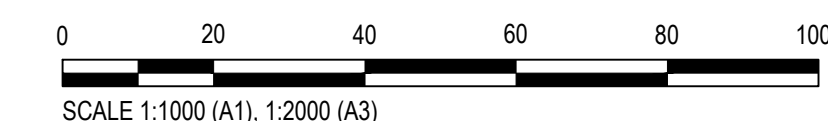


NOTE:
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SCHEDULE OF DRAWINGS	
DRAWING No.	DESCRIPTION
8201720802-01-C2000	COVER SHEET
8201720802-01-C2001	LOCALITY PLAN & DRAWING SCHEDULE
8201720802-01-C2002	GENERAL NOTES
8201720802-01-C2003	GENERAL ARANGEMENT LAYOUT PLAN
8201720802-01-C2004	RETAINING WALL LONGSECTION PLAN
8201720802-01-C2005	RETAINING WALL TYPICAL DETAILS

[illegible]UNIVERSITY
OF WOLLONGONG
AUSTRALIA

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Drawn HSM	Date 16/08/2019	Client UNIVERSITY OF WOLLONGONG	Project O'LEARY ROAD FLOOD MITIGATION WALL DETAILED DESIGN	Status FOR APPROVAL FOR CONSTRUCTION PURPOSES WHEN STAMPED	DATE		
Checked MPR	Date 16/08/2019				AHD		
Designed JMG	Date 16/08/2019				Drawing Number		
Verified RJH	Date 19/08/2019				8201720802-01-C2001		
Approved	Date						
DCN	19/08/2019	Title LOCALITY PLAN & DRAWING SCHEDULE		Revision A			

GENERAL CIVIL CONSTRUCTION NOTES

- EXECUTE ALL WORK SHOWN ON THESE DRAWINGS IN ACCORDANCE WITH THE RELEVANT CODES, STANDARDS AND LOCAL GOVERNMENT ORDINANCES. U.N.O. STANDARDS/CODES REFERENCED SHALL BE THOSE CURRENT AT THE DATE THAT DRAWINGS WERE APPROVED & AS PER APPROVED SSD REQUIREMENTS.
- DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL CARRY OUT A DIAL BEFORE YOU DIG APPLICATION AND ARRANGE A PRE-CONSTRUCTION MEETING WITH SERVICE AUTHORITIES (IF REQUIRED) TO ESTABLISH THE LOCATION OF UTILITY SERVICES AND SPECIAL REQUIREMENTS.
- PRIOR TO CONSTRUCTION THE CONTRACTOR MUST ENSURE ALL EXISTING SERVICES ARE LOCATED BY ACCREDITED LOCATOR AND POTHOLED TO CONFIRM LOCATION AND DEPTH PRIOR TO ANY WORKS. THE CONTRACTOR MUST ALLOW FOR THE COSTS FOR ANY CO-ORDINATION WITH SERVICE PROVIDERS.
- ANY RELEVANT CIVIL, STRUCTURAL AND SERVICE PLANS SHALL BE READ IN CONJUNCTION WITH THE ENCLOSED DOCUMENTATION. ANY DISCREPANCY IN THE PROJECT DOCUMENTATION AFFECTING WORKS SHOWN ON THIS DOCUMENTATION SHALL BE REFERRED TO THE SITE SUPERINTENDENT AND AN INSTRUCTION OBTAINED BEFORE PROCEEDING WITH WORKS SO AFFECTED.
- VERIFY SETOUT DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE COMMENCING WORKS.
- ALL SETOUT TO BE AS PER CARDNO PTY. LTD. DIGITAL SET OUT .dwg FILE. ALIGNMENT OF SERVICES TO BE AS PER .dwg FILE PROVIDED BY SERVICE DESIGN CONSULTANT.
- THE CONTRACTOR SHALL UNDERTAKE THE NECESSARY SURVEY SETOUT FOR THE WORKS.
- IF DISCREPANCIES ARE FOUND, CONSTRUCTOR MUST CONTACT THE SUPERINTENDANT IMMEDIATELY.
- ANY FENCES, DRIVEWAYS OR OTHER EXISTING ITEMS REMOVED OR DAMAGED DURING CONSTRUCTION TO BE REINSTATED IMMEDIATELY. CONTRACTOR TO VISIT SITE AT TENDER STAGE AND CONFIRM THE TYPE AND EXTENT OF REMOVAL/REINSTATEMENT/DISPOSAL OF ANY ITEMS TO ENSURE IT IS ALLOWED FOR IN THE COSTINGS. ALL DISPOSAL COSTS ARE TO BE BORE BY THE CONTRACTOR.
- NO WORK TO BE UNDERTAKEN ON ADJOINING LAND WITHOUT THE WRITTEN CONFIRMATION FROM SITE SUPERINTENDENT/LAND OWNER.
- COUNCIL'S TREE PRESERVATION ORDER TO BE OBSERVED AT ALL TIMES. ALL EXISTING TREES NOT SPECIFIED FOR REMOVAL ARE TO BE MAINTAINED DURING THE WORKS.
- ALL TREE PROTECTION FENCING TO BE INSTALLED PRIOR TO ANY WORKS BEING CARRIED OUT. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE ALL THE REQUIRED PROTECTION MEASURES ARE IN PLACE. ALL TREE PROTECTION MEASURES TO BE MAINTAINED FOR THE DURATION OF THE CIVIL WORKS.
- ALL RUBBISH AND STRUCTURES TO BE REMOVED BY THE CONTRACTOR AND DISPOSED. ALL COSTS OF DISPOSAL TO BE BORE BY THE CONTRACTOR. DISPOSAL OF CONSTRUCTION AND BUILDING WASTE MATERIAL SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE APPROVED WASTE MANAGEMENT PLAN.
- ACCESS MUST BE MAINTAINED TO ADJOINING PROPERTIES THROUGHOUT THE DURATION OF WORKS U.N.O.
- ALL MOVEMENTS TO AND FROM SITE TO BE IN ACCORDANCE WITH THE RELEVANT COUNCIL STANDARDS AND APPROVED TRAFFIC MANAGEMENT PLAN. THE CONTRACTOR IS TO PREPARE A DETAILED TRAFFIC MANAGEMENT PLAN AND SUBMIT TO CLIENT FOR APPROVAL PRIOR TO CONSTRUCTION COMMENCEMENT.
- SITE SIGNAGE MUST BE ERECTED PRIOR TO COMMENCEMENT OF WORKS IN A PROMINENT LOCATION ADJACENT TO THE SITE BOUNDARY STATING:
 - UNAUTHORISED ENTRY TO THE WORK SITE IS PROHIBITED.
 - NAME OF CONTRACTOR'S REPRESENTATIVE IN CHARGE OF THE WORK SITE
 - INCLUDING CONTACT TELEPHONE NUMBER.
 - NAME AND CONTACT DETAILS OF THE PRINCIPAL CERTIFYING AUTHORITY.
- IT IS THE CONTRACTORS RESPONSIBILITY TO REVIEW ALL ASSOCIATED TENDER DOCUMENTATION FOR EXAMPLE ANY APPROVAL CONDITIONS AND REQUIREMENTS, HERITAGE, ARCHAEOLOGICAL, ECOLOGICAL AND GEOTECHNICAL REPORTS TO ENSURE ALL THE REQUIRED PROTECTION AREAS, RESTRICTION FENCING OR WORKING ROOM IS IDENTIFIED AND PROTECTED ACCORDINGLY.
- ENGINEERING PLANS TO BE READ IN CONJUNCTION WITH PLANS FOR WATER, SEWER, COMMS, GAS AND ELECTRICITY.
- ALL NEW WORKS TO MAKE SMOOTH JUNCTION WITH EXISTING.
- ALL CONDUITS AND STUBS TO BE LAID UNDER ROAD PAVEMENT PRIOR TO LAYING FINAL ASPHALT SEAL OR CONCRETE PAVEMENT.
- ANY ROCK EXCAVATION TO BE REPORTED TO THE SUPERINTENDENT PRIOR TO UNDERTAKING SUCH EXCAVATION.
- ALL CONSTRUCTION AND BUILDING WORKS SHALL BE RESTRICTED BETWEEN 7.00am - 5.00pm MONDAYS TO FRIDAYS AND 8:00am - 1:00pm ON SATURDAYS (INCLUSIVE) AND PROHIBITED ON SUNDAYS AND PUBLIC HOLIDAYS UNLESS WRITTEN APPROVAL TO VARY THE HOURS IS GRANTED BY COUNCIL.
- ANY DAMAGE TO COUNCIL'S FOOTWAYS, ROADS OR OTHER INFRASTRUCTURE WORKS SHALL BE RESTORED IN ACCORDANCE WITH COUNCIL'S SPECIFICATIONS AT THE COST OF THE CONTRACTOR AND PRIOR TO PRACTICAL COMPLETION.

