6 ORCHARD STREET, WARRIEWOOD, NSW 2012

SUBDIVISION - CIVIL ENGINEERING WORKS

LOCALITY MAP

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Sheet List Table	
Sheet Number	Sheet Title
C11.01	COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN
C11.02	SPECIFICATION NOTES - SHEET 1
C11.03	SPECIFICATION NOTES - SHEET 2
C11.11	GENERAL ARRANGEMENT PLAN
C11.21	EXISTING CONDITIONS PLAN - SHEET 1
C11.22	EXISTING CONDITIONS PLAN - SHEET 2
C11.23	EXISTING CONDITIONS PLAN - SHEET 3
C11.24	EXISTING CONDITIONS PLAN - SHEET 4
C11.31	TYPICAL SECTIONS
C12.01	CONCEPT SEDIMENT AND EROSION CONTROL PLAN
C12.11	SEDIMENT AND EROSION CONTROL DETAILS
C13.01	BULK EARTHWORKS CUT TO FILL PLAN
C14.01	STORMWATER MANAGEMENT PLAN - SHEET 1
C14.02	STORMWATER MANAGEMENT PLAN - SHEET 2
C14.03	STORMWATER MANAGEMENT PLAN - SHEET 3
C14.04	STORMWATER MANAGEMENT PLAN - SHEET 4
C14.11	STORMWATER LONGITUDINAL SECTIONS - SHEET 1
C14.12	STORMWATER LONGITUDINAL SECTIONS - SHEET 2
C14.13	STORMWATER LONGITUDINAL SECTIONS - SHEET 3
C14.14	STORMWATER LONGITUDINAL SECTIONS AND PIT SCHEDULE - SHEET 4
C14.21	STORMWATER MANAGEMENT DEVICES - SHEET 1
C14.22	STORMWATER MANAGEMENT DEVICES - SHEET 2
C14.31	STORMWATER CATCHMENT PLAN
C15.01	SITEWORKS AND GRADING PLAN - SHEET 1
C15.02	SITEWORKS AND GRADING PLAN - SHEET 2
C15.03	SITEWORKS AND GRADING PLAN - SHEET 3
C15.04	SITEWORKS AND GRADING PLAN - SHEET 4
C16.01	PAVEMENT AND JOINTING PLAN - SHEET 1
C16.02	PAVEMENT AND JOINTING PLAN - SHEET 2
C16.03	PAVEMENT AND JOINTING PLAN - SHEET 3
C16.04	PAVEMENT AND JOINTING PLAN - SHEET 4
C17.01	LINEMARKING AND SIGNAGE PLAN - SHEET 1
C17.02	LINEMARKING AND SIGNAGE PLAN - SHEET 2
C17.03	LINEMARKING AND SIGNAGE PLAN - SHEET 3
C18.01	SETOUT PLAN - SHEET 1
C18.02	SETOUT PLAN AND TABLES - SHEET 2
C18.11	LONGITUDINAL SECTIONS - SHEET 1
C18.12	LONGITUDINAL SECTIONS - SHEET 2
C18.13	LONGITUDINAL SECTIONS - SHEET 3
C18.21	CROSS SECTION ALONG MC01 - SHEET 1
C18.26	CROSS SECTION ALONG MC02 - SHEET 1
C18.27	CROSS SECTION ALONG MC02 - SHEET 2
C18.31	CROSS SECTION ALONG MC03 - SHEET 1
C18.36	CROSS SECTION ALONG MC04 - SHEET 1
C18.41	RETAINING WALL PLAN AND LONGITUDINAL SECTION
C19.01	SERVICES MASTER PLAN - SHEET 1
C19.02	SERVICES MASTER PLAN - SHEET 2
C19.03	SERVICES MASTER PLAN - SHEET 3
C19.04	SERVICES MASTER PLAN - SHEET 4
C19.11	TYPICAL SERVICES SECTIONS
C20.01	DETAILS - SHEET 1
C20.02	DETAILS - SHEET 2
C20.03	DETAILS - SHEET 3
C20.04	DETAILS - SHEET 4
C20.05	DETAILS - SHEET 5
C20.06	DETAILS - SHEET 6
C20.07	DETAILS - SHEET 7
C20.08	DETAILS - SHEET 8
C20.09	DETAILS - SHEET 9
C20.10	DETAILS - SHEET 10

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FOR CONSTRUCTION

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G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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PROJECT
6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE
SUBDIVISION - STAGE 1

COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN

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130945

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C11.01

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G

DRAWING SHEET SIZE = A1

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH PITTWATER COUNCIL DEVELOPMENT GUIDELINES .THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

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.

SEDIMENT AND 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.

TREE PROTECTION

1. REFER TO LANDSCAPE PACKAGE 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.

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 OCCURING 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. ALL SOFT, WET OR UNSUITABLE MATERIAL IS TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS BELOW.
5. PROVIDE CERTIFICATES VERIFYING THE QUALITY OF IMPORTED MATERIAL FOR THE SUPERINTENDENTS APPROVAL.
6. 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)	

7. TESTING OF THE SUBGRADE FOR BUILDINGS SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. REGISTERED LABORATORY.
8. 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.
9. 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.
10. ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND U.N.O. NO ADDITIONAL PAYMENTS WILL BE MADE FOR EXCAVATION IN WET OR HARD GROUND.
11. 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;
    - 11.1. BE OF VIRGIN EXCAVATED NATURAL MATERIAL OR
    - 11.2. CONTRACTOR TO PROVIDE EVIDENCE IMPORT IS SUITABLE USE
    - 11.3. PLASTICITY INDEX BETWEEN 2-15% AND CBR > 8
    - 11.4. FREE FROM ORGANIC AND PERISHABLE MATTER
    - 11.5. MAXIMUM SIZE 50mm, PASSING 75 MICRON SIEVE (<25%)

EARTHWORKS (cont)

12. 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.
13. 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.
14. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE.

DEEP EXCAVATIONS

15. 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.
16. THE CONTRACTOR MUST PROVIDE THE SUPERINTENDENT AND OR THE DESIGN ENGINEER WITH A COPY OF THE GEOTECHNICAL ENGINEERS REPORT.
17. THE CONTRACTOR IS TO PROVIDE SAFETY BARRIERS / FENCING IN ACCORDANCE WITH OH&S AND REGULATORY AUTHORITY REQUIREMENTS.

