

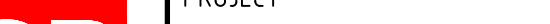
PELICAN ROAD, SCHOFIELDS CIVIL DOCUMENTATION



LOCALITY PLAN

DWG No.	DRAWING TITLE
C01.01	COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN
C01.11	SPECIFICATION NOTES - SHEET 01
C01.12	SPECIFICATION NOTES - SHEET 02
C01.13	SPECIFICATION NOTES - SHEET 03
C01.21	GENERAL ARRANGEMENT PLAN
C02.01	SEDIMENT AND SOIL EROSION CONTROL PLAN
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C04.01	SITWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 01
C04.02	SITWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 02
C04.21	STORMWATER LONGITUDINAL SECTIONS - SHEET 01
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C04.51	TEMPORARY CARPARK LAYOUT PLAN
C06.01	SITWORKS SETOUT CONTROL PLAN
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C08.01	PAVEMENT PLAN - SHEET 01
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C09.01	DETAILS - SHEET 01
C09.02	DETAILS - SHEET 02
C09.03	DETAILS - SHEET 03

NOT FOR CONSTRUCTION

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DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS																	THE COPYRIGHT OF THIS DRAWING REMAINS WITH		
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												Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81.094 433 100		PELICAN ROAD, SCHOFIELDS		COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN		DRAWING SHEET SIZE - A1	

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH BLACKTOWN CITY COUNCIL DEVELOPMENT GUIDELINES. READ IN CONJUNCTION WITH THE NOTES PROVIDED BELOW.
IF CONFLICT ARISE, BLACKTOWN CITY COUNCIL GUIDELINES AND SPECIFICATIONS TAKE PRECEDENCE. WHERE BLACKTOWN CITY COUNCIL GUIDELINES AND SPECIFICATIONS ARE SILENT, THE SPECIFICATION NOTES BELOW TAKE PRECEDENCE.

ACCESS AND SAFETY
1. THE CONTRACTOR SHALL COMPLY WITH ALL STATUTORY AND INDUSTRIAL REQUIREMENTS FOR PROVISION OF A SAFE WORKING ENVIRONMENT INCLUDING TRAFFIC CONTROL.
2. THE CONTRACTOR SHALL PROVIDE TRAFFIC MANAGEMENT PLANS FOR THE PROPOSED WORKS COMPLETED BY A SUITABLY QUALIFIED PERSON AND APPROVED BY COUNCIL / REGULATORY AUTHORITY. WORK IS NOT TO COMMENCE ON SITE PRIOR TO APPROVAL OF TRAFFIC MANAGEMENT SCHEME.
3. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES ACCESS TO BUILDINGS ADJACENT THE WORKS IS NOT DISRUPTED.
4. WHERE NECESSARY THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE OF VEHICLES AND/OR PEDESTRIANS THROUGH OR BY THE SITE.
5. THE CONTRACTOR SHALL ENSURE PUBLIC ACCESS EXTERNAL TO THE SITE IS IN ACCORDANCE WITH COUNCILS REQUIREMENTS.

TREE PROTECTION
1. REFER TO LANDSCAPE / ARCHITECTS PLAN FOR TREES TO BE RETAINED AND PROTECTED.
2. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY: 2.1. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE. 2.2. ENSURING THAT NOTHING IS NAILED TO ANY PART OF THE TREE. 2.3. CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY. COUNCILS AND/OR INDEPENDENT ARBORISTS TO BE CONSULTED WHERE TREE ROOTS ARE TO BE REMOVED AND/OR CUT.

SEDIMENT AND SOIL EROSION
1. THE SEDIMENT & EROSION CONTROL PLAN PRESENTS CONCEPTS ONLY. THE CONTRACTOR SHALL AT ALL TIMES BE RESPONSIBLE FOR THE ESTABLISHMENT & MANAGEMENT OF A DETAILED SCHEME MEETING COUNCILS DESIGN, OTHER REGULATORY AUTHORITY REQUIREMENTS AND MAKE GOOD PAYMENT OF ALL FEES.
2. THE CONTRACTOR SHALL INSTIGATE ALL SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH STATUTORY REQUIREMENTS AND IN PARTICULAR THE 'BLUE BOOK' (MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION), PRODUCED BY THE DEPARTMENT OF HOUSING AND COUNCILS POLICIES. THESE MEASURES ARE TO BE INSPECTED AND MAINTAINED ON A DAILY BASIS.
3. THE SITE SUPERINTENDENT SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS INSTRUCTED IN THE DRAWINGS AND ADHERE TO ALL REGULATORY AUTHORITY REQUIREMENTS.
4. THE CONTRACTOR SHALL INFORM ALL SUB CONTRACTORS OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS.
5. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHALL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE; 5.1 CONSTRUCT TEMPORARY STABILISED SITE ACCESS INCLUSIVE OF SHAKE DOWN / WASH PAD. 5.2 INSTALL ALL TEMPORARY SEDIMENT FENCES AND BARRIER FENCES, WHERE FENCES ADJACENT EACH OTHER, THE SEDIMENT FENCE CAN BE INCORPORATED INTO THE BARRIER FENCE. 5.3 INSTALL SEDIMENT CONTROL MEASURES AS OUTLINED ON THE APPROVED PLANS.
6. UNDERTAKE SITE DEVELOPMENT WORKS SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF MINIMUM WORKABLE SIZE.
7. 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 ENSURING CONFORMITY TO REGULATORY AUTHORITY REQUIREMENTS.
8. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) SHALL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
9. WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN STABILISED AND/OR ANY LIKELY SEDIMENT BEEN FILTERED OUT.
10. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE STABILISED / REHABILITATED.
11. ALLOW FOR GRASS STABILISATION OF EXPOSED AREAS, OPEN CHANNELS AND ROCK BATTERS DURING ALL PHASES OF CONSTRUCTION.
12. 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 RAIN EVENTS.
13. RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER SHALL BE DISPOSED OF IN ACCORDANCE WITH REGULATORY AUTHORITY REQUIREMENTS. CONTRACTOR TO PAY ALL FEES AND PROVIDE EVIDENCE OF SAFE DISPOSAL.
14. IF A TEMPORARY SEDIMENT BASIN IS REQUIRED, ENSURE SAFE BATTER SLOPES IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. MAINTAIN ADEQUATE STORAGE VOLUME IN ACCORDANCE WITH PLANS. TEMPORARY PUMP 'CLEAN FLOCCULATED' WATER TO COUNCILS STORMWATER SYSTEM. ENSURE WHOLE SITE RUN-OFF IS DIRECTED TO TEMPORARY SEDIMENT BASIN.

EXISTING SERVICES
1. 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.
2. 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.
3. 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.
4. THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.
5. 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.
6. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED AND MAINTAINED.
7. 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.
8. 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.

EARTHWORKS

1. AT THE COMMENCEMENT OF FILLING OPERATIONS FOR BULK EARTHWORKS A GEOTECHNICAL ENGINEER IS TO VISIT THE SITE & CONFIRM THE SUITABILITY OF THE METHODOLOGY OF ACHIEVING THE REQUIRED COMPACTION REQUIREMENTS.
2. STRIP TOPSOIL, VEGETABLE MATTER AND RUBBLE TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE AS DIRECTED BY THE SUPERINTENDENT.
3. WHERE FILLING IS REQUIRED TO ACHIEVE DESIGN SUBGRADE, PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF TEN PASSES OF A VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) IN THE PRESENCE OF THE SUPERINTENDENT.
4. THE CONTRACTOR IS TO ALLOW FOR A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO PROVIDE ADVICE AND CERTIFICATION OF ANY WORKS ASSOCIATED WITH TREATING OR MANAGING UNSUITABLE GROUND CONDITIONS THROUGHOUT THE CONTRACT (e.g. STABILITY OF EXCAVATIONS, POOR SUBGRADE, etc).
5. ALL SOFT, WET OR UNSUITABLE MATERIAL IS TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS BELOW.
6. PROVIDE CERTIFICATES VERIFYING THE QUALITY OF IMPORTED MATERIAL FOR THE SUPERINTENDENTS APPROVAL.
7. ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS (LOOSE) AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289.2.1.1, AS1289.5.7.1 AND AS1289.5.8.8 OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITY;

LOCATION	COMPACTION REQUIREMENT
LANDSCAPED AREAS	98% SMDD
ROADS	100% SMDD (IN ACCORDANCE WITH
COUNCIL SPECIFICATIONS)	
PAVED AREAS	100% SMDD (IN ACCORDANCE WITH
COUNCIL SPECIFICATIONS)	

8. TESTING OF THE SUBGRADE FOR BUILDINGS SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. REGISTERED LABORATORY.
9. ALLOW THE FOLLOWING COMPACTION TESTING BY N.A.T.A. REGISTERED LABORATORY FOR PLATFORMS AND FILL LAYERS IN ACCORDANCE WITH THE LATEST VERSION OF AS3798. (MINIMUM 3 TESTS PER LAYER) OR 1 TEST PER MATERIAL TYPE PER 2500sq.m OR 1 TEST.
10. WHERE TEST RESULTS ARE BELOW THE SPECIFIED COMPACTION, RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION STANDARDS ARE ACHIEVED. OTHERWISE SUBGRADE REPLACEMENT IS REQUIRED IF COMPACTION STANDARDS ARE NOT ACHIEVED.
11. ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND U.N.O. NO ADDITIONAL PAYMENTS WILL BE MADE FOR EXCAVATION IN WET OR HARD GROUND.
12. WHERE THERE IS INSUFFICIENT EXCAVATED MATERIAL SUITABLE FOR FILLING OR SUBGRADE REPLACEMENT, THE CONTRACTOR IS TO ALLOW TO IMPORT FILL. IMPORTED FILL SHALL COMPLY WITH THE FOLLOWING;
 - 12.1. BE OF VIRGIN EXCAVATED NATURAL MATERIAL OR
 - 12.2. CONTRACTOR TO PROVIDE EVIDENCE IMPORT IS SUITABLE USE
 - 12.3. PLASTICITY INDEX BETWEEN 2-15% AND GR > 8
 - 12.4. FREE FROM ORGANIC AND PERISHABLE MATTER
 - 12.5. MAXIMUM SIZE 50mm, PASSING 75 MICRON SIEVE (-25%)

EARTHWORKS (cont)
13. THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLERS MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED AT THEIR COST.
14. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE AND MAINTAIN THE INTEGRITY OF ALL SERVICES, CONDUITS AND PIPES DURING CONSTRUCTION, SPECIFICALLY DURING THE BACKFILLING AND COMPACTION PROCEDURE. ANY AND ALL DAMAGE TO NEW OR EXISTING SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST.
15. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE.
DEEP EXCAVATIONS
16. PRIOR TO THE COMMENCEMENT OF EXCAVATION WORKS GREATER THAN 1.5m IN DEPTH, THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO DETERMINE THE STABILITY OF A NATURAL MATERIAL AND BENCHING REQUIREMENTS.
17. THE CONTRACTOR MUST PROVIDE THE SUPERINTENDENT AND OR THE DESIGN ENGINEER WITH A COPY OF THE GEOTECHNICAL ENGINEERS REPORT.
18. THE CONTRACTOR IS TO PROVIDE SAFETY BARRIERS / FENCING IN ACCORDANCE WITH OH&S AND REGULATORY AUTHORITY REQUIREMENTS.
SERVICE TRENCHES
19. SAWCUT EXISTING SURFACES PRIOR TO EXCAVATION. BACKFILL ALL TRENCHES UNDER EXISTING ROADS, PAVEMENTS AND PATHS WITH STABILISED SAND 5% CEMENT OR DGS40 MATERIAL (5% CEMENT) COMPACTED IN 200mm THICK LAYERS TO 98% MMDD TO UNDERSIDE OF PAVEMENT.
20. BACKFILL ALL TRENCHES NOT UNDER ROADS, PAVEMENTS, PATHS AND BUILDINGS WITH APPROVED EXCAVATED OR IMPORTED MATERIAL COMPACTED TO 95% SMDD.

SITEWORKS
1. ALL WORKS TO BE IN ACCORDANCE WITH RELEVANT LOCAL COUNCIL / REGULATORY AUTHORITIES REQUIREMENTS, ALL SPECIFICATIONS AND AUSTRALIAN STANDARDS. CONFLICTS BETWEEN SAID DOCUMENTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR DIRECTION.
2. THE CONTRACTOR IS TO DESIGN, OBTAIN APPROVALS AND CARRY OUT REQUIRED TEMPORARY TRAFFIC CONTROL PROCEDURES DURING CONSTRUCTION IN ACCORDANCE WITH ALL REGULATORY AUTHORITIES, INCLUSIVE OF LOCAL COUNCIL REGULATIONS AND REQUIREMENTS.
3. THE CONTRACTOR IS TO OBTAIN ALL AUTHORITY APPROVALS AS REQUIRED PRIOR TO COMMENCEMENT OF WORKS.
4. RESTORE ALL PAVED, COVERED, GRASSED AND LANDSCAPED AREAS TO THEIR ORIGINAL CONDITION OR AS DIRECTED BY THE SITE SUPERINTENDENT ON COMPLETION OF WORKS. WHERE PLANTING OF NEW GRASS IS NECESSARY REFER TO LANDSCAPE ARCHITECT AND / OR ARCHITECT DOCUMENTATION.
5. ON COMPLETION OF ANY TRENCHING WORKS, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR AS DIRECTED BY THE SITE SUPERINTENDENT, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED AREAS AND ROAD PAVEMENTS.
6. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR PRIOR TO COMMENCEMENT OF WORKS.
7. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING LEVELS ONSITE PRIOR TO LODGMENT OF TENDER AND ONSITE WORKS. THE PRICE AS TENDERED SHALL BE INCLUSIVE OF ALL WORKS SHOWN ON THE TENDER PROJECT DRAWINGS. ADDITIONAL PAYMENTS FOR WORKS SHOWN ON THE TENDER PROJECT DRAWINGS WILL NOT BE APPROVED.
8. DO NOT OBTAIN DIMENSIONS BY SCALING DRAWINGS.
9. IN CASE OF DOUBT OR DISCREPANCY REFER TO SUPERINTENDENT FOR CLARIFICATION OR CONFIRMATION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
10. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED. MAKE SMOOTH TRANSITION TO EXISTING FEATURES AND MAKE GOOD WHERE JOINED.
11. TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MIN 50mm IN BITUMINOUS PAVING.
12. ALL CIVIL ENGINEERING DESIGN HAS BEEN DOCUMENTED UNDER THE ASSUMPTION THAT ALL NECESSARY SITE CONTAMINATION REMEDIATION WORKS HAVE BEEN SATISFACTORILY COMPLETED (IF APPLICABLE) AND THAT THE SITE IS NOT AFFECTED BY ANY SOIL STRATA OR GROUNDWATER TABLE CONTAMINATION.

STORMWATER DRAINAGE
1. ALL PIPES SHALL BE CLASS 2 RUBBER-RING JOINTED U.N.O. WHERE uPVC PIPES HAVE BEEN SPECIFIED, THE FOLLOWING CLASS PIPEWORK IS TO BE ADOPTED U.N.O. ø100mm OR LESS TO BE CLASS 'SN10' AND ABOVE ø100mm TO BE CLASS 'SN8'.
2. uPVC STORMWATER LINES PASSING UNDER FLOOR SLABS TO BE CONCRETE ENCASED.
3. PIPES EQUAL TO THAT OF THE STEEL REINFORCED CONCRETE PIPE CLASS SPECIFIED ON THE DRAWINGS MAY BE USED SUBJECT TO APPROVAL FROM THE SUPERINTENDENT.
4. ALL PIPE ARE TO BE LAID AT 1.0% MIN GRADE U.N.O.
5. COVERS
5.1. USE HOT DIPPED GALVANISED COVERS AND GRATES COMPLYING WITH RELEVANT COUNCIL AND AUSTRALIAN STANDARDS.
5.2. ALL COVERS AND GRATES TO BE POSITION IN A FRAME AND MANUFACTURED AS A UNIT.
5.3. ALL COVERS AND GRATES TO BE FITTED WITH POSITIVE COVER LIFTING KEYS
5.4. OBTAIN SUPERINTENDENTS APPROVAL FOR THE USE OF CAST IRON SOLID COVERS AND GRATES. CAST IRON SOLID COVERS (IF APPROVED) TO CONSIST OF CROSS-WEBBED, CELLULAR CONSTRUCTION WITH THE RIBS UPPEMOST TO ALLOW INFILLING WITH CONCRETE. INSTALL POSITIVE COVER LIFTING KEYS AND PLASTIC PLUGS.
5.5. UNLESS DETAILED OR SPECIFIED OTHERWISE, COVERS AND GRATES TO BE CLASS 'D' IN VEHICULAR PAVEMENTS AND CLASS 'B' ELSEWHERE.
5.6. ALL GRATED TRENCH DRAINS SHOULD BE 'CLASS D' CAST IRON WITHIN VEHICULAR PAVEMENTS AND CLASS 'B' HEEL SAFE WITHIN PEDESTRIAN PAVEMENTS.
6. ALL PIPE BENDS, JUNCTIONS, ETC ARE TO BE PROVIDED USING PURPOSE MADE FITTINGS OR STORMWATER PITS.
7. ALL CONNECTIONS TO EXISTING DRAINAGE STRUCTURES SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
8. STORMWATER PIPEWORK TO FINISH FLUSH WITH INTERNAL PIT WALLS AND MUST NOT PROTRUDE. CONNECTION TO BE NEATLY RENDER AND MADE NEAT.
9. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
10. U.N.O. MATERIAL USED FOR BEDDING OF PIPES SHALL BE APPROVED NON-COHESIVE GRANULAR MATERIAL HAVING HIGH PERMEABILITY AND HIGH STABILITY WHEN SATURATED AND FREE OF ORGANIC AND CLAY MATERIAL.
11. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN 50mm CONCRETE BED (OR 75mm THICK BED OF 12mm BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK.
12. BEDDING SHALL BE U.N.O TYPE H52 UNDER ROADS AND H2 UNDER GENERAL AREAS IN ACCORDANCE WITH CURRENT RELEVANT INDUSTRY STANDARDS AND GUIDELINES.
13. THE CONTRACTOR SHALL ENSURE AND PROTECT THE INTEGRITY OF ALL STORMWATER PIPES DURING CONSTRUCTION. ANY AND ALL DAMAGE TO THESE PIPES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AND AT NO EXTRA COST.
14. NOTE THAT THE PIT COVER LEVEL NOMINATED IN GUTTERS ARE TO THE INVERT OF THE GUTTER WHICH ARE 40mm LOWER THAN THE PAVEMENT LEVEL AT LIP OF GUTTER. REFER KERB DETAILS FOR CONFIRMATION.
SUBSOIL DRAINAGE
15. ø100mm SUBSOIL DRAINAGE LINES WITH NON-WOVEN GEOTEXTILE FILTER SOCK SURROUND SHALL BE CONNECTED TO A STORMWATER DRAINAGE PIT (AT MIN 1% LONGITUDINAL GRADE) AND PROVIDED IN THE FOLLOWING LOCATIONS; 15.1. THE HIGH SIDE OF PROPOSED TRAFFICKED PAVEMENT AREAS. 15.2. ALL PLANTER AND TREE BEDS PROPOSED ADJACENT TO PAVEMENT AREAS. 15.3. BEHIND RETAINING WALLS (IN ACCORDANCE WITH RETAINING WALL DETAILS). 15.4. ALL OTHER AREAS SHOWN ON DRAWINGS. 15.5. CONTRACTOR IS TO MAKE ALLOWANCE IN BOTH TENDER AND CONSTRUCTION COSTING TO ALLOW FOR SUBSURFACE DRAINAGE BEHIND ALL RETAINING WALLS / ABOVE LOCATIONS AND TO MAKE CONNECTION TO STORMWATER SYSTEM.
16. WHERE SUBSOIL DRAINAGE PASSES BENEATH BUILDINGS / PAVED AREAS AND/OR PAVEMENTS, CONTRACTOR TO ENSURE ø100mm CLASS 'SN10' uPVC DRAINAGE LINE IS USED AND THAT PROPRIETARY FITTINGS ARE USED TO RECONNECT SUBSOIL DRAINAGE LINE.
17. THE CONTRACTOR SHALL INSTALL INSPECTION OPENINGS / CLEAROUTS TO ALL SUBSOIL DRAINAGE LINES AND DOWNPIPE LINES AS SPECIFIED ON DRAWINGS AND IN ACCORDANCE WITH COUNCIL SPECIFICATIONS AT MAXIMUM 30m CENTRE AND AT ALL UPSTREAM ENDPOINTS.
18. PROVIDE 3.0m LENGTH OF ø100 SUBSOIL DRAINAGE LINE WRAPPED IN NON-WOVEN GEOTEXTILE FILTER FABRIC TO THE UPSTREAM SIDE OF STORMWATER PITS, LAID IN STORMWATER PIPE TRENCHES AND CONNECTED TO DRAINAGE PIT.
19. IN AREAS WHERE DUMPED / HAND PLACED ROCK IS USED AS A MEANS OF SCOUR PROTECTION, CONTRACTOR IS TO EXCAVATE A MINIMUM OF 100mm FROM PROPOSED SURFACE, LEVEL AND COMPACT SUBGRADE AS SPECIFIED. ROCK TO THEN BE PLACED ON GEOTEXTILE FILTER FABRIC.

PRECAST STORMWATER PITS
1. THE USE OF PRE-CAST STORMWATER DRAINAGE PITS IS NOT ACCEPTED WITHOUT CONFIRMATION BETWEEN NORTHROP ENGINEERS AND THE CONTRACTOR REGARDING QUALITY CONTROL AND CERTIFICATION OF FINISHES.
2. REFER MANUFACTURERS SPECIFICATIONS FOR INSTALLATION GUIDELINES.
3. PRECAST PIT TO BE PLACED ON MINIMUM 150mm THICK CONCRETE PAD AND BED MINIMUM 50mm WHILST CONCRETE IS STILL PARTIALLY WET.
4. ENSURE PENETRATION IS CORED THROUGH PIT FACE TO ALLOW CONNECTION.
5. ENSURE A SMOOTH SEALED FINISH AT PIPE CONNECTIONS BY HAND APPLYING CONCRETE AROUND THE PIPE ON THE INTERNAL FACE OF THE PIT TO FILL IN ANY VOIDS CREATED WHEN PENETRATION FOR THE PIPE WAS CORED.
6. ENSURE A SEALED FINISH AT PIPE CONNECTIONS BY HAND-APPLYING MINIMUM 150mm THICK CONCRETE AROUND PIPE AT THE EXTERNAL FACE OF THE PIT. ENSURE CONCRETE DOES NOT AFFECT THE INTEGRITY OF THE SUBSOIL DRAINAGE CONNECTED TO THE PIT.
7. ENSURE PIPEWORK DOES NOT PROTRUDE INTO THE BEYOND THE WALL. PIPEWORK IS TO FINISH FLUSH WITH INTERNAL WALL (UNLESS OTHERWISE NOTED OR DETAILED).
8. ENSURE THE OUTLET PIPE IS CONNECTED AT THE INVERT LEVEL OF THE PIT TO DRAIN. ALTERNATIVELY FILL THE BASE OF THE PIT WITH MASS CONCRETE (MIN 50mm THICK) OR APPROVED GROUTING COMPOUND (LESS THAN 50mm THICK) TO DRAIN.
9. PROVIDE CONCRETE BENCHING TO SIDES OF PIT TO SUIT PIPE DIAMETER. HEIGHT TO MATCH MINIMUM 1/3 PIPE DIAMETER.

RAINWATER REUSE
1. PROVIDE RAINWATER RE-USE SYSTEM TO SUPPLY WATER FOR IRRIGATION.
2. GUTTER GUARD TO BE INSTALLED ON ALL EAVES GUTTERS.
3. PRESSURE PUMP / TAP TO BE PROVIDED FOR THE REUSE OF CAPTURED TANK WATER.
4. A PERMANENT SIGN IS TO BE LOCATED IN THE VICINITY OF THE TANK STATING THE WATER IS "NON POTABLE WATER" WITH APPROPRIATE HAZARD IDENTIFICATION.
5. ALL RAINWATER SERVICES SHALL BE CLEARLY LABELLED "NON POTABLE WATER" WITH APPROPRIATE HAZARD IDENTIFICATION.
6. PIPEWORK USED FOR RAINWATER SERVICES SHALL BE COLOURED LILAC IN ACCORDANCE WITH AS1345.
7. ALL VALVES AND APERTURES SHALL BE CLEARLY AND PERMANENTLY LABELLED WITH SAFETY SIGNS TO COMPLY WITH AS1319.
8. AN AIR GAP OR RP2D TO ENSURE BACKFLOW PREVENTION (IF MAINS 'TOP UP' / BYPASS UTILISED)
9. RAINWATER TANK RETICULATION SYSTEM AND MAINS WATER BYPASS ARRANGEMENT TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 3500.1.2-2003 AND THE NSW CODE OF PRACTICE - PLUMBING AND DRAINAGE.
10. A FIRST FLUSH FILTRATION DEVICE IS TO BYPASS THE FIRST 1mm OF RAINWATER.

SIGNAGE AND LINEMARKING
1. ALL SIGNAGE TO BE INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS 1742 / RMS STANDARDS AND SPECIFICATIONS.
2. LINE MARKING AND PAINT SHALL BE IN ACCORDANCE WITH AS1742.3 AND RMS STANDARDS.
3. PAINT SHALL BE TYPE 3 CLASS 'A' AND THE COLOUR SHALL BE WHITE AND NOT SUBJECT TO DISCOLOURATION BY BITUMEN FROM ROAD SURFACE. ALL PAINT TO BE APPLIED BY MECHANICAL SPRAYER.
4. LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING.
5. PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm AND 0.40mm.
6. CARPARK LINEMARKING TO BE 80mm WIDE.

LANDSCAPING
1. REFER TO DRAWINGS BY OTHERS FOR DETAILS OF PROPOSED LANDSCAPING TREATMENT.
2. ALL DISTURBED SURFACE TO BE TEMPORARILY STABILISED WITH HYDROMULCH UPON COMPLETION OF WORKS. A 500mm STRIP OF TURF (CT2 COUCH) IS TO BE PLACED BEHIND ALL NEW KERB AND GUTTER / ROLL KERB.

PAVEMENTS
1. ALL PAVEMENT MATERIALS SHALL COMPLY WITH CURRENT RMS SPECIFICATIONS. PROVIDE MECHANICAL ANALYSIS FOR EACH BATCH OF PAVEMENT MATERIAL TO ENSURE CONFORMITY.
2. COMPACTION STANDARDS BASE 98% MODIFIED MAXIMUM DRY DENSITY SUBBASE 98% MODIFIED MAXIMUM DRY DENSITY SUBGRADE 100% STANDARD MAXIMUM DRY DENSITY
3. THE CONTRACTOR SHALL CONFIRM THE DESIGN CBR WITH A MINIMUM OF 3 TESTS TAKEN AT SUBGRADE LEVEL. WHERE DISCREPANCY IS FOUND, CONTACT THE DESIGN ENGINEER.
4. ALLOW FOR COMPACTION TESTING BY A N.A.T.A. REGISTERED LABORATORY FOR BASE LAYER, SUBBASE LAYER AND SUBGRADE LAYER IN ACCORDANCE WITH THE LATEST VERSION OF AS3798 FOR PAVEMENTS (MINIMUM 2 TESTS PER LAYER). ALLOW FOR AT LEAST TWO SUCCESSFUL COMPACTION TESTS IN EACH LAYER.
5. MATCH NEW PAVEMENTS NEATLY AND FLUSH WITH EXISTING
6. AFTER BASE IS APPROVED, SWEEP CLEAN AND PRIME AT NOMINAL RATE OF 1.0L PER 1.0 sq.m.
7. PAVEMENT HOLD POINTS 7.1. SUB-GRADE PROOF ROLL PRIOR TO SET-UP AND FORM FOR CONCRETE POUR. 7.2. INSPECTION OF FORMWORK / STEEL PRIOR TO CONCRETE POUR. 7.3. SUBMISSION OF SUB-GRADE AND BASE DENSITY TESTS.

ASPHALTIC CONCRETE
1. GENERAL 1.1. ALL ASPHALTIC CONCRETE (AC) WORK TO BE PREPARED AND CARRIED OUT IN ACCORDANCE WITH GOOD ASPHALTIC PAVING PRACTICE AS DESCRIBED IN AS2150-2005 "ASPHALT (HOT-MIXED) PAVING - GUIDE TO GOOD PRACTICE" AND CURRENT RMS SPECIFICATIONS.
2. PAVEMENT PREPARATION 2.1. THE FINISHED PAVEMENT SURFACE TO BE SEALED SHALL BE WITHIN +/- 2% OF THE OPTIMUM AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL FOREIGN MATTER. 2.2. PRIME ALL SURFACES TO BE SEALED. ALLOW PRIME TO SETTLE FOR A MINIMUM OF 3 DAYS BEFORE APPLYING TACK COAT AND ASPHALT. 2.3. SWEEP PRIMED SURFACES BEFORE APPLYING TACK COAT. 2.4. ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT UP TO GENERAL LEVEL OF PAVEMENT WITH ASPHALTIC CONCRETE BEFORE LAYING OF MAIN COURSE. 2.5. ALL DEFECTS IN THE BASE COURSE INCLUDING CRACKS, SURFACE DEFORMATION AND THE LIKE SHALL BE REPAIRED AS DIRECTED BY THE SUPERINTENDENT PRIOR TO PLACEMENT OF TACK COAT AND/OR AC COURSES.
3. PLACEMENTS 3.1. ALL ASPHALT SHALL BE PLACED UTILISING APPROVED MECHANICAL PAVING MACHINES. DO NOT HAND PLACE ASPHALT WITHOUT PRIOR APPROVAL FROM ENGINEER.
4. JOINTS 4.1. THE NUMBER OF JOINTS BOTH LONGITUDINAL AND TRANSVERSE SHALL BE KEPT TO A MINIMUM. 4.2. THE DENSITY AND SURFACE FINISH AT JOINTS SHALL BE SIMILAR TO THOSE OF THE REMAINDER OF THE LAYER.
5. COMPACTION 5.1. ALL COMPACTION SHALL BE UNDERTAKEN USING SELF PROPELLED ROLLERS. 5.2. INITIAL ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 105°C USING A STEEL DRUM ROLLER HAVING A MINIMUM WEIGHT OF 8 TONNES AND A MAXIMUM UNIT LOAD ON THE REAR DRUM EQUIVALENT TO 55kN/m WIDTH OF DRUM. 5.3. SECONDARY ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 80°C USING A PNEUMATIC TYRED ROLLER OF AT LEAST 10 TONNES MASS. A MINIMUM TYRE PRESSURE OF 550KPA AND A MINIMUM TOTAL LOAD OF 1 TONNE ON EACH TYRE. 5.4. ROLLED SURFACES SHALL BE SMOOTH AND FREE OF UNDULATIONS, BONY AND/OR UNEVEN SURFACES WILL BE REJECTED. 5.5. PROVIDE 2 No. MINIMUM COMPACTION TESTS.
6. FINISHED SURFACE PROPERTIES 6.1. FINISHED SURFACES SHALL BE SMOOTH, DENSE AND TRUE OF SHAPE AND SHALL NOT VARY MORE THAN; 6.1.1. 3mm FROM THE SPECIFIED PLAN LEVEL AT ANY POINT. 6.1.2. 3mm FROM THE BOTTOM OF A STRAIGHT EDGE LAID TRANSVERSELY. 6.1.3. 5mm FROM THE BOTTOM OF A STRAIGHT EDGE LAID LONGITUIONALLY. 6.1.4. MINUS 0 TO PLUS 2mm ADJACENT TO OTHER ELEMENTS SUCH AS KERBS AND THE LIKE TO AVOID POOLING OF SURFACE WATER. 6.1.5. MINUS 0 FROM THE SPECIFIED THICKNESS.
7. DO NOT STORE PLANT EQUIPMENT OR TRAFFIC NEWLY LAID ASPHALTIC CONCRETE PAVEMENTS WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
8. DO NOT APPLY MARKING PAINTS UNTIL ASPHALT HAS CURED IN ACCORDANCE WITH PAINT MANUFACTURERS SPECIFICATIONS.

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT		PROJECT	DRAWING TITLE	JOB NUMBER		
1	ISSUED FOR INFORMATION	JT		JRG	08.04.19	 DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	 THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE	 Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	ALEX AVENUE PRIMARY SCHOOL PELICAN ROAD, SCHOFIELDS	CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE SPECIFICATION NOTES - SHEET 01	182535	
A	ISSUED FOR CONSTRUCTION	VC		JRG	31.05.19							DRAWING NUMBER	REVISION
B	RE-ISSUED FOR CONSTRUCTION	JO		JRG	20.06.19							C01.11	D
C	RE-ISSUED FOR CONSTRUCTION	CP		JRG	29.07.19							DRAWING SHEET SIZE = A1	
D	ISSUED FOR APPROVAL	JO		JRG	19.11.19								

DRAWN: C. PASKE
DESIGNED: J. GRINSELL
JOB MANAGER: J. GILLIGAN
VERIFIER:

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH BLACKTOWN CITY COUNCIL DEVELOPMENT GUIDELINES. READ IN CONJUNCTION WITH THE NOTES PROVIDED BELOW.
IF CONFLICT ARISE, BLACKTOWN CITY COUNCIL GUIDELINES AND SPECIFICATIONS TAKE PRECEDENCE. WHERE BLACKTOWN CITY COUNCIL GUIDELINES AND SPECIFICATIONS ARE SILENT, THE SPECIFICATION NOTES BELOW TAKE PRECEDENCE.

ENGINEERING CERTIFICATION

- TO CERTIFY THE CONSTRUCTED CIVIL WORKS, A QUALIFIED EXPERIENCED ENGINEER IS TO VISIT THE SITE TO OBSERVE CONSTRUCTION TECHNIQUES AND VARIOUS ELEMENTS THAT MAY BE CONCEALED WHEN THE WORKS ARE COMPLETE.
- THIS SPECIFICATION ALLOWS FOR CERTIFICATION OF WORKS CONTROLLED BY A PRIVATE CERTIFIER FOR LAND DEVELOPMENT WORKS. THIS SPECIFICATION DOES NOT COVER CERTIFICATION REQUIREMENTS FOR AUTHORITIES SUCH AS COUNCIL, RMS OR OFFICE OF WATER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND PROVIDE ALL PROJECT SPECIFIC CONSTRUCTION COMPLIANCE (WORKS AS EXECUTED) INFORMATION TO THE SATISFACTION OF THE STAKEHOLDER / AUTHORITY. DISCREPANCIES BETWEEN THIS SPECIFICATION AND SPECIFICATIONS OF OTHER EXTERNAL STAKEHOLDERS / AUTHORITIES IS TO BE REPORTED TO THE SUPERINTENDENT FOR CLARIFICATION.
- THE CONTRACTOR IS TO AGREE WITH THE ENGINEER AN APPROPRIATE SITE VISIT SCHEDULE AND FEE ARRANGEMENT PRIOR TO COMMENCEMENT OF THE WORKS. THE CONTRACTOR SHALL ENSURE THAT THE ENGINEER CAN SAFELY ACCESS ALL CIVIL ELEMENTS TO BE REVIEWED. SITE VISITS ARE CONDUCTED DURING NORMAL BUSINESS HOURS. WE REQUIRE TWO (2) WORKING DAY NOTICE FOR ANY SITE VISIT.
- TO PROVIDE CERTIFICATION THE ENGINEER MUST VISIT THE SITE TO OBSERVE.
 - PAVEMENTS**
 - POOR SUBGRADE CONDITIONS
 - PROOF ROLLING OF SUB-GRADE
 - PLACEMENT OF SUB-BASE COURSE, BASE COURSE AND WEARING COURSE.
 - PLACEMENT OF STEEL REINFORCEMENT , DOWELS AND JOINT CRADLES PRIOR TO POURING OF CONCRETE
 - EARTHWORKS**
 - TOPSOIL STRIP
 - EARTHWORKS BATTER
 - FILLING
 - STORMWATER DRAINAGE**
 - DRAINAGE TRENCHES PRIOR TO BACKFILLING
 - LEGAL POINT OF CONNECTION PRIOR TO BACKFILLING
 - ANY OTHER DRAINAGE STRUCTURE THAT MAY BE CONCEALED DURING THE COURSE OF THE WORKS
 - CONCRETE STRUCTURES**
 - PLACEMENT OF ANY STEEL REINFORCEMENT PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE SURVEYED LEVELS, PREPARED BY A QUALIFIED SURVEYOR FOR SUBGRADE, SUB-BASE COURSE, BASE COURSE AND WEARING COURSE.
- THE CONTRACTOR SHALL PROVIDE WORKS AS EXECUTED (WAE) DOCUMENTATION PREPARED BY A QUALIFIED PRACTICING SURVEYOR. THE WAE DRAWINGS SHALL CLEARLY SHOW, STORMWATER GRATE/ COVER LEVELS, STORMWATER PIT INVERT LEVELS AND CORRESPONDING INVERT LEVELS OF ANY INCOMING OR OUTGOING PIPES, DIAMETER OF ALL PIPES, DIMENSIONS AND VOLUME OF ON-SITE DETENTION FACILITIES, INVERT LEVELS OF ORIFICE PLATES, OVERFLOW WEIRS, BASE OF TANK FINISHED LEVELS OF PAVEMENTS. THE WAE SHALL SHOW WHERE THE SIZE OR ALIGNMENT OF CIVIL ENGINEERING ELEMENTS WHEN THEY DEVIATE FROM THE DESIGN DOCUMENTATION.
- THE WAE DRAWINGS SHALL BE STAMPED WITH THE FOLLOWING STATEMENT "THESE WAE DRAWINGS HAVE BEEN PREPARED BY [COMPANY NAME] AND ARE A TRUE AND ACCURATE REPRESENTATION OF THE CONSTRUCTED WORKS". EACH DRAWING SHALL BE SIGNED AND DATED BY THE SURVEYOR WHO PREPARED THE DRAWINGS.