BACKFILLING OF SERVICES TRENCHES NOTES

- PLACE BEDDING MATERIAL, SERVICES, BACKFILLING ON FIRM GROUND FREE OF SURFACE WATER.
- BACKFILL TRENCHES AS SOON AS POSSIBLE AFTER SERVICE PIPE IS LAID AND BEDDED
- MATERIAL TO BE WELL GRADED, INORGANIC, NON PERISHABLE MATERIAL, PLASTICITY INDEX < 50%.

ROAD AND PAVEMENT WORKS

- ALL FLEXIBLE ROAD PAVEMENTS TO BE CONSTRUCTED IN ACCORDANCE WITH RELEVANT AUSTRROADS GUIDELINES.
- CONDUIT TRENCHES BENEATH ROADS TO BE BACKFILLED WITH 5mm MINUS BASALT GRAVEL OR AS OTHERWISE APPROVED BY THE SUPERINTENDENT.
- THE RESULTS OF ANY DENSITY TESTS, BEAM TESTS OR ANY CBRs UNDERTAKEN MUST BE FORWARDED TO COUNCIL WITHIN 7 BUSINESS DAYS. A NATA REGISTERED LABORATORY SHALL CARRY OUT THE TESTS. WHEN TESTING FOR DENSITY THE STANDARD COMPACTION TESTING METHOD IS TO BE USED.
- THE CONTRACTOR IS TO PROVIDE A TEST REPORT ON THE ASPHALTIC CONCRETE WORKS INCLUDING CERTIFICATION OF MATERIAL, THICKNESS AND COMPACTION FROM A QUALIFIED PAVEMENT ENGINEER IN COMPLIANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND ROADS AND MARITIME SERVICES SPECIFICATIONS.

SURVEY

- THE CONTRACTOR SHALL UNDERTAKE THE NECESSARY SURVEY SETOUT FOR THE WORKS.
- THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ANY UTILITY SERVICES OVER THE SITE.
- ALL SURVEY MARKS TO BE RETAINED UNLESS ADVISED OTHERWISE BY THE SUPERINTENDENT.
- THE CONTRACTOR WILL SURVEY ALL STRIPPED AREAS , AND ADVISE THE SUPERINTENDENT BEFORE PLACING FILL OVER SUCH AREAS.
- THE CONTRACTOR SHALL SURVEY THE LOCATION AND LEVEL OF BURIED ENDS AND JUNCTIONS OF PIPES AND CONDUITS FOR FUTURE WORKS AS EXECUTED PLANS.
- ALL FILL AREAS TO BE SURVEYED PRIOR TO PLACING BACKFILL
- FOR EXISTING CONTROL POINTS REFER TO SURVEYORS PLANS.

MASONRY

- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH A.S. 3700.
- STRENGTHS OF MASONRY UNITS SHALL BE 15 MPa AND TYPE OF MORTAR SHALL BE 1:0.25:3, (CEMENT:LIME:SAND)
- CONCRETE COVER TO STEEL REINFORCEMENT WITHIN CORE-FILLED BLOCKWORK WALLS AS INDICATED INCLUDES THE WALL THICKNESS OF THE BLOCK. PROVIDE 60 mm NOMINAL COVER TO THE RETAINING FACE OF BLOCKWORK WALLS U.N.O.
- MORTAR ADMIXTURES SHALL NOT BE USED WITHOUT THE WRITTEN APPROVAL OF THE SUPERINTENDENT.
- ONLY LOAD-BEARING MASONRY WALLS ARE SHOWN UNDER CONCRETE SLABS
- PROVIDE FULL DEPTH 10 mm ABELFLEX OR APPROVED EQUIVALENT AGAINST ALL VERTICAL SURFACES WHICH ARE TO BE USED AS FORMWORK U.N.O.
- ALL DOUBLE SKIN SOLID WALLS, SUCH AS 230 mm THICK BRICKWORK, SHALL BE BONDED BY A HEADER COURSE EVERY 4th COURSE.
- ALL MASONRY SUPPORTING OR SUPPORTED BY CONCRETE FLOORS SHALL BE PROVIDED WITH VERTICAL JOINTS TO MATCH ANY CONTROL JOINTS IN THE CONCRETE.
- NO CHASES OR RECESSES ARE PERMITTED IN LOAD-BEARING MASONRY WITHOUT THE APPROVAL OF THE ENGINEER.
- BRICKWORK AND UNREINFORCED BLOCKWORK SHALL BE ARTICULATED IN ACCORDANCE WITH PART 3.3 OF THE BUILDING CODE OF AUSTRALIA, UNLESS OTHERWISE DIRECTED BY ENGINEER. WHERE POSSIBLE WALL JOINTS ARE TO ALIGN WITH CONTROL JOINTS IN CONCRETE SLABS.
- PROVIDE VERTICAL CONTROL JOINTS AT 8 m MAX. CENTRES GENERALLY, AND 5 m MAX. FROM CORNERS FOR BRICKWORK AND UNREINFORCED BLOCKWORK.
- PROVIDE CONTROL JOINTS IN BRICKWORK IN ACCORDANCE WITH "TECHNICAL NOTE 61 - AUG 2008" BY CEMENT, CONCRETE & AGGREGATES AUSTRALIA U.N.O.
- REFER TO CONCRETE NOTES FOR DE-PROPPING PRIOR TO CONSTRUCTION OF MASONRY WALLS ON SUSPENDED SLABS.
- ALL CAVITY CONSTRUCTION SHALL INCLUDE STAINLESS STEEL TIES INSTALLED IN ACCORDANCE WITH CLAUSE 3.8 A.S. 3700.
- REINFORCED CONCRETE BLOCKWORK SHALL COMPLY WITH THE FOLLOWING, UNLESS NOTED OTHERWISE :
 - PROVIDE CLEANOUT HOLES 100 mm SQUARE MINIMUM AT BASE OF ALL WALLS AND ROD CORE HOLES TO REMOVE PROTRUDING MORTAR FINS PRIOR TO GROUTING.
 - CORE-FILLING GROUT SHALL BE: f_c = 20 MPa, MINIMUM CEMENT CONTENT = 300 kg/m, SLUMP = 230 ± 30 mm.
 - REINFORCEMENT PROJECTING FROM FOUNDATION OR SLABS INTO CORES, SHALL BE SET ACCURATELY IN PLACE USING TEMPLATES TO ALIGN WITH THE CENTRE OF THE LENGTH OF CORES AND WITH COVER AS NOTED. WHERE HORIZONTAL BARS ARE INDICATED, THE WEBS OF THE BLOCKS BELOW THE BARS SHALL BE CUT DOWN TO ACCOMMODATE THE BARS.
 - GROUT ALL CORES IN REINFORCED BLOCKWORK UNLESS OTHERWISE NOTED. HEIGHT OF BLOCKWORK TO BE GROUTED ON ONE DAY SHALL BE 2400 mm. GROUT SHALL BE PLACED IN LIFTS OF 1200 mm MAXIMUM AND COMPACTED BY POKER VIBRATOR. A SHORT TIME SHOULD ELAPSE BETWEEN SUCCESSIVE LIFTS TO ALLOW PLASTIC SETTLEMENT TO OCCUR.
 - PROVIDE 60 mm COVER FROM THE OUTSIDE FACE OF THE BLOCKWORK U.N.O.
- BACKFILL TO RETAINING WALLS SHALL BE FREE DRAINING GRANULAR MATERIAL. PROVIDE SUBSOIL DRAIN AT BASE OF WALL. DO NOT BACKFILL UNTIL 14 DAYS AFTER GROUTING, OR IF APPLICABLE, AFTER RESTRAINING SLAB OVER HAS BEEN POURED AND CURED FOR 7 DAYS. BACKFILL SHALL BE COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2%