SERVICE TRENCHES

18. 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.
19. 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 3 RUBBER-RING JOINTED RCP 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. FRC PIPES EQUAL TO THAT OF THE STEEL REINFORCED CONCRETE PIPE CLASS SPECIFIED ON THE DRAWINGS MAY BE USED SUBJECT TO APPROVAL FROM THE SUPERINTENDENT.
3. ALL PIPE ARE TO BE LAID AT 1.0% MIN GRADE U.N.O.
4. COVERS
   - 4.1. USE HOT DIPPED GALVANISED COVERS AND GRATES COMPLYING WITH RELEVANT COUNCIL AND AUSTRALIAN STANDARDS.
   - 4.2. ALL COVERS AND GRATES TO BE POSITION IN A FRAME AND MANUFACTURED AS A UNIT.
   - 4.3. ALL COVERS AND GRATES TO BE FITTING WITH POSITIVE COVER LIFTING KEYS
   - 4.4. 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 UPPERMOST TO ALLOW INFILLING WITH CONCRETE. INSTALL POSITIVE COVER LIFTING KEYS AND PLASTIC PLUGS.
   - 4.5. UNLESS DETAILED OR SPECIFIED OTHERWISE, COVERS AND GRATES TO BE CLASS 'D' IN VEHICULAR PAVEMENTS AND CLASS 'B' ELSEWHERE.
5. ALL PIPE BENDS, JUNCTIONS, ETC ARE TO BE PROVIDED USING PURPOSE MADE FITTINGS OR STORMWATER PITS.
6. ALL CONNECTIONS TO EXISTING DRAINAGE STRUCTURES SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
7. STORMWATER PIPEWORK TO FINISH FLUSH WITH INTERNAL PIT WALLS AND MUST NOT PROTRUDE. CONNECTION TO BE NEATLY RENDER AND MADE NEAT.
8. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
9. 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.
10. 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.
11. BEDDING SHALL BE U.N.O TYPE HS2 UNDER ROADS AND H2 UNDER GENERAL AREAS IN ACCORDANCE WITH CURRENT RELEVANT INDUSTRY STANDARDS AND GUIDELINES.
12. 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.
13. 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

14. 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;
    - 14.1. THE HIGH SIDE OF PROPOSED TRAFFICKED PAVEMENT AREAS.
    - 14.2. ALL PLANTER AND TREE BEDS PROPOSED ADJACENT TO PAVEMENT AREAS.
    - 14.3. BEHIND RETAINING WALLS (IN ACCORDANCE WITH RETAINING WALL DETAILS).
    - 14.4. ALL OTHER AREAS SHOWN ON DRAWINGS.
    - 14.5. 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.
15. 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.
16. 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.
17. 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.

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.

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 AS2734-1994 "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 LONGITUDINALLY.
     - 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.

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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PROJECT
6 ORCHARD STREET,
WARRIEWOOD, NSW 2012

DRAWING TITLE
SUBDIVISION - STAGE 1
SPECIFICATION NOTES - SHEET 1

JOB NUMBER 130945
DRAWING NUMBER C11.02
REVISION G
DRAWING SHEET SIZE = A1

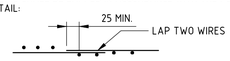
NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH PITTWATER COUNCIL DEVELOPMENT GUIDELINES .THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

CONCRETE PAVEMENTS

1. THIS SECTION REFERS TO CIVIL CONCRETE WORKS AND DOES NOT INCLUDE STRUCTURAL ELEMENTS SUCH AS BUILDINGS, BELOW GROUND STRUCTURES OR RETAINING WALLS.
2. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
3. 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

4. CONCRETE PROPERTIES SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS
   - 4.1. MINIMUM CEMENT CONTENT 250 kg/m³
   - 4.2. MAXIMUM 56 DAY SHRINKAGE STRAIN = AS NOMINATED ABOVE
   - 4.3. 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.
5. 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.
6. CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL.
7. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379. TEST CYLINDERS ARE TO BE KEPT ON SITE.
8. ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE CIVIL ENGINEER FOR REVIEW.
9. 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.
10. 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.
11. FALLS IN SLAB AS SHOWN ON PLAN MAINTAIN MINIMUM SLAB THICKNESS AS SHOWN.
12. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY THE DESIGN ENGINEER.
13. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS.
14. FABRIC SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING DETAIL:

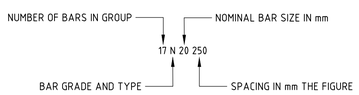


FOLLOWING THE FABRIC SYMBOL SL IS THE REFERENCE NUMBER FOR FABRIC TO AS1304.

15. POLYETHYLENE SHEET SHALL BE PLACED BELOW ALL CONCRETE PAVEMENTS.
16. 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.
17. FORMWORK CLASS SHALL BE IN ACCORDANCE WITH AS3600.
18. SURFACE FINISHES:

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

19. 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

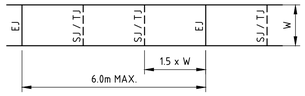


CONCRETE SEALING

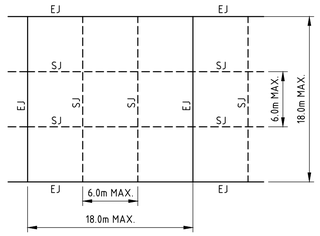
1. THE CURING PROCESS FOR NEW CONCRETE IS TO INCORPORATE THE FOLLOWING ASPECTS, GENERALLY AS ORDERED;
   - 1.1. SPRAY CURING COMPOUND
   - 1.2. SAWCUT JOINTS AS LOCATED AND SPECIFIED AS SOON AS CURING PERMITS.
   - 1.3. COVER NEW PAVING WITH HESSIAN AND BLACK PLASTIC SHEETS TAPED AT JOINTS ON COMPLETION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

PAVEMENT JOINTS

1. PROVIDE 10mm ABLEFLEX BETWEEN NEW CONCRETE WORKS AND EXISTING STRUCTURES.
2. LOCAL AUTHORITY REQUIREMENTS SHALL TAKE PRECEDENCE WITHIN THE PUBLIC ROAD RESERVE.
3. DOWELS TO BE PLACED ON PROPRIETARY CRADLES TO ENSURE CORRECT SPACING AND ALIGNMENT.
4. PEDESTRIAN PAVEMENTS
   ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS U.N.O. ON THE DESIGN DRAWINGS.
5. EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 6.0m CENTRES.
6. WEAKENED PLANE JOINTS (SAWN OR TOOL JOINTS) ARE TO BE LOCATED AT A MAX. SPACING OF 1.5m x WIDTH OF THE PAVEMENT.
7. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
8. TYPICAL PEDESTRIAN PAVEMENT JOINT DETAIL



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



SIGNAGE AND LINEMARKING

1. ALL SIGNAGE TO BE INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS / RMS STANDARDS AND SPECIFICATIONS.
2. LINE MARKING AND PAINT SHALL BE IN ACCORDANCE WITH AS1742.2 AND RMS STANDARDS.
3. LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING.

