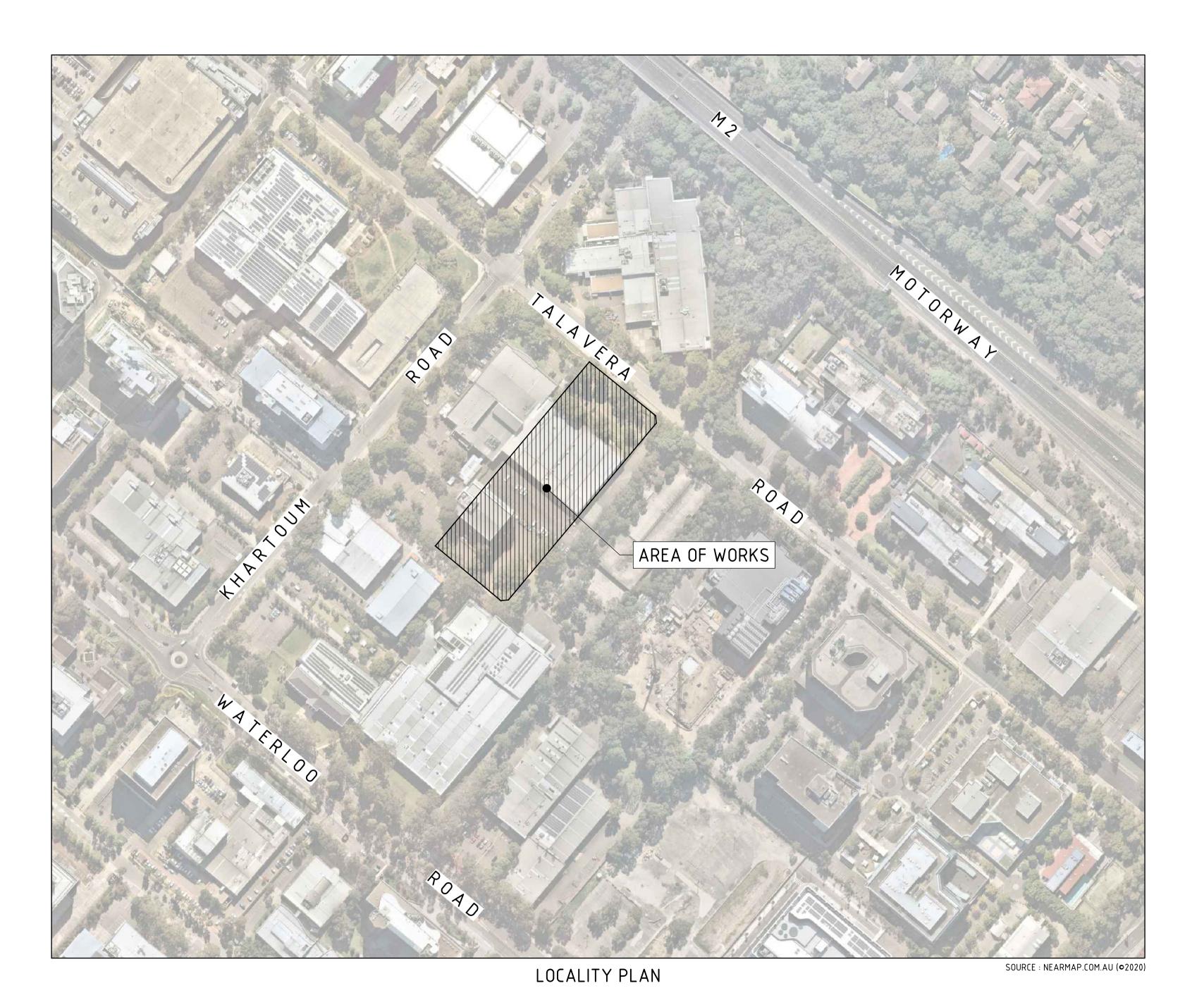
MPARK - BUILDING B

CIVIL ENGINEERING PACKAGE TENDER SUBMISSION





CIVIL DRAWING SCHEDULE

DWG No. DRAWING TITLE

COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN

SPECIFICATION NOTES - SHEET 01

C301.21 GENERAL ARRANAGEMENT PLAN
C302.01 SEDIMENT AND SOIL EROSION CONTROL PLAN
C302.11 SEDIMENT AND SOIL EROSION CONTROL DETAILS
C303.01 BULK EARTHWORKS CUT TO FILL PLAN

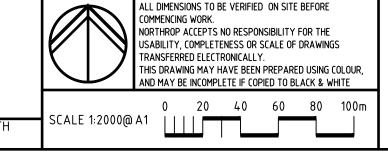
C303.06 BULK EARTHWORKS PLAN

C303.11 BULK EARTHWORKS CUT/FILL SECTIONS - SHEET 01
C303.12 BULK EARTHWORKS CUT/FILL SECTIONS - SHEET 02
C303.13 BULK EARTHWORKS CUT/FILL SECTIONS - SHEET 03
C303.14 BULK EARTHWORKS CUT/FILL SECTIONS - SHEET 04
C306.01 RETAINING WALL ALIGNMENT CONTROL PLAN
C306.21 RETAINING WALL ELEVATIONS - SHEET 01

C312.01 DETAILS - SHEET 01

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CIVIL ENGINEERING PACKAGE
TENDER SUBMISSION

COVER SHEET, DRAWING
SCHEDULE AND LOCALITY PLAN

JOB NUMBER
171708-07
DRAWING NUMBER REVIS

C301.01 A

DRAWING SHEET SIZE = A1

artoum Road Macquarie Park – Building 2 and I

RAWN: C. PASKE

Plotted By: JOHN O

ACCESS AND SAFETY

- 1. THE CONTRACTOR SHALL COMPLY WITH ALL STATUTORY AND INDUSTRIAL REQUIREMENTS FOR PROVISION OF A SAFE WORKING ENVIRONMENT INCLUDING TRAFFIC CONTROL.
- 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.
- THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES ACCESS TO BUILDINGS ADJACENT THE WORKS IS NOT DISRUPTED.
- WHERE NECESSARY THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE OF VEHICLES AND/OR PEDESTRIANS THROUGH OR BY THE
- THE CONTRACTOR SHALL ENSURE PUBLIC ACCESS EXTERNAL TO THE SITE IS IN ACCORDANCE WITH COUNCILS / AUTHORITY / SITE MANAGERS REQUIREMENTS.

TREE PROTECTION

- REFER TO LANDSCAPE PLAN FOR TREES TO BE RETAINED AND PROTECTED.
- ANY EXISTING/PROPOSED 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.
- ENSURING THAT NOTHING IS NAILED TO ANY PART OF THE TREE. 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

- 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 AND OTHER REGULATORY AUTHORITY REQUIREMENTS AND MAKE PAYMENT OF ALL FEES.
- 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.
- THE CONTRACTOR 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 DOWNSTREAM LANDS AND WATERWAYS.
- 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.
- UNDERTAKE SITE DEVELOPMENT WORKS SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF MINIMUM WORKABLE SIZE.
- AT ALL TIMES AND IN PARTICULAR DURING WINDY AND DRY WEATHER, LARGE UNPROTECTED AREAS WILL BE STABILISED / KEPT MOIST (NOT WET) TO KEEP DUST UNDER CONTROL ENSURING CONFORMITY TO REGULATORY AUTHORITY REQUIREMENTS.
- 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.
- 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 AUTHORITIES STORMWATER SYSTEM. ENSURE WHOLE DISTURBED SITE RUN-OFF IS DIRECTED TO TEMPORARY SEDIMENT BASIN.

DESCRIPTION

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 ARE 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.
- 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 ARE NOT AFFECTED BY THE WORKS AND ARE MAINTAINED AND NOT DISRUPTED.
- 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.
- 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.
- 9. THE CONTRACTOR IS TO ALLOW TO POTHOLE ANY SERVICES WITHIN A PUBLIC RESERVE WITHIN THE EXTENT OF WORKS (E.G. STORMWATER CROSSINGS).