THESE WAE DRAWINGS HAVE BEEN PREPARED BY [COMPANY NAME] AND ARE A TRUE AND ACCURATE REPRESENTATION OF THE CONSTRUCTED WORKS.

SIGNED..... DATE.....

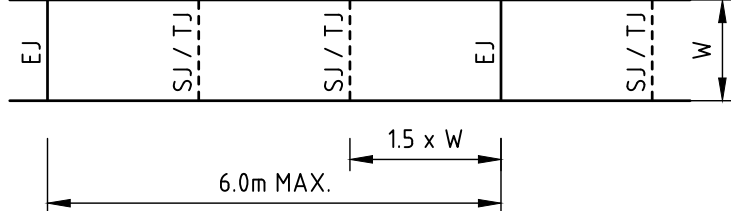
NAME.....

POSITION.....

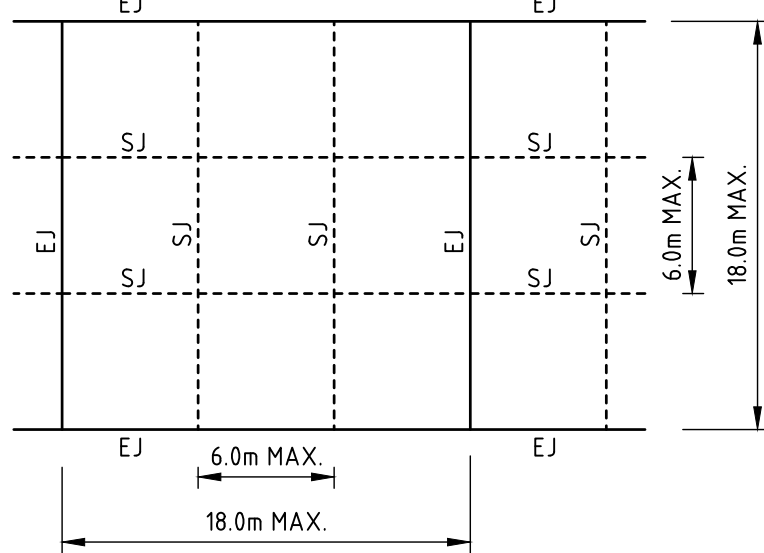
- WAE SHALL BE PROVIDED IN BOTH AUTOCAD AND PDF FORMAT. NORTHROP CONSULTING ENGINEERS WILL PROVIDE ENGINEERING PLANS TO THE CONTRACTOR IN AUTOCAD FORMAT TO AID PREPARATION OF WAE DOCUMENTATION.
- CONTRACTOR IS TO UNDERTAKE A CCTV INSPECTION OF ALL STORMWATER DRAINAGE PIPELINES AND PROVIDE TO THE ENGINEER FOR APPROVAL.
- THE CONTRACTOR SHALL PROVIDE ALL RELEVANT TEST CERTIFICATES PROGRESSIVELY THROUGHOUT THE DURATION OF THE WORKS. ALL TEST CERTIFICATES SHALL BE PREPARED BY A NATA REGISTERED LABORATORY. TEST CERTIFICATES ARE REQUIRED FOR PROOF ROLLING, SUBGRADE COMPACTION, COMPACTION OF PAVEMENT LAYERS, COMPACTION OF FILLING OPERATIONS, CONCRETE SLUMP TEST, AND CONCRETE STRENGTH TESTS. THE CONTRACT SHALL PROVIDE ALL RELEVANT VALIDATIONS BY A GEOTECHNICAL ENGINEER FOR ALL IMPORTED FILL.
- EACH TEST CERTIFICATE WILL NOMINATE THE DATE AND TIME OF THE TEST AND PROVIDE A LOCATION OF WHERE THE TEST SAMPLE WAS TAKEN FROM.
- THE CONTRACTOR SHALL ARRANGE FOR THE ENGINEER TO CONDUCT A FINAL VISIT TO REVIEW OF THE CONSTRUCTED WORKS. THIS WILL REVIEW WILL NOT TAKE PLACE UNTIL THE WAE DOCUMENTATION AND RELEVANT TEST CERTIFICATES HAVE BEEN RECEIVED.
- IF DEFECTIVE OR INCOMPLETE WORK IS FOUND DURING THE FINAL INSPECTION ANOTHER INSPECTION MAY BE REQUIRED AT THE CONTRACTORS EXPENSE TO VERIFY THE RECTIFICATION WORKS HAVE BEEN COMPLETED.

PAVEMENT JOINTS

- PROVIDE 10mm ABLEFLEX BETWEEN NEW CONCRETE WORKS AND EXISTING STRUCTURES.
- LOCAL AUTHORITY REQUIREMENTS SHALL TAKE PRECEDENCE WITHIN THE PUBLIC ROAD RESERVE.
- DOWELS TO BE PLACED ON PROPRIETARY CRADLES TO ENSURE CORRECT SPACING AND ALIGNMENT.
- PEDESTRIAN PAVEMENTS**
ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS U.N.O. ON THE DESIGN DRAWINGS.
- EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 6.0m CENTRES.
- WEAKENED PLANE JOINTS (SAWN OR TOOL JOINTS) ARE TO BE LOCATED AT A MAX. SPACING OF 15m x WIDTH OF THE PAVEMENT.
- WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
- TYPICAL PEDESTRIAN PAVEMENT JOINT DETAIL



- VEHICULAR PAVEMENTS**
ALL VEHICULAR PAVEMENTS TO BE JOINTED AS FOLLOWS U.N.O. ON THE DESIGN DRAWINGS.
- TIED KEYED CONSTRUCTION JOINTS SHOULD GENERALLY BE LOCATED LONGITUDINALLY AT A MAX. OF 6.0m CENTRES.
- SAWN JOINTS SHOULD GENERALLY BE LOCATED LATERALLY AT A MAX. OF 6.0m CENTRES WITH DOWELED EXPANSION JOINTS AT MAX. 18.0m CENTRES.
- TYPICAL VEHICULAR PAVEMENT JOINT DETAIL.



- KERB EXPANSION JOINTS SHALL BE FORMED FROM 10mm ABLEFLEX FOR FULL DEPTH OF SECTION.
- KERB EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, TANGENT POINTS OF CURVES / CORNERS AND AT 12m MAX CENTRES.
- KERB TOOLED JOINTS TO BE MIN 3mm WIDE AND LOCATED AT MAX 3m CENTRES.
- INTEGRAL KERB JOINTS SHALL MATCH THE LOCATION OF PAVEMENT JOINTS.

CONCRETE SEALING

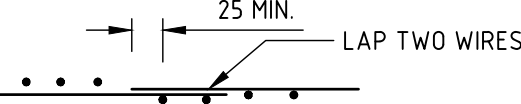
- THE CURING PROCESS FOR NEW CONCRETE IS TO INCORPORATE THE FOLLOWING ASPECTS, GENERALLY AS ORDERED;
 - SPRAY CURING COMPOUND
 - SAWCUT JOINTS AS LOCATED AND SPECIFIED AS SOON AS CURING PERMITS.
 - COVER NEW PAVING WITH HESSIAN AND BLACK PLASTIC SHEETS TAPED AT JOINTS ON COMPLETION OF SAWCUTTING. NOTE COVERING IS TO EXTEND MIN 5m BEYOND PAVEMENT BEING CURED, OVER ADJOINING (EXISTING) PAVEMENT AREAS, MAINTAIN CURING AS SPECIFIED.

CONCRETE PAVEMENTS

- THIS SECTION REFERS TO CIVIL CONCRETE WORKS AND DOES NOT INCLUDE STRUCTURAL ELEMENTS SUCH AS BUILDINGS, BELOW GROUND STRUCTURES OR RETAINING WALLS.
- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
- CONCRETE QUALITY AND REINFORCING COVER**
ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

ELEMENT	CONCRETE STRENGTH f'c (MPa)	SPECIFIED SLUMP	NOMINAL AGGREGATE SIZE	MAX. 56 DAY DRYING SHRINKAGE	COVER (mm)
KERBS AND PATHS	25	60	20	650microns	TOP 40
PITS AND VEHICULAR PAVEMENTS	32	80	20	650microns	TOP 40

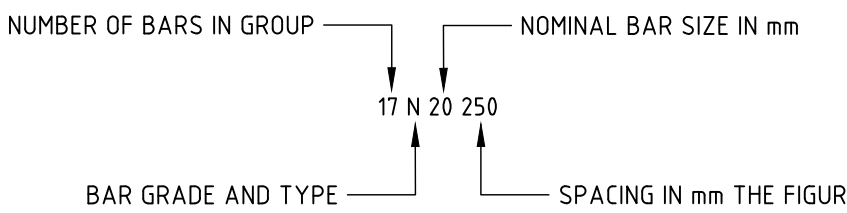
- CONCRETE PROPERTIES SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS
 - MINIMUM CEMENT CONTENT 250 kg/m³
 - MAXIMUM 56 DAY SHRINKAGE STRAIN = AS NOMINATED ABOVE
 - PRIOR TO COMMENCEMENT CONCRETE SUPPLIER TO PROVIDE DRYING SHRINKAGE TEST RESULTS FROM PRODUCTION ASSESSMENT AS EVIDENCE THAT SPECIFIED DRYING SHRINKAGE LIMITS CAN BE ACHIEVED USING NORMAL MIX DESIGN.
- ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS. PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
- CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL.
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379. TEST CYLINDERS ARE TO BE KEPT ON SITE.
- ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE CIVIL ENGINEER FOR REVIEW.
- ALL CONCRETE IS TO BE CONTINUOUSLY CURED FOR A MINIMUM PERIOD OF 10 DAYS AFTER PLACING. CURING TO COMMENCE IMMEDIATELY AFTER FINISHING. SPRAY ON CURING COMPOUNDS TO COMPLY WITH AS3799.
- 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 THE CIVIL ENGINEER.
- FALLS IN SLAB AS SHOWN ON PLAN MAINTAIN MINIMUM SLAB THICKNESS AS SHOWN.
- NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY THE DESIGN ENGINEER.
- THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS.
- FABRIC SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING DETAIL:



- FOLLOWING THE FABRIC SYMBOL SL IS THE REFERENCE NUMBER FOR FABRIC TO AS1304.
- POLYETHYLENE SHEET SHALL BE PLACED BELOW ALL CONCRETE PAVEMENTS.
- ALL PENETRATIONS TO HAVE 2/N12 TRIMMER BARS TOP AND BOTTOM TO EACH FACE U.N.O. EXTEND TRIMMERS 700 BEYOND PENETRATION. MAINTAIN 40mm COVER TOP AND BOTTOM.
- FORMWORK CLASS SHALL BE IN ACCORDANCE WITH AS3600.
- SURFACE FINISHES:

ELEMENT	FORMWORK CLASS
STORMWATER PIT	OFF FORM
PAVEMENTS	MACHINE FLOAT / BROOM FINISH
KERBS	STEEL FLOAT / TROWEL
- REINFORCEMENT SYMBOLS:

N	DENOTES GRADE 450 N BARS TO AS1302 GRADE N
R	DENOTES 230 R HOT ROLLED PLAIN BARS TO AS1302
SL	DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS1304



CONCRETE

- CARRY OUT ALL CONCRETE WORK IN ACCORDANCE WITH AS3600 AND NATSPEC CONCRETE STANDARDS.
- CONCRETE PROPERTIES AND COVER TO REINFORCING:

ELEMENT	CONCRETE STRENGTH f'c (MPa)	MAX. 56 DAY DRYING SHRINKAGE	COVER (mm)
SLABS ON GROUND	32	650microns	TOP 40 BTM 40
TANK LID	40	700microns	TOP 40 BTM 40

MAXIMUM AGGREGATE SIZE = 20mm U.N.O.
SLUMP DURING PLACING = 75mm
EXPOSURE CLASSIFICATION = B1
NO ADMIXTURES SHALL BE USED IN CONCRETE MIX UNLESS APPROVED BY STRUCTURAL ENGINEER IN WRITING.
- CONCRETE PROPERTIES FOR SLABS AND BEAMS SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS:
 - MINIMUM CEMENT CONTENT 250kg/cu.m.
 - PRIOR TO COMMENCEMENT CONCRETE SUPPLIER TO PROVIDE DRYING SHRINKAGE TEST RESULTS FROM PRODUCTION ASSESSMENT AS EVIDENCE THAT SPECIFIED DRYING SHRINKAGE LIMITS CAN BE ACHIEVED USING NORMAL MIX DESIGN.
- SUBMIT FOR APPROVAL THE FOLLOWING TO THE STRUCTURAL ENGINEER:
 - CURING PROCEDURE (PVA MEMBRANES NOT PERMITTED)
 - STRIPPING PROCEDURE
 - DETAILS AND LOCATION OF CAST IN SERVICES
 - CONDUITS, PENETRATIONS AND CONSTRUCTION JOINT LOCATIONS
- ALL CONCRETE MIXES SHALL BE DESIGNED BY A RECOGNISED TESTING LAB AND SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER.
- ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW.
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT ON ALL CONCRETE IN ACCORDANCE WITH AS1379. TEST CYLINDERS ARE TO BE KEPT ON SITE.
- ALL CONCRETE IS TO BE CONTINUOUSLY CURED FOR A MINIMUM PERIOD OF 10 DAYS AFTER PLACING. CURING TO COMMENCE IMMEDIATELY AFTER FINISHING. SPRAY ON CURING COMPOUNDS TO COMPLY WITH AS3799.
- FOR TENDER PURPOSES ASSUME MINIMUM STRIPPING TIMES AND EXTENT OF BACK PROPPING AS PER AS3610-1995 SECTION 5.0 AND AS PER GENERAL NOTES FOR FORMWORK AND PROPPING.
- FORMWORK FINISH CLASSIFICATION TO AS3600:

ELEMENT	CLASS
INGROUND FOOTINGS	5
RETAINING WALLS	5 EARTH FACE
RETAINING WALLS	3 EXPOSED FACE
COLUMNS	2
BEAMS AND SLABS	2
- SURFACE FINISHES:
 - COLUMNS AND WALLS OFF FORM
- COMPACT ALL CONCRETE INCLUDING FOOTINGS AND SLABS, USING 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 THE STRUCTURAL ENGINEER.
- CONCRETE PROFILES:
 - BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE THE SLAB THICKNESS.
 - SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
 - 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 STRUCTURAL ENGINEER.
 - PROVIDE DRIP GROOVES AT ALL EXPOSED EDGES, CHAMFERS, DRIP GROOVES, REGLETS ETC TO BE TO ARCHITECTS DETAILS.
- ALL PENETRATIONS TO HAVE 2-N16 TRIMMER BARS TOP AND BOTTOM TO EACH FACE U.N.O. EXTEND TRIMMERS 600 BEYOND PENETRATION.
- SETDOWNS OR FALLS IN FLOOR SURFACES ARE NOT PERMITTED UNLESS SHOWN ON DRAWINGS. MAINTAIN MINIMUM SLAB THICKNESS SHOWN ON PLAN WHERE FALLS OCCUR.

CONCRETE (cont)

- REINFORCEMENT GRADE AND NOTATION:

SYMBOL	BAR SHAPE	STRENGTH GRADE (MPa)	DUCTILITY CLASS	TO COMPLY WITH AUST. STANDARD
N	DEFORMED RIB BAR	500	NORMAL	AS4671
R	PLAIN ROUND BAR	250	NORMAL	AS4671
RL	RECTANGULAR MESH OF DEFORMED RIB BAR	500	LOW	AS4671
SL	SQUARE MESH OF DEFORMED RIB BAR	500	LOW	AS4671
L-TM	TRENCH MESH	500	LOW	AS4671

ALL REINFORCING BARS SHALL BE GRADE D500N TO AS4671 AND ALL MESH SHALL BE GRADE 500L TO AS4671 U.N.O. CLASS L REINFORCEMENT SHALL NOT BE USED U.N.O.

REINFORCEMENT LABELS:

N12-300
SPACING (mm)
BAR SIZE (mm)
TYPE OF REINFORCEMENT

3-N28
BAR SIZE (mm)
TYPE OF REINFORCEMENT
NUMBER OF BARS

SL92
CENTRES AT 200mm
BAR SIZE (mm)
DUCTILITY CLASS
SQUARE MESH
- REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY, AND NOT NECESSARILY IN TRUE PROJECTION. BARS SHOWN ARE INDICATIVE ONLY AND LENGTHS MAY VARY. BEAM ELEVATIONS TAKE PRECEDENCE OVER SECTIONS. SLAB PLANS TAKE PRECEDENCE OVER SECTIONS. REFER TO SECTIONS FOR EXTRA BARS THAT MAY BE REQUIRED.
- USE ONLY ALL PLASTIC OR CONCRETE CHAIRS AT EXTERNAL SURFACES.
- SITE BENDING OF REINFORCEMENT BARS SHALL BE DONE WITHOUT HEATING USING A 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 AS3600-2001.
- SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN ON THE STRUCTURAL DRAWINGS OR IN POSITIONS OTHERWISE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER. LAPS SHALL BE IN ACCORDANCE WITH AS3600 SECTION 13 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR.
- FOR LAPS IN MESH REFER TO SLAB ON GROUND NOTES.
- WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.
- 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.
- ALL REINFORCEMENT, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION AND INSPECTED BY THE STRUCTURAL ENGINEER PRIOR TO PLACING CONCRETE.
- HOLD DOWN BOLTS SHALL BE HOT DIPPED GALVANISED.
- U.N.O. ALL MASONRY ANCHORS INTO CONCRETE SHALL BE RAMSET TRUBOLTS (LONGEST VERSION) OR APPROVED EQUIVALENT. BOLTS SHALL BE GALVANISED WHERE THEY ARE ADJOINING NON FERROUS OR PREPAINTED MEMBERS. PROVIDE STAINLESS STEEL BOLTS FOR ALL EXTERNAL CONDITIONS, OR WHERE EXPOSED TO THE WEATHER.

NOT FOR CONSTRUCTION

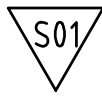
REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.	PROJECT	DRAWING TITLE	JOB NUMBER		
1	ISSUED FOR INFORMATION	JT		JRG	08.04.19				 Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	ALEX AVENUE PRIMARY SCHOOL PELICAN ROAD, SCHOFIELDS	CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE SPECIFICATION NOTES - SHEET 02	182535	
2	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19							DRAWING NUMBER	REVISION
3	ISSUED FOR APPROVAL	JO		JRG	19.11.19							C01.12	3
						DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD				DRAWING SHEET SIZE = A1		

VERIFIER: J. GILLIGAN
JOB MANAGER: J. GILLIGAN
DESIGNED: J. GRINSELL
DRAWN: C. PASKE

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH BLACKTOWN CITY COUNCIL DEVELOPMENT GUIDELINES. READ IN CONJUNCTION WITH THE NOTES PROVIDED BELOW.
IF CONFLICT ARISE, BLACKTOWN CITY COUNCIL GUIDELINES AND SPECIFICATIONS TAKE PRECEDENCE. WHERE BLACKTOWN CITY COUNCIL GUIDELINES AND SPECIFICATIONS ARE SILENT, THE SPECIFICATION NOTES BELOW TAKE PRECEDENCE.

SCOUR PROTECTION ROCK	
1.	ROCK USED IN THE SCOUR PROTECTION SHALL CONSIST OF MATERIAL WHICH COMPLIES WITH THESE NOTES AND THE DRAWINGS. THIS REQUIREMENT APPLIES TO BOTH IMPORTED ROCK AND IN-SITU ROCK WHICH IS RE-USED.
2.	INDIVIDUAL ROCKS SHALL BE FREE FROM CRACKS, CLEAVAGE PLANES, SEAMS AND DEFECTS WHICH WOULD RESULT IN THE BREAKDOWN OF THE ROCK IN SERVICE.
3.	ROCK UNITS SHALL BE EITHER SEDIMENTARY RACK ONLY OR IGNEOUS ROCK ONLY AND AS A MINIMUM, SHALL SATISFY THE FOLLOWING CRITERIA: - ROCK SHALL BE ROUGH AND ANGULAR - ROCK SHALL HAVE A MINIMUM DRY DENSITY OF 2200 kg/m - IGNEOUS ROCK SHALL HAVE NO MORE THAN 10% (BY VOLUME) OLIVINE MATERIAL AND SHALL EXHIBIT NO ZONES OF SECONDARY ALTERATION SUCH AS CHLORITISATION. SEDIMENTARY ROCK SHALL HAVE A MINIMUM SODIUM SULPHATE SOUNDNESS WEIGHT LOSS NOT EXCEEDING 25% - ROCK SHALL HAVE A SATURATED POINT LOAD STRENGTH INDEX (IS50) NO LESS THAN 5.0 MPa FOR IGNEOUS ROCK AND 1.5 MPa FOR SEDIMENTARY ROCK - THE RATIO OF THE MAXIMUM DIMENSION TO THE MINIMUM DIMENSION, MEASURED AT RIGHT ANGLES TO THE MAXIMUM DIMENSION SHALL NOT EXCEED 2.5
4.	THE ROCK UNITS SHALL BE PLACED SUCH THAT THE SPECIFIED REQUIREMENTS FOR SIZE, FINISHED SIDE SLOPES, TOP AND TOE LEVELS AND DENSITY REQUIREMENTS, ARE SATISFIED. IN ADDITION, ROCKS SHALL BE WEDGED AND LOCKED TOGETHER SUCH THAT THEY ARE NOT FREE TO MOVE. ROCK UNITS SHALL NOT BE ROLLED OR DROPPED INTO POSITION, THEY SHALL BE PLACED.
5.	THE METHOD OF ROCK PLACEMENT SHALL BE SUCH AS TO MINIMISE ITS BREAKDOWN ON HANDLING AND THE PRODUCTION OF FINES.
6.	A NON-WOVEN GEOTEXTILE (BIDIM A64 OR EQUIVALENT) SHALL BE PLACED UNDERNEATH AND BEHIND ALL ROCK ARMOUR AND EXTEND 0.5m ABOVE THE EXTENT OF THE WORKS OR AS OTHERWISE SHOWN ON THE DRAWINGS. THE GEOTEXTILE IS TO BE LAID ON A NEATLY TRIMMED BATTER THAT IS FREE OF HOLLOWs OR SHARP OBJECTS.
7.	GEOTEXTILE LAYERS SHALL EITHER OVERLAP ON ANOTHER BY 1000mm OR BE SEWN TOGETHER (WITH A NON-BIODEGRADABLE THREAD) WITH AN OVERLAP OF 100mm.
8.	ROCK SUB-ARMOUR SHALL BE PLACED UPON THE GEOTEXTILE IN A LAYER NO LESS THAN 150mm THICK UNLESS NOTED OTHERWISE ON DRAWINGS.
9.	ROCK ARMOUR SHALL BE SELECTIVELY HAND PLACED UPON THE SUB-ARMOUR TO ENSURE A SNUG FIT SUCH THAT INDIVIDUAL ROCKS ARE NOT TO MOVE. THE PLACING OF ANY ARMOUR ROCK SHALL BE COMPLETED IN SUCH A MANNER TO MINIMISE THE DISTURBANCE OR DISLODGEment OF THE SUB-ARMOUR.
10.	THE ROCK ARMOUR SHALL BE NO LESS THAN 375mm THICK UNLESS NOTED OTHERWISE ON THE DRAWINGS.
11.	THE ARMOUR ROCK AND SUB-ARMOUR ROCK SHALL BE PLACED TO THE CONSTRUCTION TOLERANCES SHOWN ON THE DRAWINGS.
12.	AT LEAST FOURTEEN (14) DAYS PRIOR TO THE SUPPLY OF ANY ROCK, THE CONTRACTOR SHALL PROVIDE DOCUMENTATION TO DEMONSTRATE THAT THE ROCK TO BE SUPPLIED COMPLIES WITH THE REQUIREMENTS OF THE SPECIFICATION.

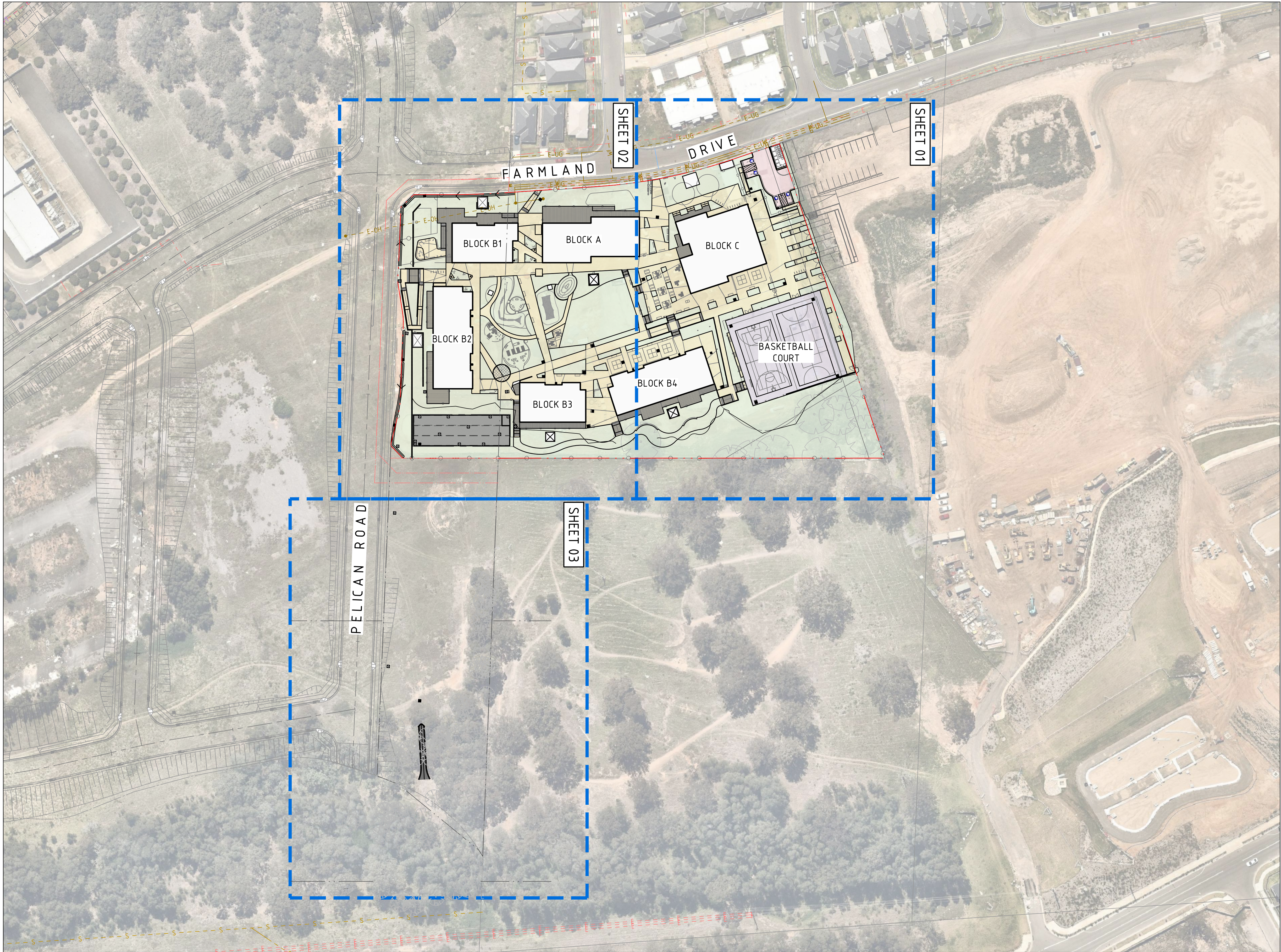
3D INFORMATION DISCLAIMER
THE 12D DESIGN FILE SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO USE IN THE CONSTRUCTION WORKS.
HARDCOPY/PDF PLANS AND DOCUMENTS TAKE PRECEDENCE OVER THE SUPPLIED ELECTRONIC INFORMATION AND ANY INCONSISTENCIES SHOULD IMMEDIATELY BE REPORTED TO NORTHROP CONSULTING ENGINEERS FOR VERIFICATION PRIOR TO USE BY THE CONTRACTOR.
NORTHROP CONSULTING ENGINEERS TAKES NO RESPONSIBILITY FOR USE OF NON-VERIFIED 3D DESIGN INFORMATION USED IN THE WORKS.
THE USE OF THE 3D MODEL INFORMATION SHALL CONSTITUTE ACKNOWLEDGMENT AND ACCEPTANCE OF THE ABOVE STATEMENTS BY THE RECIPIENT.

SAFETY IN DESIGN	
	THE FOLLOWING ITEMS HAVE BEEN IDENTIFIED AS SAFETY RISKS
	 RISK DESCRIPTION  RISK DESCRIPTION

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE	 Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	PROJECT	DRAWING TITLE	JOB NUMBER
1	ISSUED FOR INFORMATION	JT		JRG	08.04.19	 DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	 THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD			ALEX AVENUE PRIMARY SCHOOL	CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE	182535
2	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19					DRAWING NUMBER	REVISION	
3	ISSUED FOR APPROVAL	JO		JRG	19.11.19					C01.13	3	
										DRAWING SHEET SIZE = A1		
										PELICAN ROAD, SCHOFIELDS	SPECIFICATION NOTES - SHEET 03	

DRAWN: C. PASKE
DESIGNED: J. GRINSELL
JOB MANAGER: J. GILLIGAN
VERIFIER:



LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- EXISTING KERB
- EXISTING ELECTRICITY
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING ELECTRICITY (UNDERGROUND)
- EXISTING GAS
- EXISTING WATER
- EXISTING STORMWATER
- SHEET EXTENTS

GENERAL NOTES:

- SURVEY SUPPLIED BY: LTS LOCKLEY
- REFERENCE NUMBER: 43778DT
- DATE: 09/06/2017
- REVISION: 1
- 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.
- NORTHROP TAKE NO RESPONSIBILITY FOR THE ACCURACY AND/OR USE OF THIS SURVEY AND ITS CONTENTS

NOT FOR CONSTRUCTION

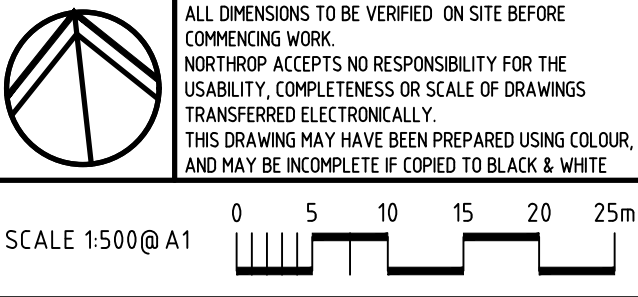
REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19
3	RE-ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19
4	RE-ISSUED FOR CLIENT REVIEW	JRG		JRG	11.09.19
5	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19
6	ISSUED FOR APPROVAL	JO		JRG	19.11.19
7	ISSUED FOR APPROVAL	VC		JRG	26.02.20



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Sydney
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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT
ALEX AVENUE PRIMARY SCHOOL
PELICAN ROAD, SCHOFIELDS

DRAWING TITLE
CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE
GENERAL ARRANGEMENT PLAN

JOB NUMBER
182535
DRAWING NUMBER
C01.21
REVISION
7
DRAWING SHEET SIZE = A1

DRAWN: C. PASKE
DESIGNED: J. GRINSELL
JOB MANAGER: J. GILLIGAN
VERIFIER:

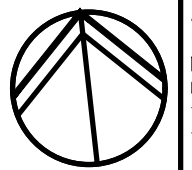
REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
C	RE-ISSUED FOR CONSTRUCTION	CP		JRG	12.07.19
D	RE-ISSUED FOR CONSTRUCTION	VC		JRG	13.08.19
E	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19
F	ISSUED FOR APPROVAL	JO		JRG	19.11.19
G	ISSUED FOR APPROVAL	CP		JRG	21.11.19
H	ISSUED FOR APPROVAL	VC		JRG	26.02.20



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SCALE 1:500 @ A1
0 5 10 15 20 25m



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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT
ALEX AVENUE PRIMARY SCHOOL

**PELICAN ROAD,
SCHOFIELDS**

DRAWING TITLE
**CIVIL DOCUMENTATION
CONSTRUCTION CERTIFICATE**

**SEDIMENT AND SOIL
EROSION CONTROL PLAN**

JOB NUMBER
182535
DRAWING NUMBER
C02.01
REVISION
H
DRAWING SHEET SIZE = A1

FOR CONSTRUCTION

LEGEND

BOUNDARY LINE

EASEMENT LINE

EXISTING KERB

EXISTING ELECTRICITY

EXISTING ELECTRICITY (OVERHEAD)

EXISTING ELECTRICITY (UNDERGROUND)

EXISTING GAS

EXISTING WATER

EXISTING STORMWATER

EXISTING CONTOURS

SEDIMENT FENCE

SECURITY FENCE

PROPOSED BUILDING FOOTPRINT

WIRE MESH AND GRAVEL
SEDIMENT FILTER

GEOTEXTILE INLET FILTER
TRAPS

DRAINAGE SWALE

STABILISED SITE ACCESS

STOCKPILE

EARTH BASIN - WET

GENERAL NOTES:

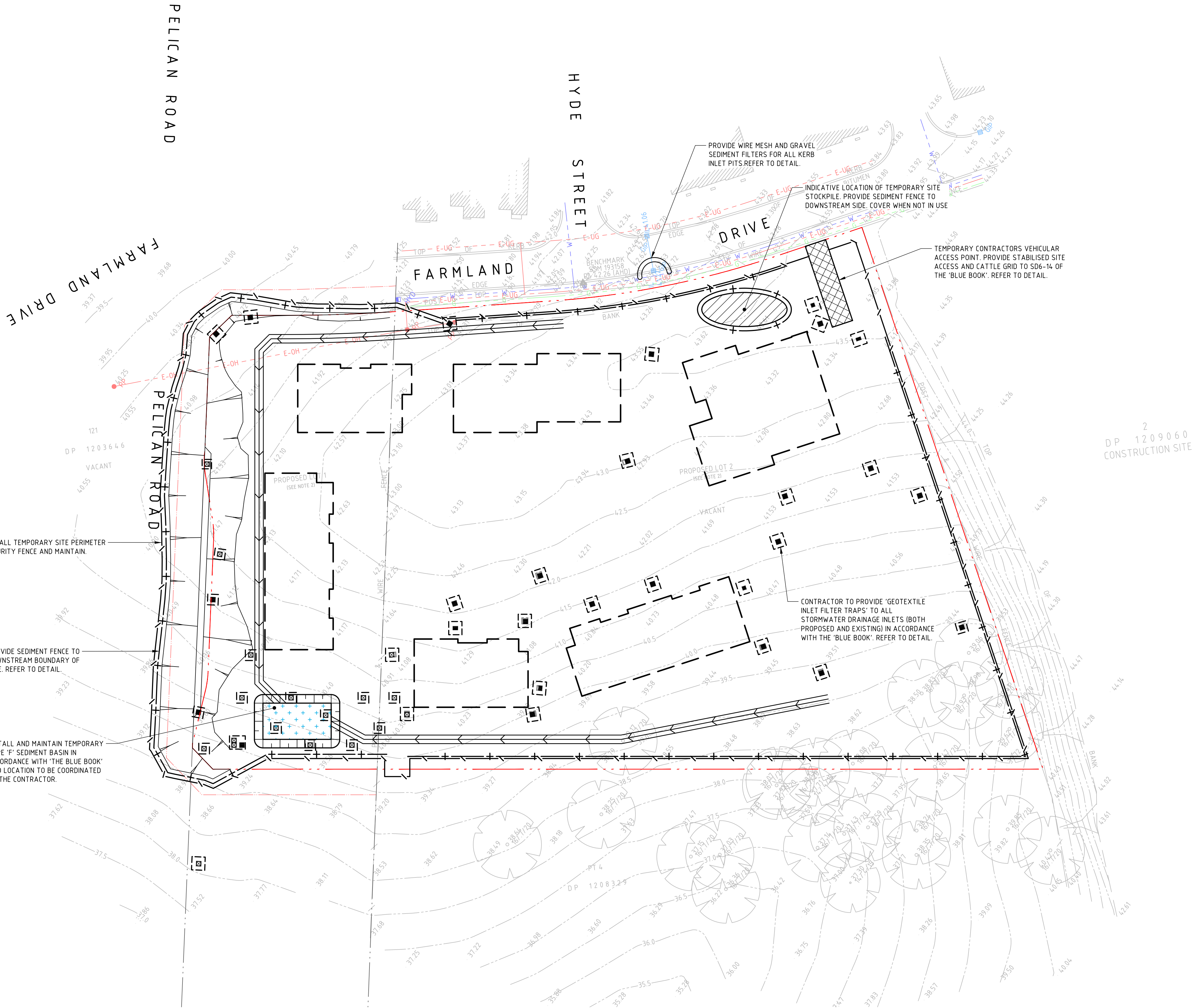
1. REFER SPECIFICATIONS NOTES FOR SEDIMENT AND SOIL
EROSION CONTROL GENERAL REQUIREMENTS.