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.

ENGINEERING CERTIFICATION

1. 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.
2. 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.
3. 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.
4. TO PROVIDE CERTIFICATION THE ENGINEER MUST VISIT THE SITE TO OBSERVE.
   - 4.1. PAVEMENTS
     - 4.1.1. POOR SUBGRADE CONDITIONS
     - 4.1.2. PROOF ROLLING OF SUB-GRADE
     - 4.1.3. PLACEMENT OF SUB-BASE COURSE, BASE COURSE AND WEARING COURSE.
     - 4.1.4. PLACEMENT OF STEEL REINFORCEMENT , DOWELS AND JOINT CRADLES PRIOR TO POURING OF CONCRETE
   - 4.2. EARTHWORKS
     - 4.2.1. TOPSOIL STRIP
     - 4.2.2. EARTHWORKS BATTER
     - 4.2.3. FILLING
   - 4.3. STORMWATER DRAINAGE
     - 4.3.1. DRAINAGE TRENCHES PRIOR TO BACKFILLING
     - 4.3.2. LEGAL POINT OF CONNECTION PRIOR TO BACKFILLING
     - 4.3.3. ANY OTHER DRAINAGE STRUCTURE THAT MAY BE CONCEALED DURING THE COURSE OF THE WORKS
   - 4.4. CONCRETE STRUCTURES
     - 4.4.1. PLACEMENT OF ANY STEEL REINFORCEMENT PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL PROVIDE SURVEYED LEVELS, PREPARED BY A QUALIFIED SURVEYOR FOR SUBGRADE, SUB-BASE COURSE, BASE COURSE AND WEARING COURSE.
6. 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.
7. 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.....

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. CONTRACTOR IS TO UNDERTAKE A CCTV INSPECTION OF ALL STORMWATER DRAINAGE PIPELINES AND PROVIDE TO THE ENGINEER FOR APPROVAL.
10. 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
11. EACH TEST CERTIFICATE WILL NOMINATE THE DATE AND TIME OF THE TEST AND PROVIDE A LOCATION OF WHERE THE TEST SAMPLE WAS TAKEN FROM.
12. 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.
13. 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.

3D INFORMATION DISCLAIMER

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

THE FOLLOWING ITEMS HAVE BEEN IDENTIFIED AS SAFETY RISKS

- S01 OSD TANK CONSIDERED A CONFINED SPACE
- S02 SHORING REQUIREMENTS DUE TO TRENCH DEPTHS
- S03 TRAFFIC CONTROL FOR EXTERNAL WORKS
- S04 OSD TANK ROOF STRUCTURE LOADING DURING CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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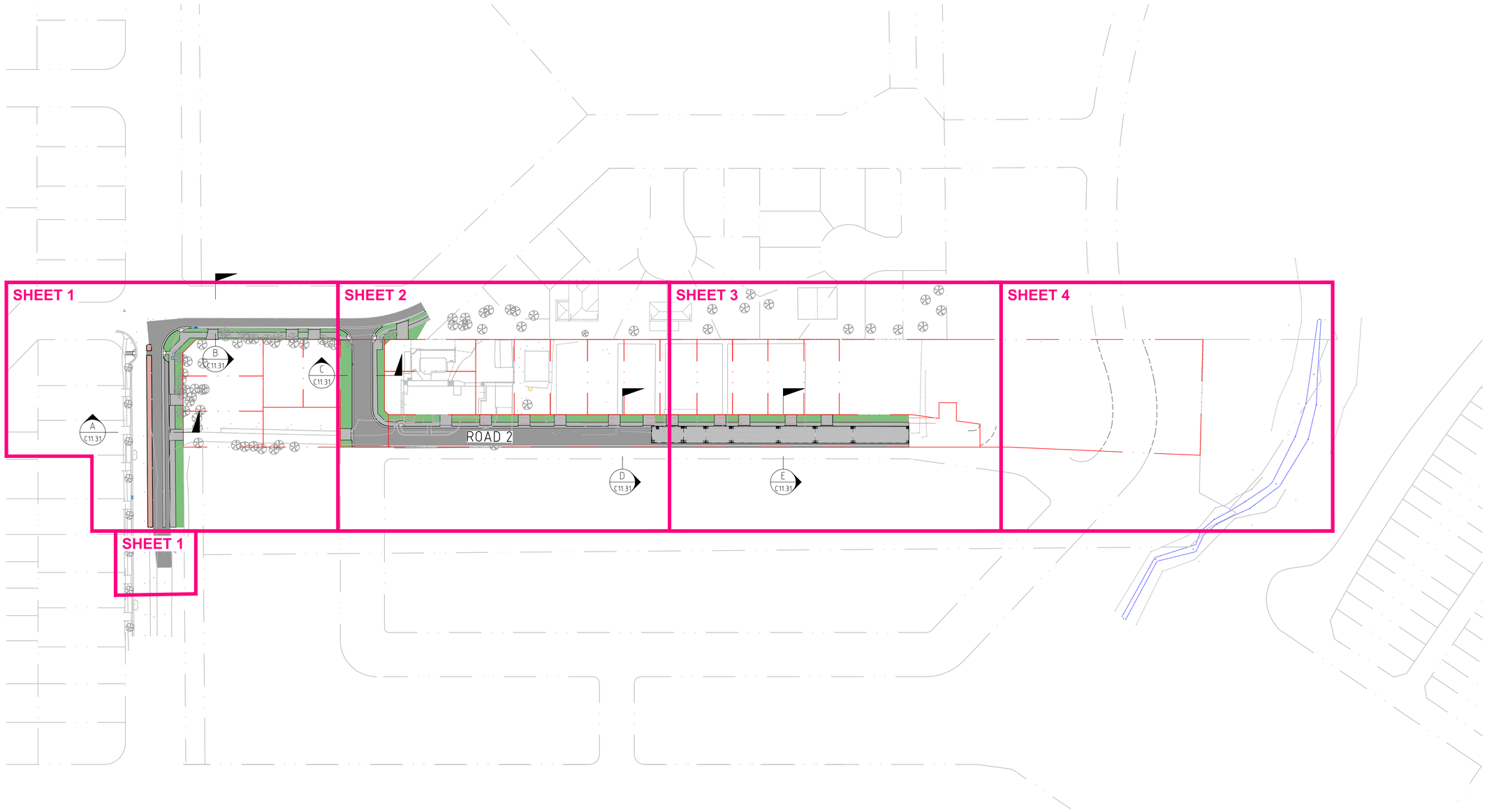
PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
SPECIFICATION NOTES - SHEET 2

JOB NUMBER: 130945
DRAWING NUMBER: C11.03
REVISION: G
DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- ADJACENT BOUNDARY
- CREEK LINE