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 EARTHWORKS REQUIREMENTS.
- 2. STRIP TOPSOIL, VEGETABLE MATTER AND RUBBLE TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE AS DIRECTED BY THE SUPERINTENDENT.
- 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 OR CERTIFYING ENGINEER.
- 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, THE EXISTING QUARRY AREA etc).
- 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;

LANDSCAPED AREAS ROADS COUNCIL SPECIFICATIONS)

PAVED AREAS

|ISSUED| VER'D | APP'D | DATE

COMPACTION REQUIREMENT 100% SMDD (IN ACCORDANCE WITH 100% SMDD (IN ACCORDANCE WITH COUNCIL SPECIFICATIONS)

- 8. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE UNLESS AGREED DIFFERENTLY WITH THE
- 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
- 10. WHERE TEST RESULTS ARE BELOW THE SPECIFIED COMPACTION. RECOMPACT (TYNING FIRST AS NECESSARY) 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.

EARTHWORKS (cont)

- 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:
- 1.1. BE OF VIRGIN EXCAVATED NATURAL MATERIAL OR 1.2. CONTRACTOR TO PROVIDE EVIDENCE IMPORT IS SUITABLE FOR

1.5. MAXIMUM SIZE 50mm. PASSING 75 MICRON SIEVE (<25%)

- 1.3. PLASTICITY INDEX BETWEEN 2-15% AND CBR > 8 1.4. FREE FROM ORGANIC AND PERISHABLE MATTER
- 2. 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
- 12. 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.

THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE

CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE

DEEP EXCAVATIONS

RECTIFIED AT THEIR COST.

- 13. 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 MATERIAL BEING EXCAVATED AND BENCHING REQUIREMENTS / MINIMUM BATTER SLOPES.
- 14. THE CONTRACTOR MUST PROVIDE THE SUPERINTENDENT AND OR THE DESIGN ENGINEER WITH A COPY OF THE GEOTECHNICAL ENGINEERS REPORT PRIOR TO PRACTICAL COMPLETION.
- 15. THE CONTRACTOR IS TO PROVIDE SAFETY BARRIERS, FENCING AND THE LIKE IN ACCORDANCE WITH OH&S AND REGULATORY AUTHORITY REQUIREMENTS AND TO ENSURE THE WORK SITE IS SAFE AT ALL

LANDSCAPING

REFER TO DRAWINGS BY OTHERS FOR DETAILS OF PROPOSED LANDSCAPING TREATMENT.

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.

4.1. <u>PAVEMENTS</u>

- 4.1.1. POOR SUBGRADE CONDITIONS PROOF ROLLING OF SUB-GRADE 4.1.2.
- PLACEMENT OF SUB-BASE COURSE, BASE COURSE AND 4.1.3. WEARING COURSE.
- PLACEMENT OF STEEL REINFORCEMENT DOWELS AND JOINT 4.1.4. CRADLES PRIOR TO POURING OF CONCRETE

4.2.3.

4.3.3.

4.2. <u>EARTHWORKS</u> 4.2.1. TOPSOIL STRIP 4.2.2. EARTHWORKS BATTER

FILLING

- 4.3. STORMWATER DRAINAGE DRAINAGE TRENCHES PRIOR TO BACKFILLING LEGAL POINT OF CONNECTION PRIOR TO BACKFILLING 4.3.2.

ANY OTHER DRAINAGE STRUCTURE THAT MAY BE CONCEALED

CONCRETE STRUCTURES

DURING THE COURSE OF THE WORKS

- 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 PRACTISING 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. DATE.....

POSITION..

- 8. 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.
- 9. IF THE WORKS ARE SUBJECT TO APPROVAL BY THE UPPER PARRAMATTA RIVER CATCHMENT TRUST (UPRCT) THE CONTRACTOR IS TO ABIDE BY THE UPRCT APPROVAL CHECKLIST.
- 10. CONTRACTOR IS TO UNDERTAKE A CCTV INSPECTION OF ALL STORMWATER DRAINAGE PIPELINES AND PROVIDE TO THE ENGINEER FOR
- 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
- 12. EACH TEST CERTIFICATE WILL NOMINATE THE DATE AND TIME OF THE TEST AND PROVIDE A LOCATION OF WHERE THE TEST SAMPLE WAS
- 13. 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.
- 14. 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.

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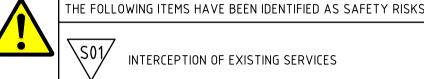
PLEASE BE ADVISED 12D DESIGN FILE, IF SUPPLIED, IS DEEMED TO BE AN ACCURATE REFLECTION OF NORTHROP'S DESIGN AT THE TIME OF FINAL DESIGN DEVELOPMENT AND MAY NOT FULLY REFLECT THE DESIGN SURFACE AS PRESENTED. HOWEVER THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INCORPORATION IN THE CONSTRUCTION WORKS.

YOU ARE FURTHER ADVISED THAT ISSUED HARDCOPY/PDF PLANS AND DOCUMENTS TAKE PRECEDENCE OVER THE SUPPLIED ELECTRONIC INFORMATION AND ANY INCONSTANCIES SHOULD IMMEDIATELY BE REPORTED TO NORTHROP CONSULTING ENGINEERS FOR VERIFICATION PRIOR TO THEIR INCORPORATION IN THE WORKS.