2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL
/ RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.

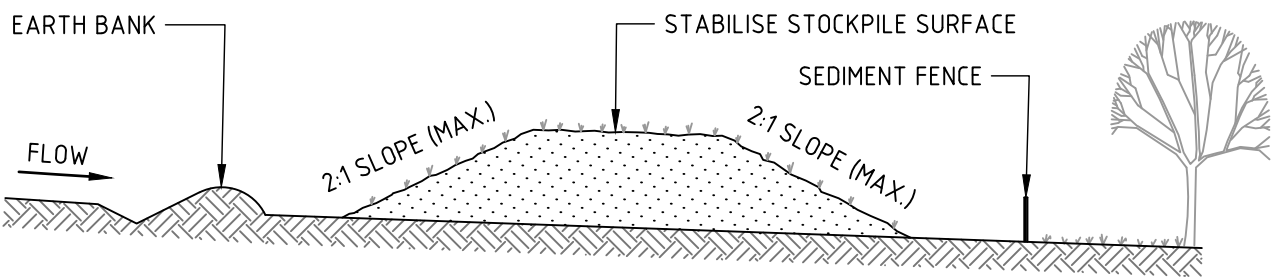
3. ALL SEDIMENT AND SOIL EROSION CONTROL MEASURES TO BE
INSTALLED IN ACCORDANCE WITH THE 'BLUE BOOK'.
CONTRACTOR TO ENSURE THESE MEASURES ARE IN PLACE AND
MAINTAINED AT ALL TIMES DURING CONSTRUCTION WORKS.

4. CONTRACTOR TO PROVIDE 'WIRE MESH AND GRAVEL SEDIMENT
FILTER' TO ALL PAVED / ROAD AREAS (BOTH PROPOSED AND
EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.

5. CONTRACTOR TO PROVIDE 'GEOTEXTILE INLET FILTER TRAPS'
TO ALL STORMWATER DRAINAGE INLETS (BOTH PROPOSED AND
EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.



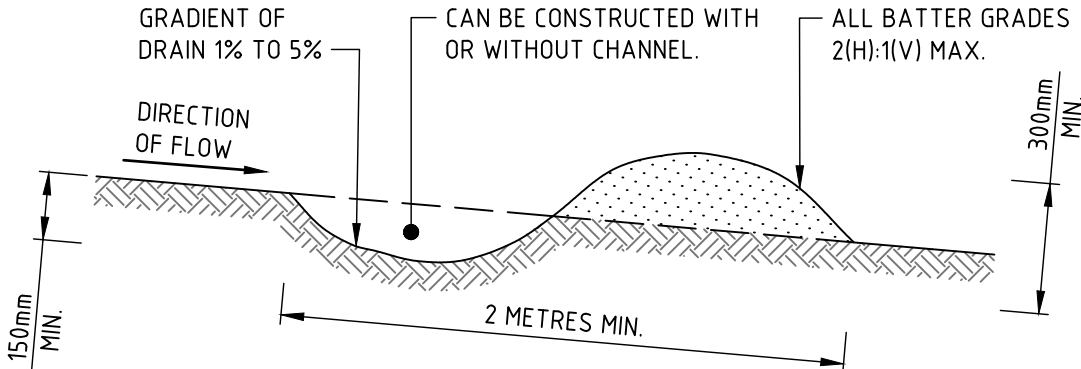
VERIFIER: J. GILLIGAN
JOB MANAGER: J. GILLIGAN
DESIGNED: J. GRINSELL
DRAWN: C. PASKE



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARO DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

STOCKPILE

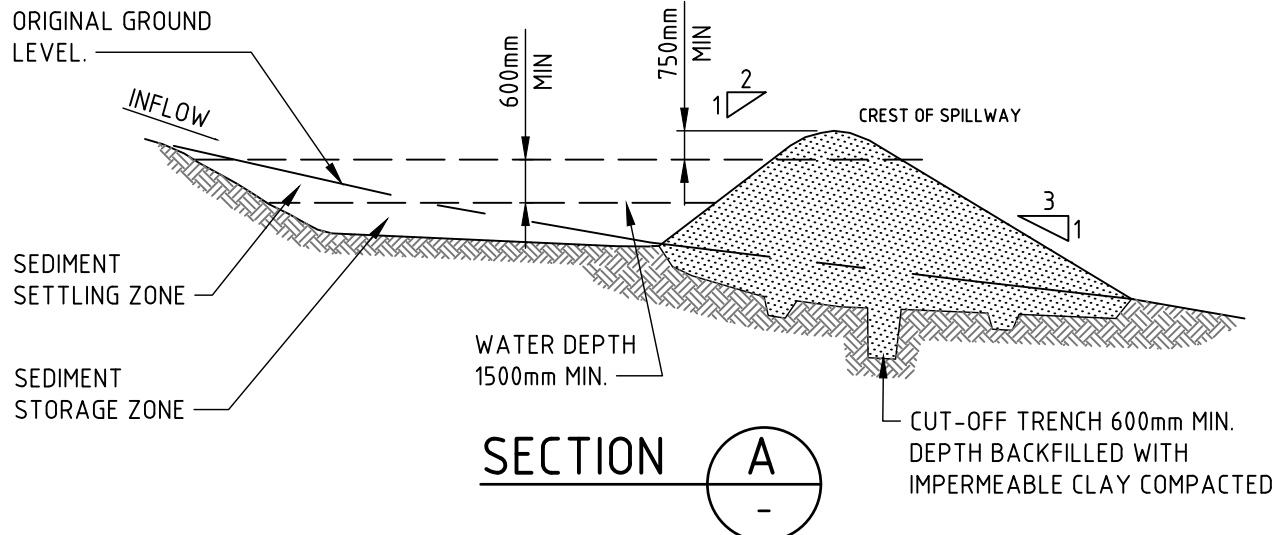
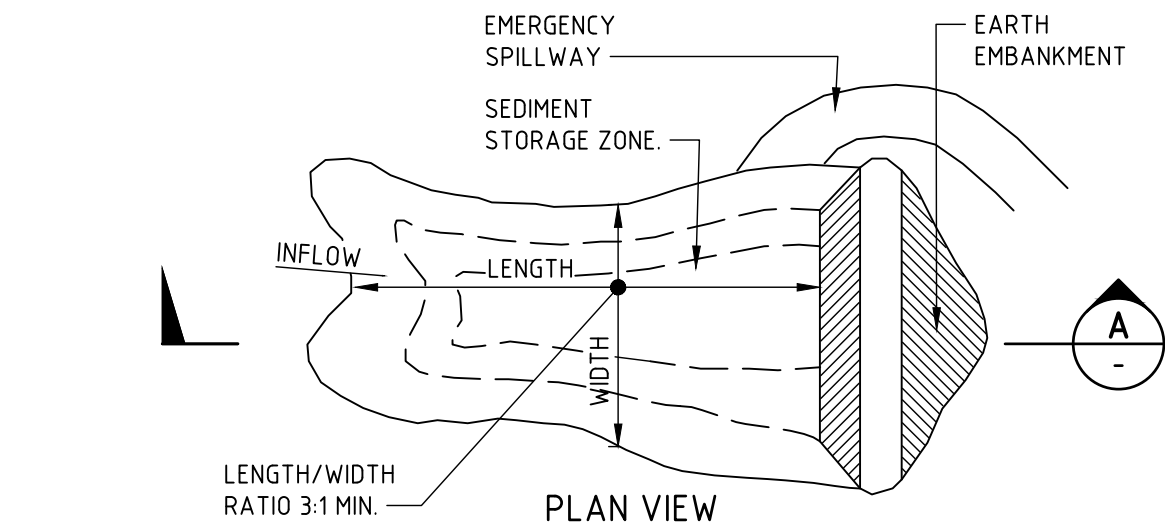


CONSTRUCTION NOTES

1. BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.

DRAINAGE SWALE

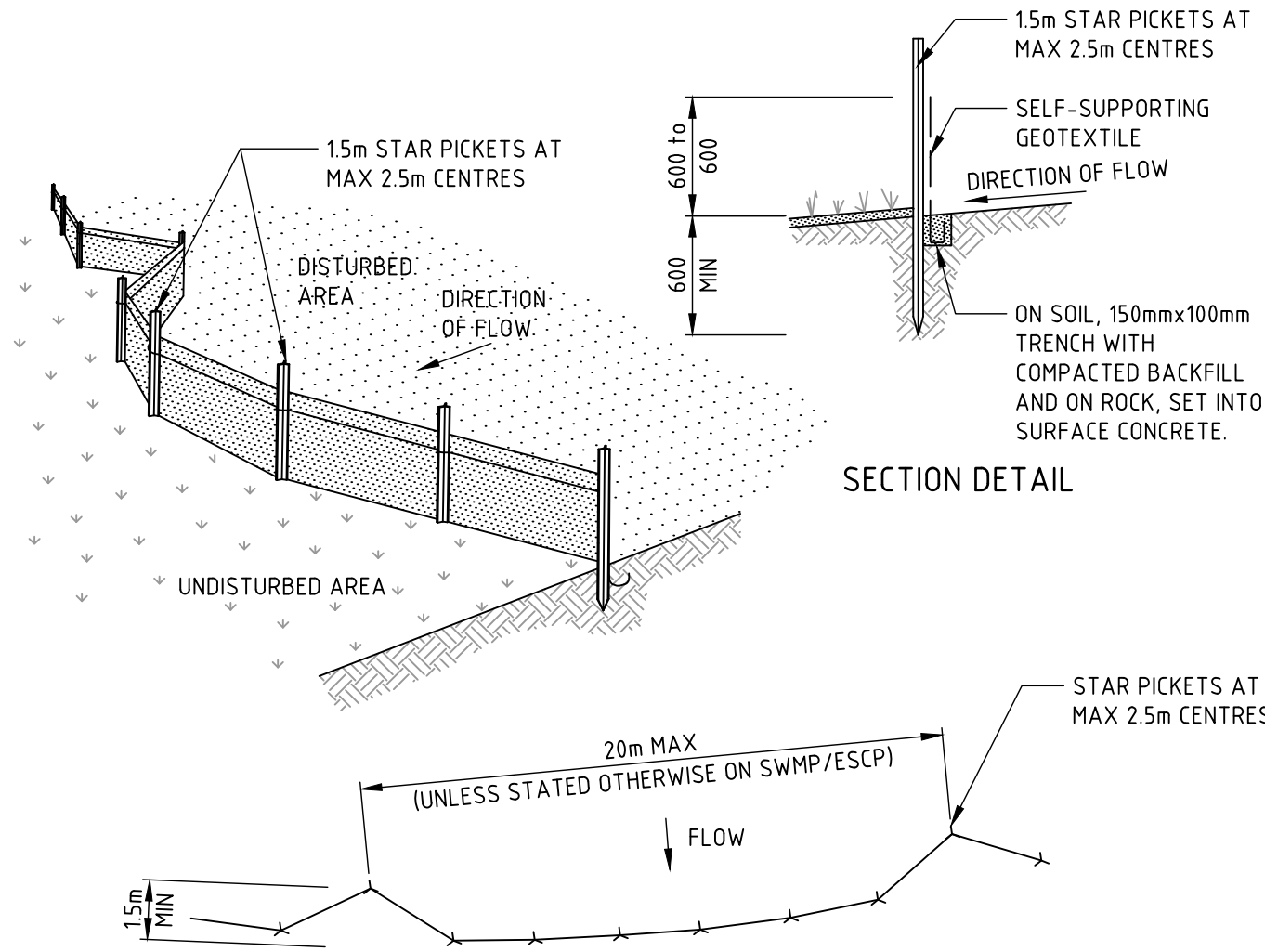


CONSTRUCTION NOTES

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AND 1200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. CONSTRUCT THE EMERGENCY SPILLWAY.
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.

(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

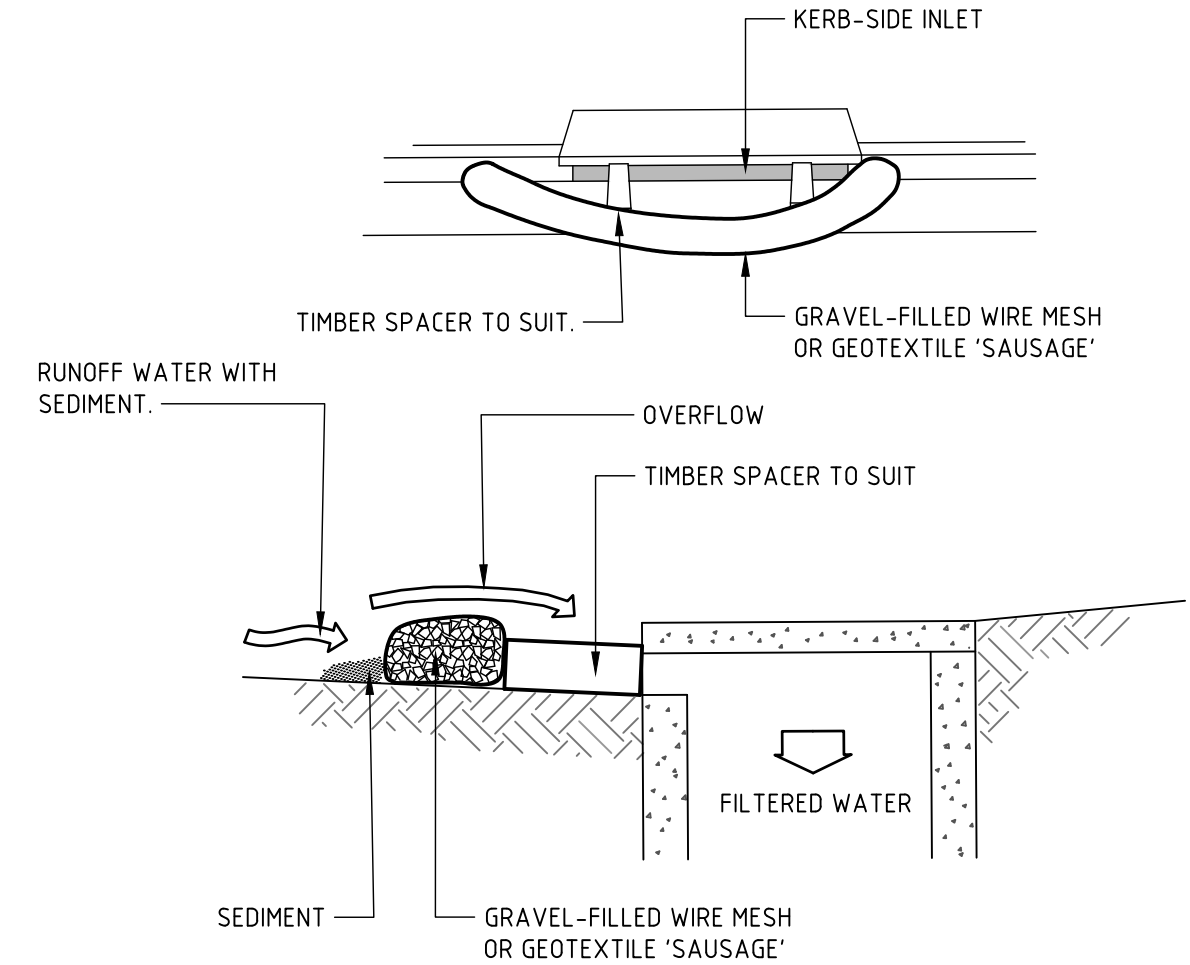
SEDIMENT BASIN



CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 15 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

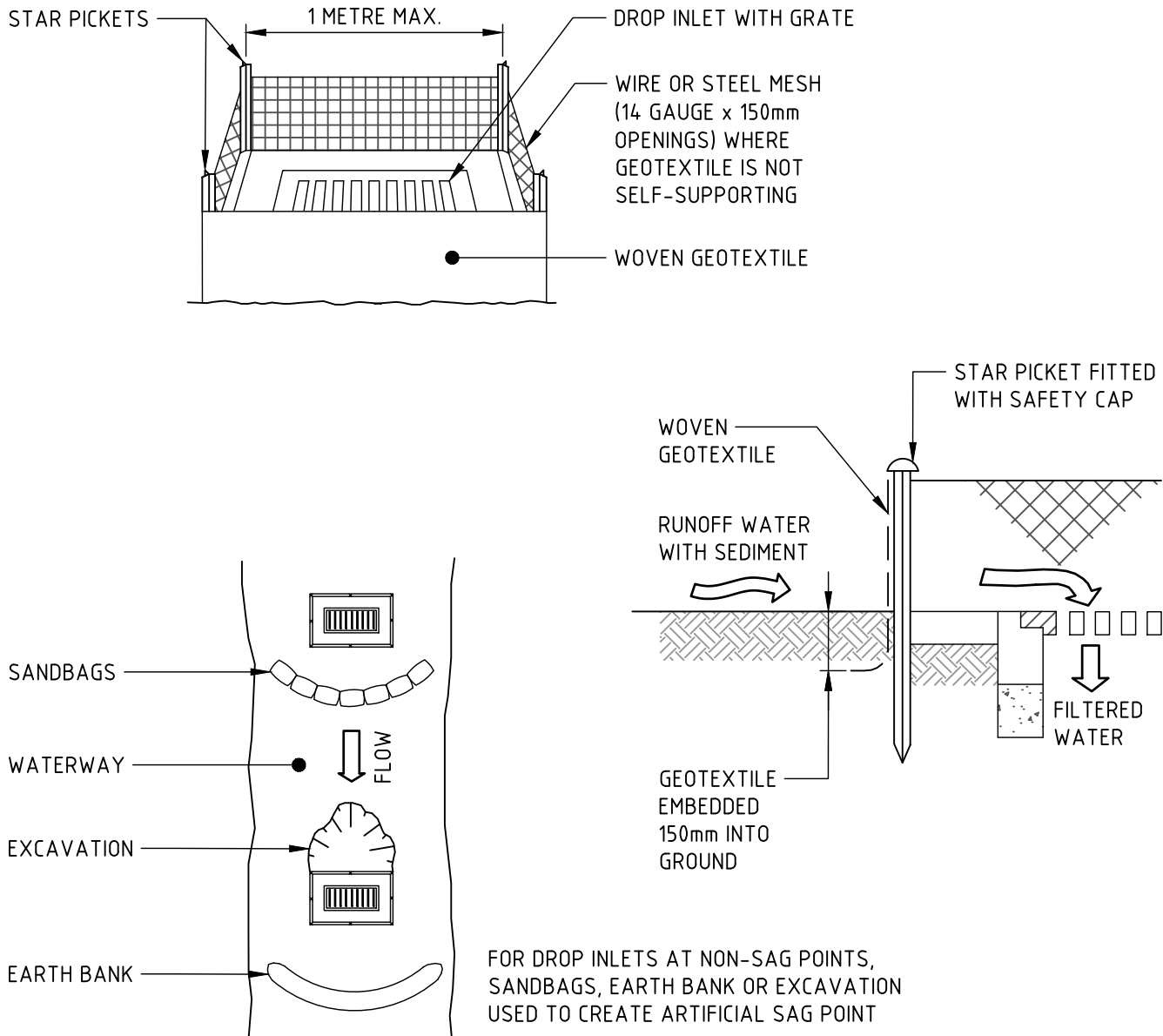
SEDIMENT FENCE



CONSTRUCTION NOTES

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

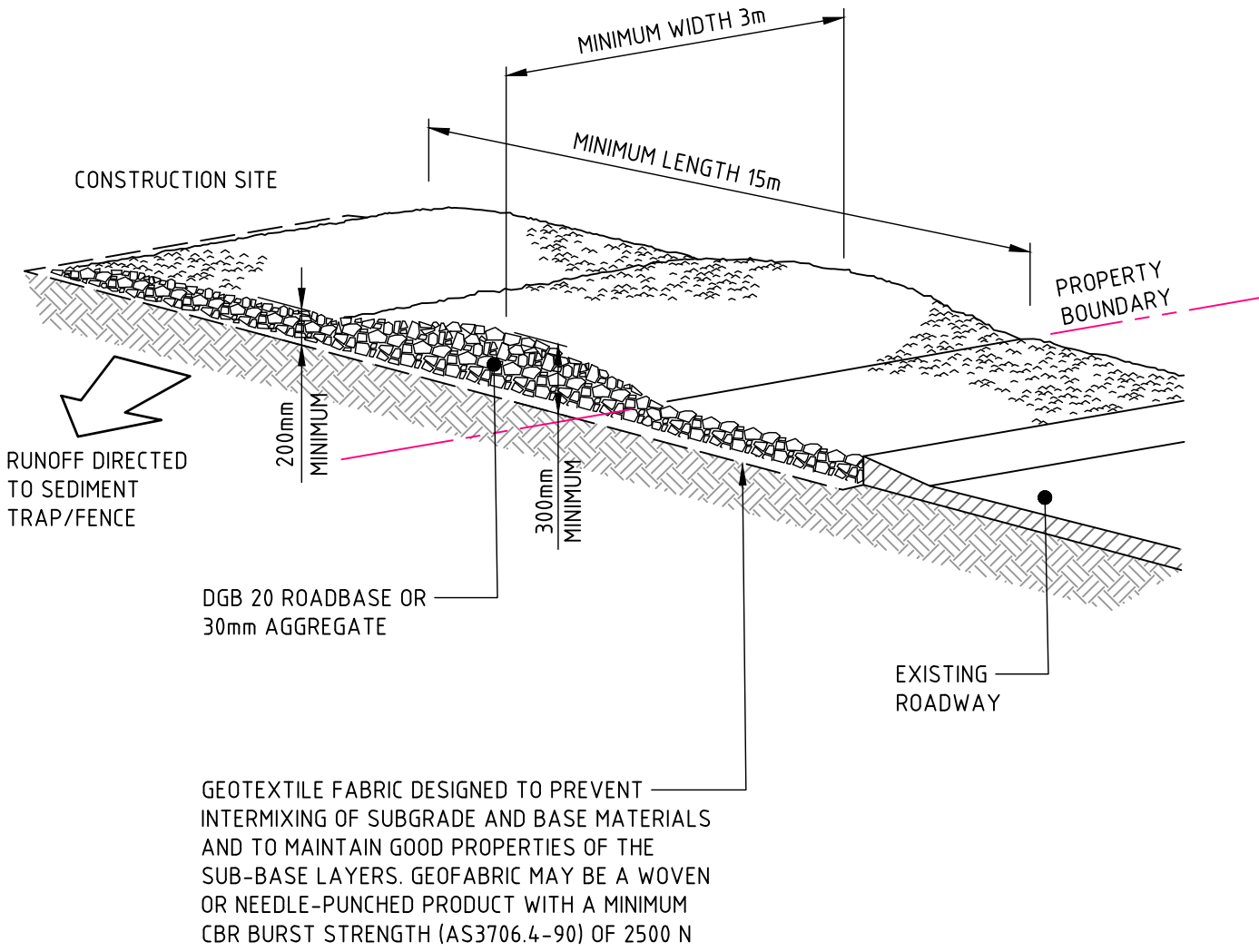
WIRE MESH AND GRAVEL SEDIMENT FILTER



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER TRAPS



CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR INFORMATION	JT		JRG	08.04.19
A	ISSUED FOR CONSTRUCTION	VC		JRG	31.05.19
B	RE-ISSUED FOR CONSTRUCTION	JO		JRG	20.06.19
C	RE-ISSUED FOR CONSTRUCTION	CP		JRG	12.07.19
D	RE-ISSUED FOR CONSTRUCTION	JO		JRG	15.11.19
E	ISSUED FOR APPROVAL	JO		JRG	19.11.19

RICHARD CROOKES CONSTRUCTIONS
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

GROUP GSA
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NOT TO SCALE

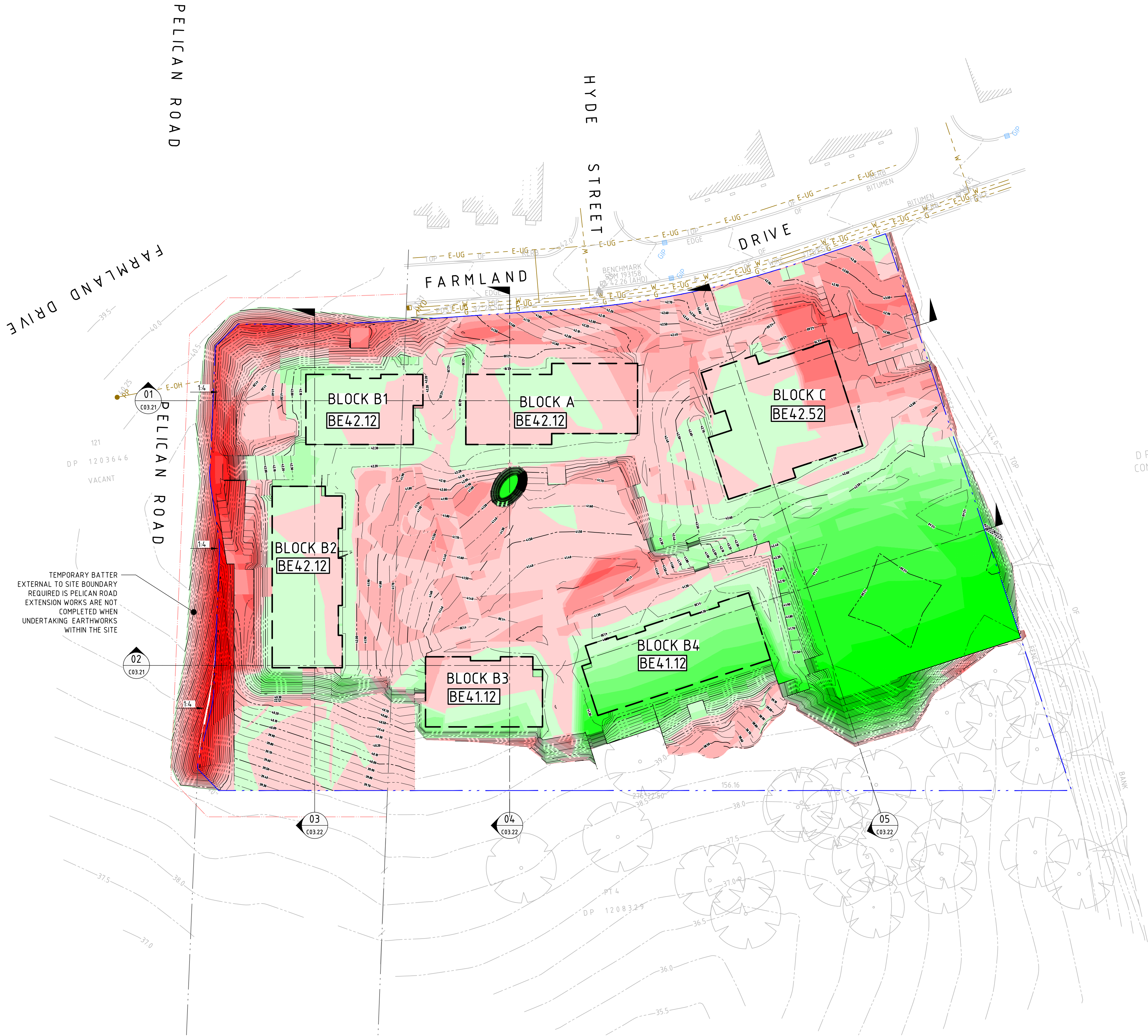
NORTHROP Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT ALEX AVENUE PRIMARY SCHOOL PELICAN ROAD, SCHOFIELDS

DRAWING TITLE CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE SEDIMENT AND SOIL EROSION CONTROL DETAILS
--

JOB NUMBER 182535
DRAWING NUMBER C02.11
REVISION E
DRAWING SHEET SIZE = A1

VERIFIER: J. GILLIGAN
JOB MANAGER: J. GRINSELL
DESIGNED: J. GRINSELL
DRAWN: C. PASKE



LEGEND

BOUNDARY LINE

PROPOSED BUILDING FOOTPRINT

BEXX.XX

BULK EARTHWORKS PAD LEVEL

X.X

DIRECTION OF GRADE

BATTERS

XX.XX

CONTOURS

DEPTH OF CUT

- 999m TO - 2.0m

- 2.0m TO - 1.5m

- 1.5m TO - 1.25m

- 1.25m TO - 1.0m

- 1.0m TO - 0.75m

- 0.75m TO - 0.5m

- 0.5m TO - 0.25m

- 0.25m TO - 0.0m

DEPTH OF FILL

0.0m TO 0.25m

0.25m TO 0.5m

0.5m TO 0.75m

0.75m TO 1.0m

1.0m TO 1.25m

1.25m TO 1.5m

1.5m TO 2.0m

2.0m TO 999m

GENERAL NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.

2. CAD FILES / DTM FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).

3. STRIP EXISTING TOPSOIL IN CONSULTATION WITH THE GEOTECHNICAL ENGINEER / REPORT. FOR THE PURPOSES OF EARTHWORKS CALCULATIONS A TOPSOIL STRIPPING DEPTH OF 100mm HAS BEEN ASSUMED.

4. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.

5. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS; ie SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS AND THE LIKE.

6. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.