GENERAL NOTE:

HOUSES AND LOT GRADING (BY OTHERS)

FOR CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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ARCHITECT
STEPHEN BOWERS ARCHITECTS

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0 10 20 30 40m SCALE 1:800

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
6 ORCHARD STREET, WARRIEWOOD, NSW 2012

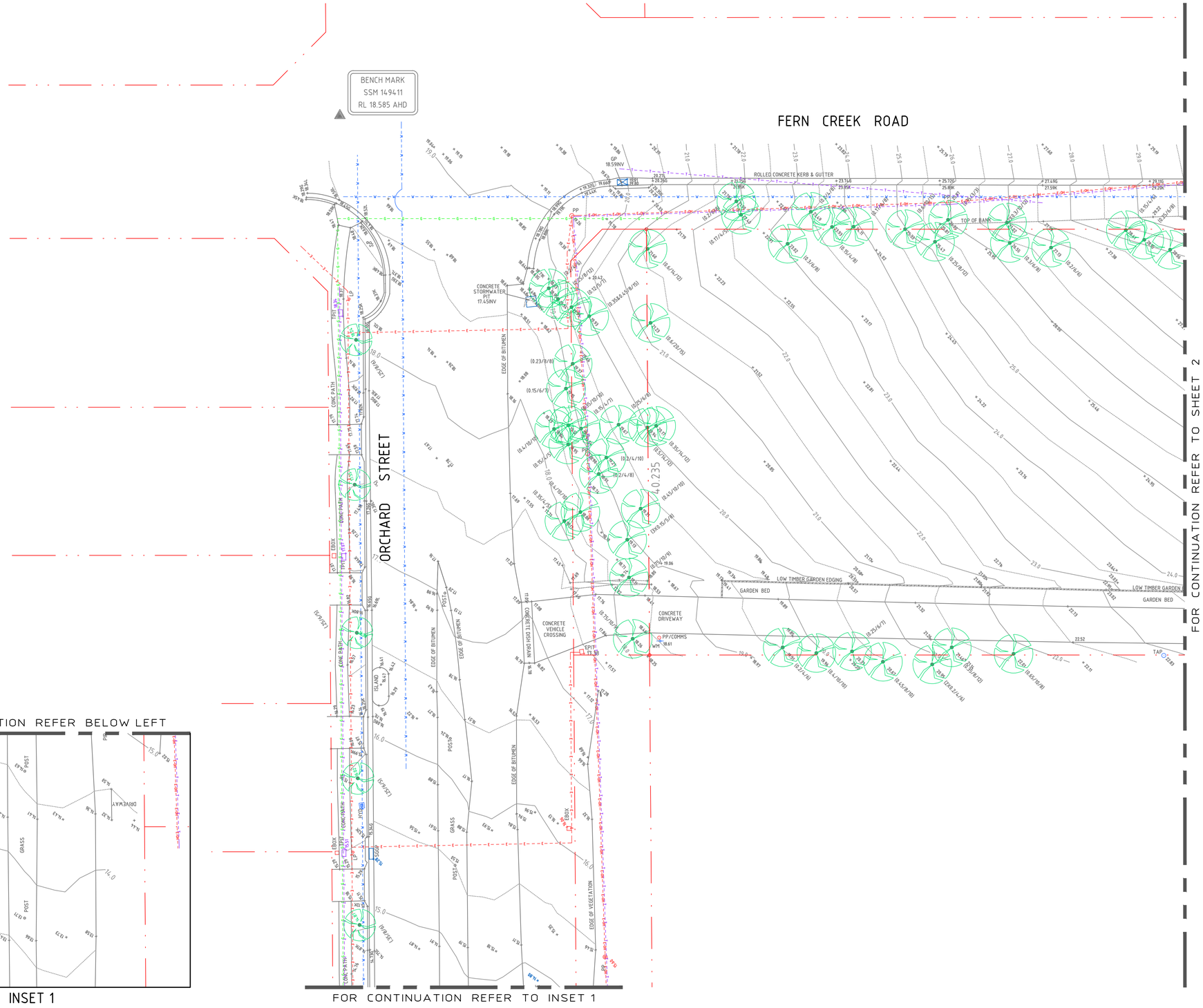
DRAWING TITLE
SUBDIVISION - STAGE 1

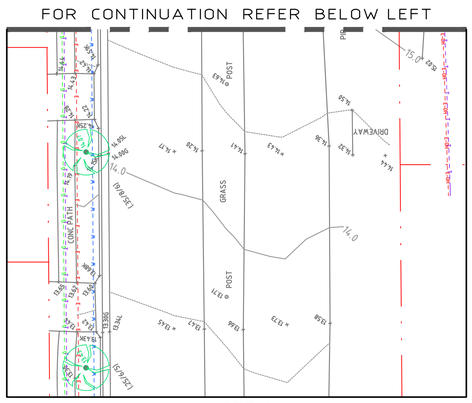
GENERAL ARRANGEMENT PLAN

JOB NUMBER **130945**

DRAWING NUMBER **C11.11** REVISION **G**

DRAWING SHEET SIZE = A1





INSET 1

LEGEND

- BOUNDARY LINE
- EXISTING ELECTRICITY
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING TELECOMUNICATIONS
- EXISTING WATER
- EXISTING STORMWATER
- EXISTING SEWER

GENERAL NOTES:

1. SURVEY SUPPLIED BY:
   NAME: BMA - BRUNSKILL MCCLENAHAN & ASSOCIATES P/L
   DATE: 06.07.14
   REVISION: A
2. 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.
3. NORTHROP TAKES NO RESPONSIBILITY FOR THE ACCURACY AND/OR USE OF THIS SURVEY AND ITS CONTENTS