CONCRETE

- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH A.S. 3600, A.S. 1379 AND A.S. 3610 CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
- FOR IN-SITU CONCRETE QUALITY REQUIREMENTS, REFER TO THE FOLLOWING TABLE:

COMPONENET	EXPOSURE CLASSIFICATION	COMPRESSIVE STRENGTH	COVER	CEMENT TYPE	SPECIFICATION CLASS
FOOTINGS	A2	25 MPa	60 MM	GP	NORMAL

- MAXIMUM AGGREGATE SIZE = 20 mm U.N.O.
MINIMUM CEMENT CONTENT = 300 kg/m³
SLUMP DURING PLACING = 80 mm
FOR CEMENT TYPE REFER TO A.S. 3972
FOR CONCRETE SPECIFICATION CLASS REFER TO A.S. 1379.
- ALL CONCRETE COMPONENTS WITH A SPECIFICATION CLASS DENOTED AS SPECIAL IN THE TABLE ABOVE ARE TO BE PROPORTIONED TO LIMIT DRYING SHRINKAGE TO 650 MICROSTRAIN AT 56 DAYS. DETAILS OF THE PROPOSED MIX TO BE SUBMITTED AND APPROVAL OBTAINED PRIOR TO POURING ANY CONCRETE. PRIOR TO COMMENCEMENT CONCRETE SUPPLIER TO PROVIDE DRYING SHRINKAGE TEST RESULTS FROM PRODUCTION ASSESSMENT.
 - PROJECT ASSESSMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH A.S. 1379.
 - NO ADMIXTURES SHALL BE USED IN A CONCRETE MIX UNLESS APPROVED BY ENGINEER IN WRITING.
 - SUBMIT FOR APPROVAL THE FOLLOWING TO THE ENGINEER :
 - CURING PROCEDURE (PVA MEMBRANES NOT PERMITTED)
 - STRIPPING AND BACK PROPPING PROCEDURE
 - DETAILS AND LOCATION OF CONDUITS AND PENETRATIONS
 - CONSTRUCTION JOINT LOCATIONS
 - CONCRETE STRENGTH f_c (MPa) IS CHARACTERISTIC STRENGTH AT 28 DAYS
 - THE FINISHED CONCRETE SHALL BE MECHANICALLY VIBRATED TO ACHIEVE A DENSE HOMOGENOUS MASS, COMPLETELY FILLING THE FORMWORK THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.
 - PLACE CONCRETE CONTINUOUSLY BETWEEN CONSTRUCTION JOINTS SHOWN ON PLAN. DO NOT BREAK OR INTERRUPT SUCCESSIVE POURS SUCH THAT COLD JOINTS OCCUR. ANY REVISIONS OR ADDITIONS TO CONSTRUCTION JOINTS SHOWN ON PLAN REQUIRE APPROVAL FROM CARDNO.
 - BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE THE SLAB THICKNESS.
 - SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
 - NO FINISH WHICH DECREASES COVER IS ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
 - NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN SHOWN IN THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.
 - PROVIDE DRIP GROOVES AT ALL EXPOSED EDGES. CHAMFERS, DRIP GROOVES, REGLETS ETC TO ARCHITECT'S DETAILS.
 - CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE ENGINEER.
 - MAINTAIN MINIMUM SLAB THICKNESS SHOWN ON PLAN WHERE FALLS OCCUR.
 - REPAIRS TO CONCRETE SHALL NOT BE ATTEMPTED WITHOUT THE PERMISSION OF THE ENGINEER.
 - CAST-IN FIXINGS, BOLTS ETC. SHALL NOT BE ALTERED WITHOUT THE PERMISSION OF THE ENGINEER.
 - ALL CONCRETE MIXES SHALL BE DESIGNED BY A RECOGNISED TESTING LAB AND SUBMITTED TO CARDNO FOR REVIEW.
 - ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO CARDNO FOR REVIEW.
 - PROJECT CONTROL TESTING SHALL BE CARRIED OUT ON ALL CONCRETE IN ACCORDANCE WITH A.S. 1379-2007. TEST CYLINDERS ARE TO BE KEPT ON SITE.

PAVEMENT

- THE PREPARED SUBGRADE IS TO BE INSPECTED BY THE SITE GEOTECHNICAL ENGINEER AND COUNCIL TO CONFIRM THE ADEQUACY OF THE SOILS EXPOSED WITHIN THE SUBGRADE SURFACE DURING CONSTRUCTION.
- THE FOLLOWING MINIMUM DRY DENSITY RATIOS (AS1289.5.4.1-1993) MUST BE ACHIEVED DURING CONSTRUCTION OR AS INSTRUCTED BY COUNCIL. PAVEMENT LAYERS MUST BE PLACED AND COMPACTED AT MAXIMUM THICKNESSES OF 200mm. THEREFORE SUBBASE WILL REQUIRE PLACEMENT IN TWO LAYERS.
 - BASECOURSE 98% MODIFIED
 - SUBBASE 98% MODIFIED
 - SUBGRADE 100% MODIFIED
- PAVEMENT MATERIALS MUST COMPLY WITH RMS FORM 3051 OR AS APPROVED BY COUNCIL.
- BASECOURSE SHOULD COMPRISE OF DGB20 AND SUBBASE MATERIALS OF DGS20, DGS40 OR AS APPROVED BY COUNCIL.
- SUBGRADES FORMED IN ROCK SHOULD UNDERGO A MINIMUM OF 300mm OF RIPPING AND RECOMPACTION OF THE SURFACE TO CREATE A UNIFORM SUBGRADE THAT IS FREE OF HARD AND SOFT ZONES AT THE SUBGRADE SURFACE.
- NO RECYCLED PAVEMENT MATERIALS TO BE USED IN ROAD CONSTRUCTION FOR THE BASE, SUBBASE OR WEARING SURFACE LAYER OF PAVEMENT. NO RECLAIMED ASPHALT PAVEMENT (RAP) FOR MINOR ROADS UNLESS NOTED OTHERWISE.

CONSTRUCTION PHASE SERVICES

- SHOULD CARDNO BE ENGAGED FOR THE CONSTRUCTION PHASE SERVICES, OBTAIN CARDNO'S WRITTEN INSTRUCTION AT THE FOLLOWING HOLD POINTS:
 - PREPARATION OF FOUNIDNG MATERIAL, INCLUDING PIER BORE HOLES AND BEARING CAPACITY
 - REINFORCEMENT PRIOR TO PLACEMENT OF CONCRETE OR COREFILLING OF BLOCKWORK
 - STEEL AND TIMBER FRAME INSPECTION PRIOR TO SHEETING
 - BACKFILLING ADJACENT TO COMPLETED STRUCTURES.
- PROVIDE MINIMUM 48 HOURS NOTICE FOR ANY REQUIRED INSPECTIONS.