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





VEHICULAR TRAFFIC

DEEP TRENCHES

FALL DURING CONSTRUCTION

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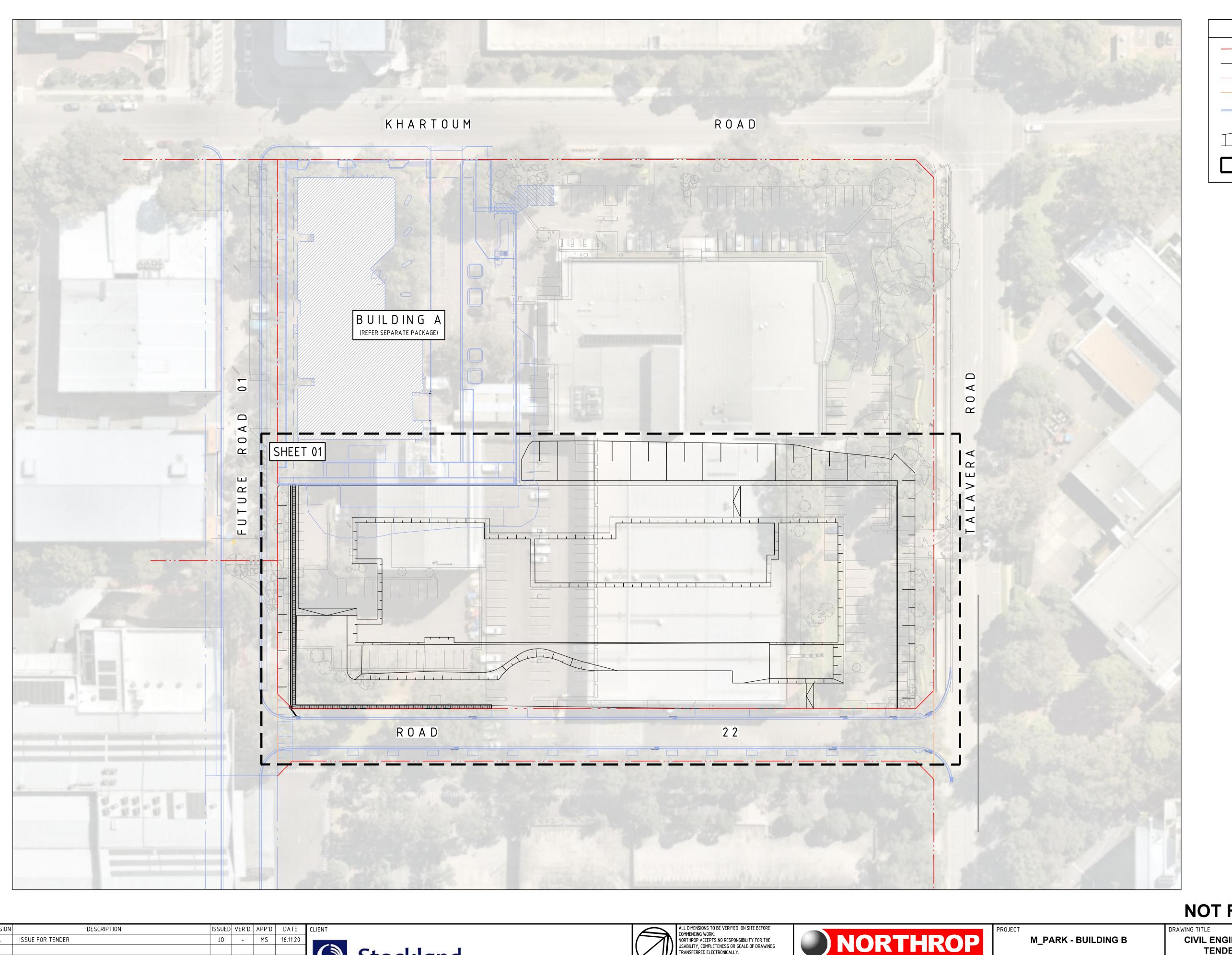
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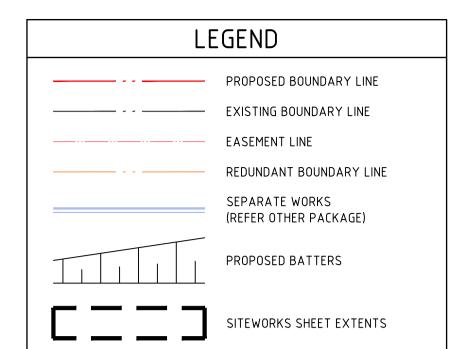
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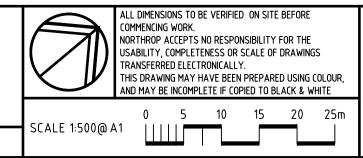
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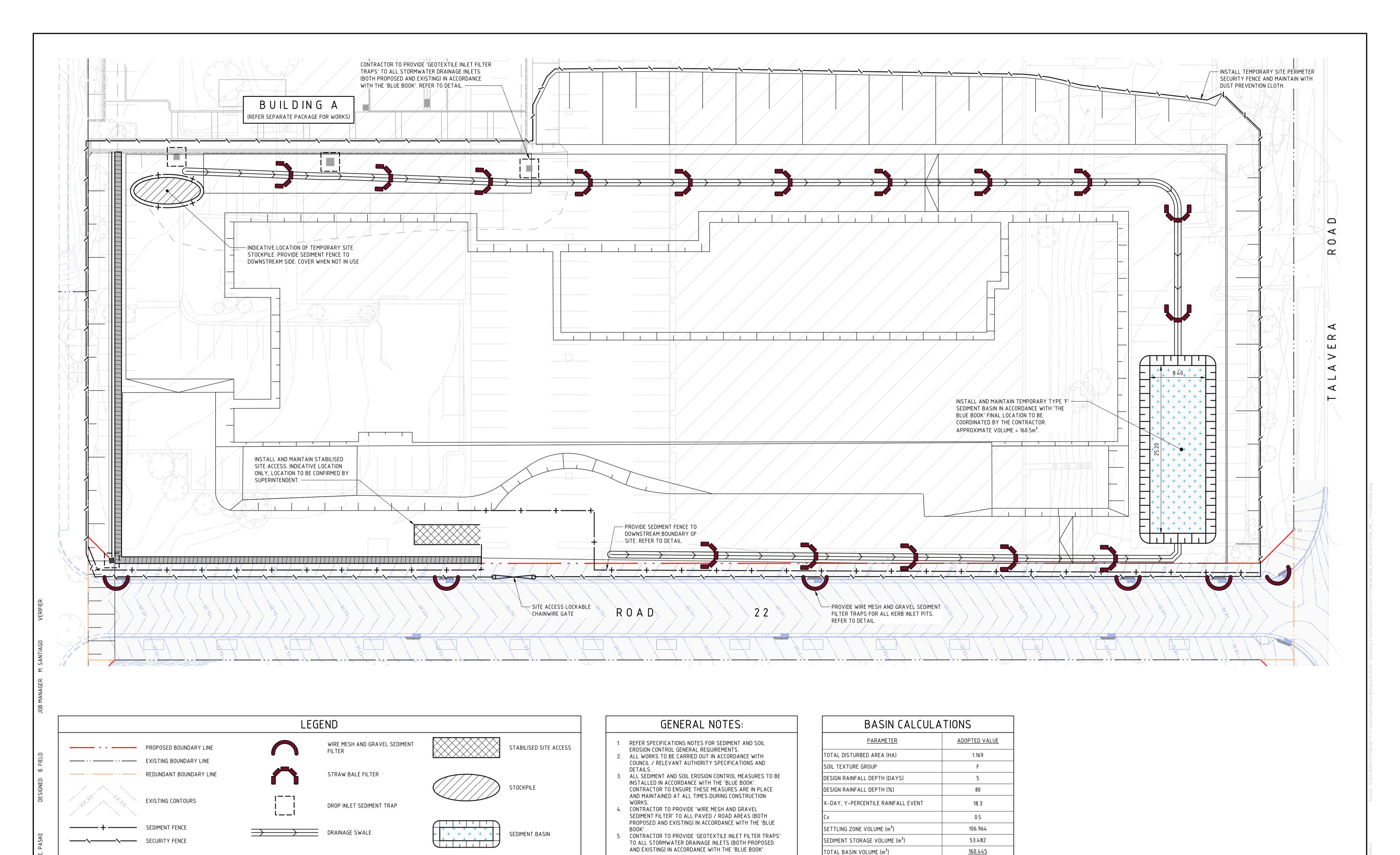
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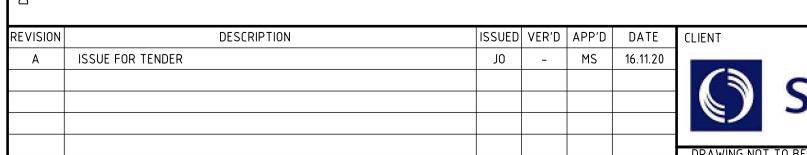
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CIVIL ENGINEERING PACKAGE **TENDER SUBMISSION** GENERAL ARRANAGEMENT PLAN

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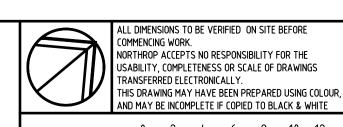
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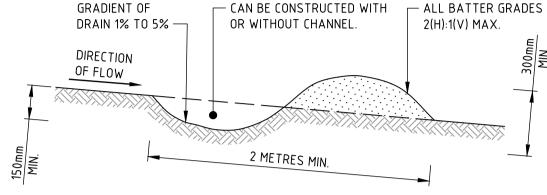
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SEDIMENT AND SOIL EROSION CONTROL PLAN

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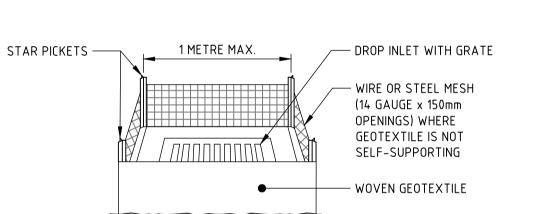
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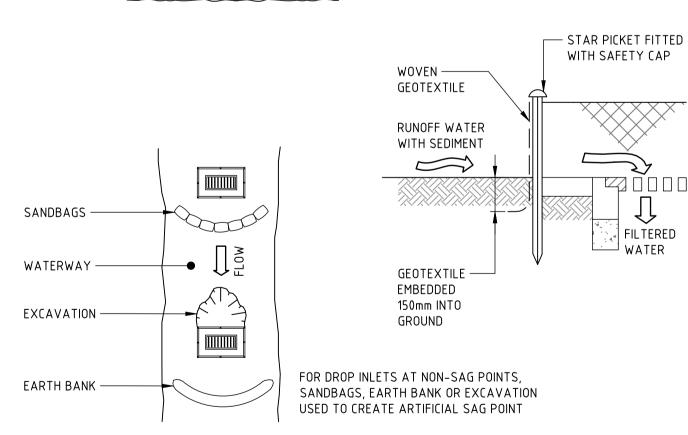