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

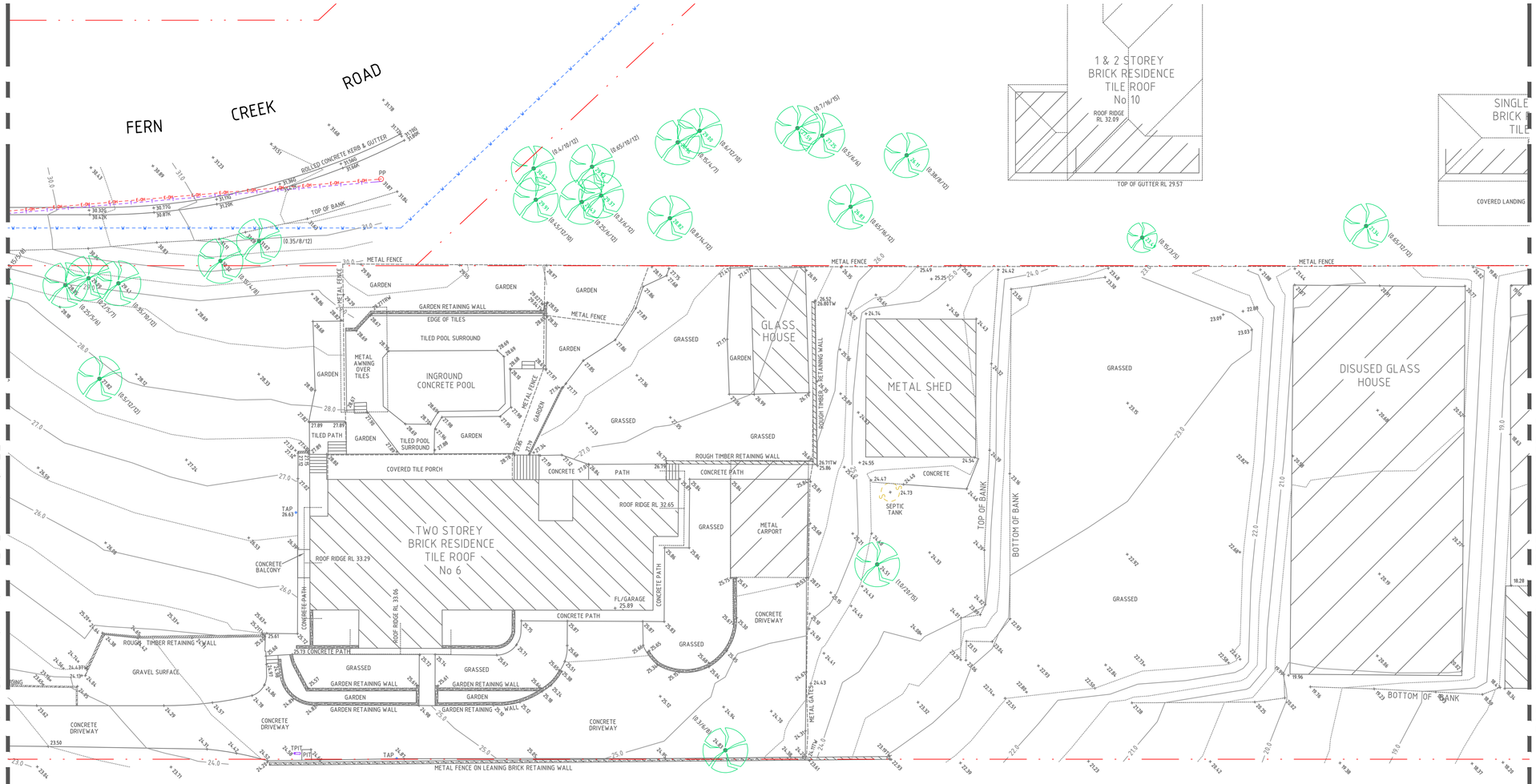
EXISTING CONDITIONS PLAN - SHEET 1

JOB NUMBER: 130945

DRAWING NUMBER: C11.21

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- EXISTING ELECTRICITY
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING TELECOMUNICATIONS
- EXISTING WATER
- EXISTING STORMWATER
- EXISTING SEWER

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JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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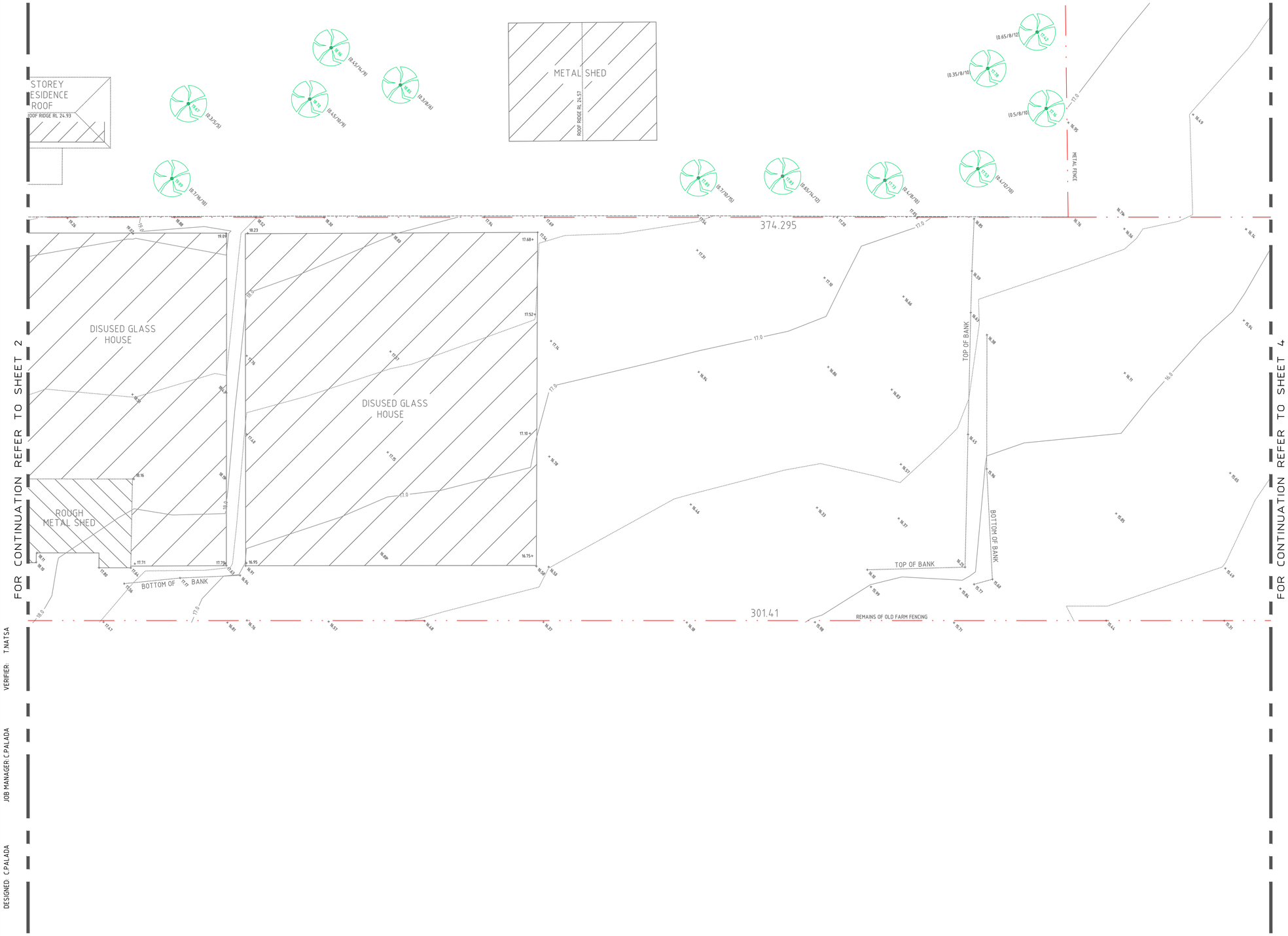
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
EXISTING CONDITIONS PLAN - SHEET 2