DRAINAGE SYSTEMS

- A PERMEABLE DRAINAGE LAYER NOT LESS THAN 300 MM WIDE UNDERNEATH THE FOOTING; A SLOTTED PVC AGRICULTURAL PIPE, WITH GEOFABRIC SOCK IF APPROPRIATE, OR EQUIVALENT SYSTEM, DRAINING TO THE STORM WATER SYSTEM.
- DRAINAGE FILL MATERIAL TO BE A SINGLE-SIZED GRAVEL OR CRUSHED ROCK IN THE RANGE OF 10 TO 20 mm, DESIGNATED GP, OR A WELL-GRADED GRAVEL, DESIGNATED GW, WITH A MINIMUM PARTICLE SIZE NOT LESS THAN 5 mm.
- DRAINAGE FILL TO BE FREE-DRAINING, AND POSITIONED SUCH THAT IT DELIVERS THE WATER AT THE LEVEL OF THE DRAINAGE PIPE, WHICH MUST SLOPE ALONG THE LENGTH OF THE WALL AT A MINIMUM 1% FALL.

DESIGN LOADING

- THE STRUCTURAL COMPONENTS DETAILED ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND LOCAL GOVERNMENT ORDINANCES FOR THE FOLLOWING LOADINGS:
 - FOUNDATION MATERIAL SHALL HAVE :
 - EFFECTIVE INTERNAL FICTION ANGLE = 30°
 - EFFECTIVE COHESION = 0 kPa
 - BULK DENSITY = 18 kN/m³
 - HYDROSTATIC LOADING DUE TO MAX FLOOD LEVEL ONLY. NO IMPACT LOADING DUE TO WATER FLOW HAS BEEN CONSIDERED
- THE DESIGN PRESENTED HEREIN IS BASED ON SOIL PARAMETERS, FOUNDATION CONDITIONS, GROUNDWATER CONDITIONS AND LOADINGS STATED ABOVE. GEOTECHNICAL CONSULTANT TO CONFIRM ACTUAL SOIL CONDITIONS MEET OR EXCEED THOSE SPECIFIED PRIOR TO CONSTRUCTION.

EXISTING SERVICES

- ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
- CARE TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS AREA TO BE UNDERTAKEN OVER COMMUNICATION, GAS OR ELECTRICAL SERVICES. HAND EXCAVATION ONLY IN THESE AREAS.
- THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING SERVICES THAT ARE TO BE RETAINED IN THE VICINITY OF THE PROPOSED WORKS. ANY AND ALL DAMAGE TO THESE SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AT THE CONTRACTORS EXPENSE.
- CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.
- THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS UNLESS DIRECTED OTHERWISE ON THE DRAWINGS OR BY THE SUPERINTENDENT.
- THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED AND MAINTAINED.
- PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF THE PROGRAM FOR THE RELOCATION AND/OR CONSTRUCTION OF TEMPORARY SERVICES AND FOR ANY ASSOCIATED INTERRUPTION OF SUPPLY.
- THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.

FORMWORK

- THE DESIGN, CONSTRUCTION AND PERFORMANCE OF THE FORMWORK AND FALSEWORK IS THE RESPONSIBILITY OF THE BUILDER.CARE TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS AREA TO BE UNDERTAKEN OVER COMMUNICATION, GAS OR ELECTRICAL SERVICES. HAND EXCAVATION ONLY IN THESE AREAS.
- DESIGN AND CONSTRUCTION AND STRIPPING TIMES SHALL COMPLY WITH A.S. 3610 AND A.S. 3600 UNLESS OTHERWISE APPROVED BY THE ENGINEER.CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.
- DURING CONSTRUCTION, SUPPORT PROPPING SHALL BE PROVIDED WHERE LOADS FROM STACKED MATERIALS, FORMWORK AND OTHER SUPPORTED SLABS INDUCE LOADS IN A SLAB OR BEAM WHICH EXCEED THE DESIGN LOAD FOR STRENGTH OR SERVICEABILITY AT THAT AGE ONCE THE NOMINATED 28 DAY STRENGTH HAS BEEN ATTAINED.

- THESE LOADS SHALL NOT EXCEED THE DESIGN SUPERIMPOSED LOADS SET OUT IN THE GENERAL NOTES.
- THE FORMWORK SHALL BE DESIGNED TO RELY ON NO RESTRAINT OR SUPPORT FROM THE PERMANENT STRUCTURE WITHOUT PRIOR APPROVAL FROM THE PROJECT DESIGN ENGINEER.
 - FORMWORK SHALL BE DESIGNED TO ACCOMMODATE MOVEMENTS AND LOAD RE DISTRIBUTION DUE TO POST-TENSIONING.
 - WHERE NECESSARY SPECIAL REQUIREMENTS FOR SEQUENCE OF CONCRETE PLACEMENT AND STRIPPING ARE SET OUT ON DRAWINGS.
 - DESIGN INFORMATION CONCERNING THE FOUNDATION FORMWORK SHALL BE DETERMINED FROM THE CONDITIONS EXISTING ON SITE AT THE TIME OF CONSTRUCTION. REFER ALSO TO THE GEOTECHNICAL REPORT WHERE AVAILABLE.
 - UNLESS NOTED OTHERWISE, PROVIDE UPWARD CAMBER TO FORMWORK OF CANTILEVERS OF L/120, WHERE L IS THE SHORTEST PROJECTION BEYOND COLUMN OR WALL FACE, AND TO FORMWORK OF SLABS WHERE NOTED ON PLAN. MAINTAIN THE SLAB AND BEAM DEPTHS SHOWN.
 - FORMWORK TO BE USED WHEN PREPARING KEYSTONE BASE SLABS TO ENSURE FLAT AND LEVEL BUILDING SURFACE.

FOUNDATIONS

- ALL WALL FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 100 kPa.
- FOUNDATION MATERIAL SHALL BE UNIFORM AND BE APPROVED BY THE GEOTECHNICAL ENGINEER FOR THE ABOVE MENTIONED PRESSURES BEFORE PLACING MEMBRANE, REINFORCEMENT OR CONCRETE.
- ENSURE STABILITY OF ADJACENT STRUCTURES AND PATHS IS MAINTAINED DURING ALL STAGES OF CONSTRUCTION.
- FOOTING LEVELS, WHERE SHOWN, ARE DESIGN ESTIMATES ONLY AND WILL BE ESTABLISHED DURING SITE INSPECTION OF WORK IN PROGRESS.

REINFORCEMENT

- REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
- SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN OR OTHERWISE APPROVED IN WRITING BY THE ENGINEER. LAPS SHALL BE IN ACCORDANCE WITH A.S. 3600 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR, AS SHOWN IN THE FOLLOWING TABLE:

BAR SIZE	N10	N12	N16	N20	N24	N28	N32	N36	N40
LAP LENGTH (mm)	500	600	800	1000	1200	1400	1800	2200	2600

- ALL PENETRATIONS TO HAVE 2-N16 TRIMMER BARS TO EACH FACE. U.N.O. EXTEND TRIMMERS 600 mm BEYOND PENETRATION.
- WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE ENGINEER.
- FABRIC SHALL BE LAPPED TWO TRANSVERSE WIRES PLUS 25 mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF THE WIRE.
- WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-400 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 400 mm UNLESS NOTED.
- JOGGLES TO BARS SHALL COMPRISE A LENGTH OF 12 BAR DIAMETERS BETWEEN BEGINNING AND END OF AN OFFSET OF 1 BAR DIAMETER
- AT A SIMPLE OR END SUPPORT OF A SLAB ON A MASONRY WALL, ALL BOTTOM SLAB REINFORCEMENT SHALL EXTEND OVER THE MASONRY WALL BY A LENGTH 75 mm FOR N12 BARS AND 95 mm FOR N16 BARS. IF THIS CANNOT BE ACHIEVED DUE TO COVER REQUIREMENTS THEN THE BARS SHALL BE COGGED. FOR FABRIC THE LAST AT EXTERNAL CROSS ROD SHALL BE LOCATED OVER THE WALL AND 50 mm MINIMUM BEYOND THE FACE OF THE WALL.
- ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1 m CENTRES BOTH WAYS, AND 800 mm EACH WAY FOR FABRIC. WHEN POURED ON GROUND AS FORMWORK PROVIDE PLATES UNDER ALL BAR CHAIRS. PLASTIC TIPPED STEEL CHAIRS SHALL NOT BE USED ON EXPOSED FACES IN EXPOSURE CLASSIFICATION B1, B2 AND C ONLY PLASTIC OR CONCRETE CHAIRS.
- AT EXTERNALLY EXPOSED SURFACES, NO METALLIC ITEMS INCLUDING FORM BOLTS, FORM SPACERS, METALLIC BAR CHAIRS AND TIE-WIRE ARE TO BE PLACED IN THE COVER ZONE.
- SITE BENDING OF REINFORCEMENT SHALL BE AVOIDED IF POSSIBLE. WHERE SITE BENDING IS UNAVOIDABLE IT SHALL BE CARRIED OUT COLD, WITHOUT THE APPLICATION OF HEAT, AND IN ACCORDANCE WITH THE PRACTICE NOTE RPN1 OF THE STEEL REINFORCEMENT INSTITUTE OF AUSTRALIA.
- ALL REINFORCEMENT, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION AND INSPECTED BY A STRUCTURAL ENGINEER PRIOR TO PLACING CONCRETE.
- THE STRUCTURAL ENGINEER SHALL BE GIVEN 24 HOURS NOTICE FOR REINFORCEMENT INSPECTION AND CONCRETE SHALL NOT BE DELIVERED UNTIL FINAL APPROVAL HAS BEEN OBTAINED FROM THE STRUCTURAL ENGINEER.
- GALVANISING TO BE A MINIMUM OF 600 MICRONS.
- DO NOT CUT REINFORCEMENT AFTER IT HAS BEEN GALVANISED.

RIP RAP

- RIP RAP TO CONSIST OF HARD IGNEOUS ROCK AND HAVE A MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 100MPa
- RIP RAP TO BE INSPECTED AND SIGNED OFF BY BY GEOTECHNICAL CONSULTANT PRIOR TO PLACEMENT.

TREE REMOVAL

- THE TREE REMOVAL PLAN IS INDICATIVE ONLY. THE CONTRACTOR IS TO VISIT SITE AND CONFIRM THE EXTENT OF VEGETATION REMOVAL PRIOR TO TENDER SUBMISSION.
- PRIOR TO THE REMOVAL OF ANY TREE, EACH TREE WILL BE INSPECTED BY A QUALIFIED ECOLOGIST. THE ECOLOGIST WILL REMAIN ON SITE FOR THE DURATION OF THE TREE REMOVAL TO ENSURE ANY FAUNA IS RELOCATED ACCORDINGLY. THE ECOLOGIST WILL BE COMMISSIONED BY THE PRINCIPAL. THE CONTRACTOR IS TO PROVIDE AT LEAST 5 BUSINESS DAYS NOTICE PRIOR TO THE REMOVAL OF ANY TREES
- ANY FELLED VEGETATION MUST BE MULCHED AND STOCKPILED ON SITE. THE CONTRACTOR TO ALLOW FOR ALL MULCHING, STOCKPLING AND APPROPRIATE SEDIMENT FENCING. IT IS INTENDED THAT THE MULCH IS REUSED ON SITE. THIS WILL BE CONFIRMED BY THE LANDSCAPE CONTRACTOR DURING CONSTRUCTION.

PRINCIPAL CERTIFIER INSPECTION

- THE ENGINEERING WORKS SHALL BE INSPECTED BY THE PRINCIPAL CERTIFYING AUTHORITY (PCA). IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE PCA WHEN INSPECTIONS ARE REQUIRED. AT LEAST 24 HOURS NOTICE IS REQUIRED FOR INSPECTIONS WHERE COUNCIL IS THE PCA. AS A MINIMUM COURSE OF ACTION, THE PCA SHOULD BE NOTIFIED AT THE FOLLOWING STAGES AS MINIMUM:
 - PRIOR TO COMMENCING FILLING WORKS
 - WHEN ROADWORKS HAVE BEEN EXCAVATED TO SUBGRADE, PRIOR TO PLACING OF PAVEMENT.
 - AT COMPLETION OF THE PREPARATION OF ALL CONCRETE LAYBACK GUTTER CROSSING SUBGRADE

PROJECT COMPLETION PACKAGE

- THE CONTRACTOR IS TO ASSIST WITH THE COMPILATION OF THE PROJECT COMPLETION PACKAGE BY PROVIDING STRUCTURAL CERTIFICATION CONFIRMING THAT THE RETAINING WALL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT STANDARDS.



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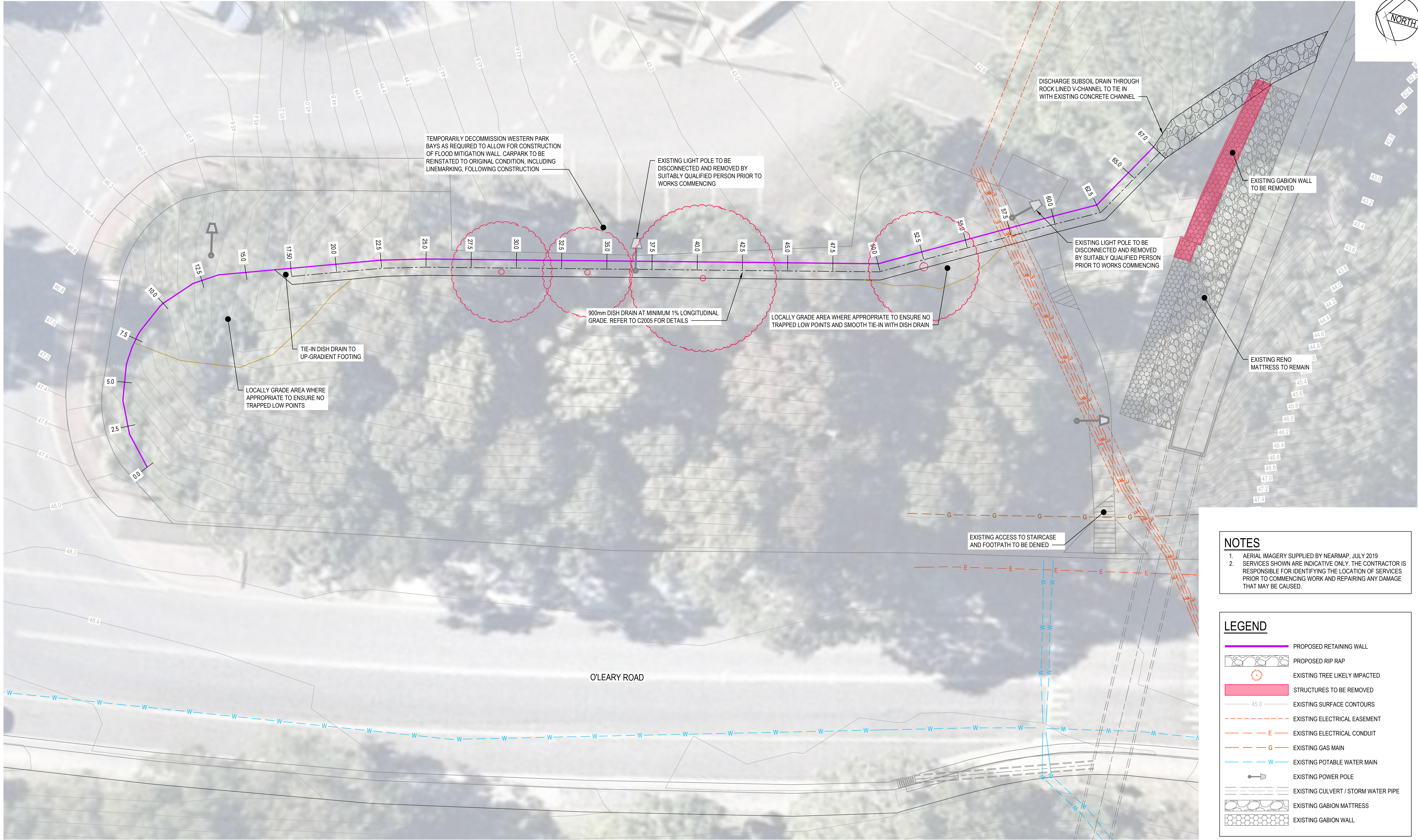