7. BULK EARTHWORKS ARE BASED ON THE FOLLOWING DEPTHS FROM FINISHED SURFACE LEVELS;

7.1. BUILDING SLAB + VOID 380mm

7.2. VEHICULAR PAVEMENT 520mm

7.3. RUBBER SOFT FALL 200mm

7.4. PLAY MULCH 400mm

7.5. MASS PLANTING 375mm

7.6. FOOTPATH 150mm

7.7. SAND PIT 200mm

7.8. TIMBER DECKS VARIES

7.9. TURF 100mm

7.10. ARTIFICIAL TURF 120mm

7.11. OTHER EXTERNAL SURFACES 200mm

8. APPROXIMATE BULK EARTHWORK VALUES AS FOLLOWS;

8.1. CUT 3,628 cu.m

8.2. FILL 5,303 cu.m

8.3. BALANCE 1,675 cu.m FILL

8.4. NOTE: SITE STRIPPING VOLUMES HAVE NOT BEEN INCLUDED IN ABOVE CALCULATIONS.

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
E	RE-ISSUED FOR CONSTRUCTION	JRG		JRG	16.09.19
F	RE-ISSUED FOR CONSTRUCTION	VC		JRG	11.10.19
G	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19
H	ISSUED FOR APPROVAL	JRG		JRG	09.12.19
J	ISSUED FOR APPROVAL	JRG		JRG	10.02.20
K	ISSUED FOR APPROVAL	VC		JRG	26.02.20

RICHARD CROOKES

CONSTRUCTIONS

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GROUP GSA

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SCALE 1:500 @ A1

0 5 10 15 20 25m

NORTHROP

Sydney

Level 11 345 George Street, Sydney NSW 2000

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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT

ALEX AVENUE PRIMARY SCHOOL

PELICAN ROAD, SCHOFIELDS

DRAWING TITLE

CIVIL DOCUMENTATION
CONSTRUCTION CERTIFICATE

BULK EARTHWORKS PLAN

JOB NUMBER

182535

DRAWING NUMBER

C03.01

REVISION

K

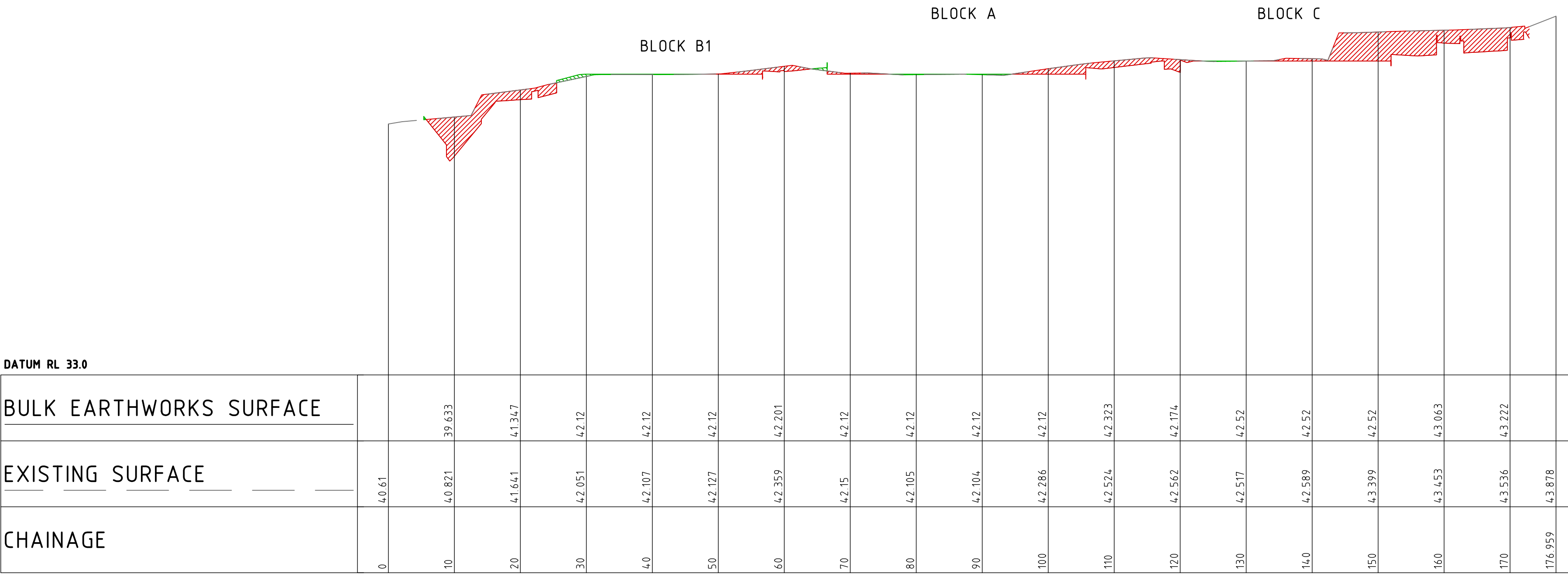
DRAWING SHEET SIZE = A1

FOR CONSTRUCTION

LEGEND

CUT AREA

FILL AREA

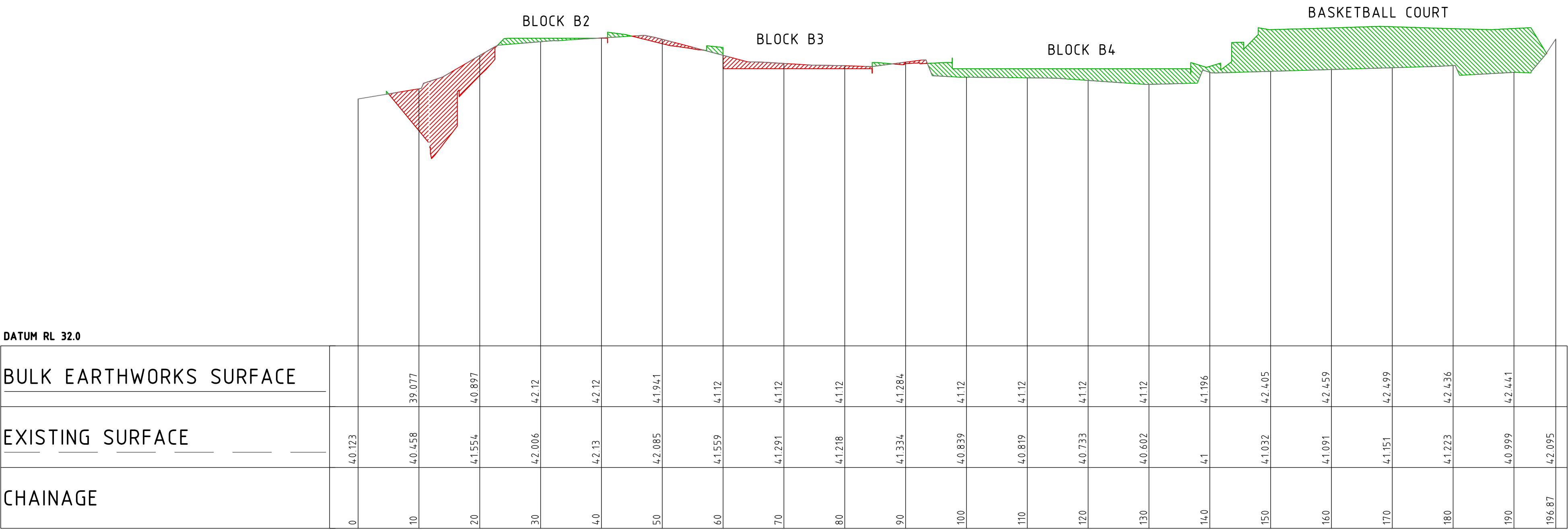


SECTION

SCALE 1:500 (H), 1:100 (V)

01

C03.01



SECTION

SCALE 1:500 (H), 1:100 (V)

02

C03.01

DRAWN: C. PASKE

DESIGNED: J. GRINSELL

JOB MANAGER: J. GILLIGAN

VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
D	RE-ISSUED FOR CONSTRUCTION	VC		JRG	13.08.19
E	RE-ISSUED FOR CONSTRUCTION	VC		JRG	11.10.19
F	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19
G	ISSUED FOR APPROVAL	JRG		JRG	09.12.19
H	ISSUED FOR APPROVAL	JRG		JRG	10.02.20
J	ISSUED FOR APPROVAL	VC		JRG	26.02.20



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PROJECT

ALEX AVENUE PRIMARY SCHOOL

PELICAN ROAD,
SCHOFIELDS

DRAWING TITLE

CIVIL DOCUMENTATION
CONSTRUCTION CERTIFICATE

BULK EARTHWORKS CUT AND
FILL SECTIONS - SHEET 01

JOB NUMBER

182535

DRAWING NUMBER

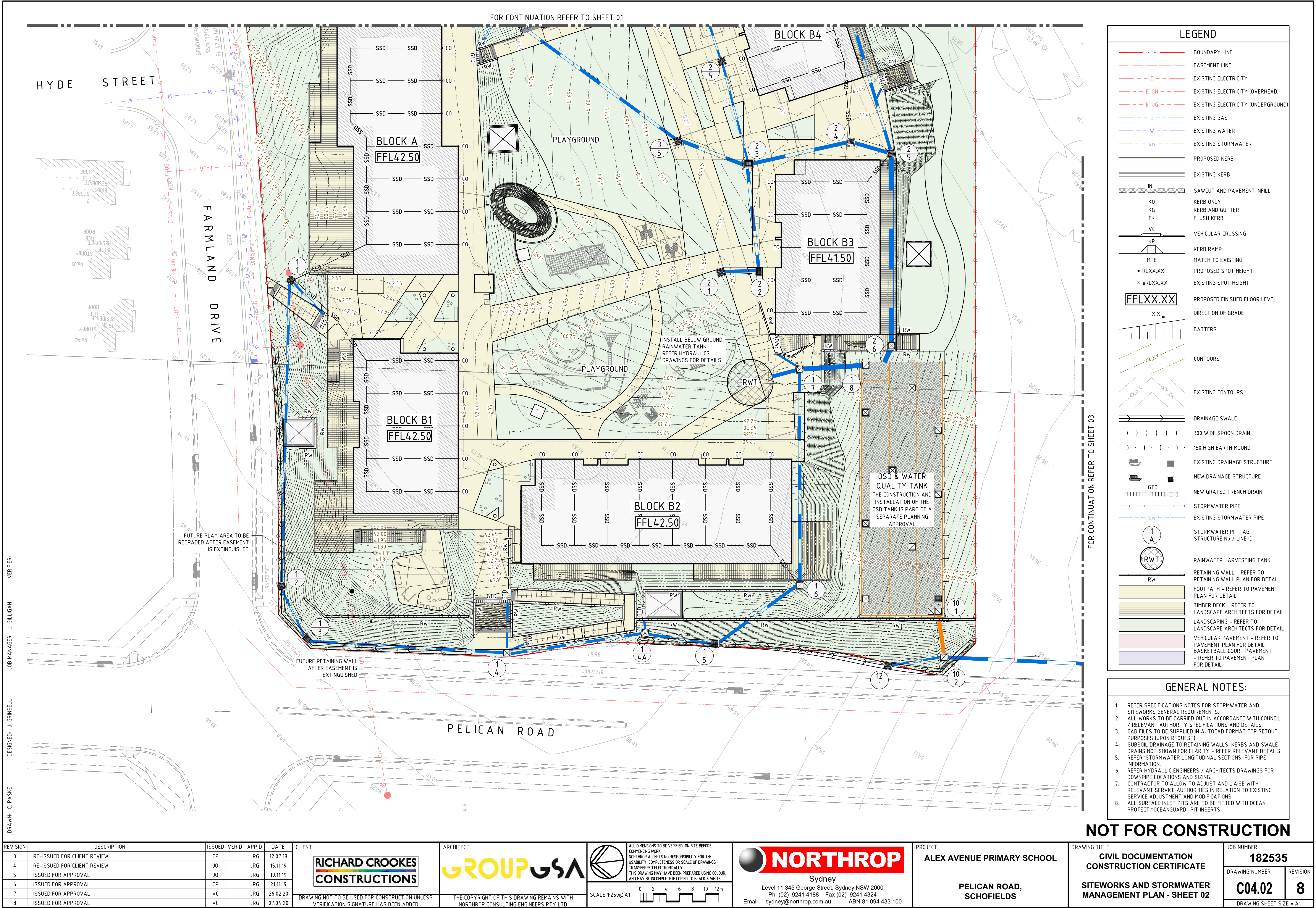
C03.21

REVISION

J

DRAWING SHEET SIZE = A1

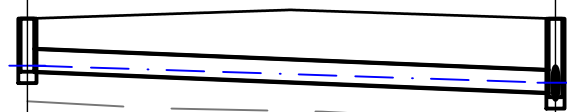
FOR CONSTRUCTION



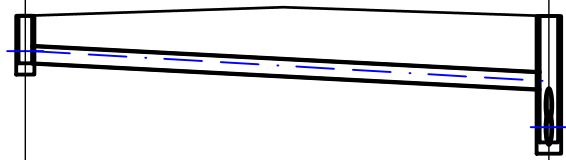
[illegible]

DRAWN: C. PASKE DESIGNED: J. GRINSELL JOB MANAGER: J. GILLIGAN VERIFIER:

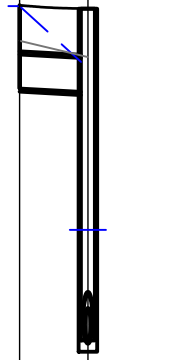
STRUCTURE NAME	
STRUCTURE TYPE	900x900 G.S.I.P. SAG 6\1
PIPE TYPE	UPVC
PIPE GRADE (%)	G=0.8%
PIPE SIZE (mm)	300
Vf - FULL PIPE VELOCITY (m/s)	Vf=0.61
Q - PIPE FLOW (L/s)	Q=13
LINE	6
DATUM RL	26.0
H.G.L. (1% A.E.P.)	41.887 41.887
FINISHED SURFACE	42.510
NATURAL SURFACE	41.417
PIPE INVERT LEVEL	41.807
DEPTH TO INVERT	0.703
CO-ORDINATED SETOUT	0.000 E303674.614 N6268987.129
CHAINAGE	34.931 E303640.398 N6268980.099



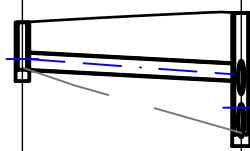
STRUCTURE NAME	
STRUCTURE TYPE	900x900 G.S.I.P. SAG 7\1
PIPE TYPE	UPVC
PIPE GRADE (%)	G=1.0%
PIPE SIZE (mm)	225
Vf - FULL PIPE VELOCITY (m/s)	Vf=0.90
Q - PIPE FLOW (L/s)	Q=23
LINE	7
DATUM RL	25.0
H.G.L. (1% A.E.P.)	42.045 42.045
FINISHED SURFACE	42.509
NATURAL SURFACE	41.652
PIPE INVERT LEVEL	41.538
DEPTH TO INVERT	0.971
CO-ORDINATED SETOUT	0.000 E303680.970 N6268955.337
CHAINAGE	34.627 E303647.057 N6268948.341



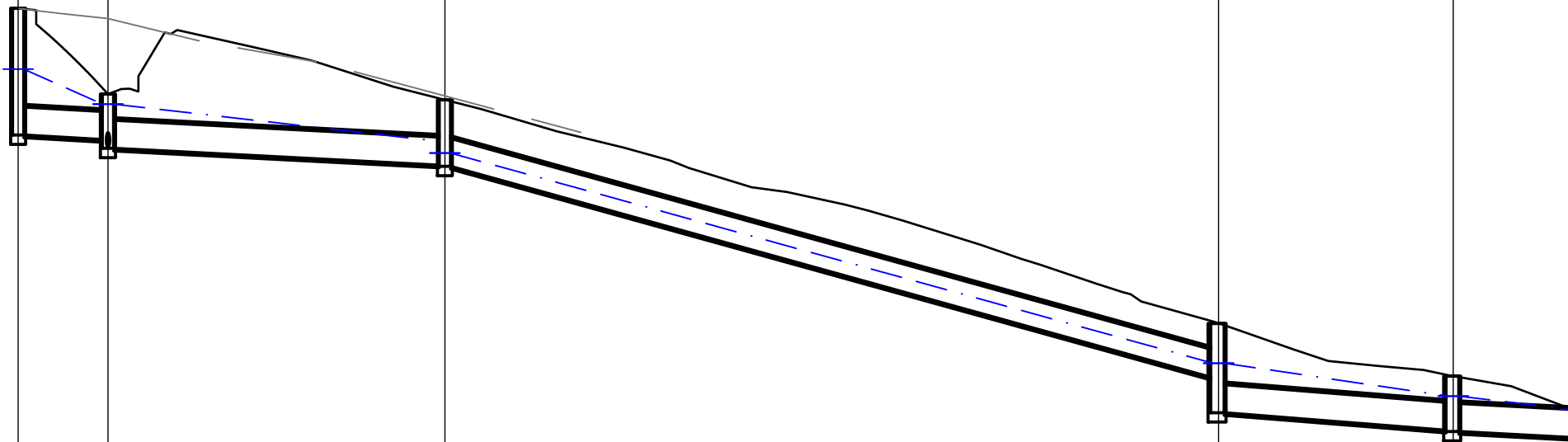
STRUCTURE NAME	
STRUCTURE TYPE	900x900 J.P. 1\7
PIPE TYPE	RRJ2
PIPE GRADE (%)	G=1.0%
PIPE SIZE (mm)	450
Vf - FULL PIPE VELOCITY (m/s)	Vf=2.15
Q - PIPE FLOW (L/s)	Q=333
LINE	8
DATUM RL	24.0
H.G.L. (1% A.E.P.)	41.971 41.971
FINISHED SURFACE	41.938
NATURAL SURFACE	41.298
PIPE INVERT LEVEL	40.836
DEPTH TO INVERT	1.101
CO-ORDINATED SETOUT	0.000 E303546.691 N6268968.257
CHAINAGE	4.514 E303547.358 N6268963.793



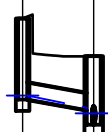
STRUCTURE NAME	
STRUCTURE TYPE	600x600 G.S.I.P. SAG 9\1
PIPE TYPE	UPVC
PIPE GRADE (%)	G=1.0%
PIPE SIZE (mm)	225
Vf - FULL PIPE VELOCITY (m/s)	Vf=0.66
Q - PIPE FLOW (L/s)	Q=13
LINE	9
DATUM RL	24.0
H.G.L. (1% A.E.P.)	40.821 40.821
FINISHED SURFACE	41.432
NATURAL SURFACE	40.618
PIPE INVERT LEVEL	40.535
DEPTH TO INVERT	0.897
CO-ORDINATED SETOUT	0.000 E303631.247 N6268970.182
CHAINAGE	14.470 E303634.228 N6268956.022



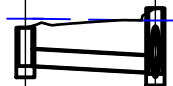
STRUCTURE NAME	
STRUCTURE TYPE	900x900 J.P. 10\1
PIPE TYPE	RRJ2
PIPE GRADE (%)	G=1.0%
PIPE SIZE (mm)	450
Vf - FULL PIPE VELOCITY (m/s)	Vf=1.93
Q - PIPE FLOW (L/s)	Q=306
LINE	10
DATUM RL	20.0
H.G.L. (1% A.E.P.)	38.558 38.558
FINISHED SURFACE	39.535
NATURAL SURFACE	39.531
PIPE INVERT LEVEL	37.500
DEPTH TO INVERT	2.035
CO-ORDINATED SETOUT	0.000 E303508.266 N6268974.850
CHAINAGE	7.204 E303501.063 N6268946.827
STRUCTURE NAME	
STRUCTURE TYPE	900x900 J.P. 10\2
PIPE TYPE	RRJ2
PIPE GRADE (%)	G=1.0%
PIPE SIZE (mm)	450
Vf - FULL PIPE VELOCITY (m/s)	Vf=1.95
Q - PIPE FLOW (L/s)	Q=299
LINE	10
DATUM RL	20.0
H.G.L. (1% A.E.P.)	37.996 37.996
FINISHED SURFACE	38.158
NATURAL SURFACE	39.368
PIPE INVERT LEVEL	37.428
DEPTH TO INVERT	0.730
CO-ORDINATED SETOUT	0.000 E303496.941 N6268970.130
CHAINAGE	34.217 E303498.159 N6268934.221
STRUCTURE NAME	
STRUCTURE TYPE	900x900 J.P. 10\3
PIPE TYPE	RRJ2
PIPE GRADE (%)	G=5.5%
PIPE SIZE (mm)	450
Vf - FULL PIPE VELOCITY (m/s)	Vf=4.04
Q - PIPE FLOW (L/s)	Q=303
LINE	10
DATUM RL	20.0
H.G.L. (1% A.E.P.)	33.840 33.840
FINISHED SURFACE	34.479
NATURAL SURFACE	34.479
PIPE INVERT LEVEL	33.615
DEPTH TO INVERT	0.864
CO-ORDINATED SETOUT	0.000 E303487.475 N6268858.815
CHAINAGE	96.259 E303498.553 N6268843.611
STRUCTURE NAME	
STRUCTURE TYPE	900x900 J.P. 10\4
PIPE TYPE	RRJ2
PIPE GRADE (%)	G=1.5%
PIPE SIZE (mm)	450
Vf - FULL PIPE VELOCITY (m/s)	Vf=1.87
Q - PIPE FLOW (L/s)	Q=298
LINE	10
DATUM RL	20.0
H.G.L. (1% A.E.P.)	33.312 33.312
FINISHED SURFACE	33.633
NATURAL SURFACE	33.633
PIPE INVERT LEVEL	32.744
DEPTH TO INVERT	0.889
CO-ORDINATED SETOUT	0.000 E303498.553 N6268843.611
CHAINAGE	115.070 E303498.553 N6268843.611
STRUCTURE NAME	
STRUCTURE TYPE	900x900 G.S.I.P. SAG 10\5
PIPE TYPE	RRJ2
PIPE GRADE (%)	G=1.0%
PIPE SIZE (mm)	450
Vf - FULL PIPE VELOCITY (m/s)	Vf=1.87
Q - PIPE FLOW (L/s)	Q=298
LINE	10
DATUM RL	20.0
H.G.L. (1% A.E.P.)	33.100 33.100
FINISHED SURFACE	33.116
NATURAL SURFACE	33.116
PIPE INVERT LEVEL	32.650
DEPTH TO INVERT	0.466
CO-ORDINATED SETOUT	0.000 E303498.553 N6268843.611
CHAINAGE	124.468 E303498.553 N6268843.611



STRUCTURE NAME	
STRUCTURE TYPE	600x600 G.S.I.P. SAG 11\1
PIPE TYPE	UPVC
PIPE GRADE (%)	G=3.0%
PIPE SIZE (mm)	225
Vf - FULL PIPE VELOCITY (m/s)	Vf=0.66
Q - PIPE FLOW (L/s)	Q=3
LINE	11
DATUM RL	27.0
H.G.L. (1% A.E.P.)	42.267 42.267
FINISHED SURFACE	42.789
NATURAL SURFACE	42.032
PIPE INVERT LEVEL	42.032
DEPTH TO INVERT	0.000
CO-ORDINATED SETOUT	0.000 E303654.638 N6269034.331
CHAINAGE	4.701 E303655.889 N6269029.800



STRUCTURE NAME	
STRUCTURE TYPE	900x900 G.S.I.P. SAG 12\1
PIPE TYPE	UPVC
PIPE GRADE (%)	G=1.0%
PIPE SIZE (mm)	225
Vf - FULL PIPE VELOCITY (m/s)	Vf=1.16
Q - PIPE FLOW (L/s)	Q=46
LINE	12
DATUM RL	22.0
H.G.L. (1% A.E.P.)	38.019 38.019
FINISHED SURFACE	38.158
NATURAL SURFACE	39.368
PIPE INVERT LEVEL	37.307
DEPTH TO INVERT	0.851
CO-ORDINATED SETOUT	0.000 E303501.068 N6268946.827
CHAINAGE	8.596 E303501.068 N6268946.827



NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR INFORMATION	JT		JRG	08.04.19
2	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19
3	RE-ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19
4	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19
5	ISSUED FOR APPROVAL	JO		JRG	19.11.19
6	ISSUED FOR APPROVAL	VC		JRG	26.02.20



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PROJECT
ALEX AVENUE PRIMARY SCHOOL

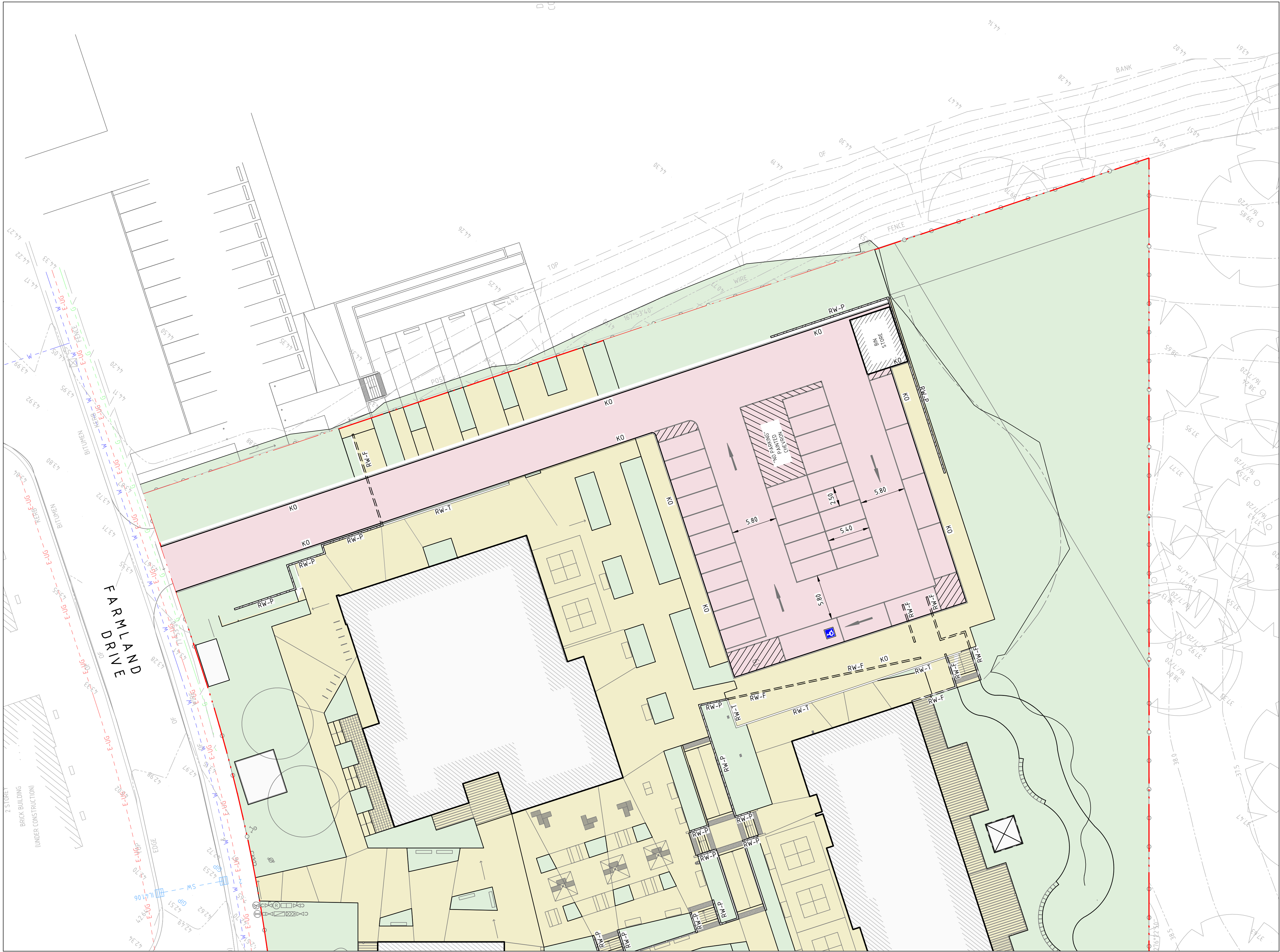
PELICAN ROAD,
SCHOFIELDS

DRAWING TITLE
CIVIL DOCUMENTATION
CONSTRUCTION CERTIFICATE

STORMWATER LONGITUDINAL
SECTIONS - SHEET 03

JOB NUMBER	182535
DRAWING NUMBER	C04.23
REVISION	6
DRAWING SHEET SIZE	A1

DRAWN: C. PASKE
DESIGNED: J. GRINSELL
JOB MANAGER: J. GILLIGAN
VERIFIER:



LEGEND	
	BOUNDARY LINE
	EASEMENT LINE
	PROPOSED KERB
	KORB ONLY
	PROPOSED DRAINAGE STRUCTURE
	PROPOSED RETAINING WALL
	FUTURE RETAINING WALL
	TEMPORARY RETAINING WALL
	VEHICULAR PAVEMENT - REFER TO PAVEMENT PLAN FOR DETAIL

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	JRG		JRG	21.11.19
2	ISSUED FOR APPROVAL	JRG		JRG	24.04.20

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SCALE 1:250@A1

Sydney
Level 11 345 George Street, Sydney NSW 2000
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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT

ALEX AVENUE PRIMARY SCHOOL

PELICAN ROAD,
SCHOFIELDS

DRAWING TITLE

CIVIL DOCUMENTATION
CONSTRUCTION CERTIFICATE

TEMPORARY CARPARK LAYOUT
PLAN

JOB NUMBER

182535

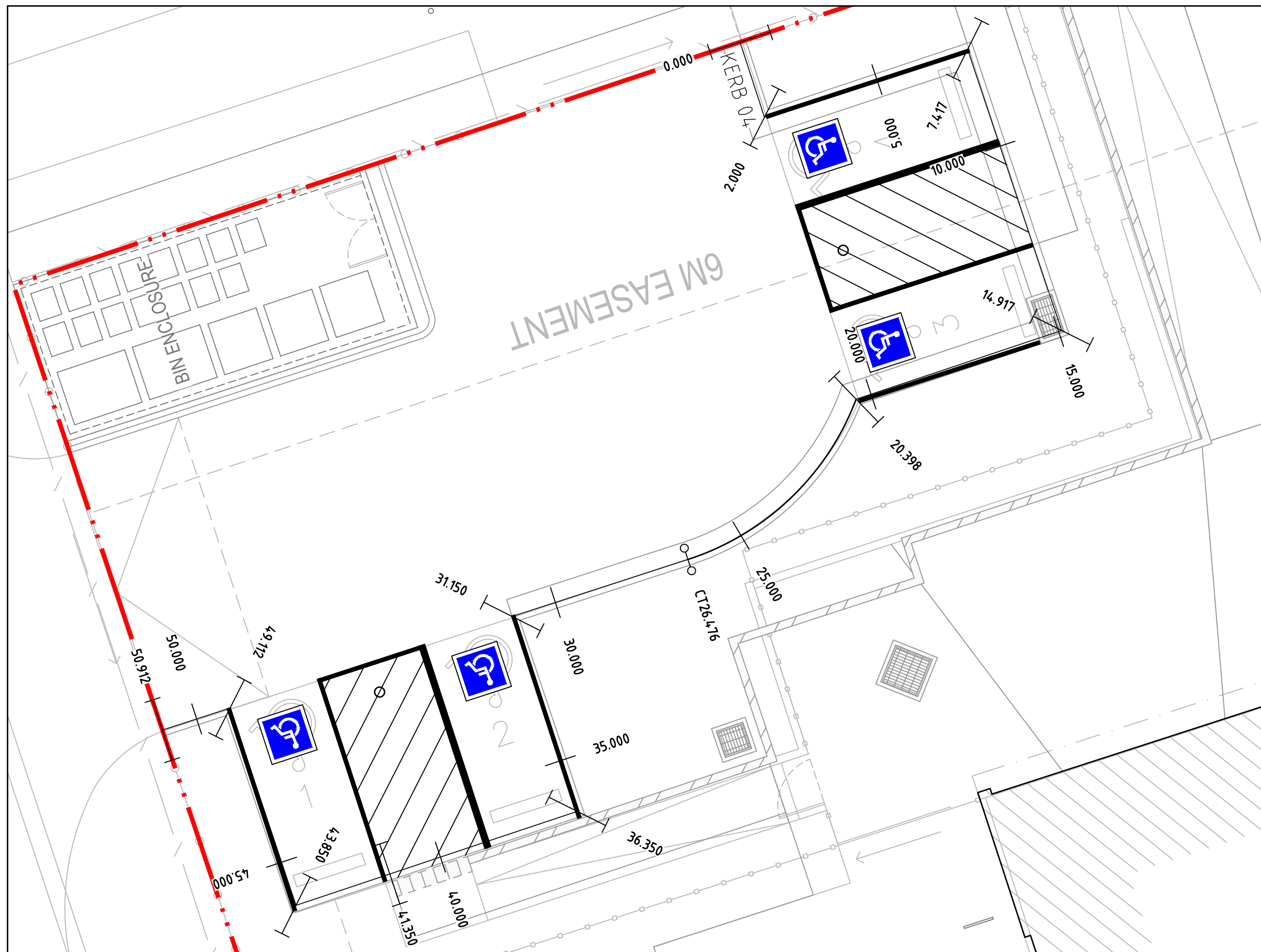
DRAWING NUMBER

C04.51

REVISION

2

DRAWING SHEET SIZE = A1



LEGEND

	PROPOSED BOUNDARY LINE
	EXISTING BOUNDARY LINE
	EASEMENT LINE
	CONTROL LINE
	
	CH0.00
	CHAINAGE

GENERAL NOTES:

1. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).

KERB 03 HORIZONTAL								
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	303670.155	626904.1521	4.3.625	257°55'55.95"			
TC	4.046	303666.197	626904.675	4.3.625	257°55'55.95"			
IP 2	4.441	303665.705	626904.570	4.3.628		R = 0.500	0.789	90°26'52.28"
CT	4.836	303665.603	626904.1063	4.3.634	348°22'48.23"			
IP 3	14.186	303663.720	626905.222	4.3.782	348°22'48.23"			

KERB 03 VERTICAL		
PT	CHAINAGE	HEIGHT
IP 1	0.000	43.625
IP 2	4.237	43.625
IP 3	14.186	43.782

D KERB->KERB 04								
Pt	Chainage	Easting	Northing	Level	Bearing	Rad/Spiral	A.Length	D.Angle
IP1	0	303672.167	6269032.219	43.45	258°23'01.19"			
IP2	2	303670.208	6269031.816	43.43				
IP3	7.417	303671.344	6269026.52	43.322				
IP4	14.917	303664.011	6269024.947	43.247				
IP5	20.398	303662.861	6269030.306	43.301				
IP6	23.437	303659.958	6269031.79	43.332		6.782	6.078	51°20'48.34"
CT	26.476	303659.304	6269034.984	43.362	348°24'54.80"			
IP7	31.15	303658.365	6269039.563	43.409				
IP8	36.35	303653.281	6269038.473	43.357				
IP9	41.35	303652.232	6269043.361	43.438				
IP10	43.85	303651.708	6269045.805	43.478				
IP11	49.112	303656.854	6269046.909	43.583				
IP12	50.912	303656.491	6269048.672	43.643	348°22'30.23"			

Pt	Chainage	Height
IP1	0	43.45
IP2	2	43.43
IP3	7.417	43.322
IP4	14.917	43.247
IP5	31.15	43.409
IP6	36.35	43.357
IP7	43.86	43.478
IP8	49.09	43.583
IP9	50.912	43.643

DRAWN: C. PASKE DESIGNED: J. GRINSELL JOB MANAGER: J. GILLIGAN VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19
2	ISSUED FOR CLIENT REVIEW	CP		JRG	11.15.19
3	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19
4	ISSUED FOR APPROVAL	JO		JRG	19.11.19

CLIENT

RICHARD CROOKES

CONSTRUCTIONS

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ARCHITECT

GROUP GSA

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SCALE 1:100 @ A1

0 1 2 3 4 5m

 **NORTHROP**

Sydney

Level 11 345 George Street, Sydney NSW 2000
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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT
ALEX AVENUE PRIMARY SCHOOL

**PELICAN ROAD,
SCHOFIELDS**

DRAWING TITLE

**CIVIL DOCUMENTATION
CONSTRUCTION CERTIFICATE**

**SITeworks SETOUT
CONTROL PLAN**

JOB NUMBER		182535	
DRAWING NUMBER		REVISION	
C06.01		4	
DRAWING SHEET SIZE = A1			

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DRAWN: C.PASKE
DESIGNED: J.GRINSELL
JOB MANAGER: J.GILLIGAN
VERIFIER:

KERB 01								
PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING	RAD/SPIRAL	A.LENGTH	D.ANGLE
IP1	0	303610.24	626904.205	42.81	179°11'33.77"			
TC	0.43	303610.25	626904.161	42.79	179°11'33.77"			
IP2	5.56	303610.34	6269035.18	42.6		6.7	10.25	87°41'42.41"
CT	10.69	303603.91	6269034.83	42.41	266°53'16.18"			
IP3	10.86	303603.74	6269034.82	42.4				
IP4	18.36	303596.24	6269035.02	42.33				
IP5	19.92	303596.19	6269033.47	42.34				
IP6	34.95	303581.17	6269033.93	42.19				
IP7	36.56	303581.24	6269035.54	42.18				
IP8	37.56	303580.24	6269035.58	42.15				
TC	39.55	303578.25	6269035.66	42.11	272°13'16.88"			
IP9	44.26	303572.25	6269035.89	42		6	9.42	89°59'60.00"
CT	48.97	303572.49	6269041.89	41.88	2°13'16.88"			
IP10	50.11	303572.53	6269043.02	41.86	2°13'16.88"			

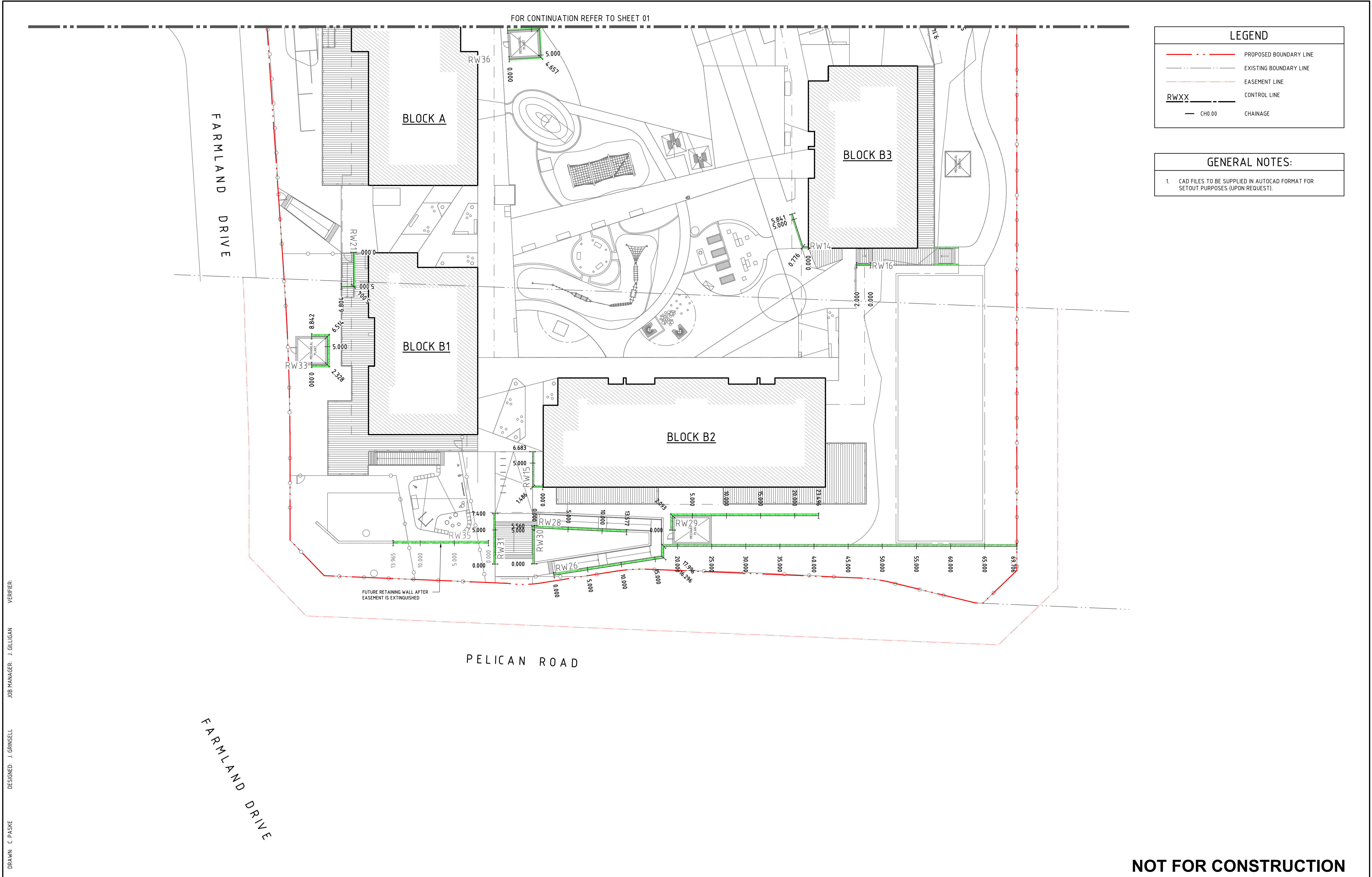
KERB 02								
PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING	RAD/SPIRAL	A.LENGTH	D.ANGLE
IP1	0	303578.53	6269042.78	41.99	182°13'16.88"			
TC	0.4	303578.51	6269042.38	42	182°13'16.88"			
IP2	0.79	303578.49	6269041.88	42.01		-0.5	0.78	89°44'31.88"
CT	1.18	303578.99	6269041.86	42.02	92°28'45.00"			
IP3	16.11	303593.91	6269041.21	42.38				
IP4	20.94	303598.73	6269041	42.5		-208.9	9.65	2°38'46.29"
CC	25.76	303603.55	6269041.02	42.62	89°49'59.28"			
IP5	26.16	303604.06	6269041.02	42.63		-0.5	0.79	90°38'25.51"
CT	26.55	303604.05	6269041.53	42.64	359°11'33.77"			
IP6	26.95	303604.04	6269041.92	42.65	359°11'33.77"			