JOB NUMBER: 130945
DRAWING NUMBER: C11.22
REVISION: G
DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- EXISTING ELECTRICITY
- EXISTING ELECTRICITY (OVERHEAD)
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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

EXISTING CONDITIONS PLAN - SHEET 3

JOB NUMBER: 130945

DRAWING NUMBER: C11.23

REVISION: G

DRAWING SHEET SIZE = A1

FOR CONTINUATION REFER TO SHEET 3

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

LEGEND

- BOUNDARY LINE
- EXISTING ELECTRICITY
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

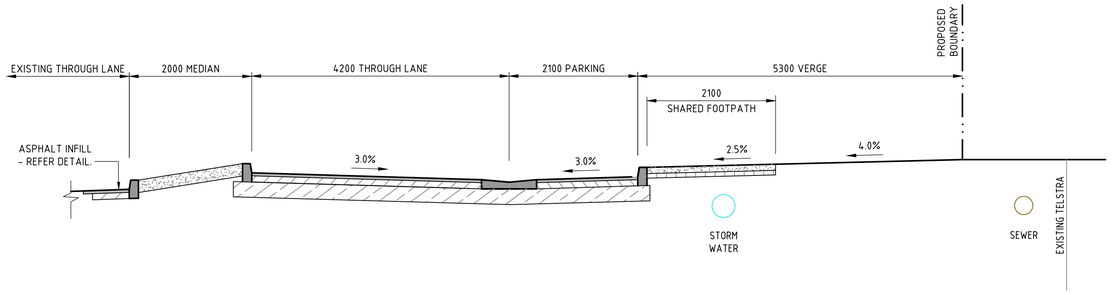
EXISTING CONDITIONS PLAN - SHEET 4

JOB NUMBER: 130945

DRAWING NUMBER: C11.24

REVISION: G

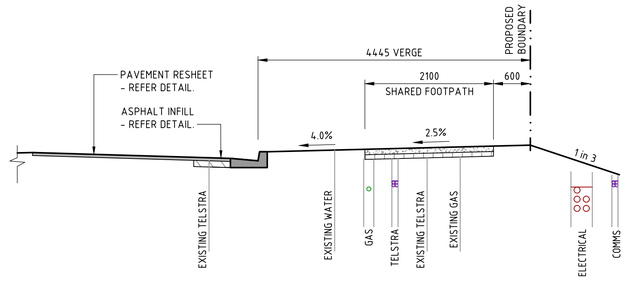
DRAWING SHEET SIZE = A1



SECTION A C11.11

TYPICAL SECTION - ORCHARD STREET

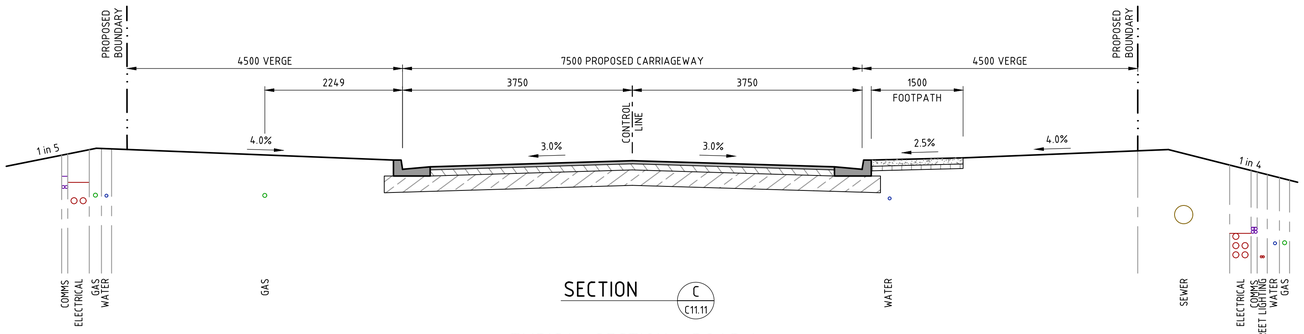
LOCATION OF EXISTING SERVICES TO BE CONFIRMED BY CONTRACTOR ON SITE



SECTION B C11.11

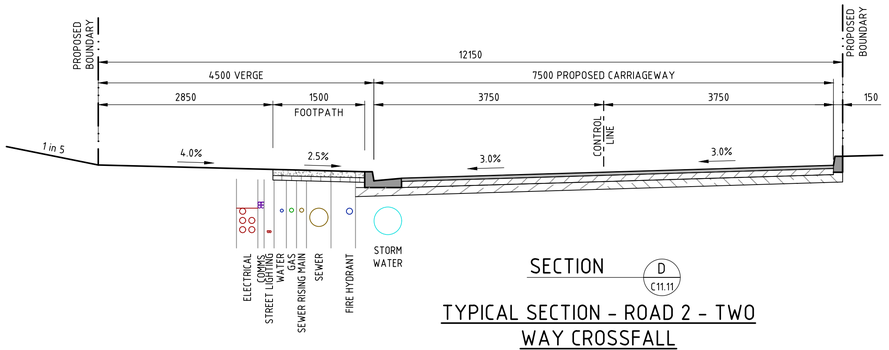
TYPICAL SECTION - FERN CREEK ROAD

LOCATION OF EXISTING SERVICES TO BE CONFIRMED BY CONTRACTOR ON SITE



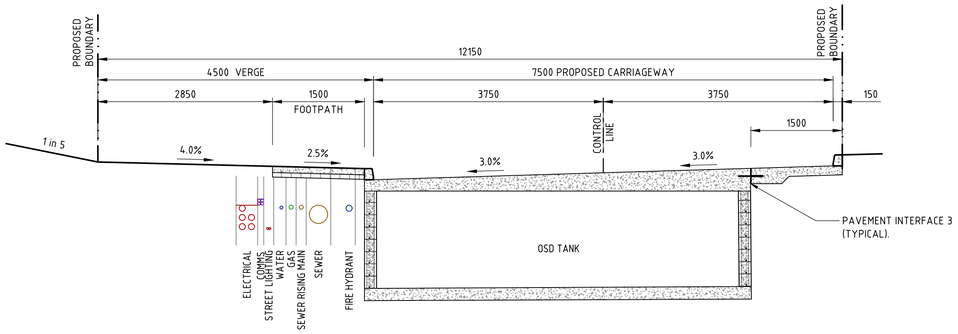
SECTION C C11.11

TYPICAL SECTION - ROAD 1



SECTION D C11.11

TYPICAL SECTION - ROAD 2 - TWO WAY CROSSFALL



SECTION E C11.11

TYPICAL SECTION - ROAD 2 - OSD TANK - TWO WAY CROSSFALL

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

GENERAL NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3. SERVICES ARE SHOWN INDICATIVE ONLY FOR ALLOCATION PURPOSES - REFER SERVICES MASTER PLAN 'C8.01 - C8.04 AND C8.10' AND OTHER RELEVANT CONSULTANT DRAWINGS FOR LOCATIONS, EXTENTS, EXACT SETOUT AND DETAILS.