CONSTRUCTION NOTES

- PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
- CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
- 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 (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE

STOCKPILES (SD 4-1)





CONSTRUCTION NOTES

- 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
- 4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS

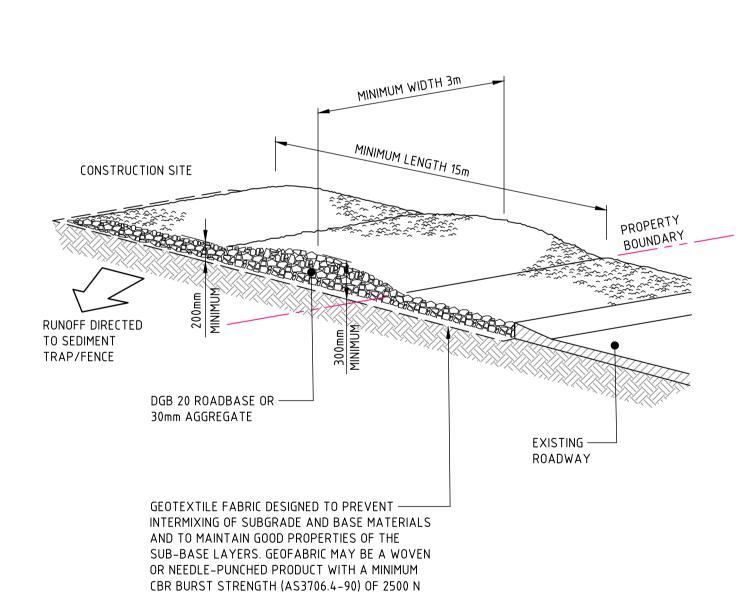
GEOTEXTILE INLET FILTER (SD 6-12)

CONSTRUCTION NOTES

- 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. EARTH BANK - LOW FLOW (SD 5-5)



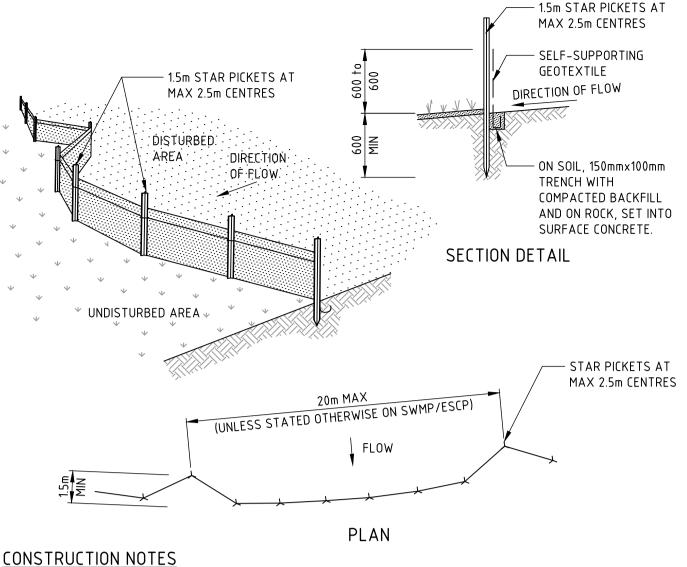
CONSTRUCTION NOTES

- 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
- 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 (SD 6-14)

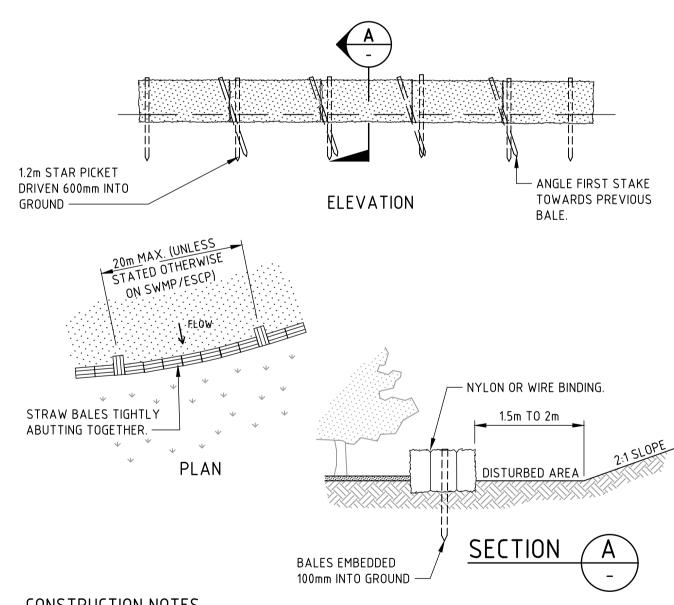
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- CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER 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 1.5 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.

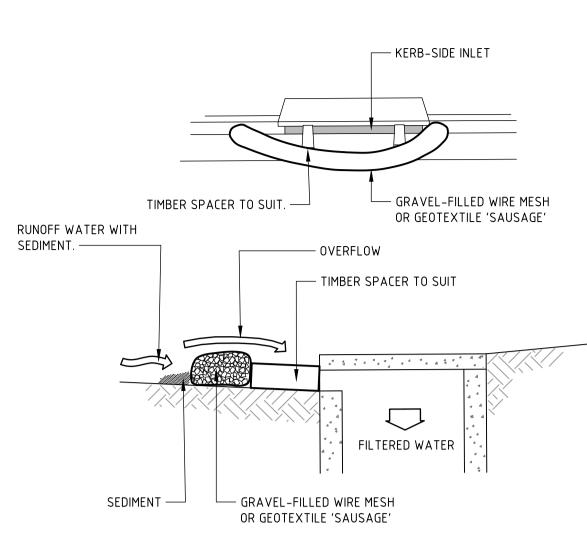
SEDIMENT FENCE (SD 6-8)



CONSTRUCTION NOTES

- 1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE
- 2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN
- BALES. STRAWS ARE TO BE PLACED PARALLEL TO GROUND. 3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
- 4. EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 1.2 METRE STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.
- 5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE THE BALES ARE PLACED 1 TO 2 METRES DOWNSLOPE FROM THE TOE.
- ESTABLISH A MAINTENANCE PROGRAM THAT ENSURES THE INTEGRITY OF THE BALES IS RETAINED THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.

STRAW BALE FILTER



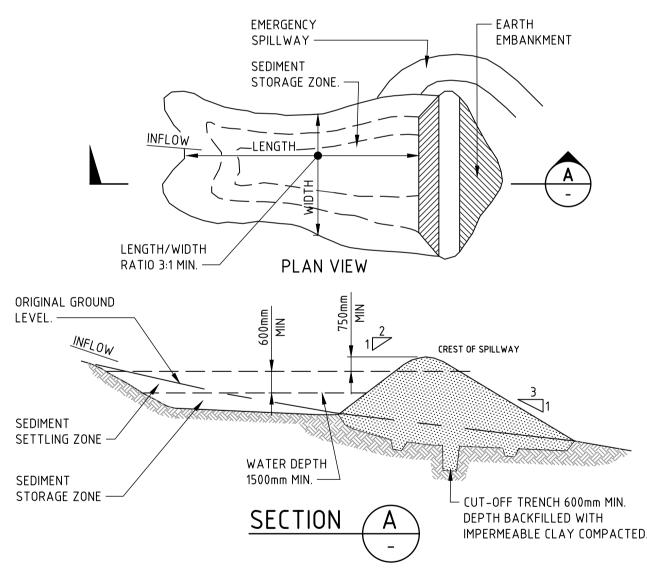
NOTE: THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP.

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.

MESH AND GRAVEL INLET FILTER (SD 6-11)



- 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
- 7. CONSTRUCT THE EMERGENCY SPILLWAY.
- 8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.