VG IP FOR KERB 01"		
PT	CHAINAGE	HEIGHT
IP1	0	42.81
IP2	10.86	42.4
IP3	18.37	42.33
IP4	19.92	42.34
IP5	36.56	42.18
IP6	50.11	41.86

VG IP FOR KERB 02"		
PT	CHAINAGE	HEIGHT
IP1	0	41.99
IP2	26.95	42.65

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										PELICAN ROAD, SCHOFIELDS	SITWORKS SETOUT CONTROL TABLES	DRAWING NUMBER	REVISION
												C06.11	1
												DRAWING SHEET SIZE = A1	



DRAWN: C. PASKE
DESIGNED: J. GRINSELL
JOB MANAGER: J. GILLIGAN
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
2	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19	
3	RE-ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19	
4	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19	
5	ISSUED FOR APPROVAL	JO		JRG	19.11.19	
6	ISSUED FOR APPROVAL	CP		JRG	21.11.19	
7	ISSUED FOR APPROVAL	VC		JRG	26.02.20	

RICHARD CROOKES CONSTRUCTIONS

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Sydney
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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT
ALEX AVENUE PRIMARY SCHOOL

PELICAN ROAD, SCHOFIELDS

DRAWING TITLE
CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE

RETAINING WALL SETOUT PLAN - SHEET 02

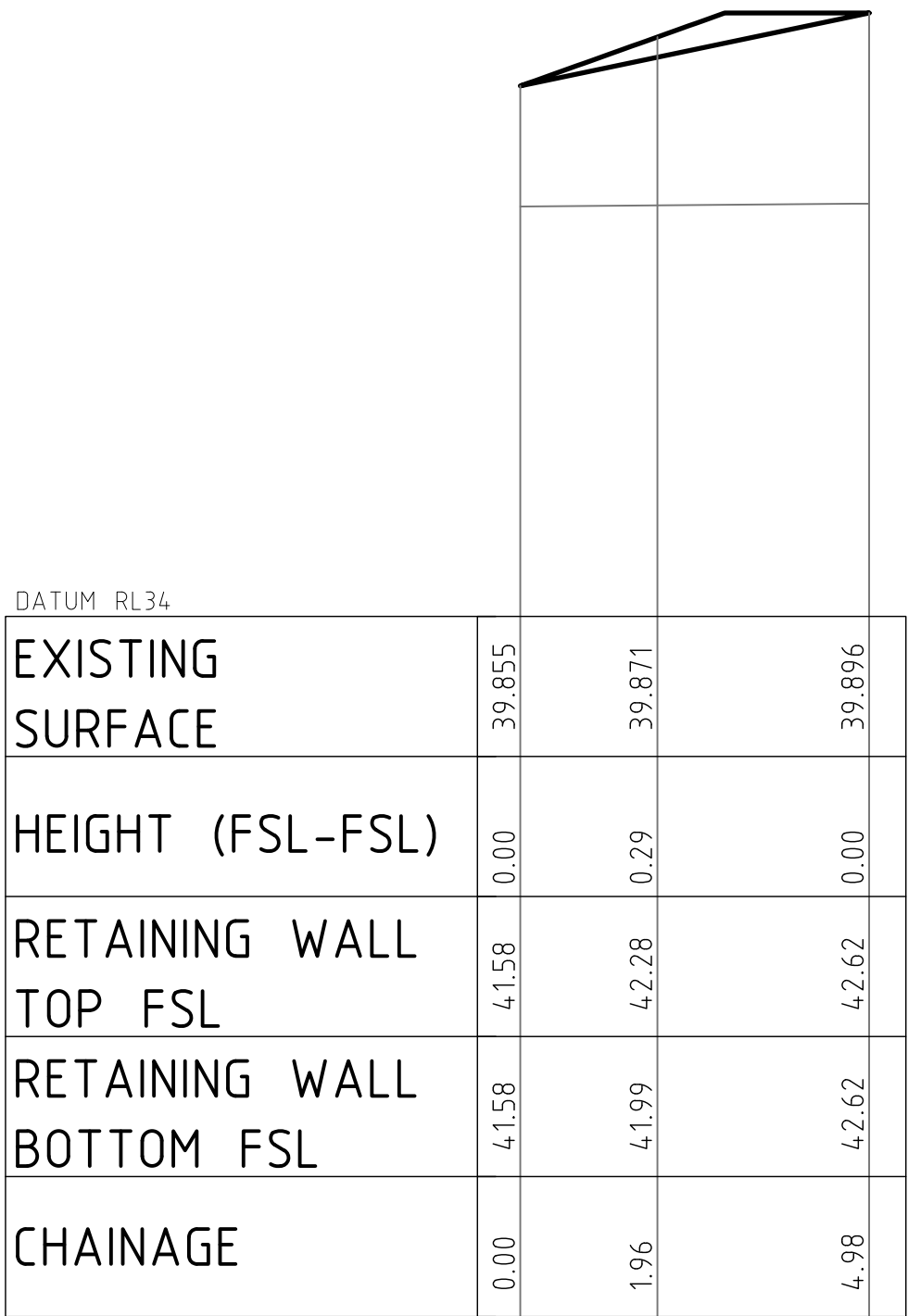
JOB NUMBER
182535

DRAWING NUMBER C07.02	REVISION 7
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DRAWING SHEET SIZE = A1

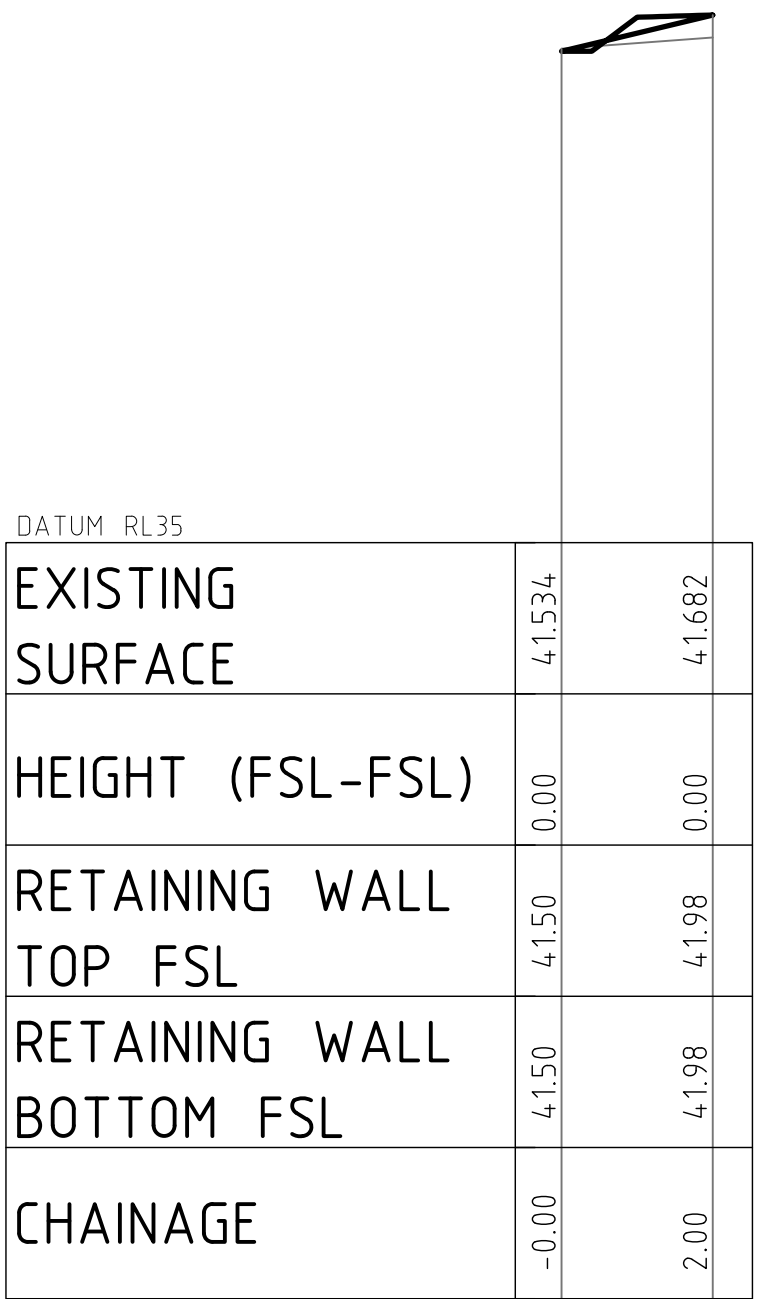
DRAWN: C PASKE
DESIGNED: J GRINSELL
JOB MANAGER: J GILLIGAN
VERIFIER:

GENERAL NOTES	
1.	REFER SPECIFICATIONS NOTES FOR GENERAL REQUIREMENTS.
2.	CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3.	REFER RETAINING WALL DETAILS.
4.	TOW DENOTES TOP OF WALL
5.	TOF DENOTES TOP OF FOOTING



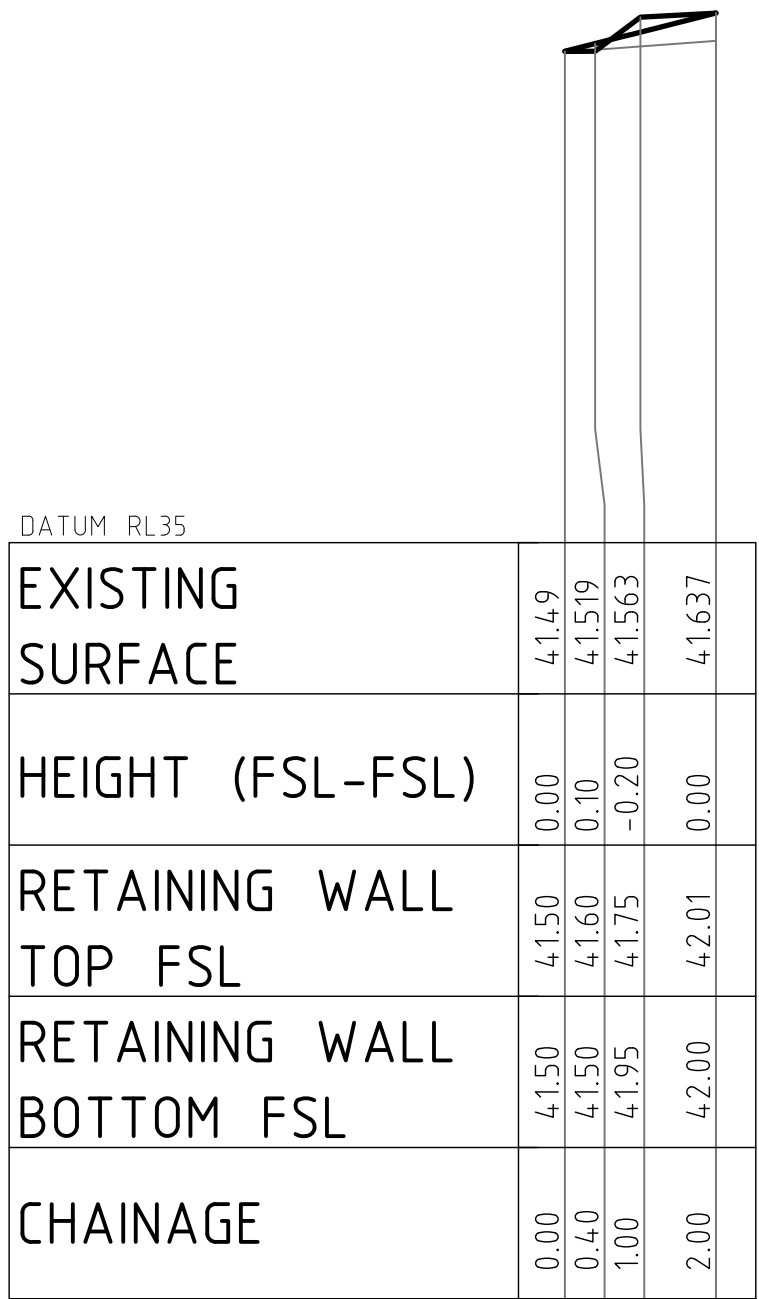
SCALE 1:100 HORIZ 1:100 VERT

ELEVATION OF RW01 BW RETAINING WALL



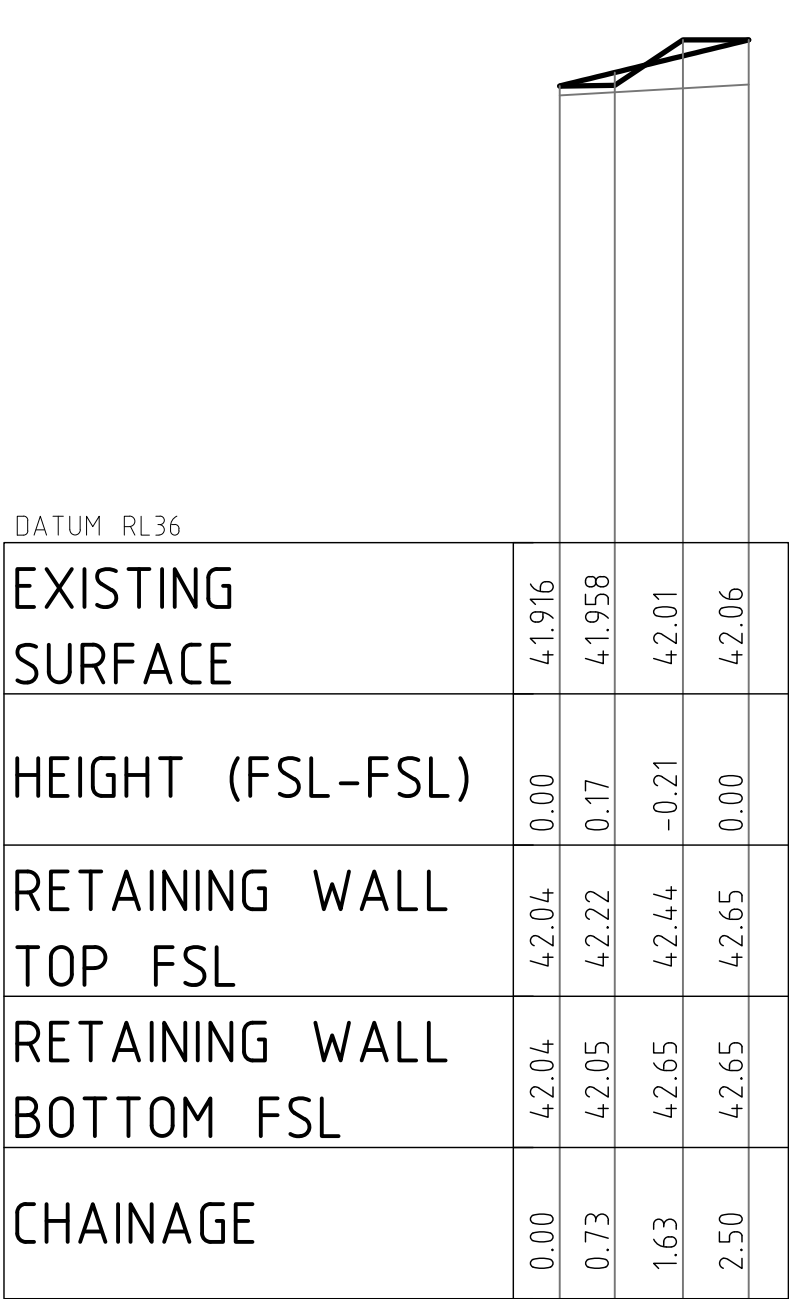
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ELEVATION OF RW02 BW RETAINING WALL



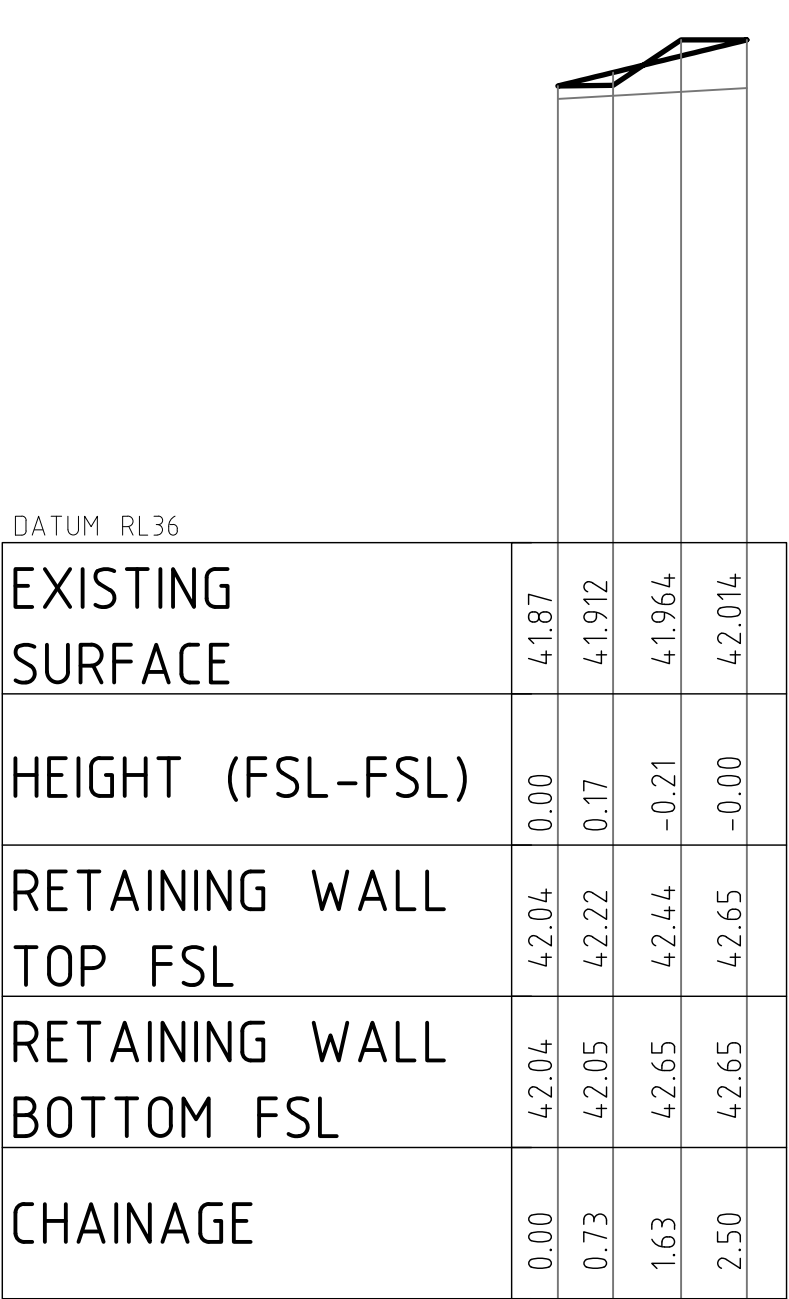
SCALE 1:100 HORIZ 1:100 VERT

ELEVATION OF RW03 BW RETAINING WALL



SCALE 1:100 HORIZ 1:100 VERT

ELEVATION OF RW04 BW RETAINING WALL



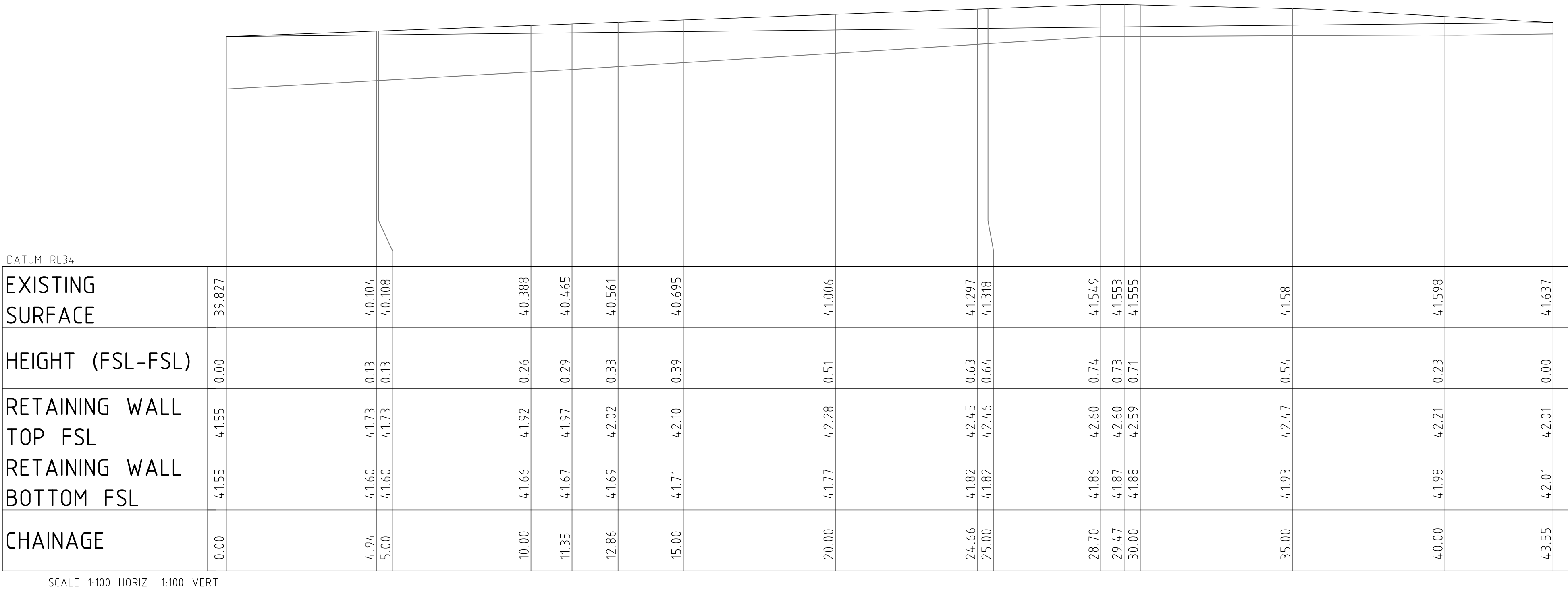
SCALE 1:100 HORIZ 1:100 VERT

ELEVATION OF RW05 BW RETAINING WALL

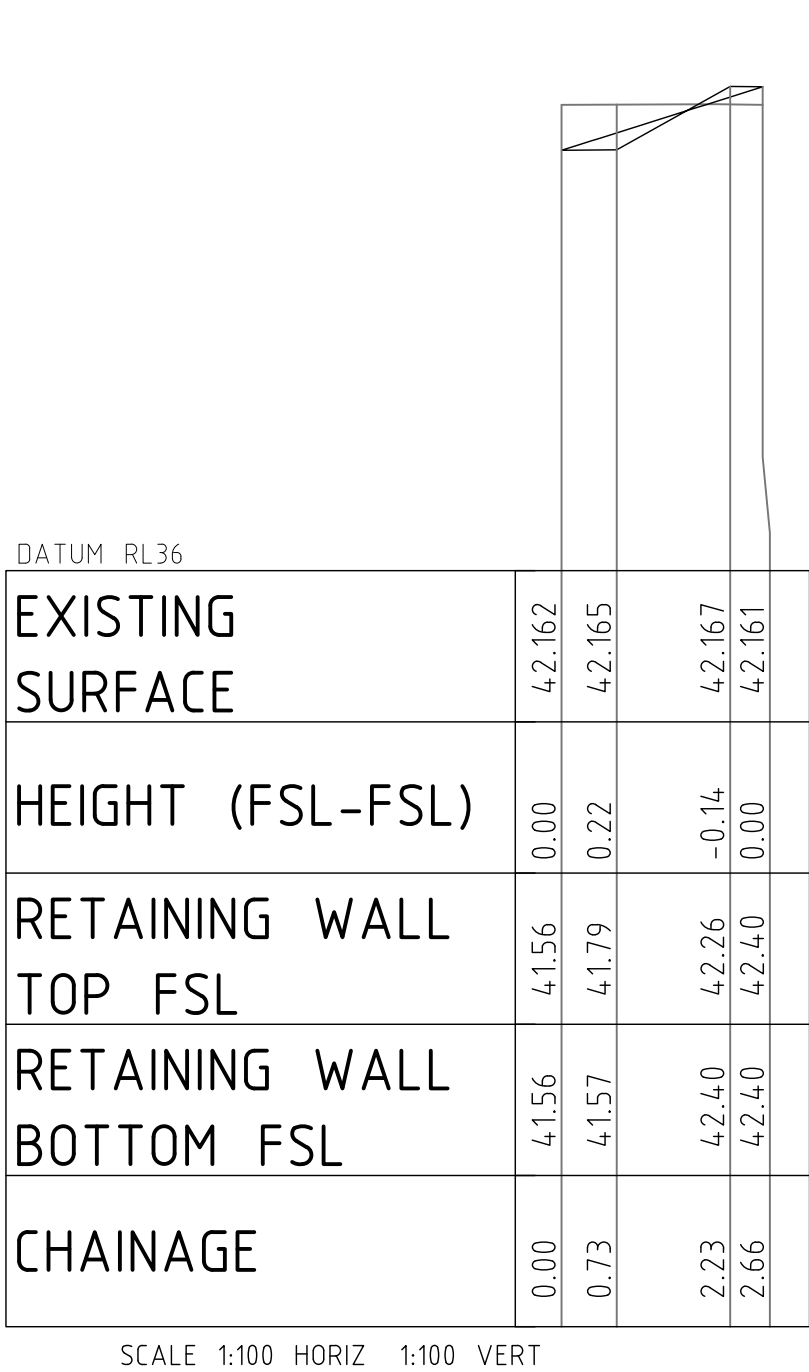
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2	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19					PELICAN ROAD, SCHOFIELDS	RETAINING WALL ELEVATIONS - SHEET 01	DRAWING NUMBER	REVISION
3	RE-ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19					C07.11	5		
4	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19					DRAWING SHEET SIZE = A1			
5	ISSUED FOR APPROVAL	JO		JRG	19.11.19								

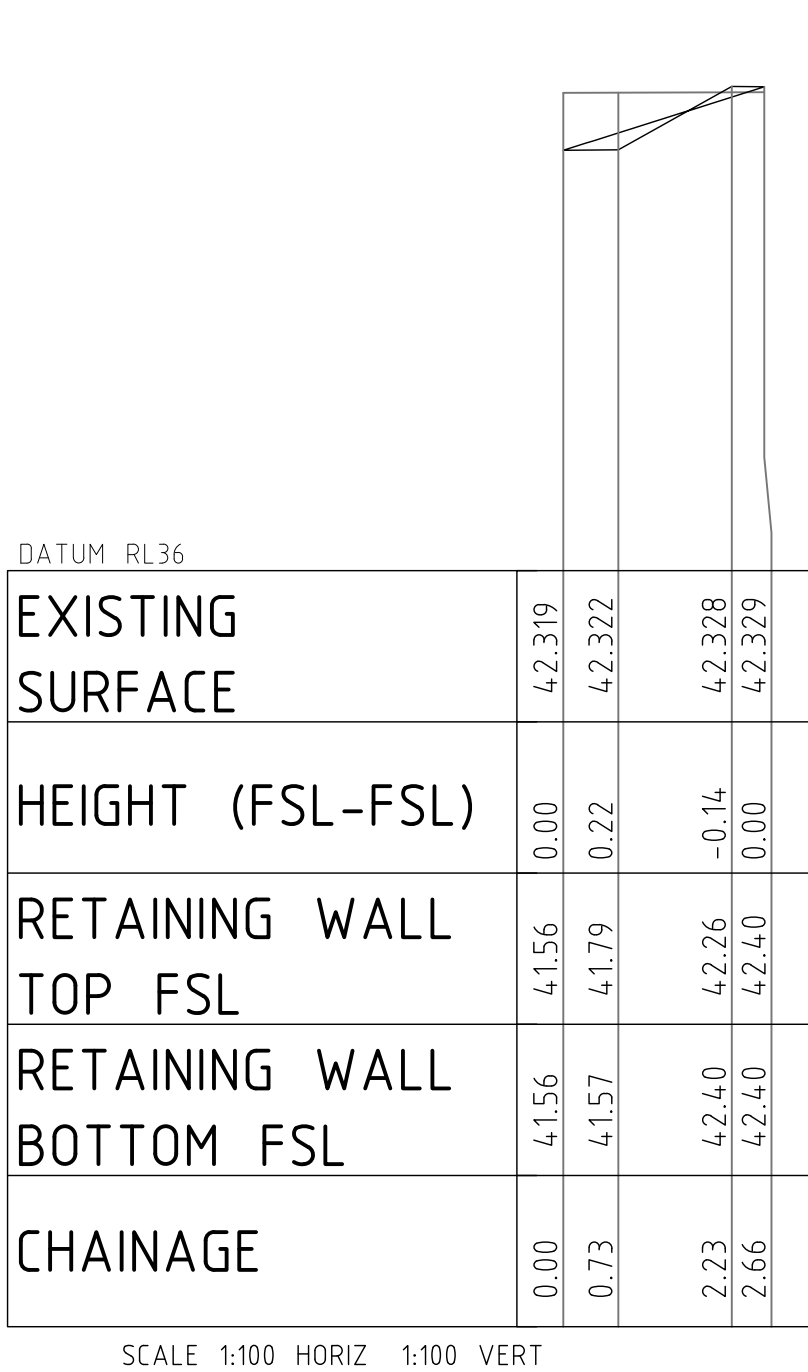
GENERAL NOTES	
1.	REFER SPECIFICATIONS NOTES FOR GENERAL REQUIREMENTS.
2.	CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3.	REFER RETAINING WALL DETAILS.
4.	TOW DENOTES TOP OF WALL
5.	TOF DENOTES TOP OF FOOTING



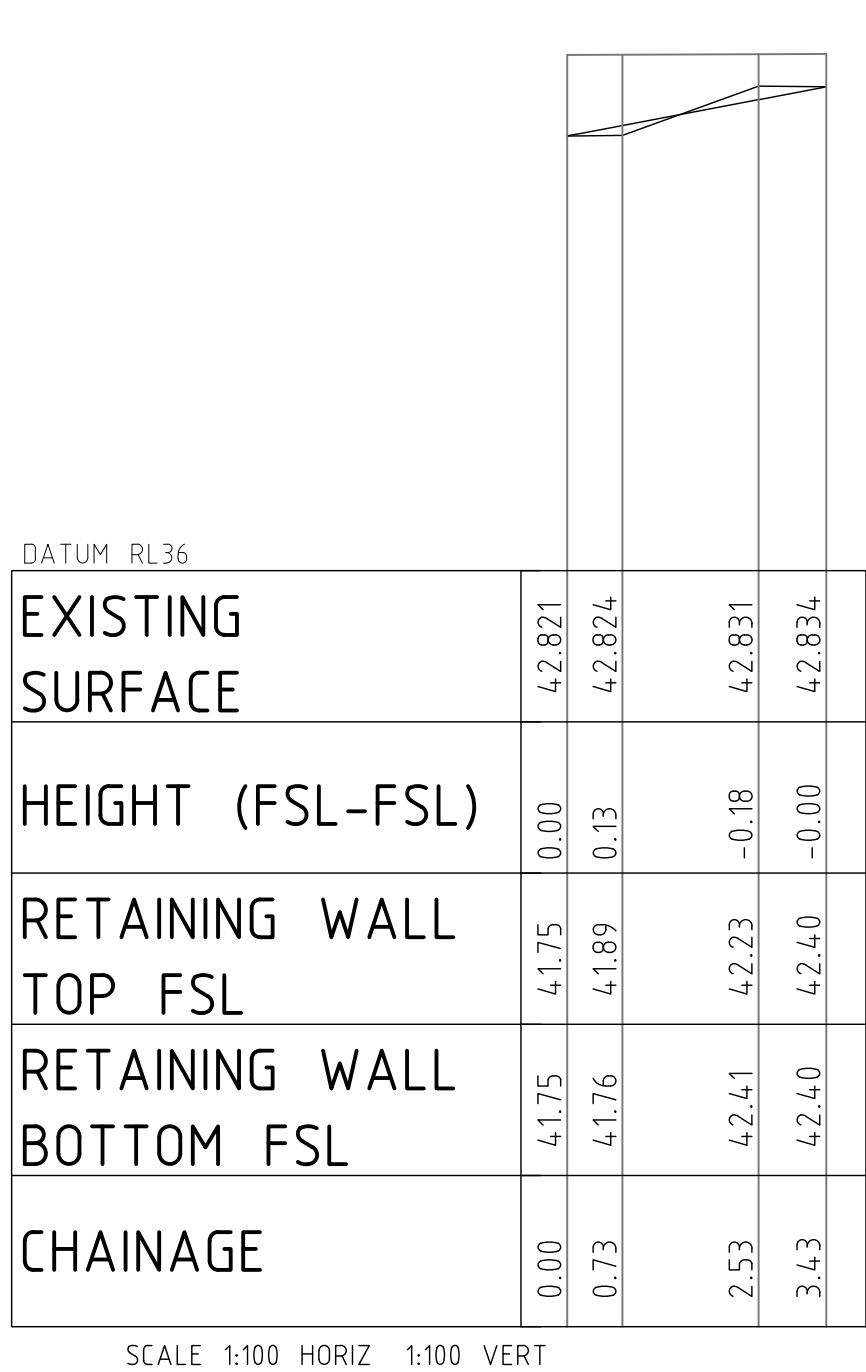
ELEVATION OF RW06 BW RETAINING WALL



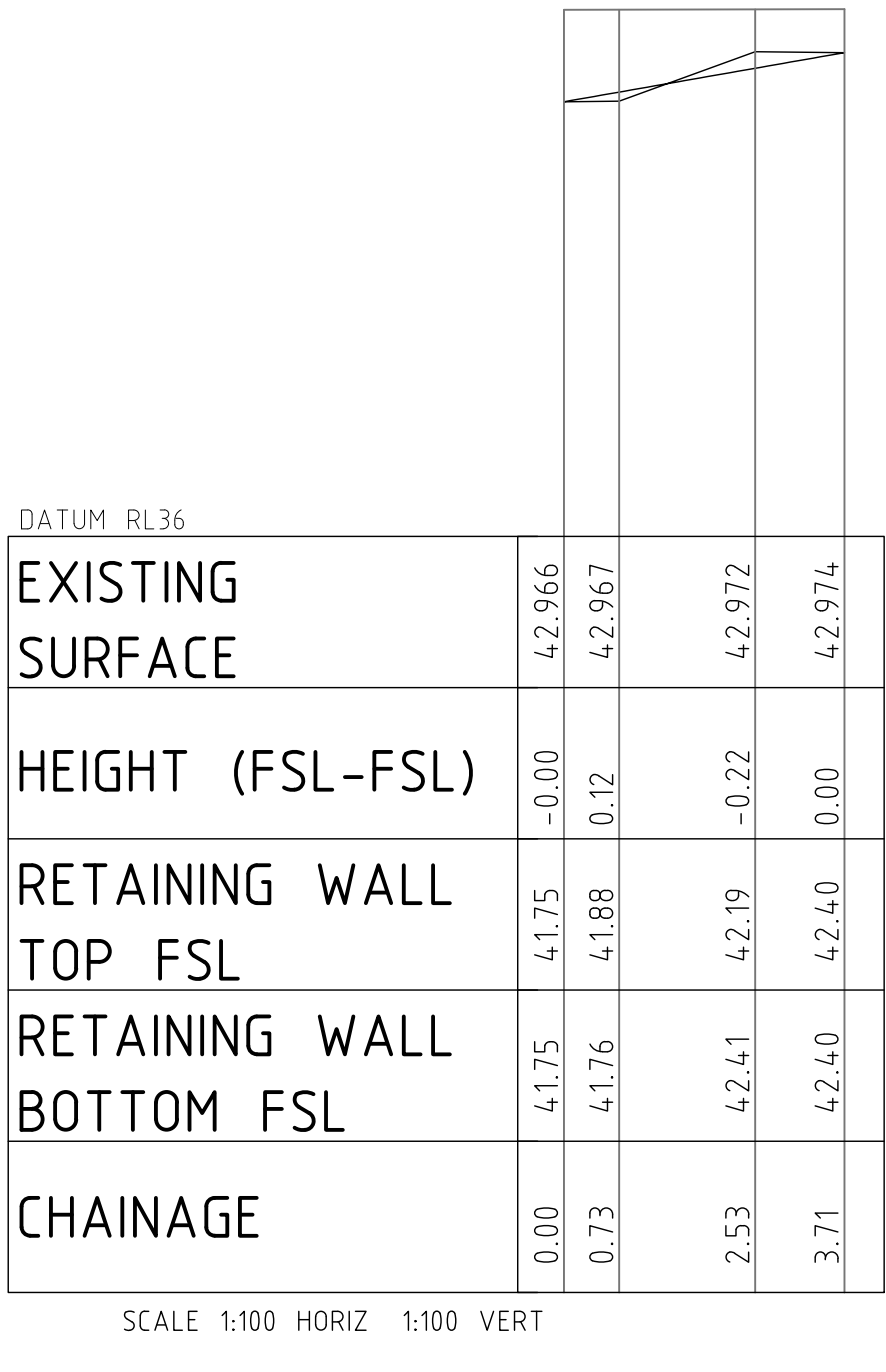
ELEVATION OF RW07 BW RETAINING WALL



ELEVATION OF RW08 BW RETAINING WALL



ELEVATION OF RW09 BW RETAINING WALL



ELEVATION OF RW10 BW RETAINING WALL

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT		PROJECT	DRAWING TITLE	JOB NUMBER	
1	ISSUED FOR INFORMATION	JT		JRG	08.04.19	RICHARD CROOKES CONSTRUCTIONS THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD	GROUP GSA ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.	Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	ALEX AVENUE PRIMARY SCHOOL	CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE	182535	
2	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19						DRAWING NUMBER	REVISION
3	RE-ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19						C07.12	6
4	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19						DRAWING SHEET SIZE = A1	
5	ISSUED FOR APPROVAL	JO		JRG	19.11.19							
6	ISSUED FOR APPROVAL	CP		JRG	21.11.19							

DRAWN: C PASKE
DESIGNED: J GRINSELL
JOB MANAGER: J GILLIGAN
VERIFIER:

- GENERAL NOTES
1.