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Date	16/08/2019
Client	UNIVERSITY OF WOLLONGONG
Date	16/08/2019
Date	16/08/2019
Date	19/08/2019
Date	19/08/2019

Project	O'LEARY ROAD FLOOD MITIGATION WALL
Detailed Design	
Title	GENERAL NOTES

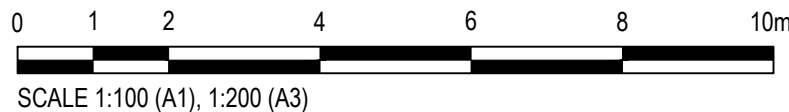
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FOR CONSTRUCTION PURPOSES WHEN STAMPED	
DATUM	AHD
Scale	NTS
Size	A1
Drawing Number	8201720802-01-C2002
Revision	A



GENERAL ARRANGEMENT LAYOUT
SCALE 1:100

- NOTES**
1. AERIAL IMAGERY SUPPLIED BY NEARMAP, JULY 2019
 2. SERVICES SHOWN ARE INDICATIVE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE LOCATION OF SERVICES PRIOR TO COMMENCING WORK AND REPAIRING ANY DAMAGE THAT MAY BE CAUSED.

- LEGEND**
- PROPOSED RETAINING WALL
 - PROPOSED RIP RAP
 - EXISTING TREE LIKELY IMPACTED
 - STRUCTURES TO BE REMOVED
 - EXISTING SURFACE CONTOURS
 - EXISTING ELECTRICAL EASEMENT
 - EXISTING ELECTRICAL CONDUIT
 - EXISTING GAS MAIN
 - EXISTING POTABLE WATER MAIN
 - EXISTING POWER POLE
 - EXISTING CULVERT / STORM WATER PIPE
 - EXISTING GABION MATTRESS
 - EXISTING GABION WALL



Rev.	Date	Description	Des.	Verif.	Appd.
A	19/08/2019	FOR CONSTRUCTION WHEN STAMPED	JMG	RJH	DCN



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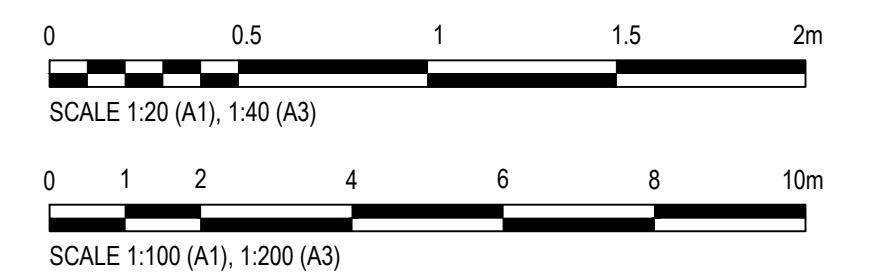
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Checked	MPR	Date	16/08/2019
Designed	JMG	Date	16/08/2019
Verified	RJH	Date	19/08/2019
Approved		Date	
DCN		19/08/2019	

Client **UNIVERSITY OF WOLLONGONG**
Project **O'LEARY ROAD FLOOD MITIGATION WALL**
DETAILED DESIGN
Title **GENERAL ARRANGEMENT LAYOUT PLAN**

Status	FOR APPROVAL		
FOR CONSTRUCTION PURPOSES WHEN STAMPED			
DATUM		Scale	Size
AHD		1:100	A1
Drawing Number			Revision
8201720802-01-C2003			A



 RETAINING WALL
 RETAINING WALL FOOTING
 EXISTING SURFACE LEVEL
 100 YEAR ARI MAXIMUM FLOOD LEVEL



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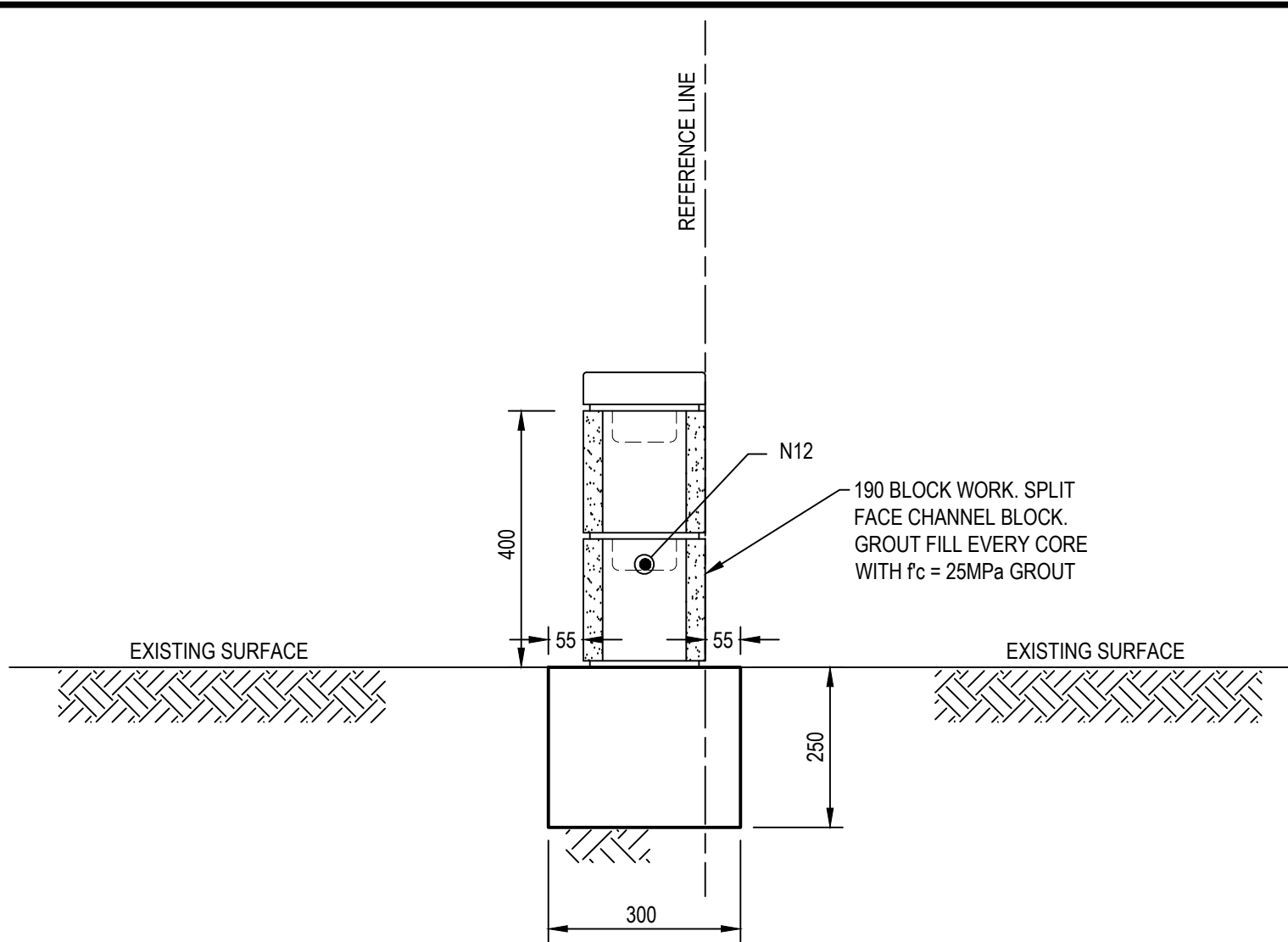