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

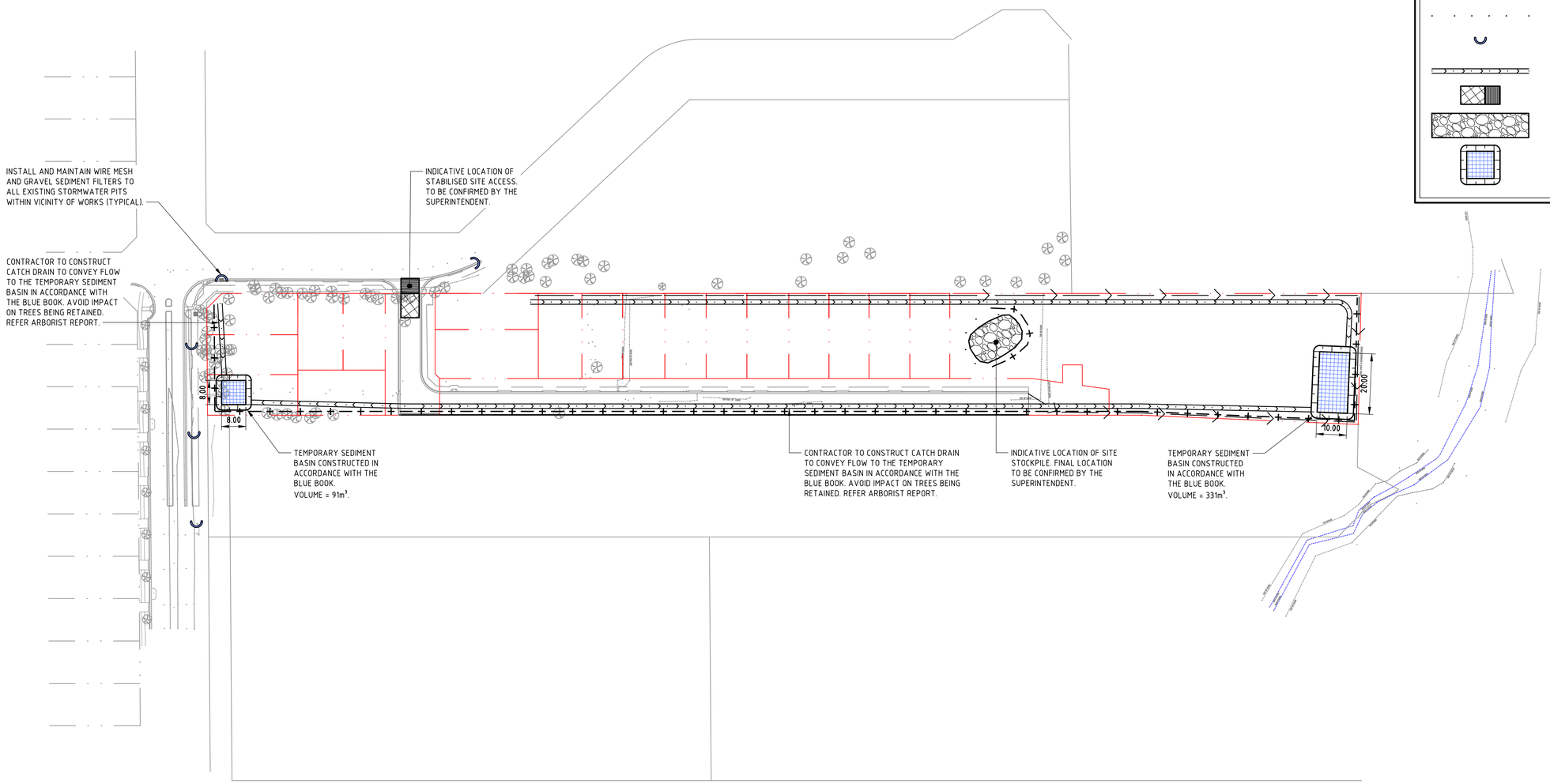
TYPICAL SECTIONS

JOB NUMBER: 130945

DRAWING NUMBER: C11.31

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- SEDIMENT FENCE
- DIVERSION SWALE
- WIRE MESH AND GRAVEL SEDIMENT FILTER
- CATCH DRAIN / EARTH BANK (LOW FLOW)
- STABILISED SITE ACCESS
- STOCKPILE
- SEDIMENT BASIN

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 'MESH AND GRAVEL INLET FILTER TRAP' 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'.
6. CONTRACTOR TO PROVIDE ADEQUATE DUST CONTROL MEASURES IN ACCORDANCE WITH THE 'BLUE BOOK'.