(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY) EARTH BASIN - WET

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33 TALAVERA ROAD &

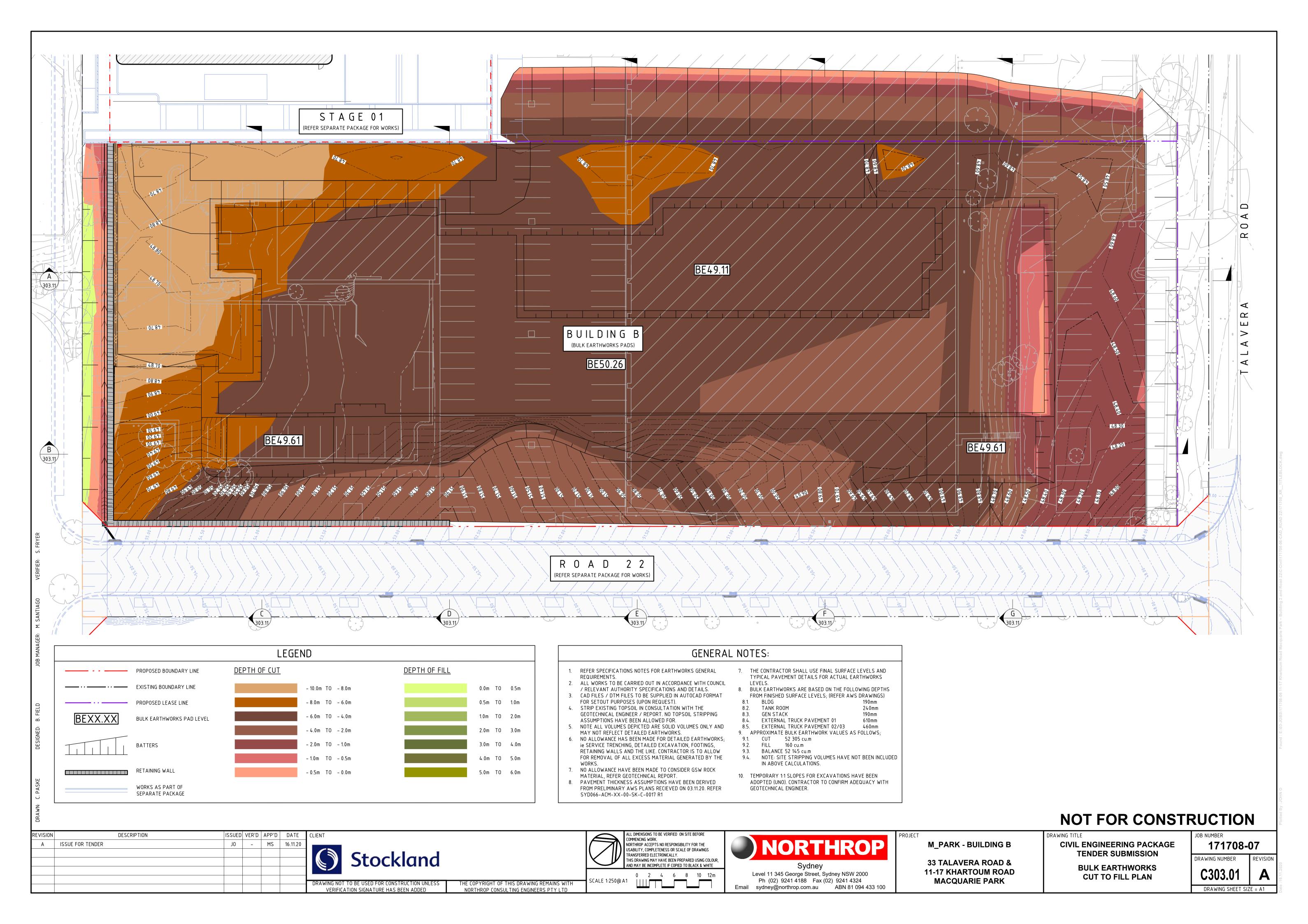
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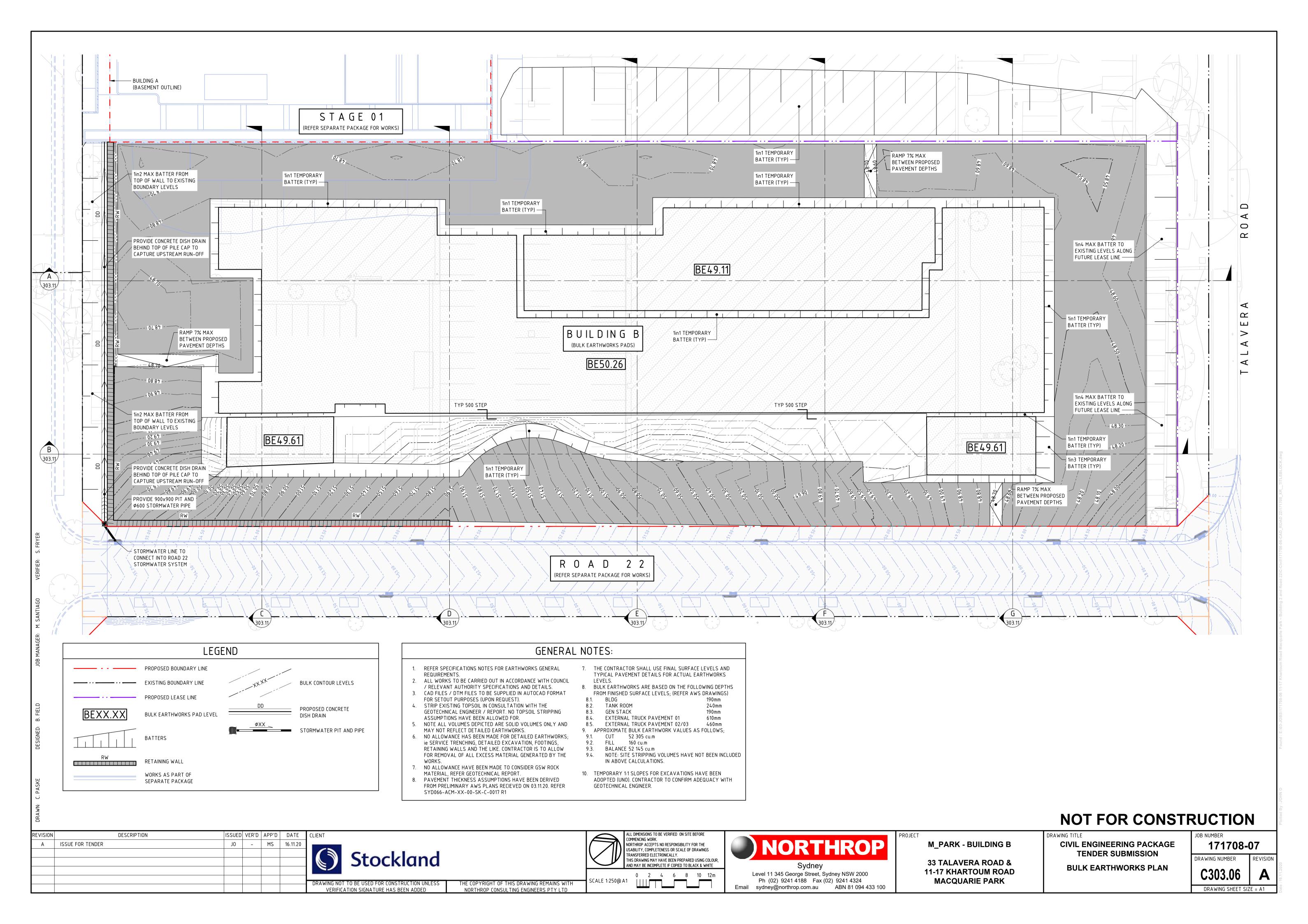
11-17 KHARTOUM ROAD