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Verified	Date
RJH	19/08/2019
Approved	Date
DCN	19/08/2019

Client	UNIVERSITY OF WOLLONGONG
Project	O'LEARY ROAD FLOOD MITIGATION WALL DETAILED DESIGN
Title	RETAINING WALL LONGSECTION PLAN

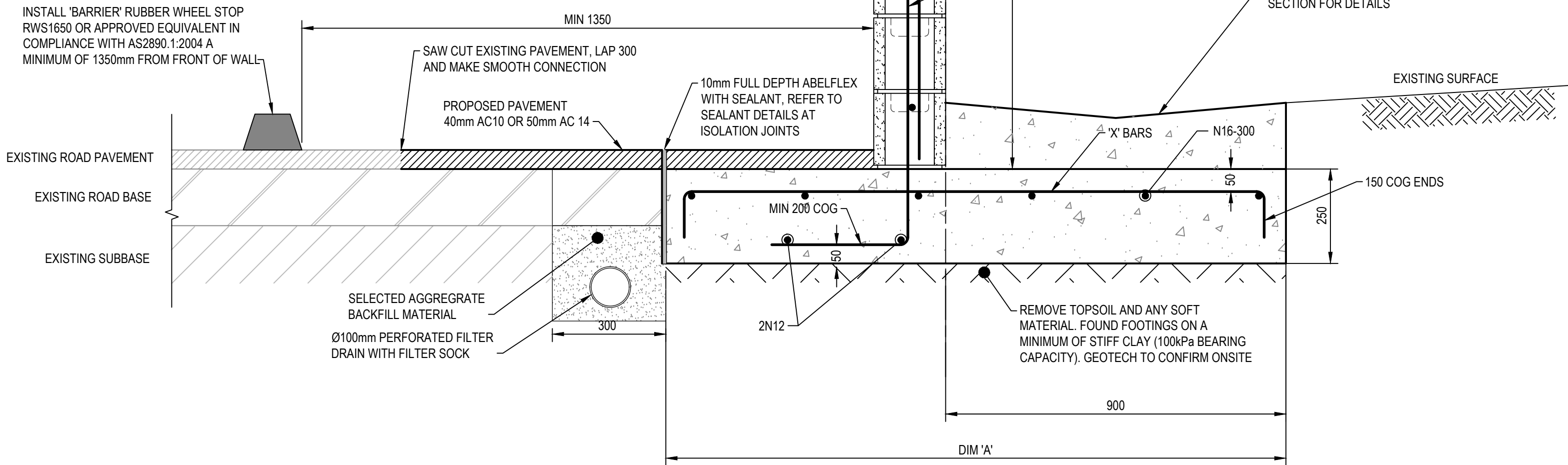
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Drawing Number			Revision
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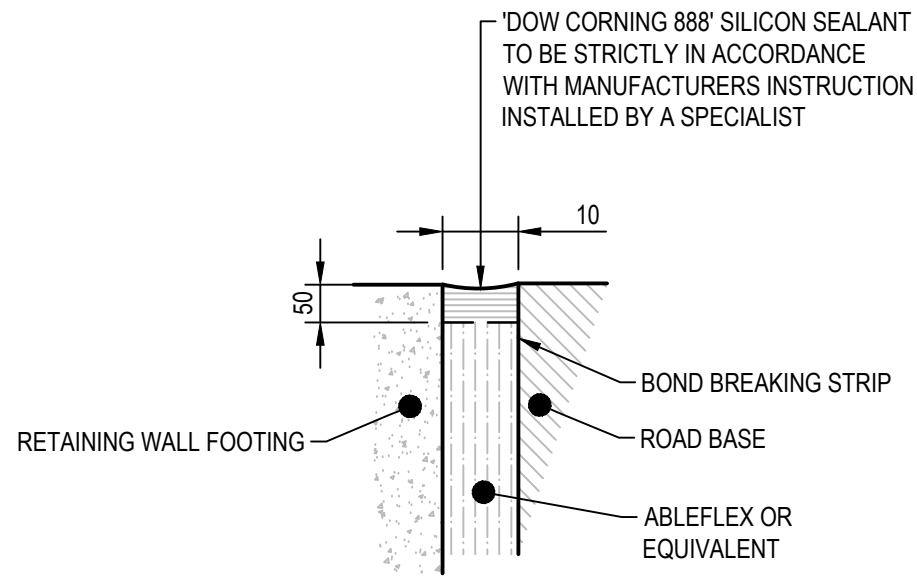
TYPICAL RETAINING WALL SECTION CH 0m - 17.5m
SCALE 1:10

CHAINAGE	DIM 'H'	DIM 'A'	'X' BAR	'Y' BAR
17.5m - 20m	600	1200	N12-400	N12-400
20m - 22.5m	800	1200	N12-400	N12-400
22.5m - 27.5m	1000	1200	N12-400	N12-400
27.5m - 30m	1200	1200	N12-400	N12-400
30m - 55m				
55m - 65m				
65m - 68m	1400	1350	N16-400	N16-400
30m - 35m				
55m - 65m				
35m - 40m	1600	1350	N16-400	N16-400
45m - 50m				
40m - 45m	1800	1500	N16-200	N16-200

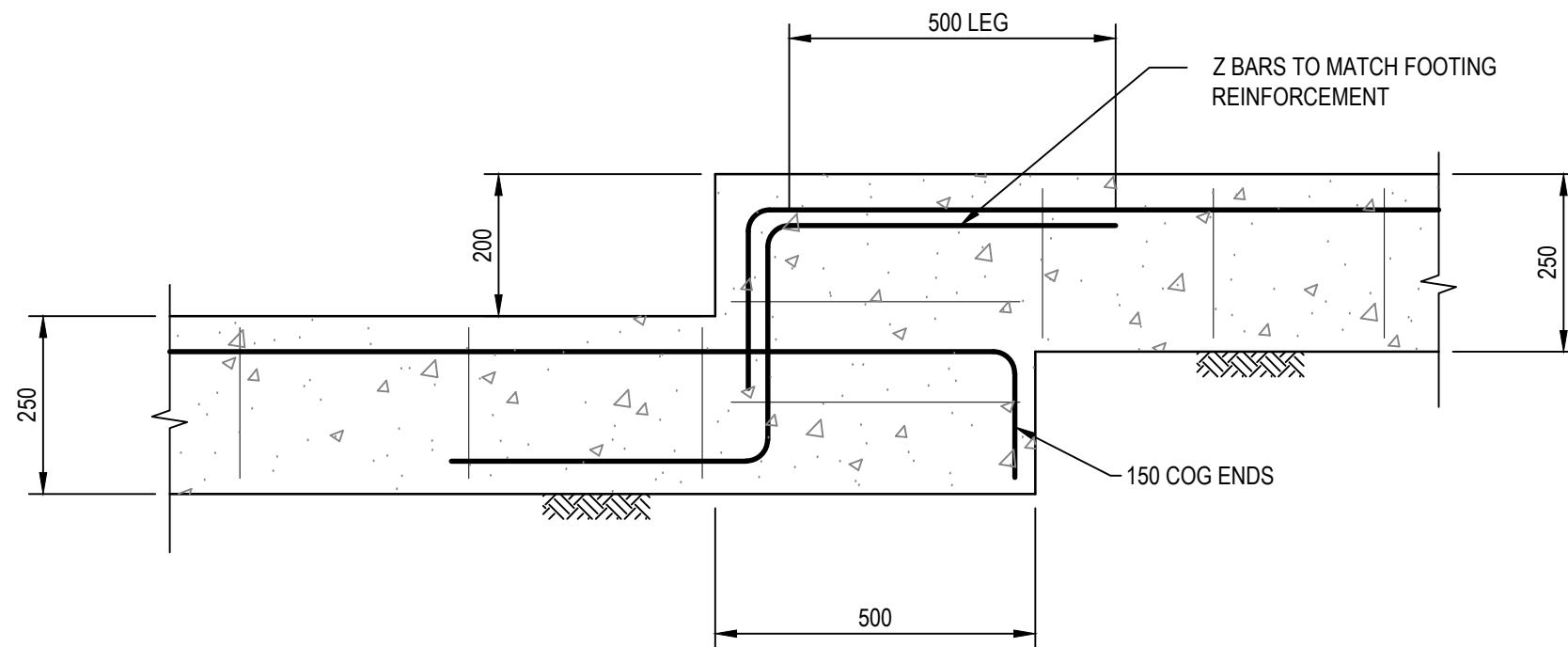
NOTE:
VERTICAL CONTROL JOINTS TO BE PROVIDED AT
MAXIMUM 8M CTS. REFER TO RETAINING WALL
CONTROL JOINT DETAIL