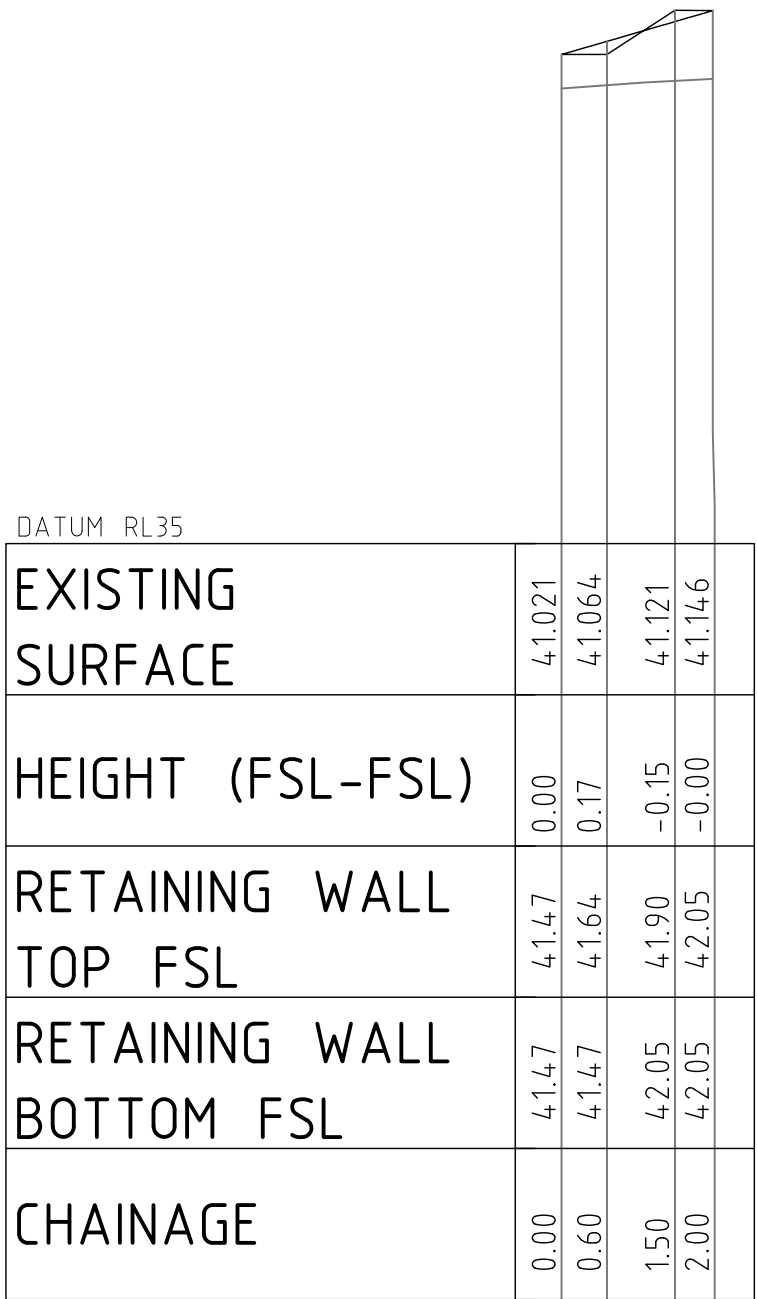
REFER SPECIFICATIONS NOTES FOR GENERAL REQUIREMENTS.
2.

CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3.

REFER RETAINING WALL DETAILS.
4.

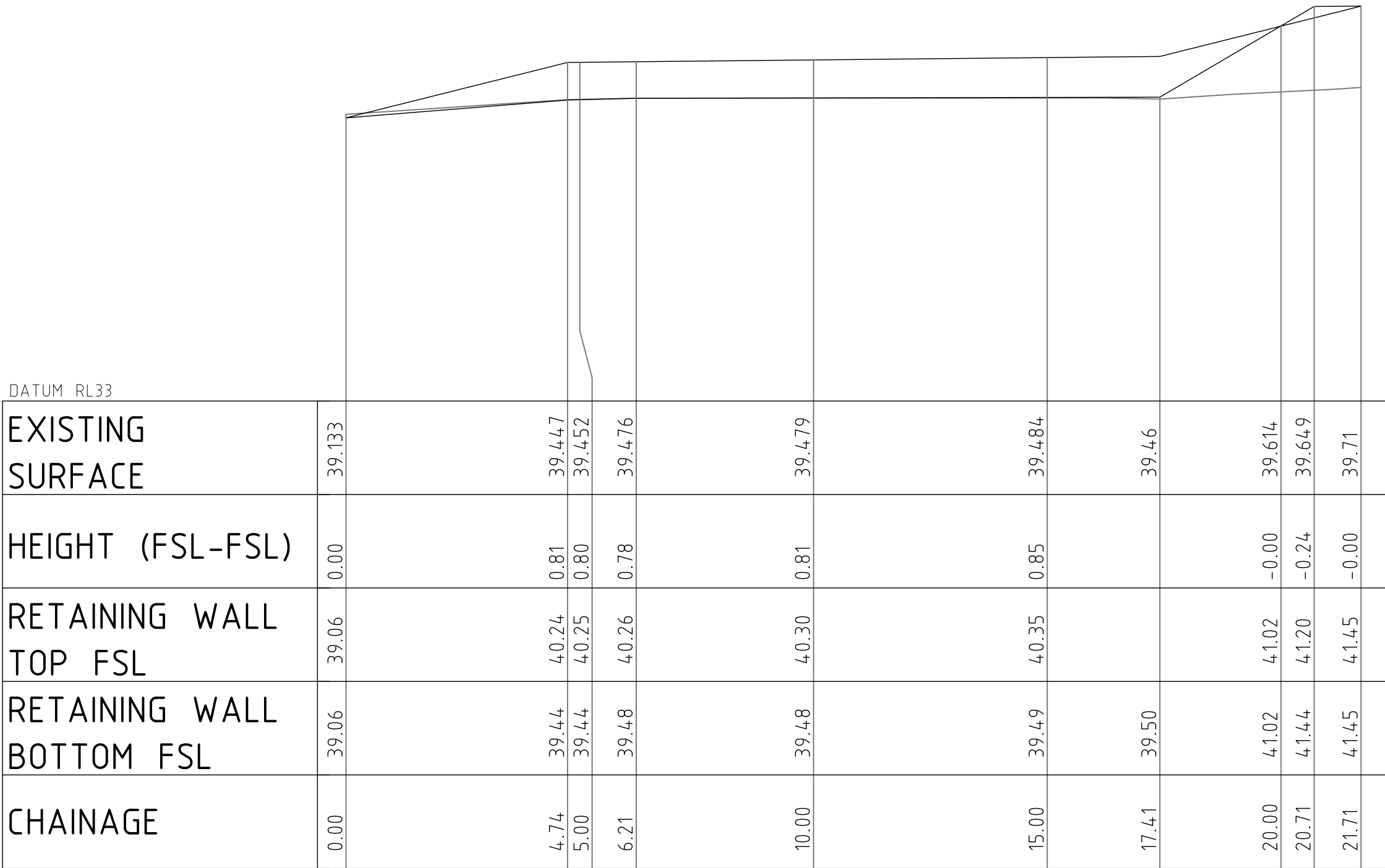
TOW DENOTES TOP OF WALL
5.

TOF DENOTES TOP OF FOOTING



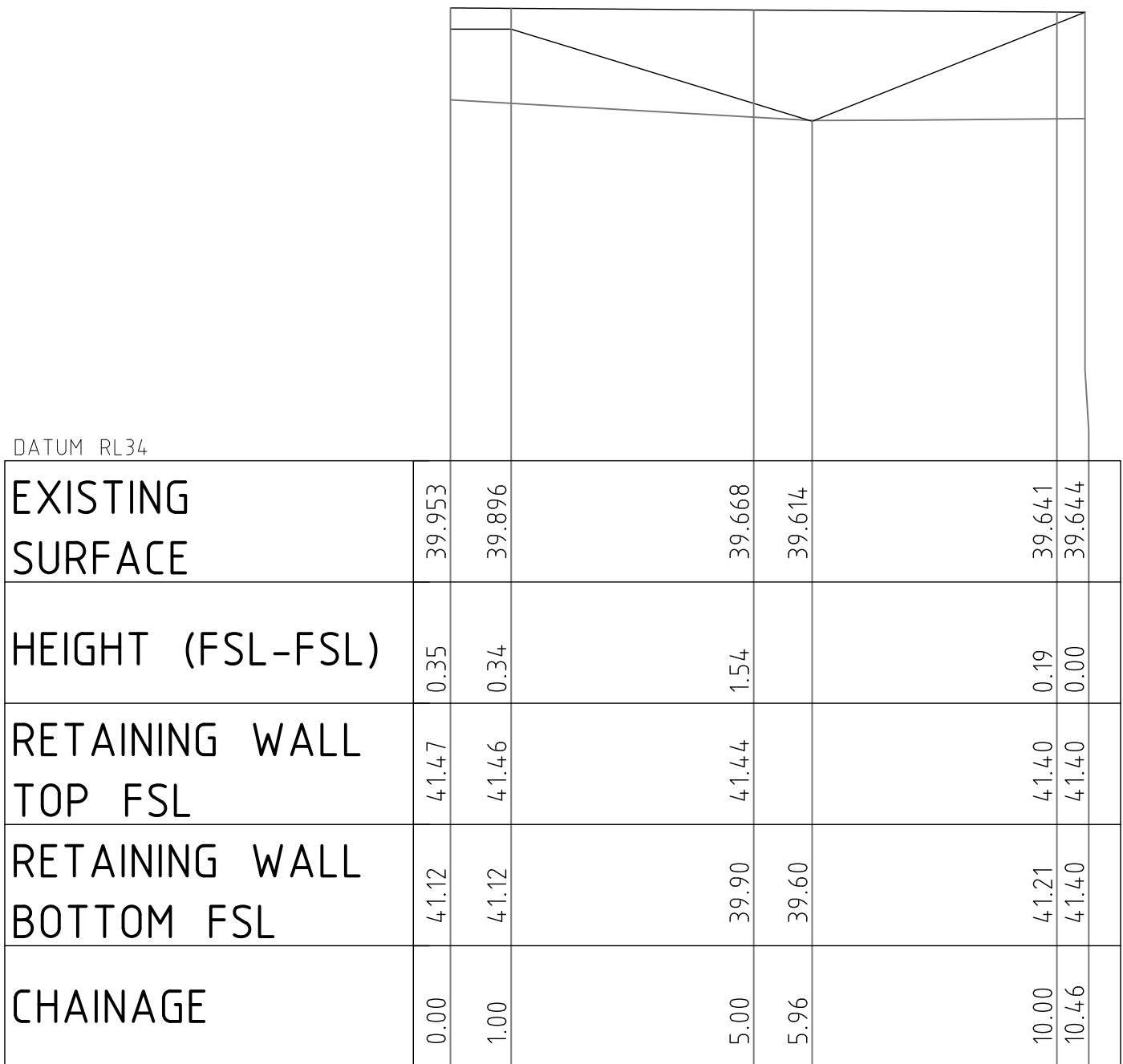
SCALE 1:100 HORIZ 1:100 VERT

ELEVATION OF RW16 BW RETAINING WALL



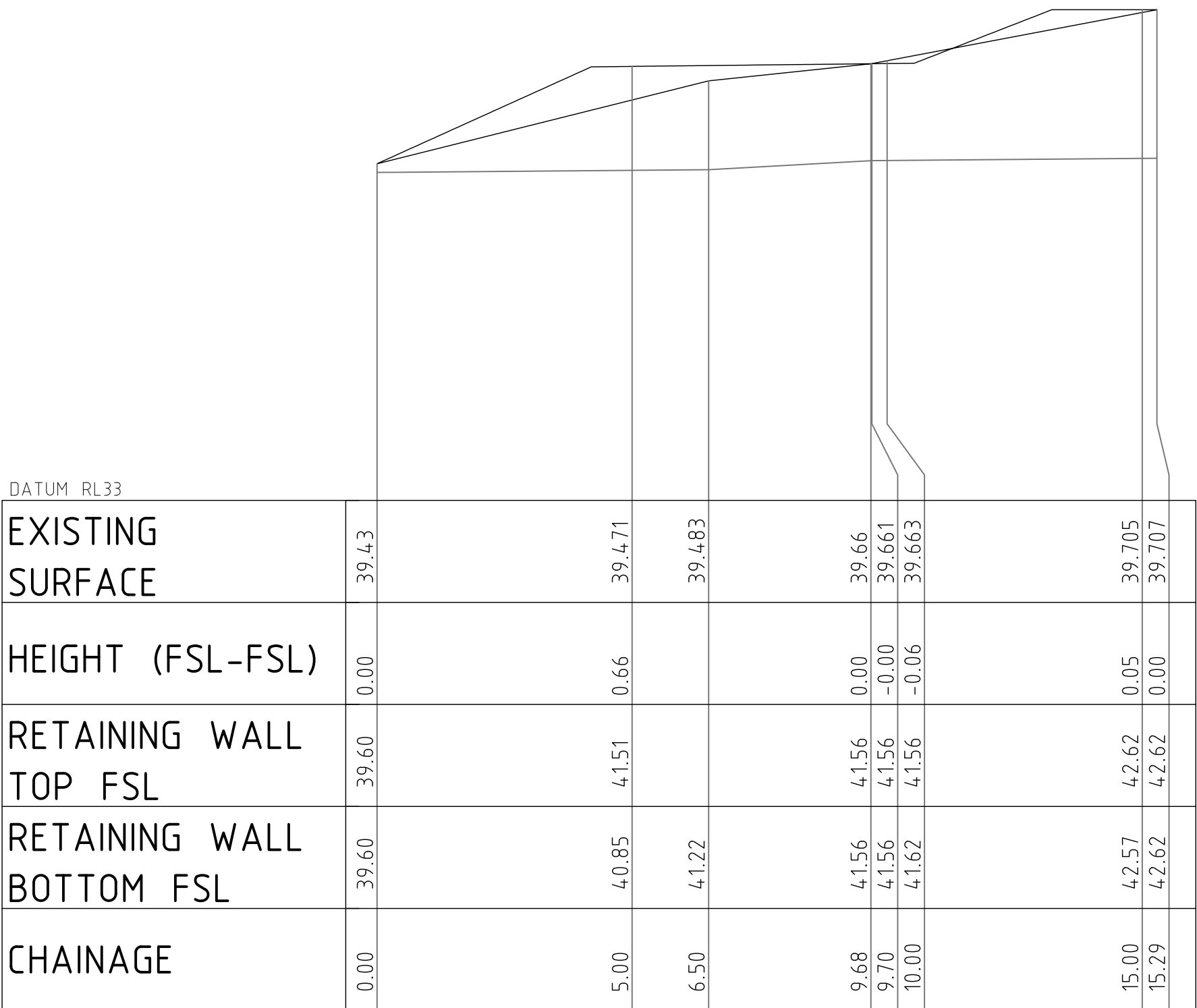
SCALE 1:100 HORIZ 1:100 VERT

ELEVATION OF RW18 BW RETAINING WALL



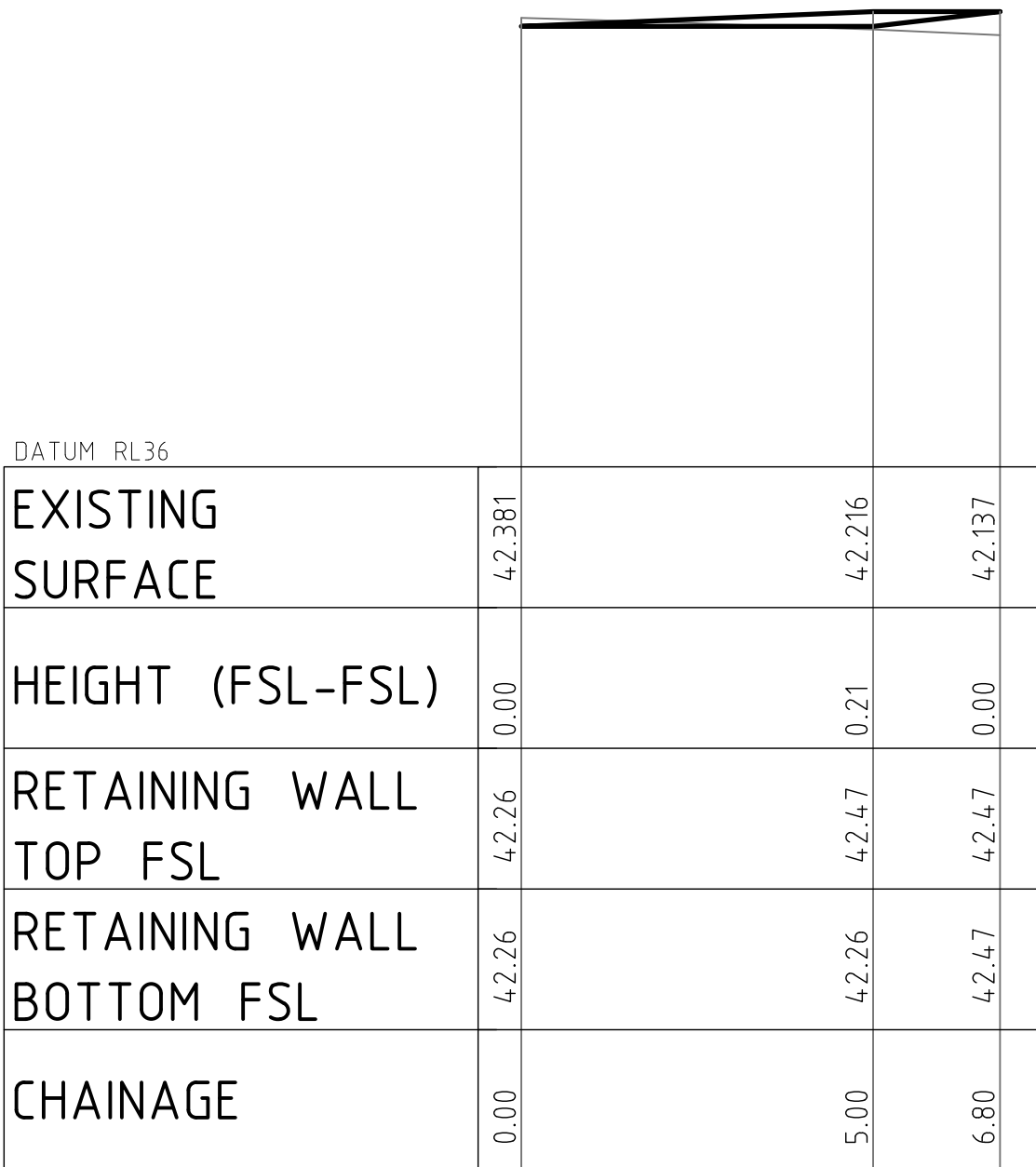
SCALE 1:100 HORIZ 1:100 VERT

ELEVATION OF RW19 BW RETAINING WALL



SCALE 1:100 HORIZ 1:100 VERT

ELEVATION OF RW20 BW RETAINING WALL



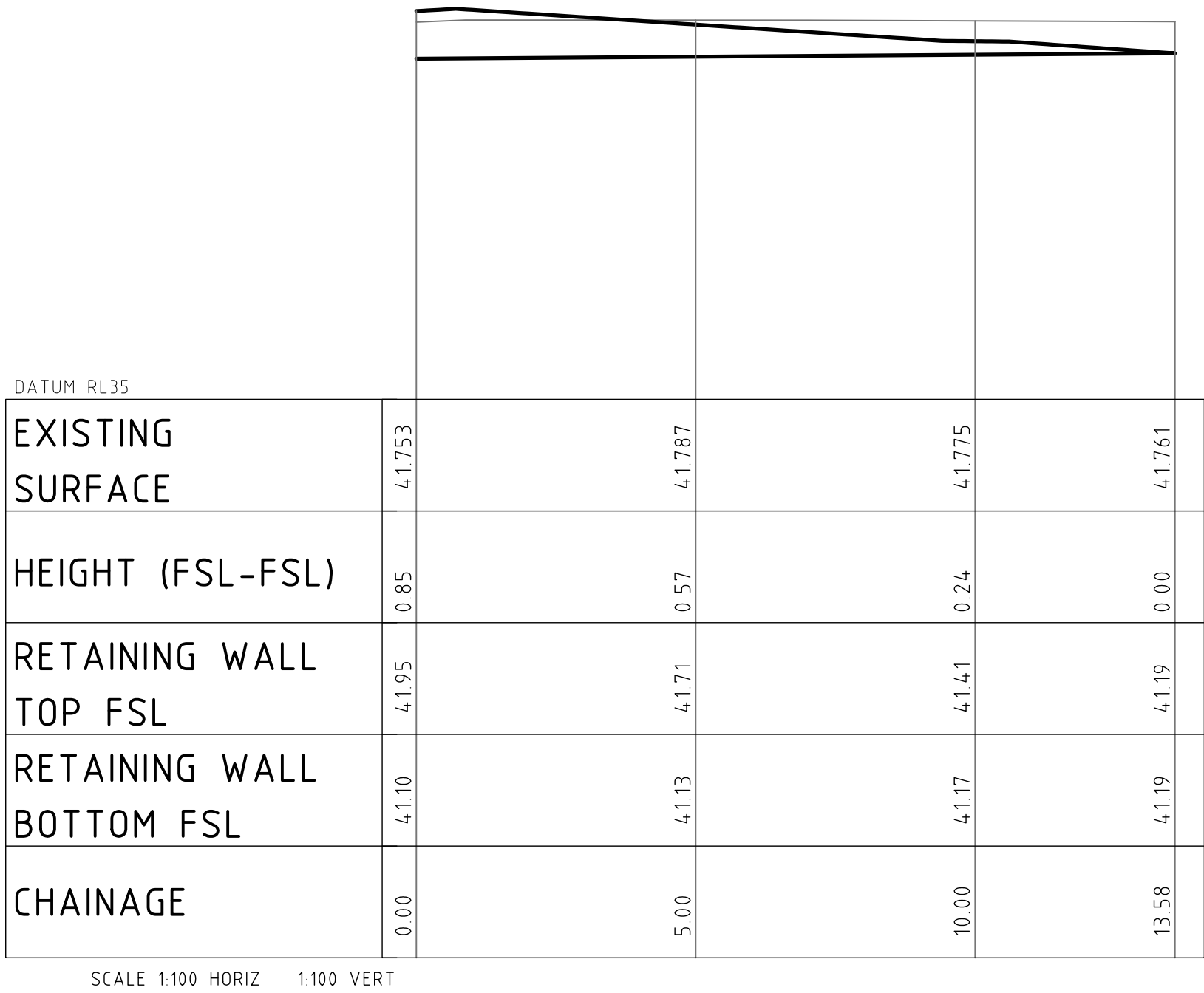
SCALE 1:100 HORIZ 1:100 VERT

ELEVATION OF RW21 BW RETAINING WALL

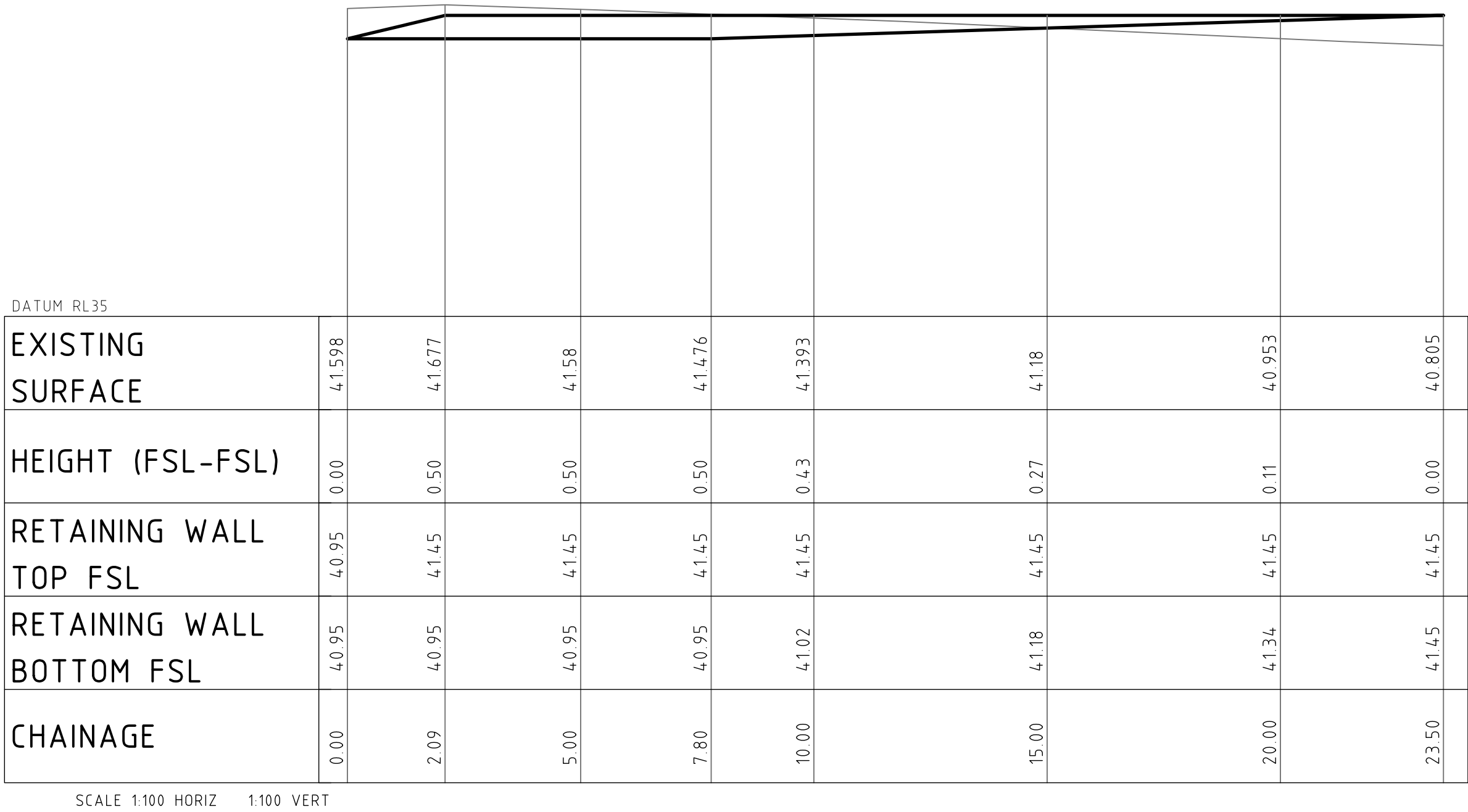
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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.	PROJECT	DRAWING TITLE	JOB NUMBER	
1	ISSUED FOR INFORMATION	JT		JRG	08.04.19	RICHARD CROOKES CONSTRUCTIONS DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	GROUP GSA THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD	NORTHROP Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	ALEX AVENUE PRIMARY SCHOOL	CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE	182535	
2	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19							
3	RE-ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19							
4	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19							
5	ISSUED FOR APPROVAL	JO		JRG	19.11.19							
6	ISSUED FOR APPROVAL	CP		JRG	21.11.19							
									PELICAN ROAD, SCHOFIELDS	RETAINING WALL ELEVATIONS - SHEET 04	DRAWING NUMBER C07.14	REVISION 6
										DRAWING SHEET SIZE = A1		

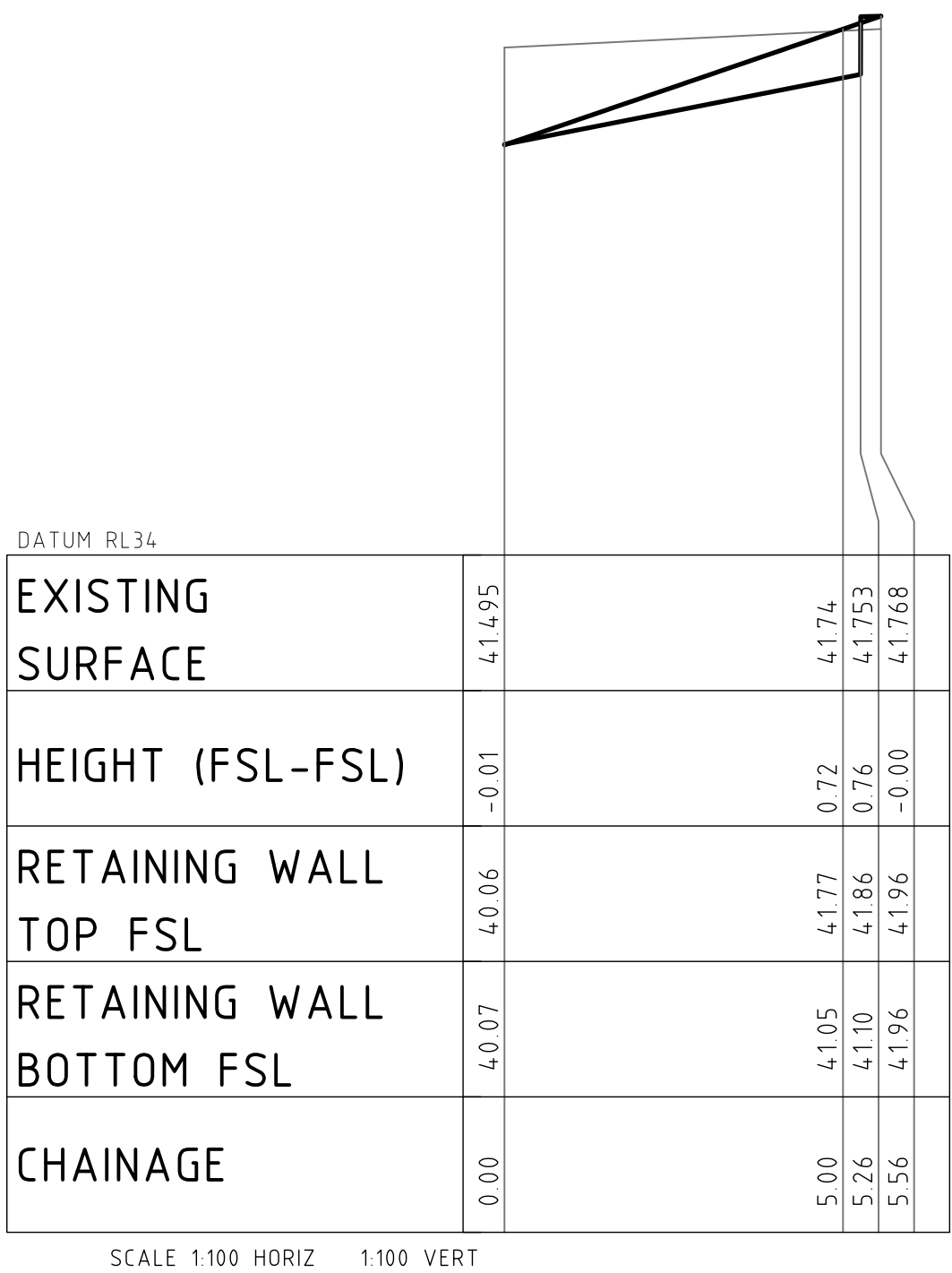
GENERAL NOTES	
1.	REFER SPECIFICATIONS NOTES FOR GENERAL REQUIREMENTS.
2.	CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3.	REFER RETAINING WALL DETAILS.
4.	TOW DENOTES TOP OF WALL
5.	TOF DENOTES TOP OF FOOTING