CIVIL ENGINEERING PACKAGE **TENDER SUBMISSION** SEDIMENT AND SOIL EROSION

171708-07 DRAWING NUMBER REVISION

CONTROL DETAILS NOT TO SCALE MACQUARIE PARK Email sydney@northrop.com.au ABN 81 094 433 100 DRAWING SHEET SIZE = A1





TALAVERA ROAD DATUM RL 43.0 BULK EARTHWORKS SURFACE EXISTING SURFACE CHAINAGE

BULK EARTHWORKS SECTION A (CONT) VERTICAL SCALE 1:250@A1

BULK EARTHWORKS SECTION A

HORIZONTAL SCALE 1:250@A1 VERTICAL SCALE 1:250@A1

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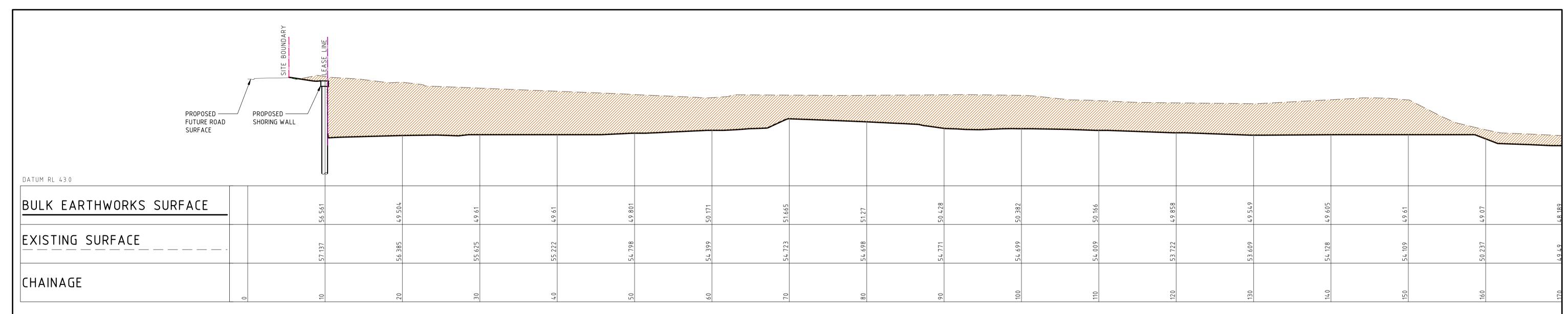
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CIVIL ENGINEERING PACKAGE