TYPICAL RETAINING WALL SECTION CH 17.5m - 67m
SCALE 1:10

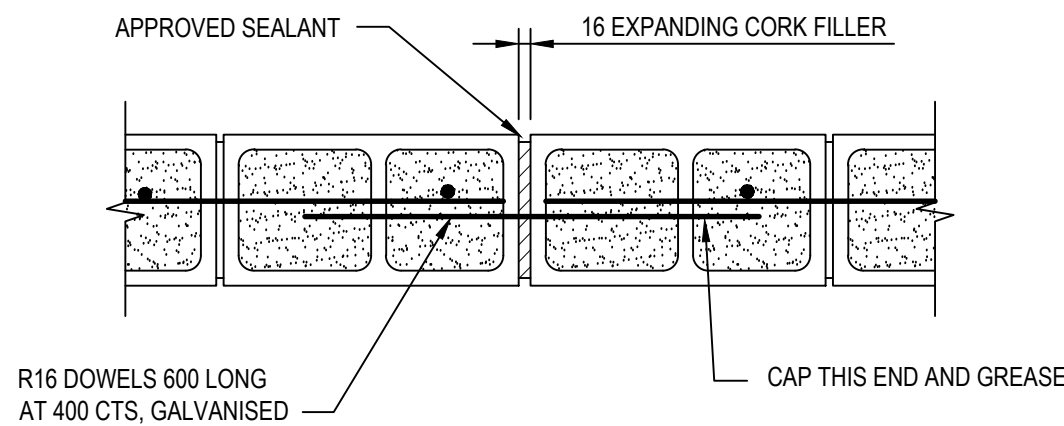


SEALANT DETAILS AT ISOLATION JOINTS
SCALE 1:1

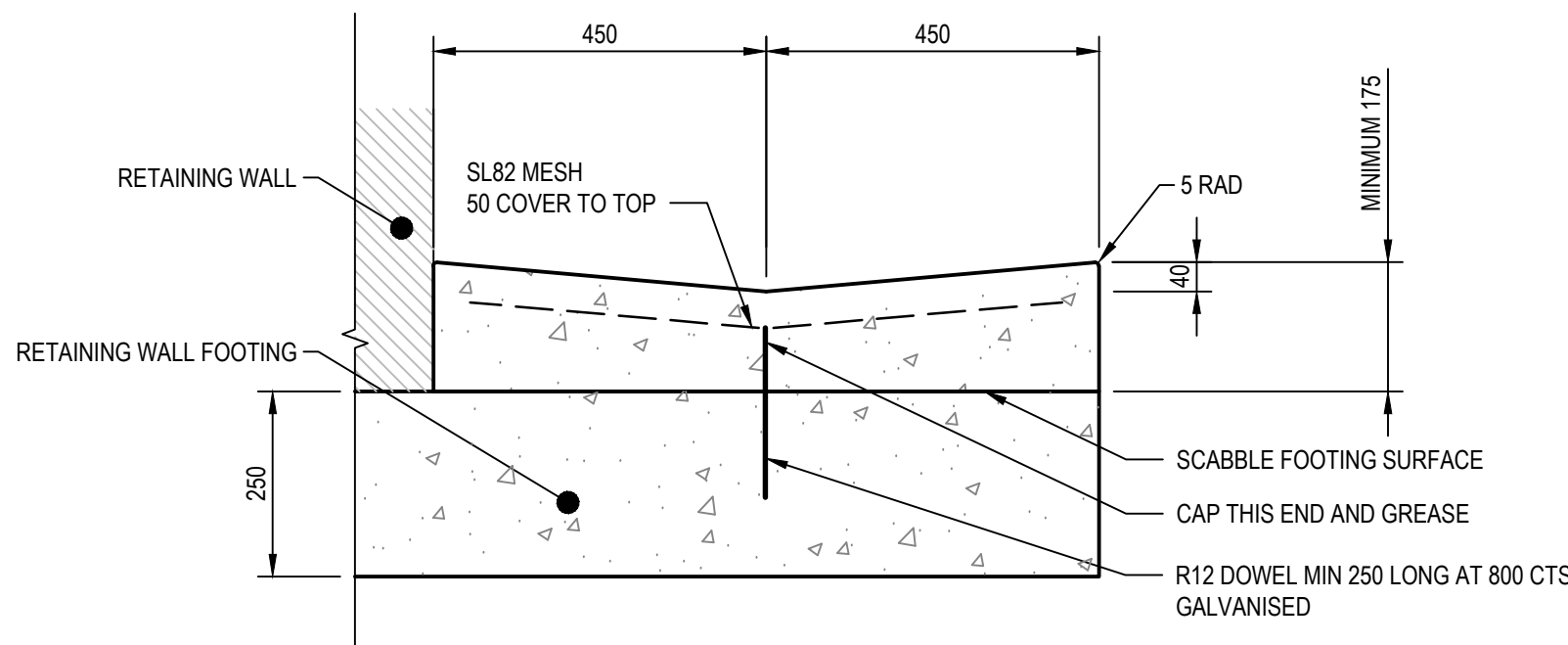


TYPICAL FOOTING STEP DETAIL
SCALE 1:10

NOTE:
CONTROL JOINTS AT 8m CTS TO BE VERTICAL
FOR FULL HEIGHT OF WALL. APPLY SEALANTS AS
SPECIFIED TO EACH FACE OF BLOCK.



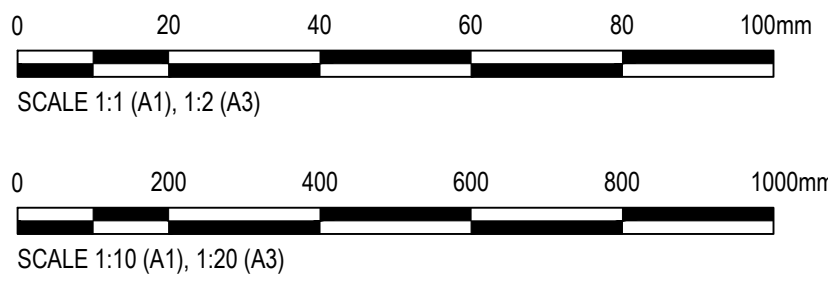
TYPICAL RETAINING WALL CONTROL JOINT DETAIL
SCALE 1:10



TYPICAL DISH DRAIN SECTION
SCALE 1:10

NOTE

DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED



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Approved		Date	
DCN			19/08/2019

Client	UNIVERSITY OF WOLLONGONG
Project	O'LEARY ROAD FLOOD MITIGATION WALL DETAILED DESIGN
Title	RETAINING WALL TYPICAL DETAILS

Status	FOR APPROVAL FOR CONSTRUCTION PURPOSES WHEN STAMPED
DATUM	AHD
Scale	AS SHOWN
Size	A1
Drawing Number	8201720802-01-C2005
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