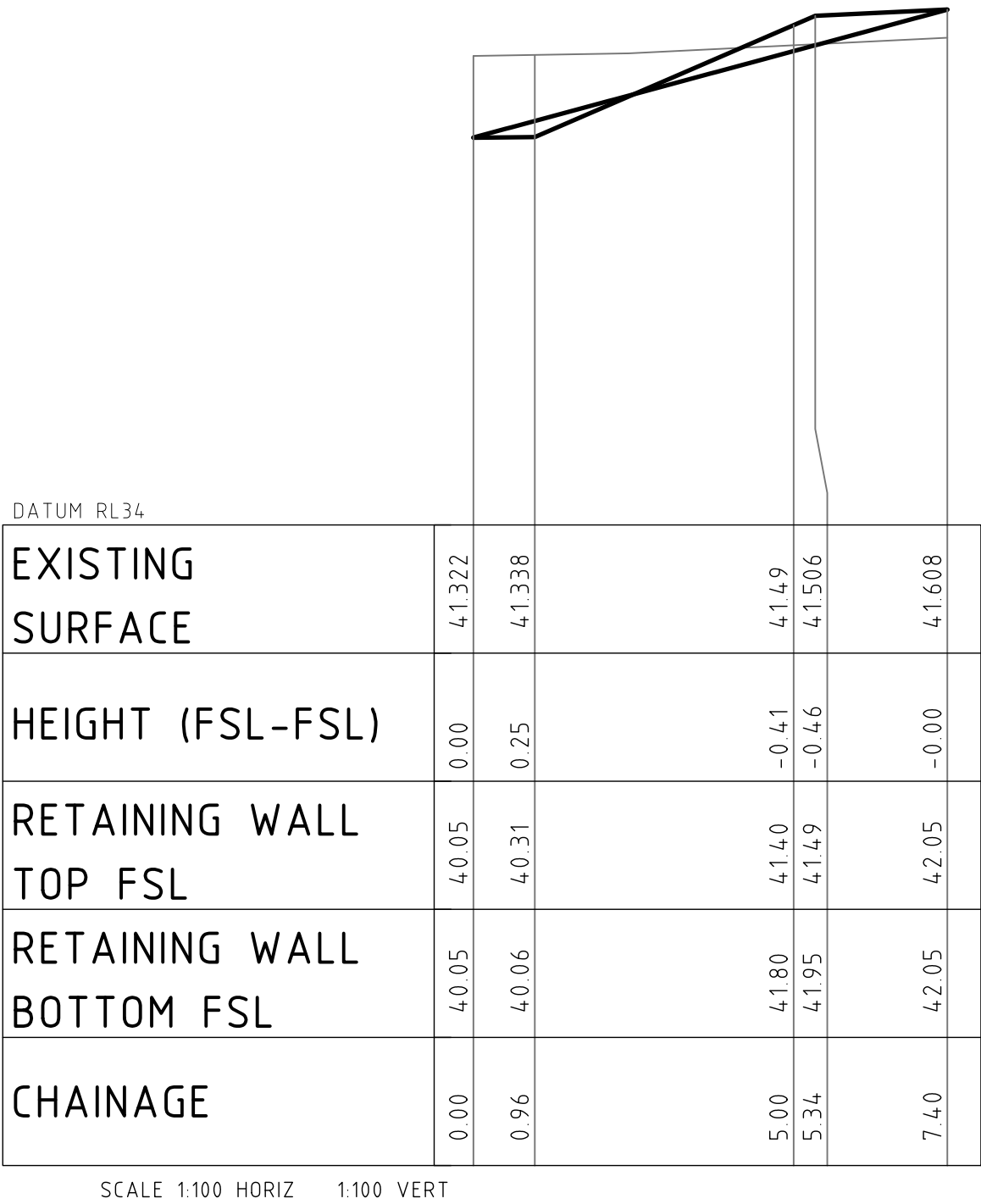
ELEVATION OF RW28 BW RETAINING WALL



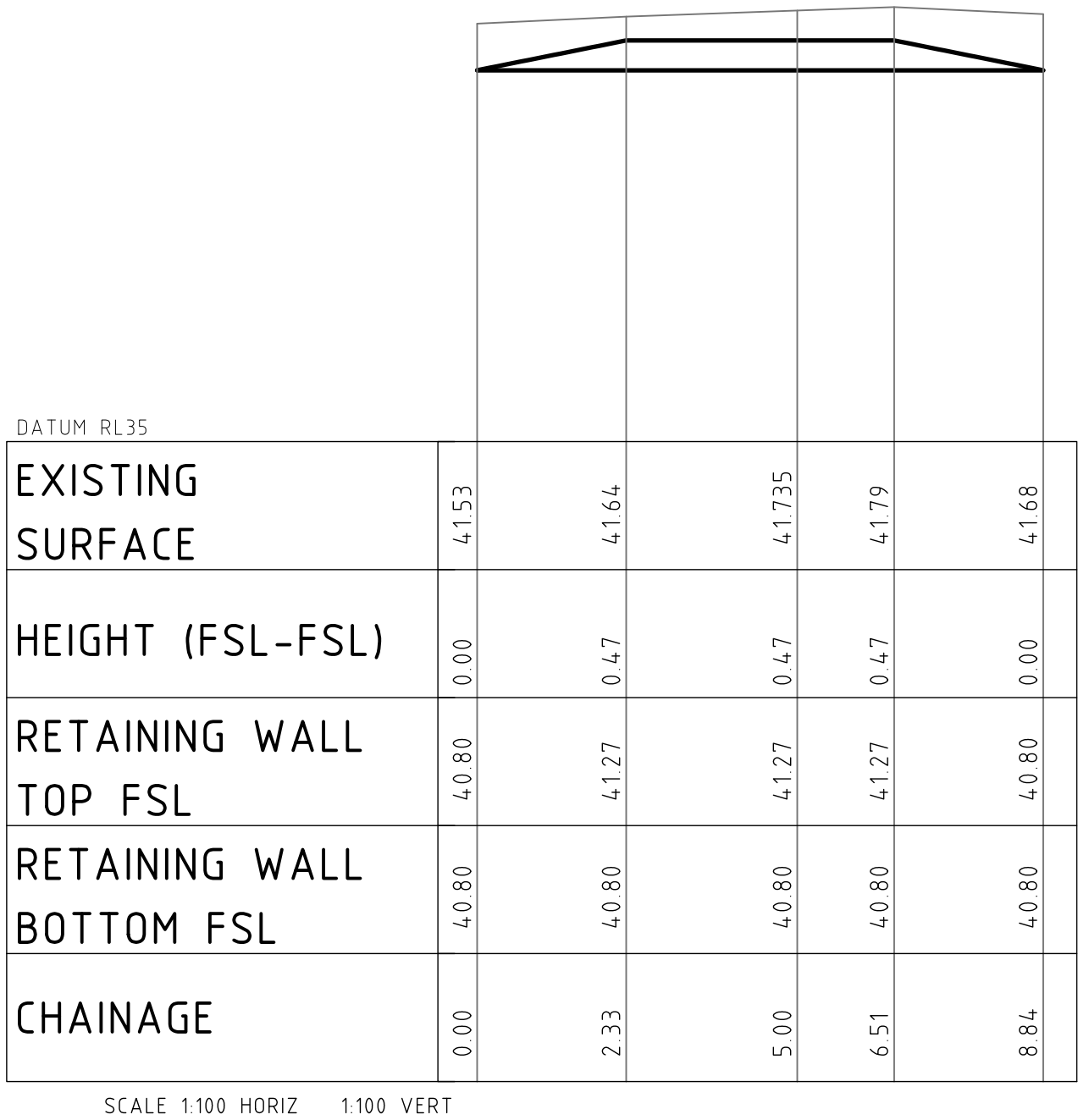
ELEVATION OF RW29 BW RETAINING WALL



ELEVATION OF RW30 BW RETAINING WALL



ELEVATION OF RW31 BW RETAINING WALL

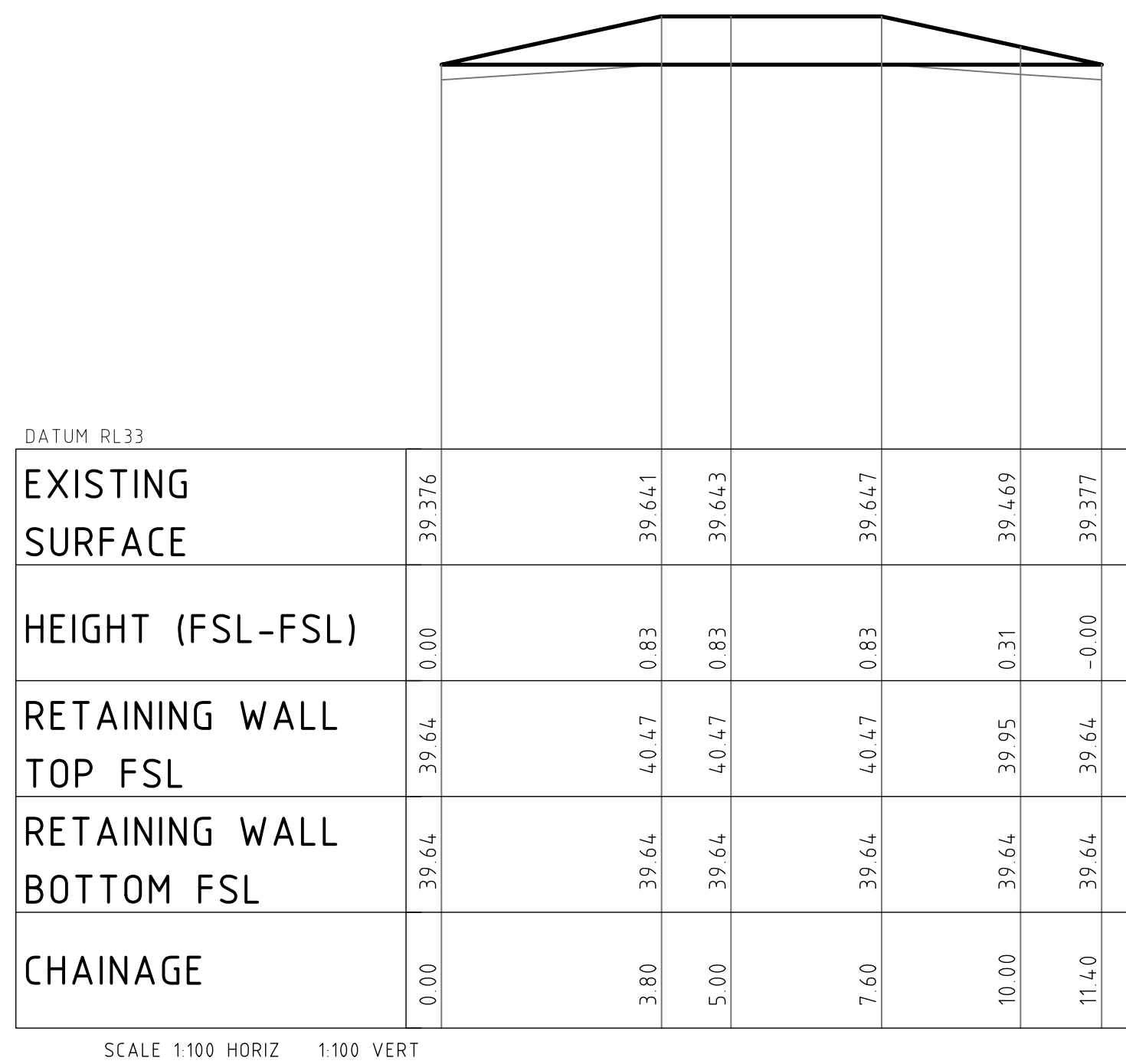


ELEVATION OF RW33 BW RETAINING WALL

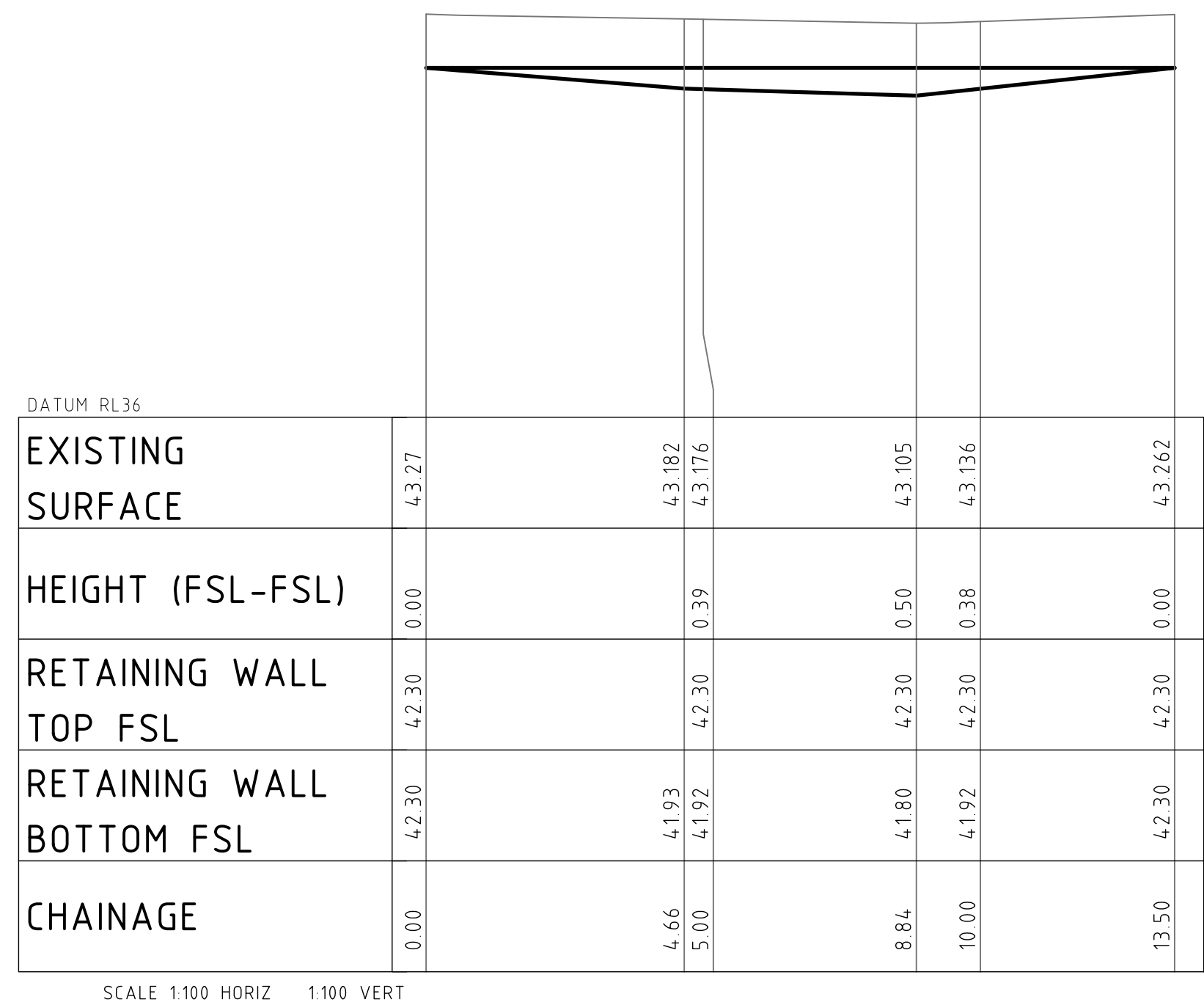
NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT		PROJECT	DRAWING TITLE	JOB NUMBER	
1	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19			ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE	 Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	ALEX AVENUE PRIMARY SCHOOL PELICAN ROAD, SCHOFIELDS	CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE	182535
2	ISSUED FOR APPROVAL	JO		JRG	19.11.19						DRAWING NUMBER	REVISION
3	ISSUED FOR APPROVAL	CP		JRG	21.11.19						C07.16	4
4	ISSUED FOR APPROVAL	VC		JRG	26.02.20						DRAWING SHEET SIZE = A1	
						DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD			RETAINING WALL ELEVATIONS - SHEET 06		

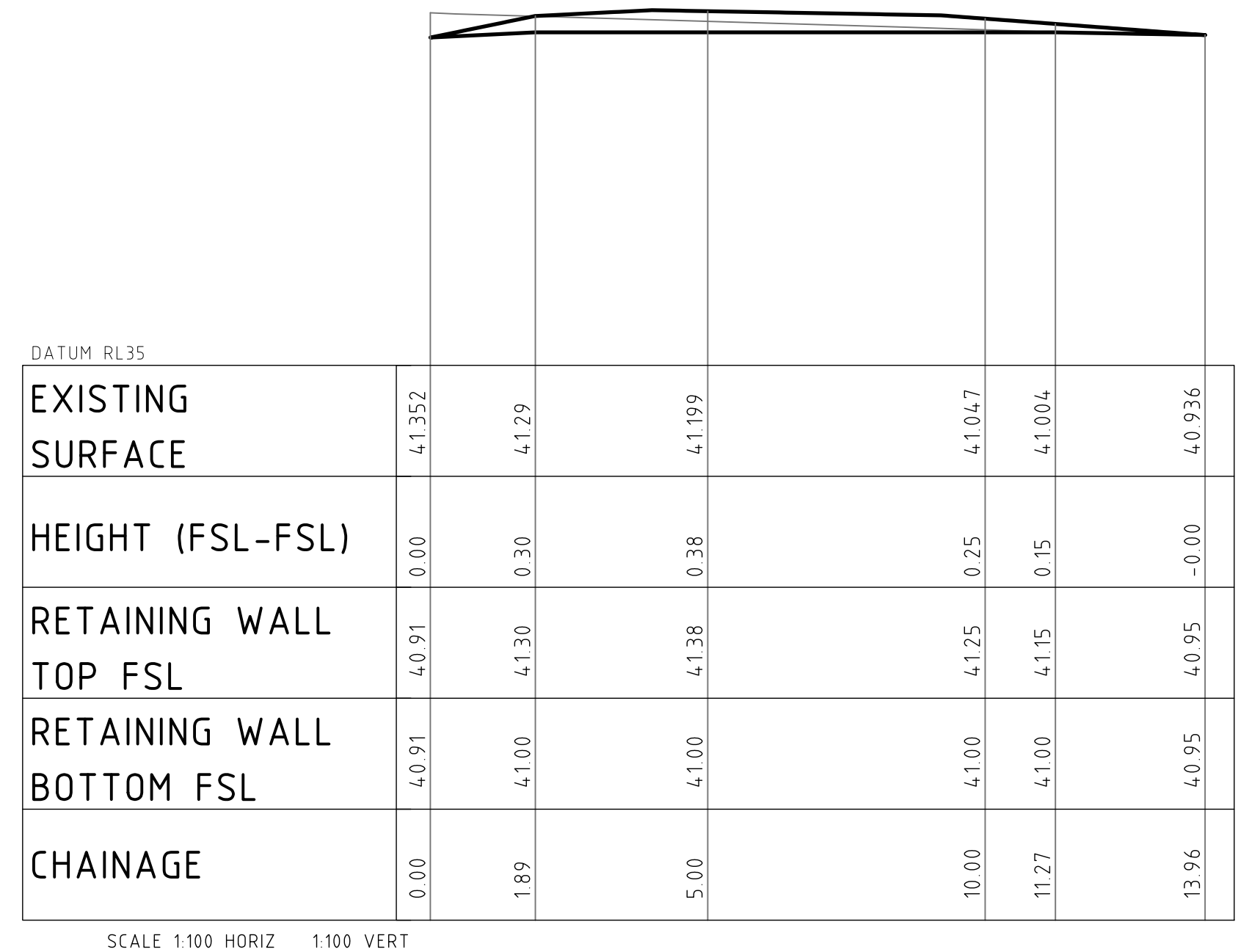
GENERAL NOTES	
1.	REFER SPECIFICATIONS NOTES FOR GENERAL REQUIREMENTS.
2.	CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3.	REFER RETAINING WALL DETAILS.
4.	TOW DENOTES TOP OF WALL
5.	TOF DENOTES TOP OF FOOTING



ELEVATION OF RW34 BW RETAINING WALL



ELEVATION OF RW36 BW RETAINING WALL



ELEVATION OF RW35 BW RETAINING WALL

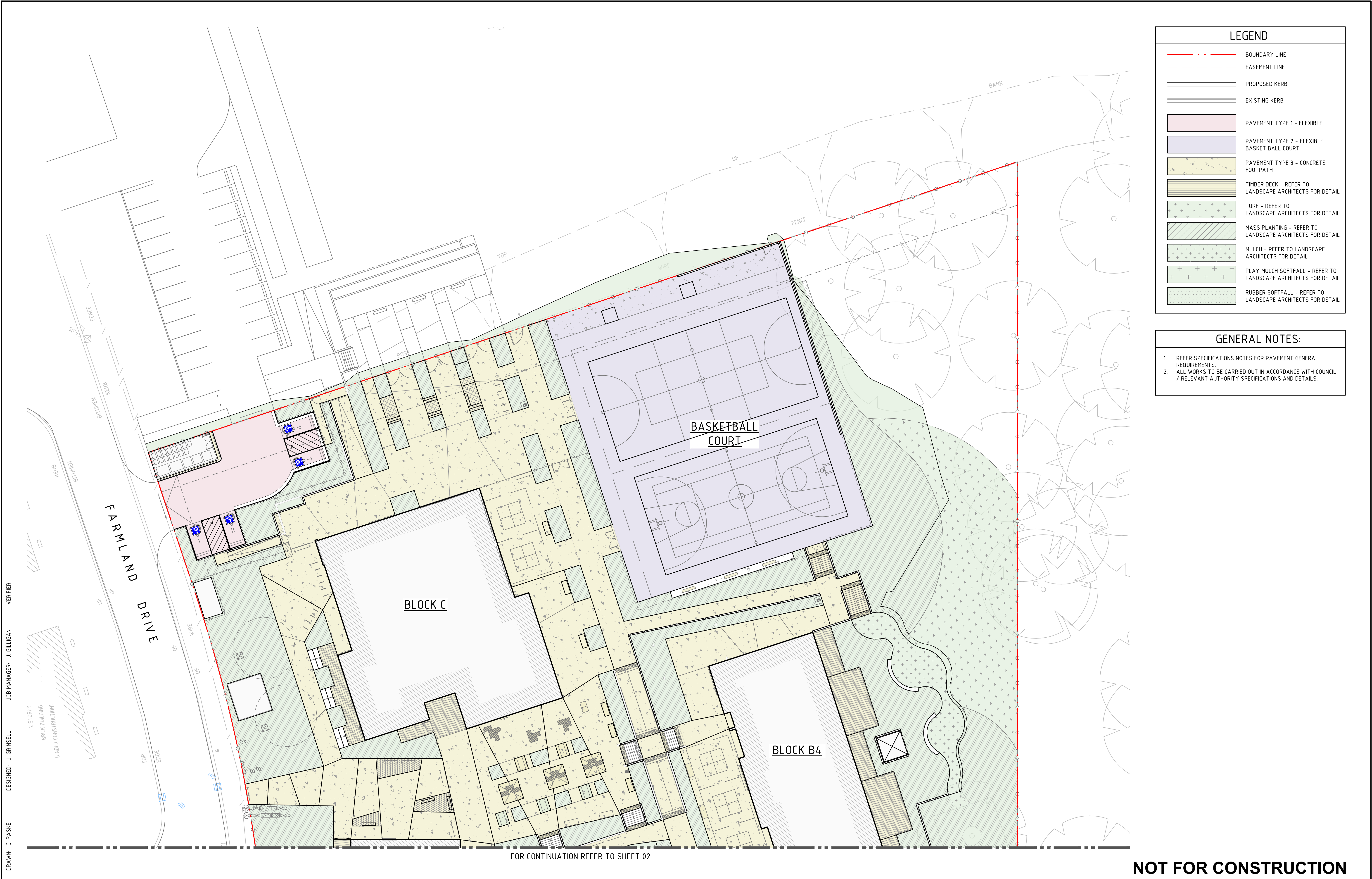
VERIFIER:

JOB MANAGER: J. GILLIGAN

DESIGNED: J. GRINSELL

DRAWN: C. PASKE

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE	PROJECT	DRAWING TITLE	JOB NUMBER	
1	ISSUED FOR APPROVAL	CP		JRG	21.11.20			 Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	ALEX AVENUE PRIMARY SCHOOL	CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE	182535	
2	ISSUED FOR APPROVAL	VC		JRG	26.02.20						DRAWING NUMBER	REVISION
											C07.17	2
						DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD					DRAWING SHEET SIZE - A1



DRAWN: C. PASKE
DESIGNED: J. GRINSELL
JOB MANAGER: J. GILLIGAN
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19
2	RE-ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19
3	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19
4	ISSUED FOR APPROVAL	JO		JRG	19.11.19

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SCALE 1:250@A1

Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT
ALEX AVENUE PRIMARY SCHOOL

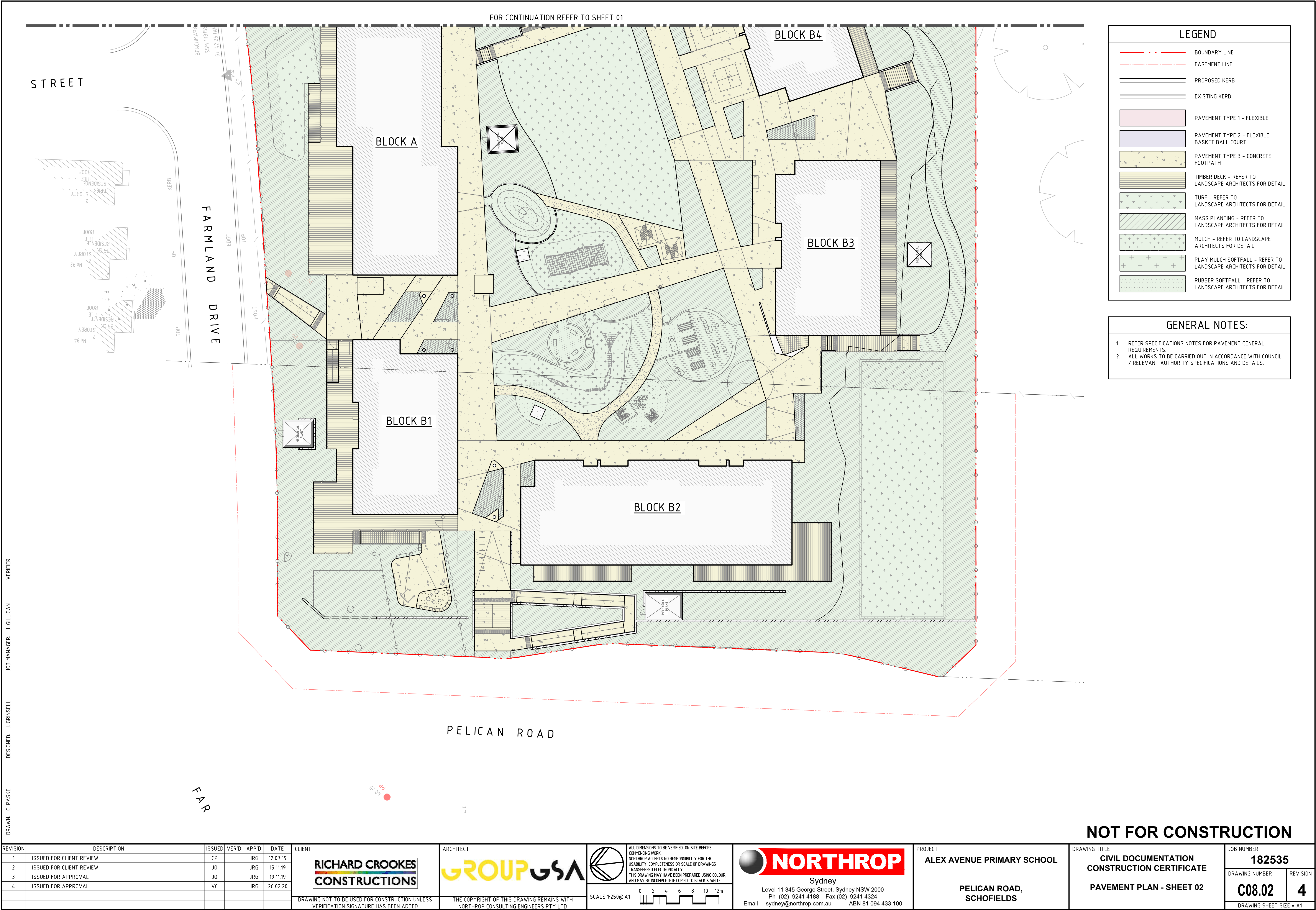
PELICAN ROAD,
SCHOFIELDS

DRAWING TITLE
CIVIL DOCUMENTATION
CONSTRUCTION CERTIFICATE

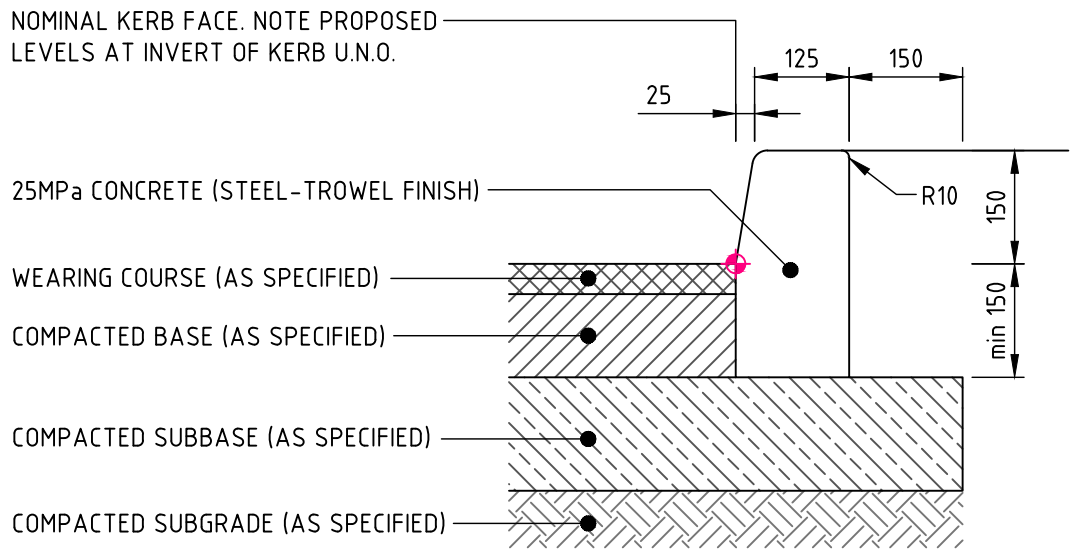
PAVEMENT PLAN - SHEET 01

JOB NUMBER
182535
DRAWING NUMBER
C08.01
REVISION
4
DRAWING SHEET SIZE = A1

NOT FOR CONSTRUCTION

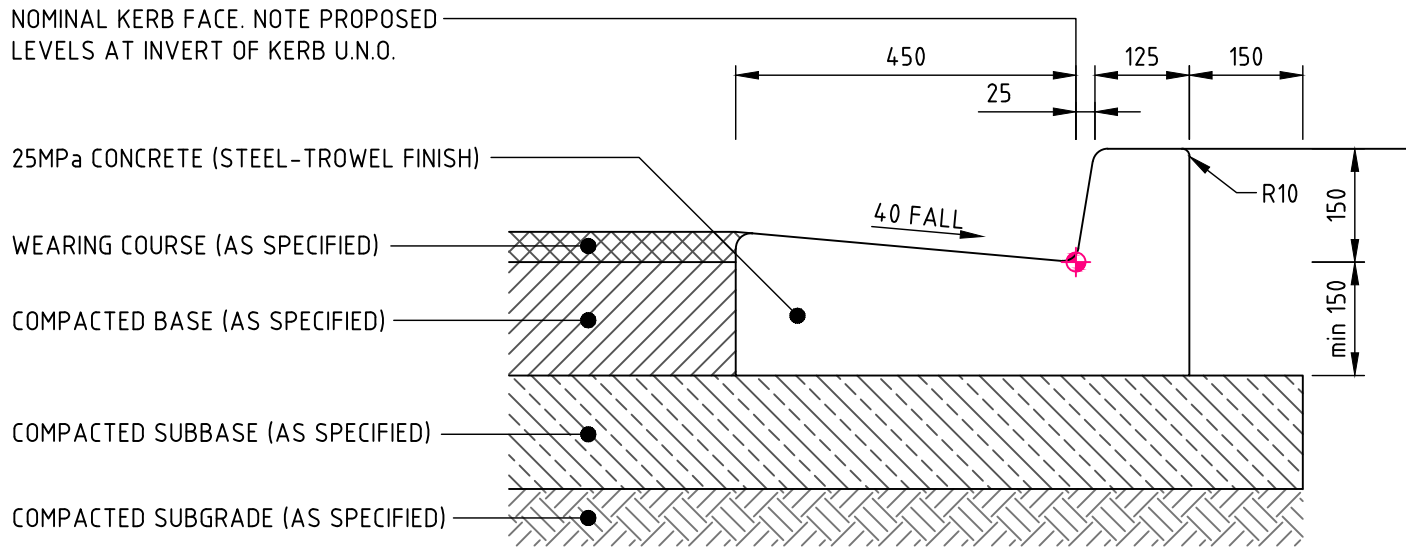


VERIFIER: J. GILLIGAN
JOB MANAGER: J. GRINSELL
DESIGNED: J. GRINSELL
DRAWN: C. PASKE



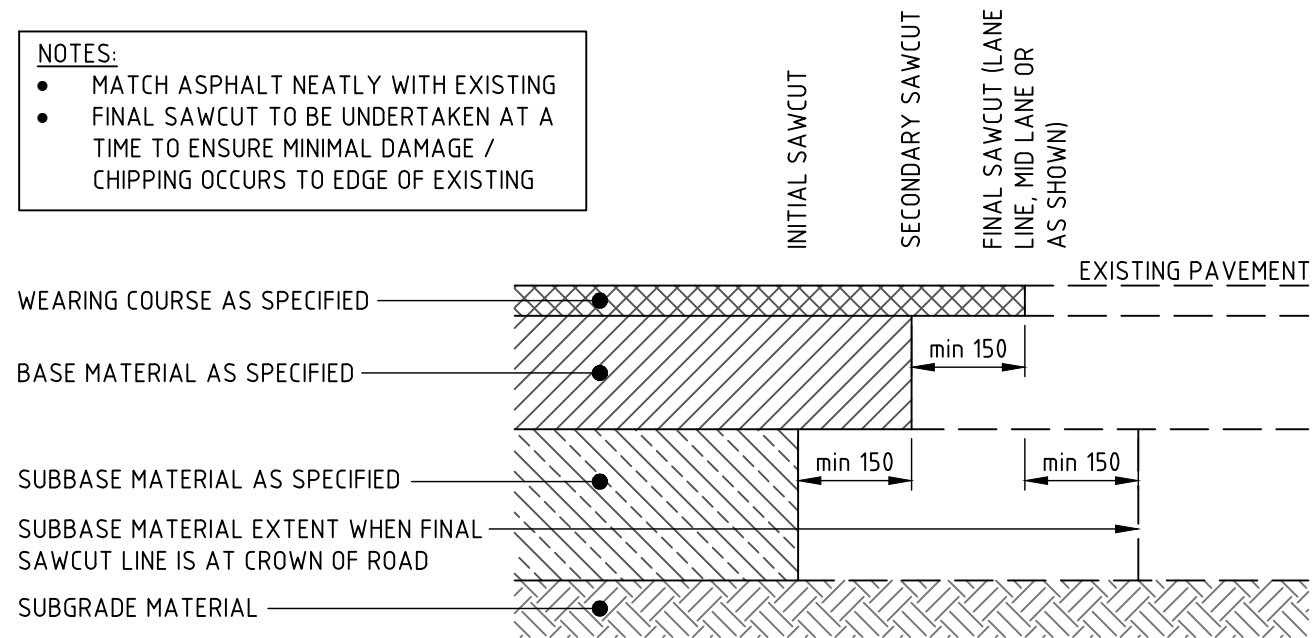
KERB ONLY 'KO'

EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS
ALL RADII TO BE 20mm U.N.O.

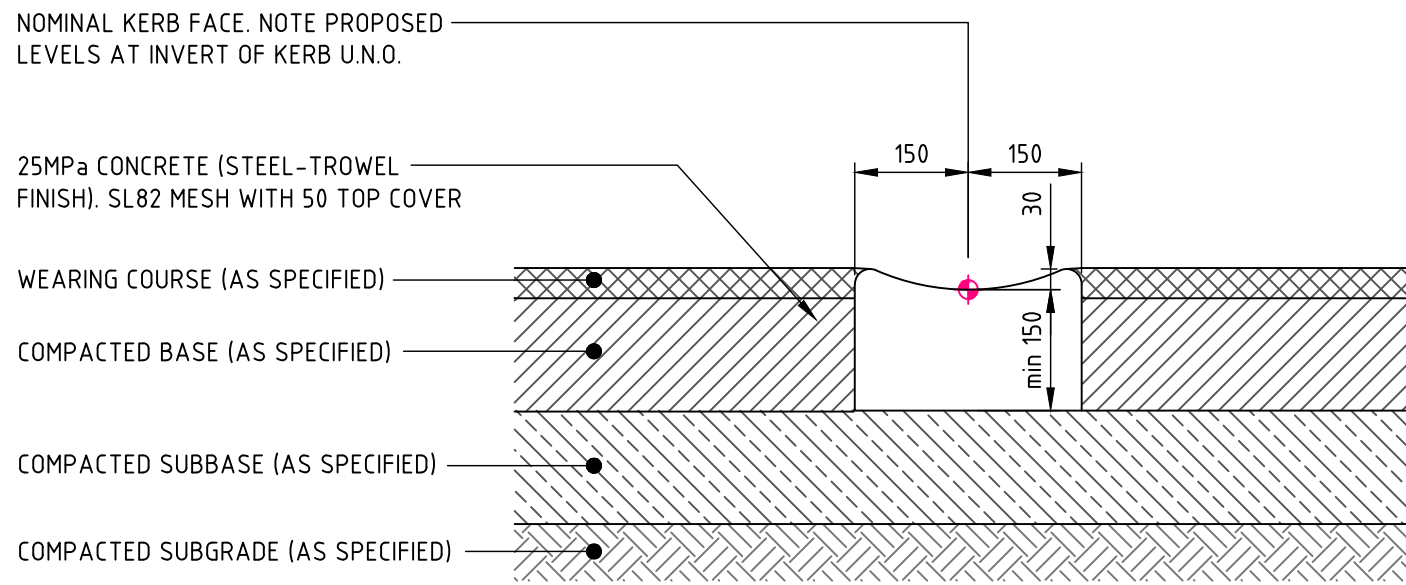


KERB & GUTTER 'KG'

EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS
ALL RADII TO BE 20mm U.N.O.