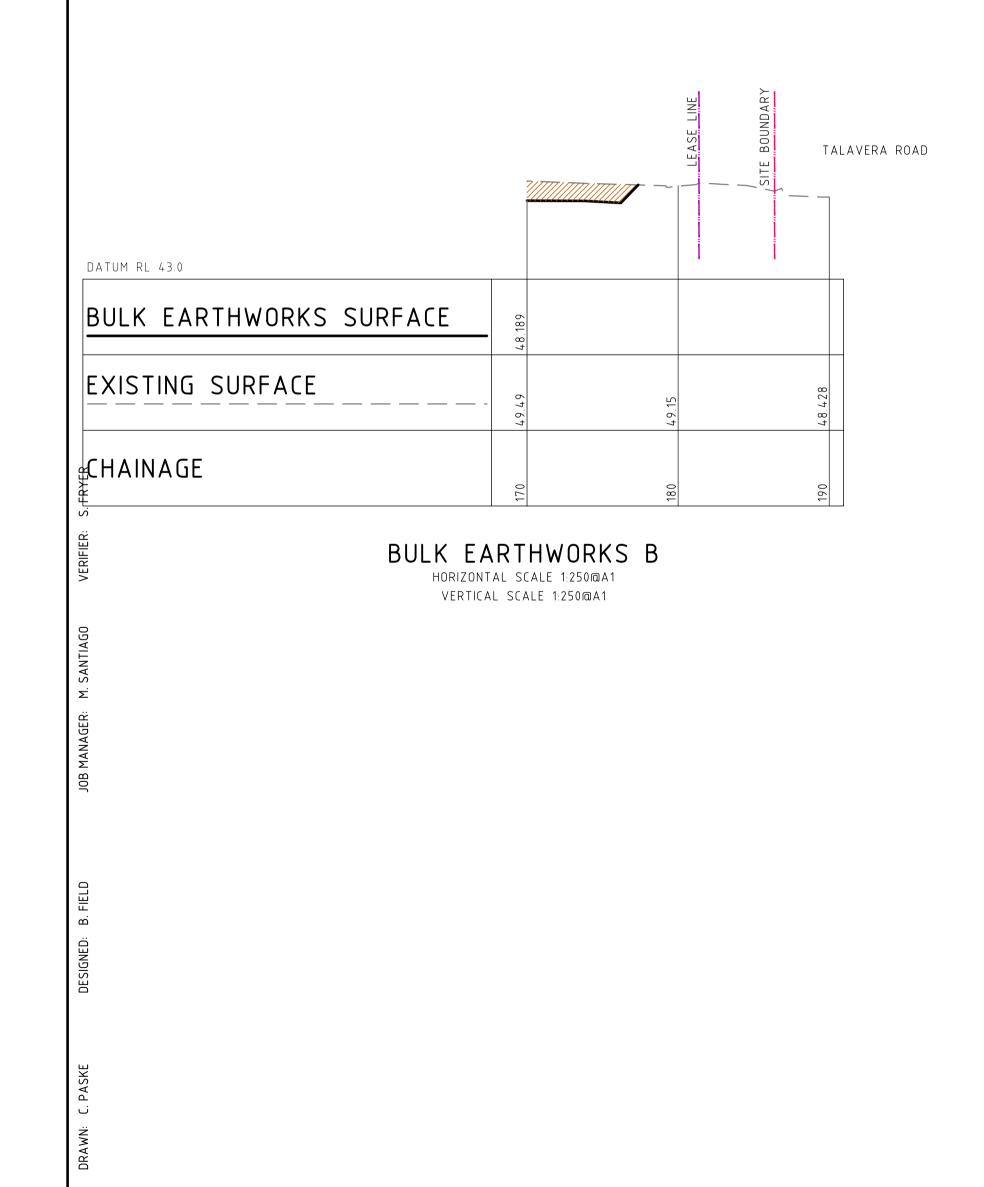
TENDER SUBMISSION BULK EARTHWORKS CUT/FILL SECTIONS - SHEET 01

171708-07 DRAWING NUMBER

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BULK EARTHWORKS B HORIZONTAL SCALE 1:250@A1 VERTICAL SCALE 1:250@A1



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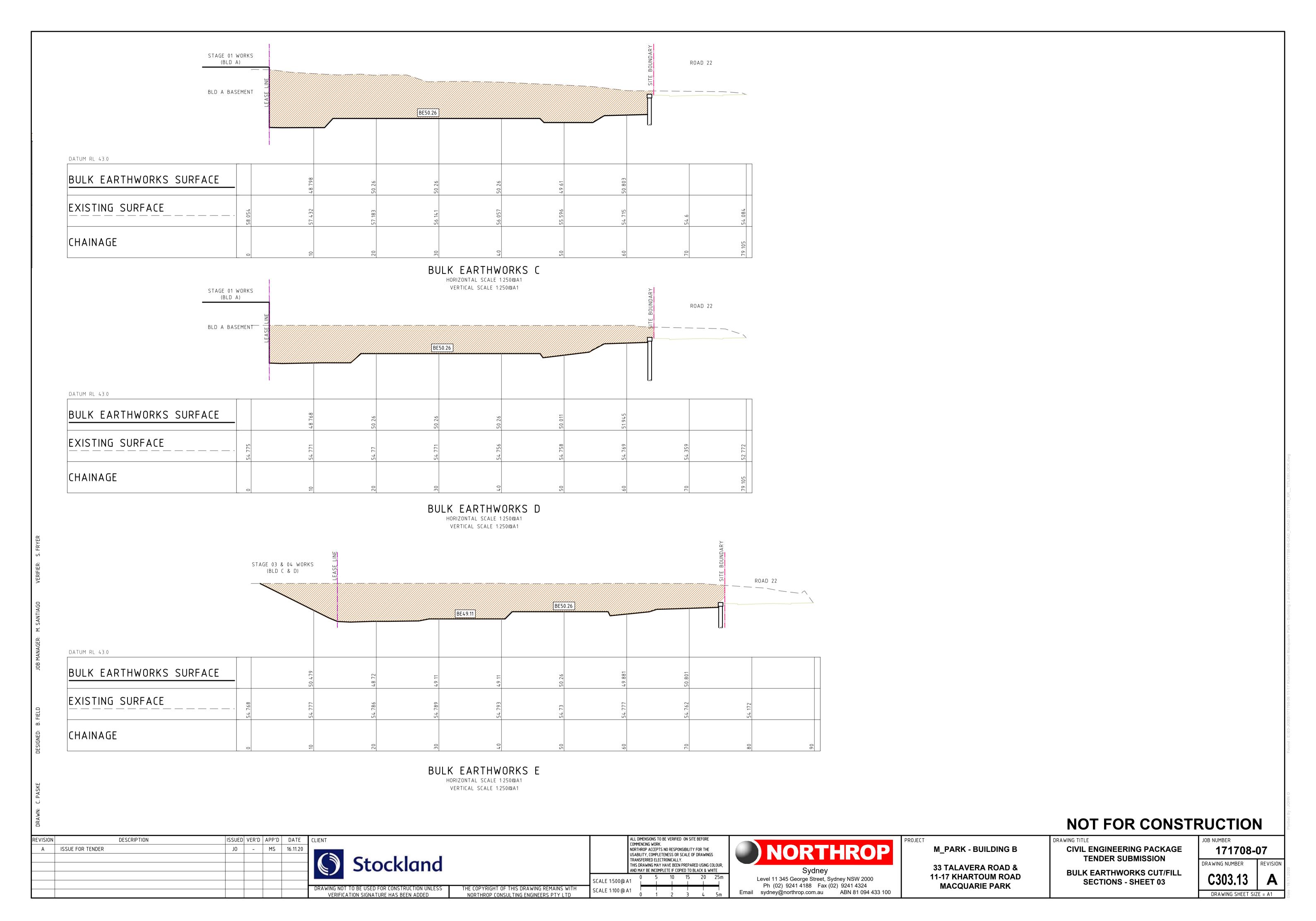
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SECTIONS - SHEET 02

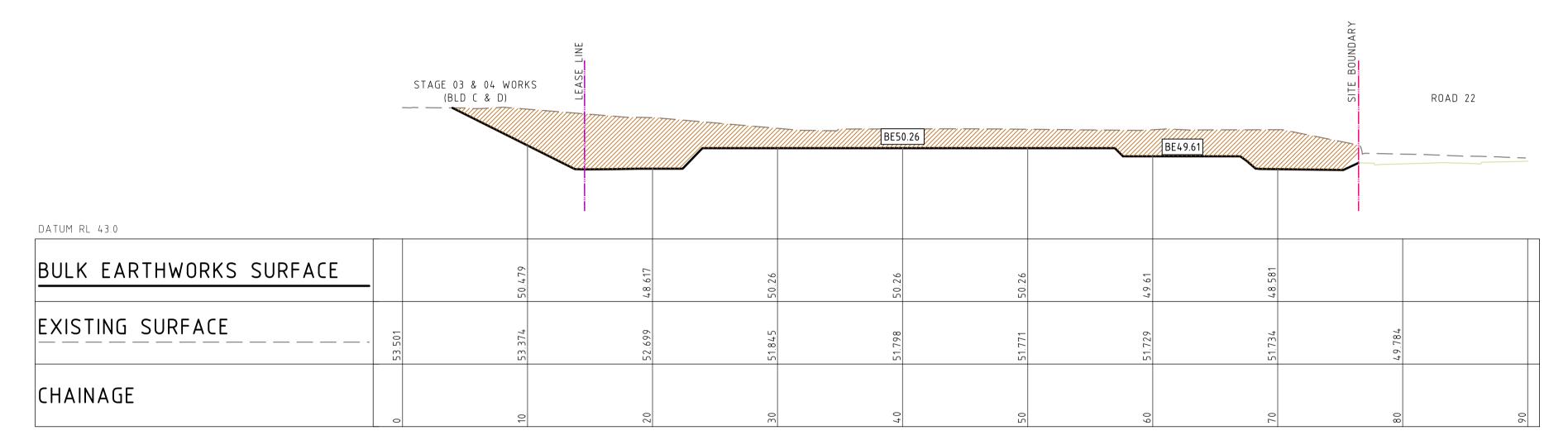
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C303.12



BULK EARTHWORKS F

HORIZONTAL SCALE 1:250@A1 VERTICAL SCALE 1:250@A1



BULK EARTHWORKS G HORIZONTAL SCALE 1:250@A1

VERTICAL SCALE 1:250@A1

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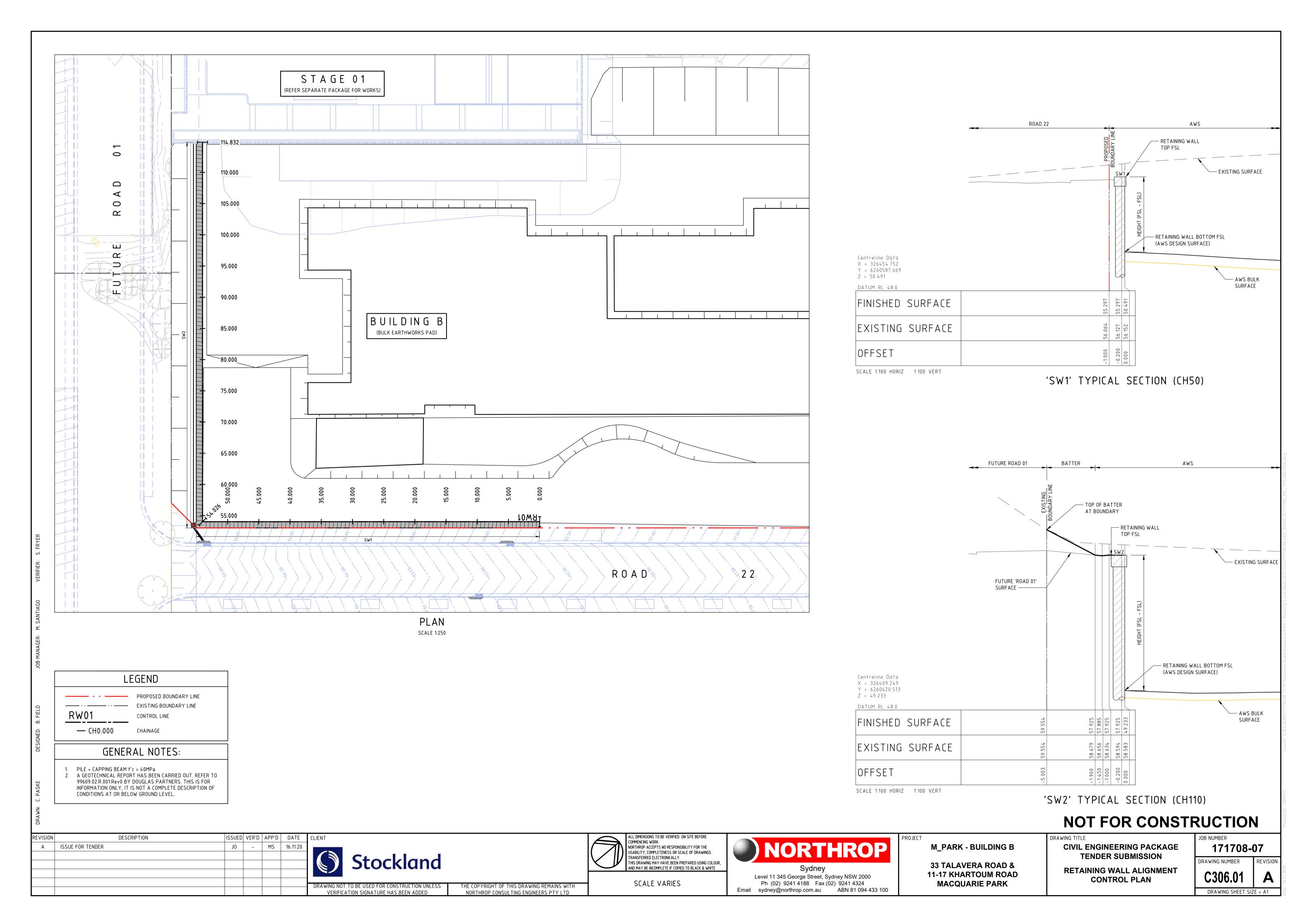
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DRAWING TITLE CIVIL ENGINEERING PACKAGE **TENDER SUBMISSION BULK EARTHWORKS CUT/FILL**