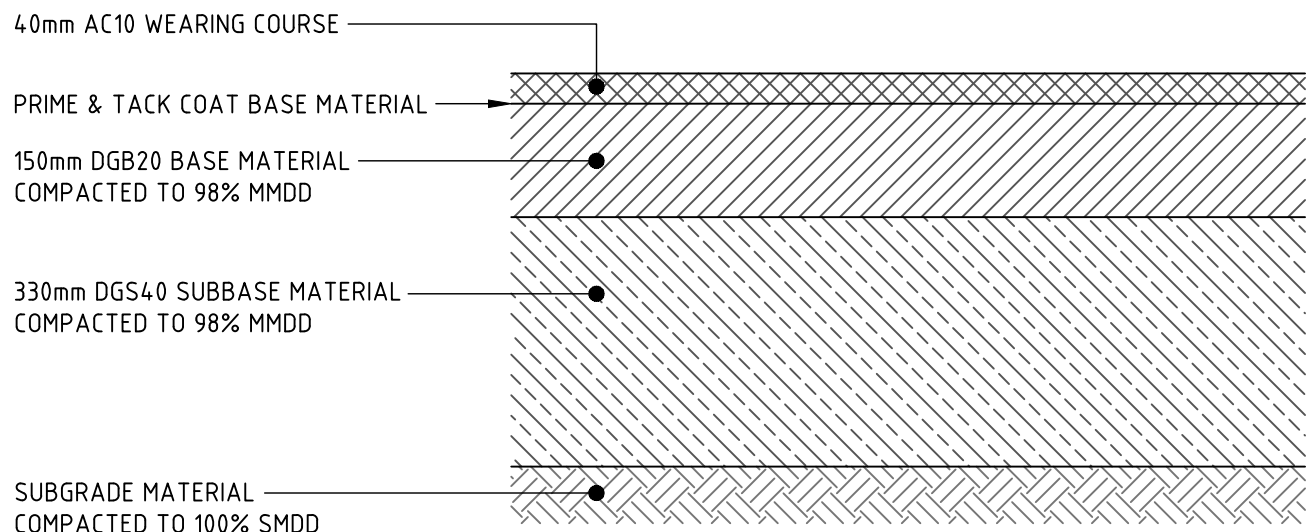


PAVEMENT INTERFACE 'INT'



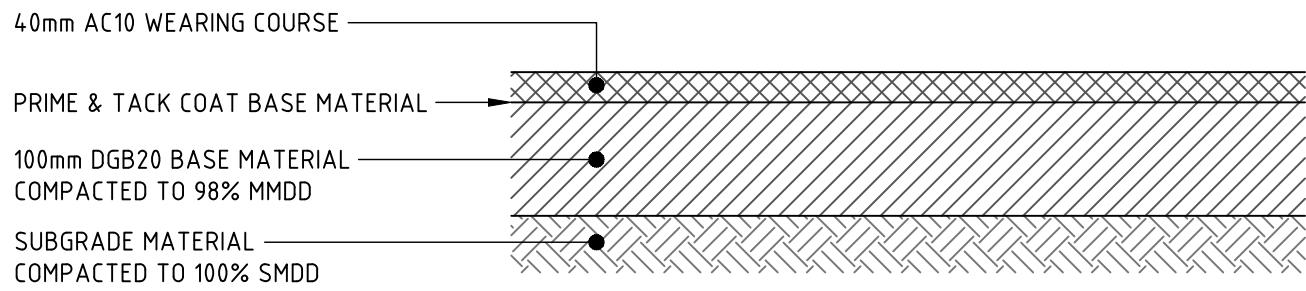
SPOON DRAIN - 300 WIDE 'SD'

EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS
ALL RADII TO BE 20mm U.N.O.



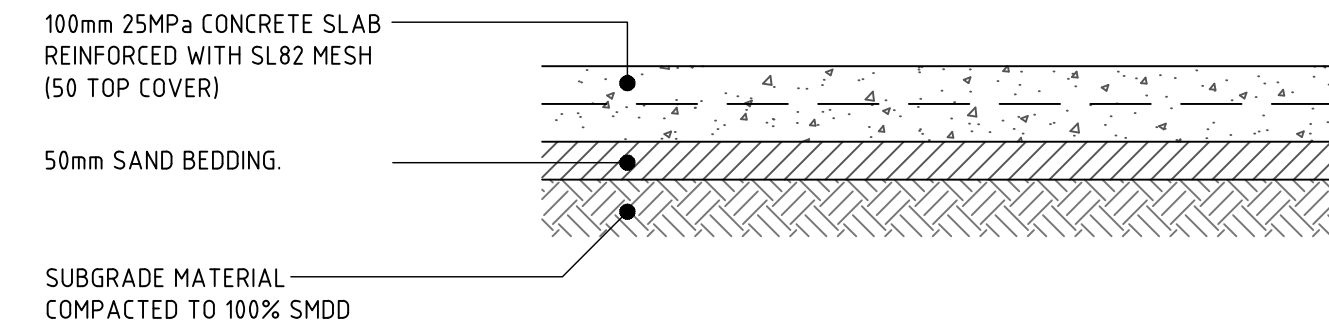
PAVEMENT TYPE '1'

MIN CBR 3% (CONTRACTOR TO CONFIRM ONSITE) DESIGN
LOADING IN ACCORDANCE WITH 'EFSG' SPECIFICATIONS



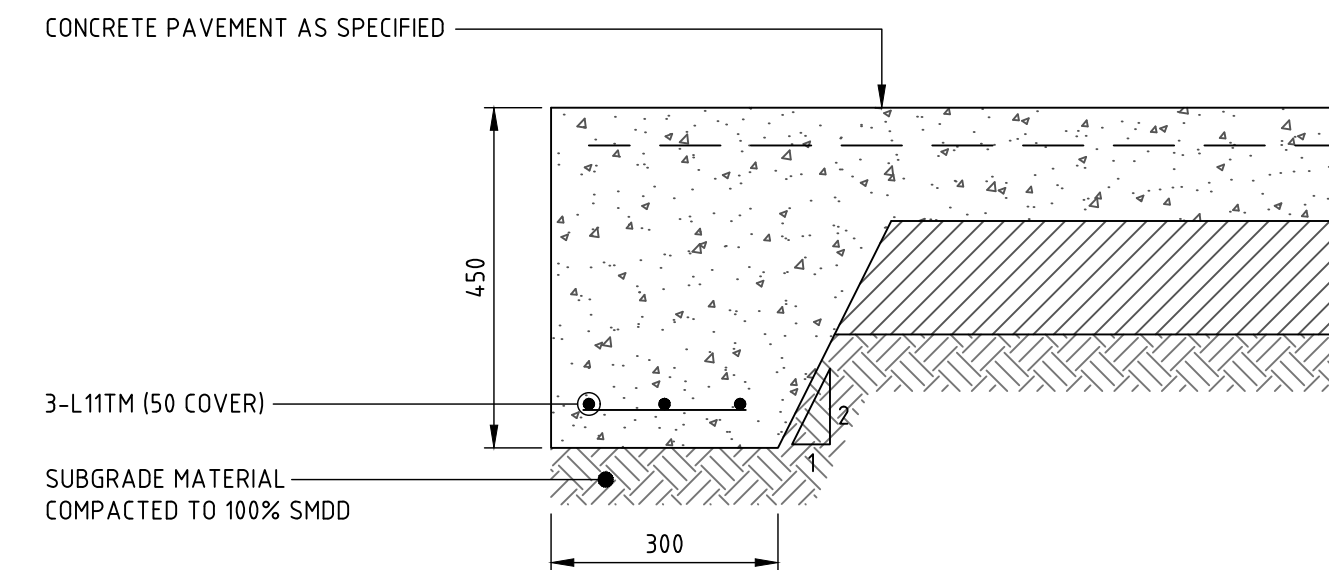
PAVEMENT TYPE '2'

MIN CBR 3% (CONTRACTOR TO CONFIRM ONSITE) DESIGN
LOADING IN ACCORDANCE WITH 'EFSG' SPECIFICATIONS



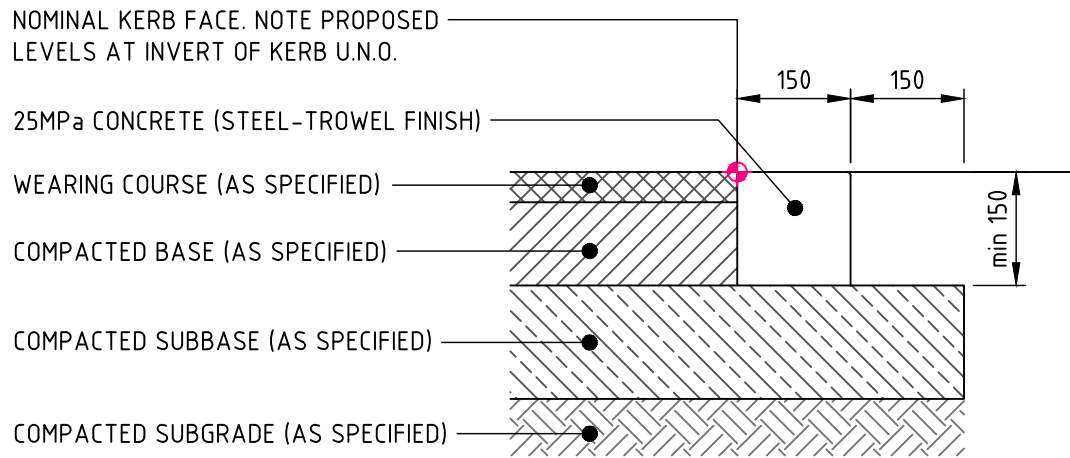
PAVEMENT TYPE '3'

MIN CBR 3% (CONTRACTOR TO CONFIRM ONSITE).
CONTRACTOR TO ALLOW FOR JOINTS - REFER JOINT DETAILS



THICKENED EDGE DETAIL 'TE'

SELECT FILL COMPACTED TO 98% MMDD WHERE FILL IN EXCESS
OF PAVEMENT THICKNESS



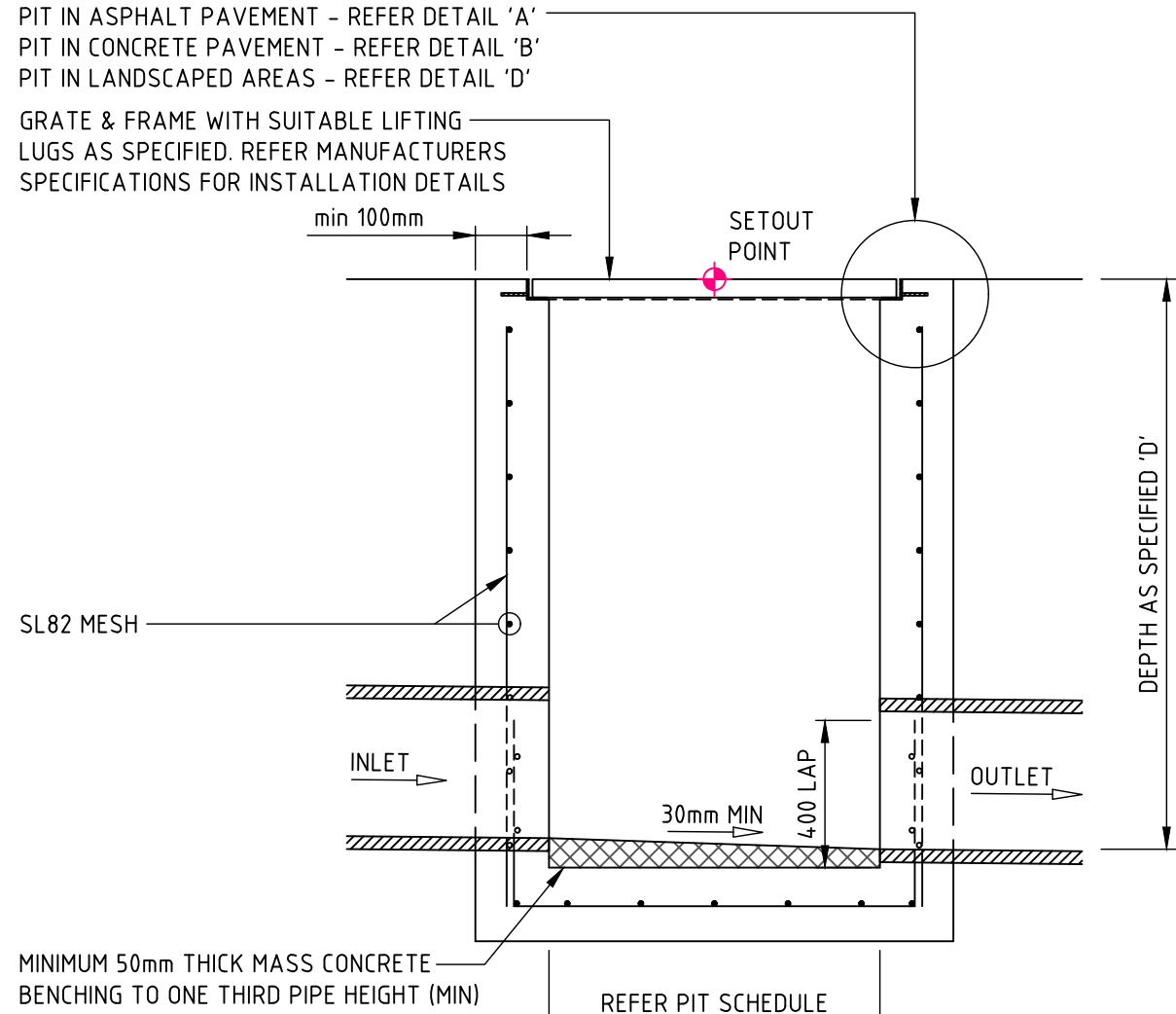
FLUSH KERB 'FK'

EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS
ALL RADII TO BE 5mm U.N.O.

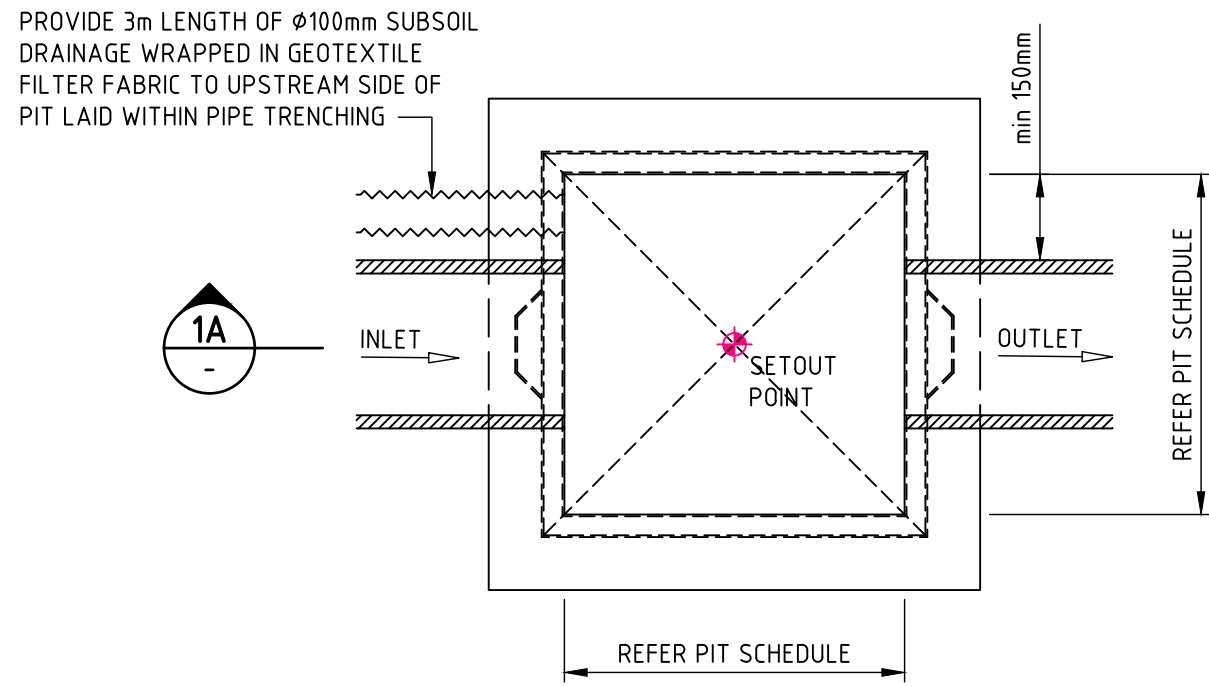
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1	ISSUED FOR INFORMATION	JT		JRG	08.04.19	RICHARD CROOKES CONSTRUCTIONS	GROUP GSA	SCALE 1:10 @ A1	ALEX AVENUE PRIMARY SCHOOL	CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE	182535
2	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19				PELICAN ROAD, SCHOFIELDS	DETAILS - SHEET 01	
3	RE-ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19						
4	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	12.07.19						
5	ISSUED FOR APPROVAL	JO		JRG	19.11.19						
						DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD	0.0 0.1 0.2 0.3 0.4 0.5m			
										DRAWING SHEET SIZE = A1	

DRAWN: C. PASKE
DESIGNED: J. GRINSELL
JOB MANAGER: J. GILLIGAN
VERIFIER:

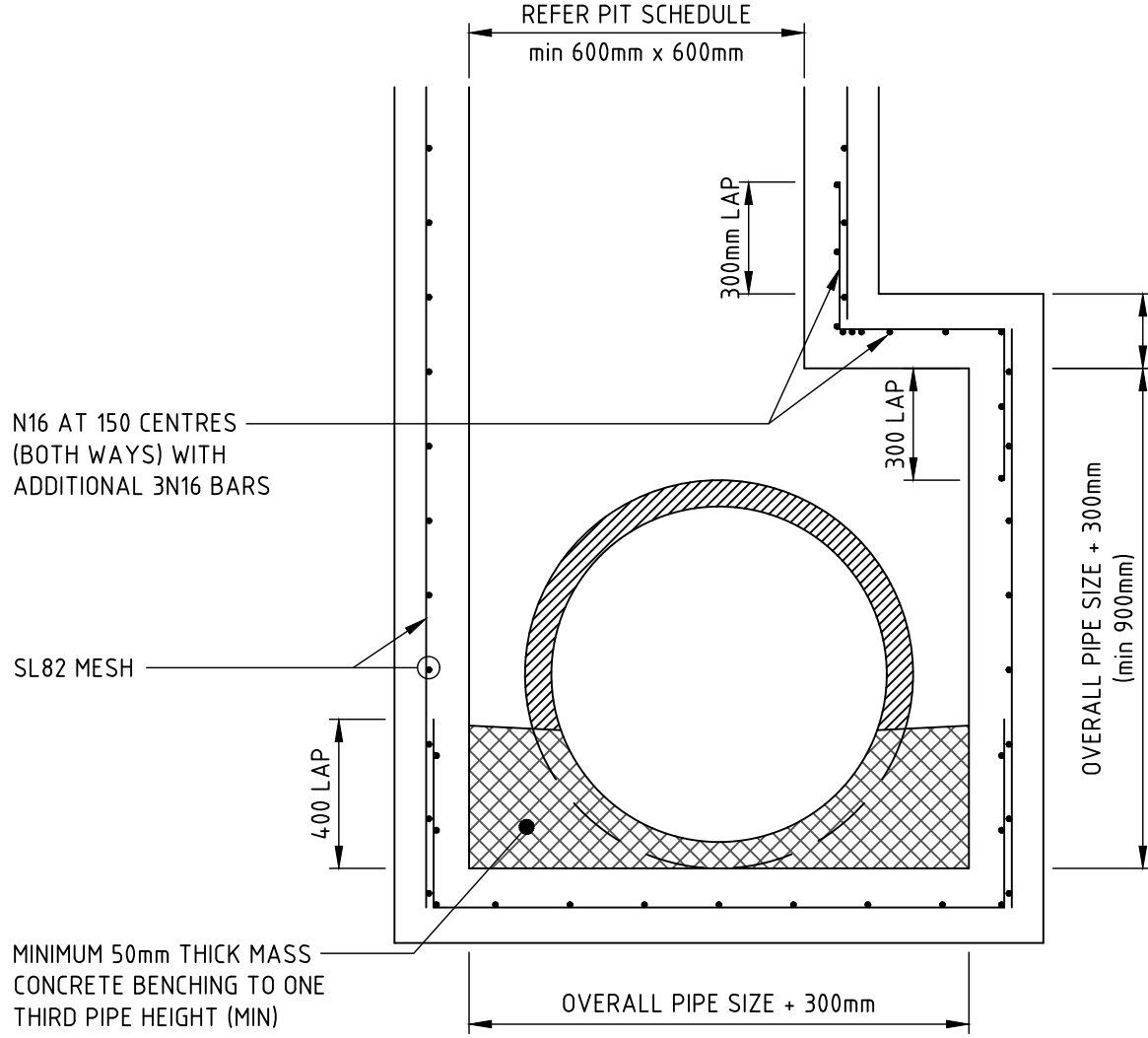


SECTION 1A

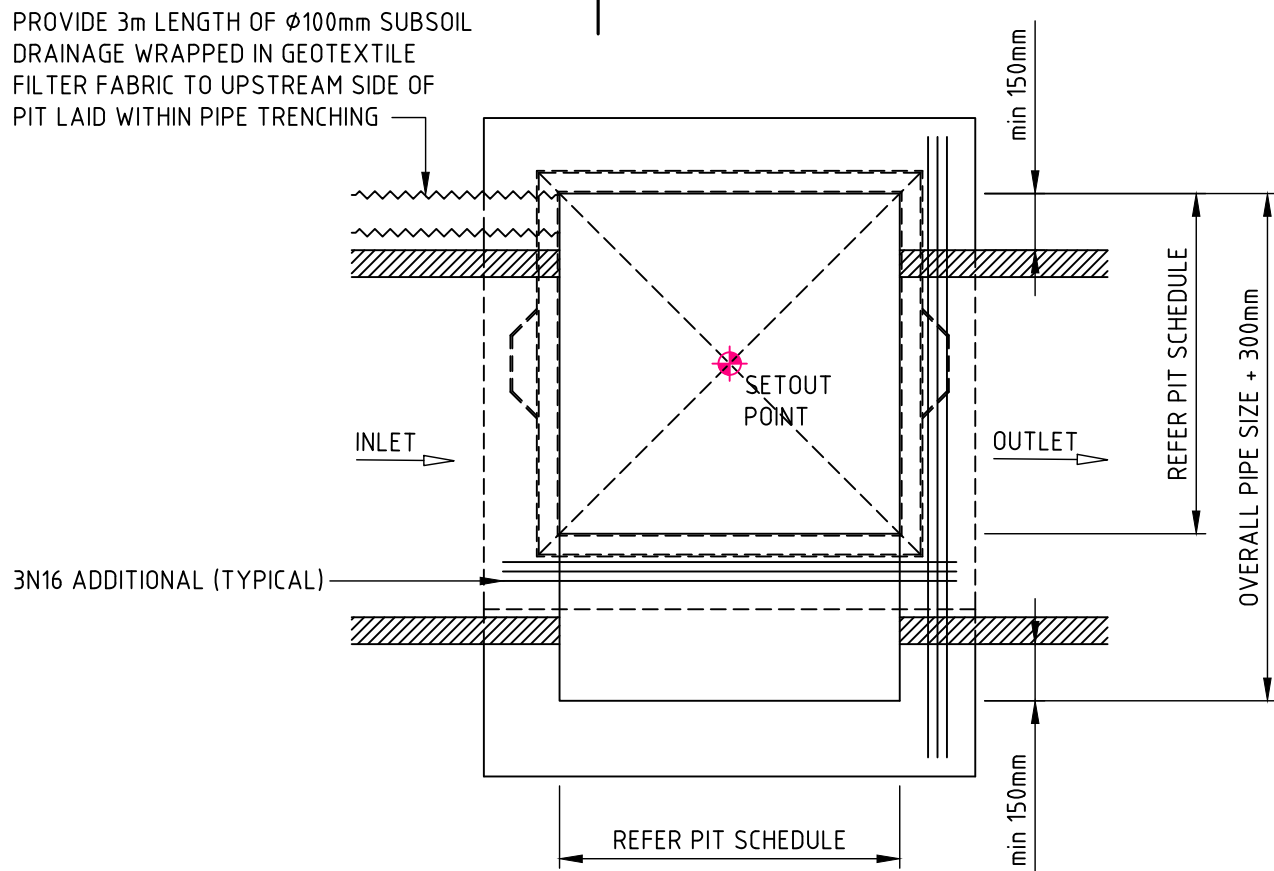


PLAN
SURFACE INLET 'SIP' / JUNCTION PIT 'JP'

PIT STRUCTURE TO BE 200mm THICK UNLESS SHOWN OTHERWISE. DRILL AND EPOXY PLASTIC PROPRIETARY STEP IRONS IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND MANUFACTURERS SPECIFICATIONS (PITS > 1000mm DEPTH).
REFER PIT INTERFACE DETAIL 'F' FOR CORNER REINFORCEMENT

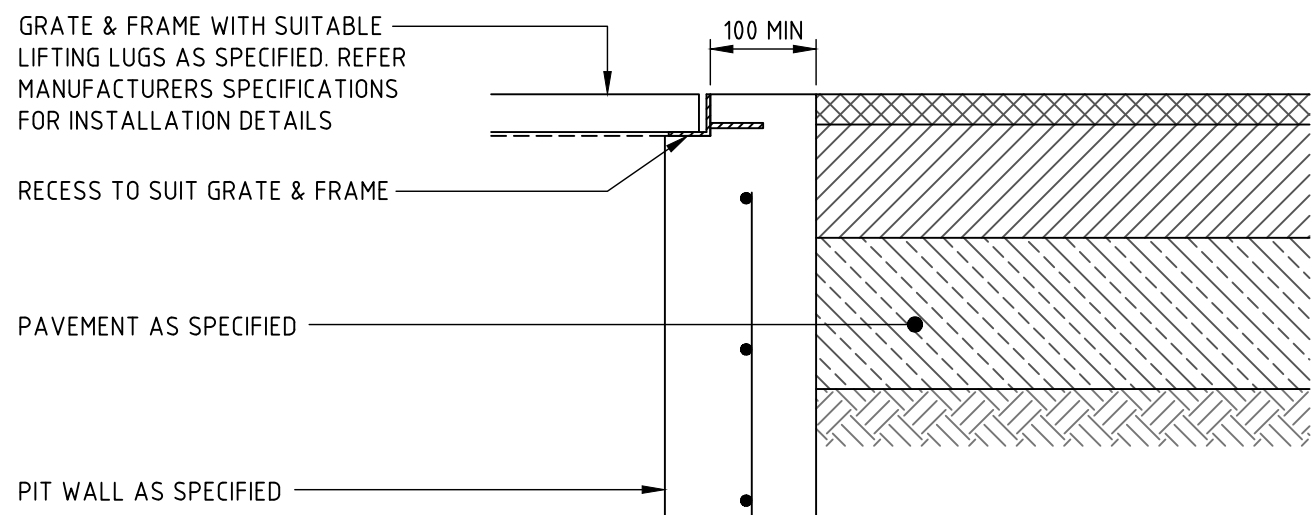


SECTION 1B

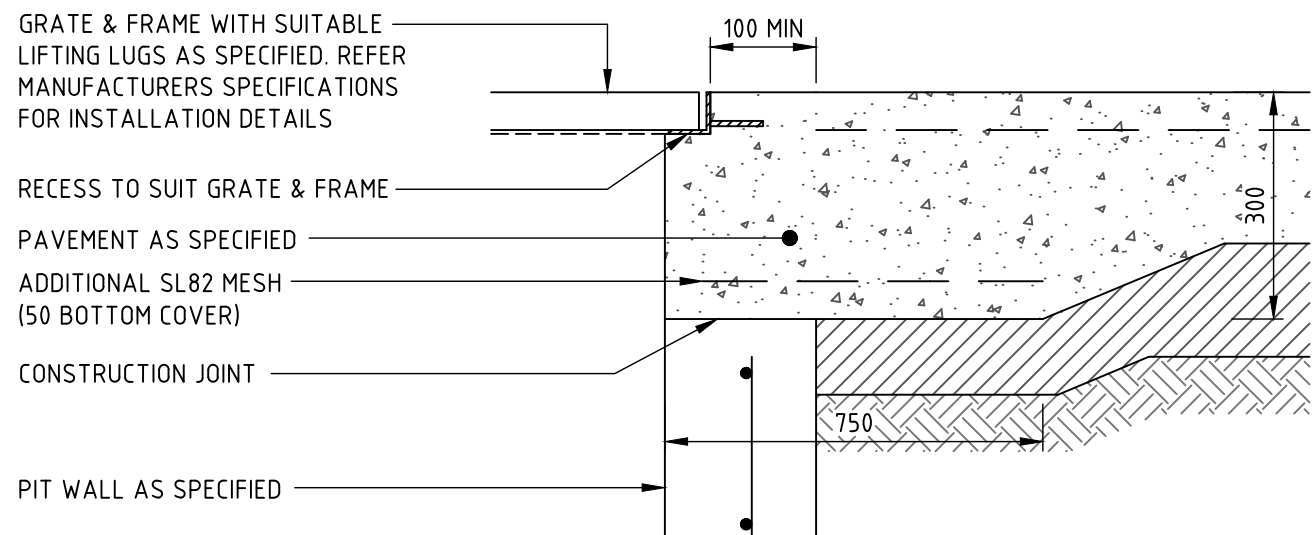


PLAN
DRAINAGE PIT - EXTENDED CHAMBER

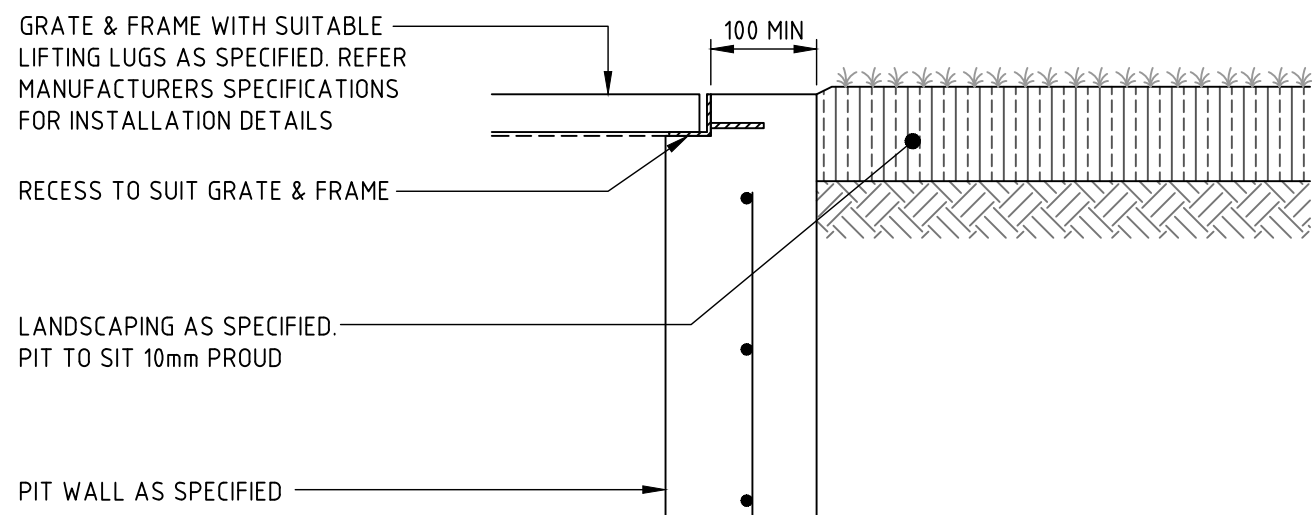
PIT STRUCTURE TO BE 200mm THICK UNLESS SHOWN OTHERWISE. DRILL AND EPOXY PLASTIC PROPRIETARY STEP IRONS IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND MANUFACTURERS SPECIFICATIONS (PITS > 1000mm DEPTH).
REFER PIT INTERFACE DETAIL 'F' FOR CORNER REINFORCEMENT



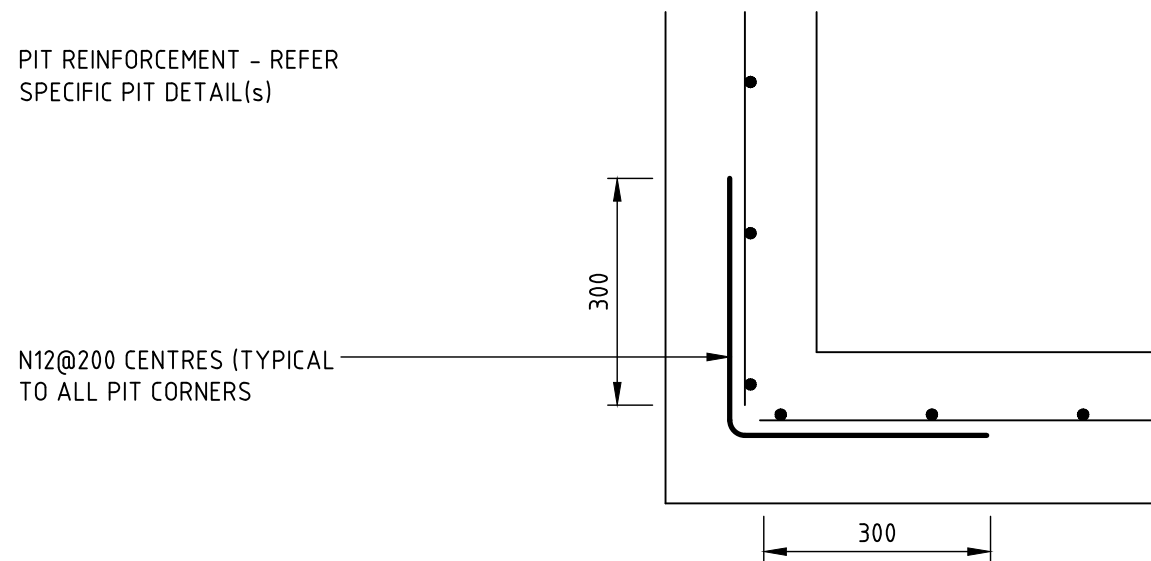
PIT INTERFACE - DETAIL 'A'



PIT INTERFACE - DETAIL 'B'



PIT INTERFACE - DETAIL 'D'



PIT INTERFACE (PLAN VIEW)- DETAIL 'F'

APPLICABLE TO ALL STORMWATER DRAINAGE STRUCTURES

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR CLIENT REVIEW	JO		JRG	20.06.19
2	RE-ISSUED FOR CLIENT REVIEW	CP		JRG	12.07.19
3	RE-ISSUED FOR CLIENT REVIEW	JO		JRG	15.11.19
4	ISSUED FOR APPROVAL	JO		JRG	19.11.19

CLIENT	ARCHITECT
RICHARD CROOKES CONSTRUCTIONS	GROUP GSA
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PROJECT ALEX AVENUE PRIMARY SCHOOL PELICAN ROAD, SCHOFIELDS

DRAWING TITLE CIVIL DOCUMENTATION CONSTRUCTION CERTIFICATE DETAILS - SHEET 02

JOB NUMBER 182535	REVISION 4
DRAWING NUMBER C09.02	DRAWING SHEET SIZE = A1