SECTIONS - SHEET 04

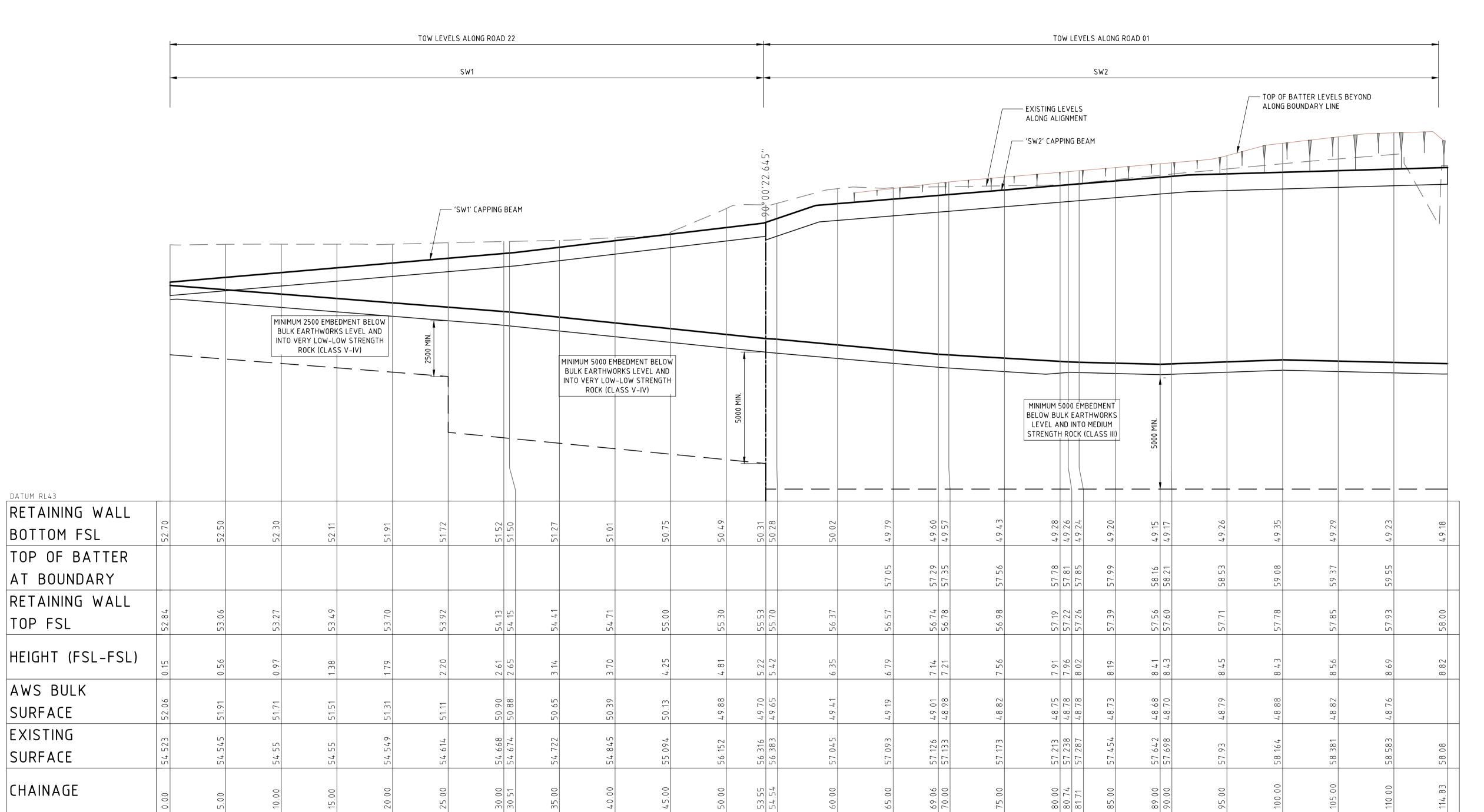
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SCALE 1:200 HORIZ 1:100 VERT

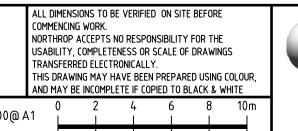
ELEVATION OF RW01 RETAINING WALL

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RETAINING WALL ELEVATIONS - SHEET 01

171708-07 DRAWING NUMBER

C306.21

REFER SCHEDULE FOR PILE — REINFORCEMENT

TYPICAL PILE CAPPING BEAM DETAIL

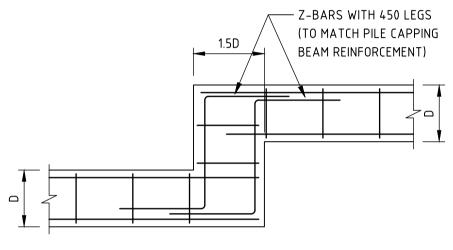
TYPICAL CONTIGUOUS PILE SHORING WALL PLAN

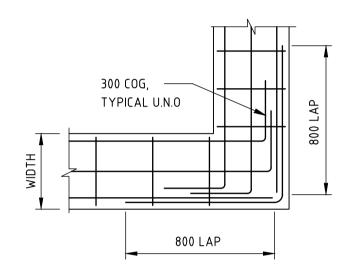
50 COVER

— PROGRESSIVELY PLUG GAP

BETWEEN PILES DURING EXCAVATION USING GROUT OR

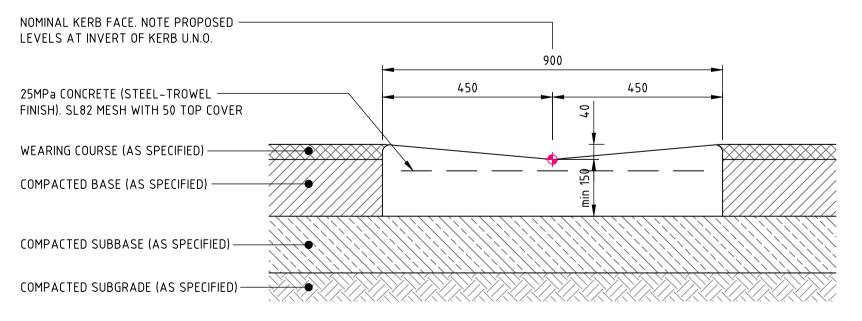
SHOTCRETE





TYPICAL PILE CAPPING BEAM CORNER DETAIL

	CAPPING BEAM			PILES					
	WIDTH (X)	DEPTH (Y)	REINFORCEMENT	DIA	REINFORCEMENT	SPACING			
SW1	750	600	10N24 + N12-300 CLOSED TIES	600	8N28 + N12-300 CLOSED TIES	CONTIGUOUS			
SW2	1000	750	14N24 + N12-300 CLOSED TIES	750	10N28 + N12-300 CLOSED TIES	CONTIGUOUS			

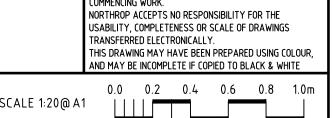


DISH DRAIN - 900 WIDE 'DD' EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS ALL RADII TO BE 20mm U.N.O.

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400 INTO CAPPING BEAM ,TYPICAL

TYPICAL PILE CAPPING BEAM STEP DETAIL

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