FOR CONSTRUCTION

DRAWN: S.WEEKS DESIGNED: C.PALADA JOB MANAGER: C.PALADA VERIFIER: T.NATSA

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

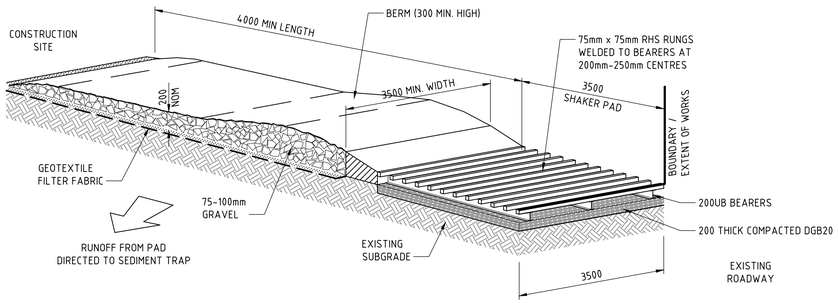
DRAWING TITLE: SUBDIVISION - STAGE 1

CONCEPT SEDIMENT AND EROSION CONTROL PLAN

JOB NUMBER: 130945

DRAWING NUMBER: C12.01 REVISION: G

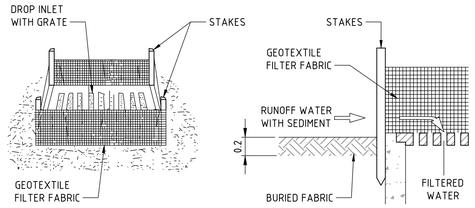
DRAWING SHEET SIZE = A1



STABILISED SITE ACCESS

MAINTENANCE

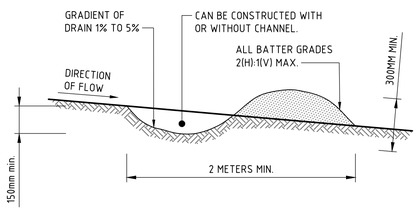
- THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY,
- THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT,
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.
- INSTALL BARRIER ON EITHER SIDE OF SHAKER PAD TO ENSURE VEHICLES ARE GUIDED ON TO THE PAD.
- INVERT OF SHAKER PAD TO BE DRAINED VIA AGRICULTURAL PIPE WRAPPED IN GEOTEXTILE FABRIC.



GEOTEXTILE INLET FILTER
DROP INLET SEDIMENT TRAP

NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. CUT A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.0m LONG STAR PICKETS INTO GROUND AT THE FOUR CORNERS OF PIT WALLS. 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.

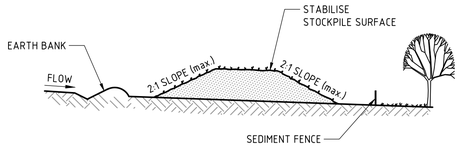


CONSTRUCTION NOTES

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.

CATCH DRAIN

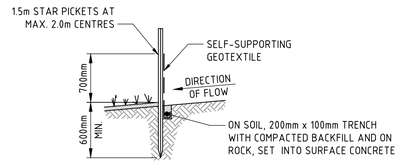
NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.



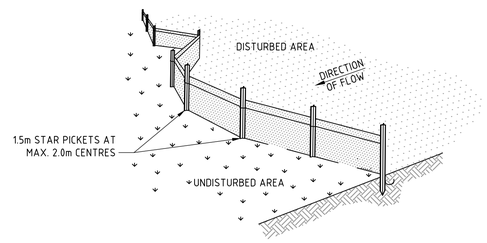
STOCKPILE

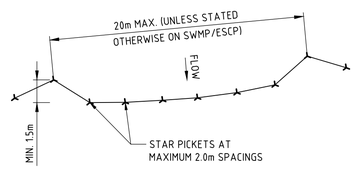
NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES 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 2 METRES 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 ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.



SECTION DETAIL



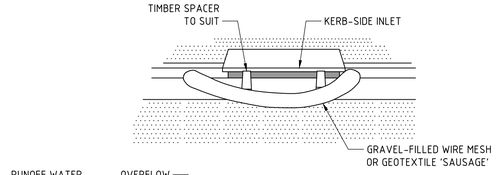


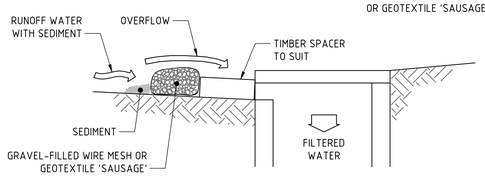
PLAN

SEDIMENT FENCE

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 50L/s IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND AT 2.0m 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.

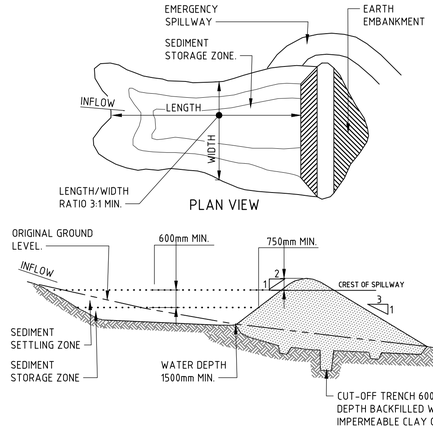




MESH AND GRAVEL INLET FILTER

NOTES:

1. THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN AN APPROVED SWMP/ESCP.
2. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
3. 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.
4. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
5. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100-mm SPACE BETWEEN IT AND THE KERB INLET . MAINTAIN THE OPENING WITH SPACE BLOCKS.
6. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
7. 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.



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)

EARTH BASIN - WET (SD 6-4)

NOT TO SCALE

1. Site Data Sheet

Site name:

Site location: 6 and 6A Orchard Street, Warriewood

Precinct:

Description of site: Assumes Type F soils

Site area	Site						Remarks
	South	North					
Total catchment area (ha)	0.34	1.237					
Disturbed catchment area (ha)	0.34	1.237					
Soil analysis							
Soil landscape							DIPNR mapping (if relevant)
Soil Texture Group	Type F	Type F					Sections 6.3.3(c), (d) and (e)
Rainfall data							
Design rainfall depth (days)	5	5					See Sections 6.3.4 (d) and (e)
Design rainfall depth (percentile)	80	80					See Sections 6.3.4 (f) and (g)
x-day, y-percentile rainfall event	35	35					See Section 6.3.4 (h)
Rainfall intensity: 2-year, 6-hour storm	13.6	13.6					See IFD chart for the site
Rainfall erosivity (R-factor)	4030	4030					Automatic calculation from above data

Comments:
Works greater than 6mths in duration - i.e. 80th percentile
Existing soils are Clayey (Group F) - Type D or F Basin
5day-80th percetnil rainfall depth for Warriewood 35mm
2yr-6hr - derived from IFD chart

4. Volume of Sediment Basins, *Type D* and *Type F* Soils

Basin volume = settling zone volume + sediment storage zone volume

Settling Zone Volume

The settling zone volume for *Type F* and *Type D* soils is calculated to provide capacity to contain all runoff expected from up to the y-percentile rainfall event. The volume of the basin's settling zone (V) can be determined as a function of the basin's surface area and depth to allow for particles to settle and can be determined by the following equation:

$$V = 10 \times C_v \times A \times R_{y\text{-\%ile, x-day}} \ (m^3)$$

where:

10 = a unit conversion factor

C_v = the volumetric runoff coefficient defined as that portion of rainfall that runs off as stormwater over the x-day period

R = is the x-day total rainfall depth (mm) that is not exceeded in y percent of rainfall events. (See Sections 6.3.4(d), (e), (f), (g) and (h)).

A = total catchment area (ha)

Sediment Storage Zone Volume

In the standard calculation, the sediment storage zone is 50 percent of the setting zone. However, designers can work to capture the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(ii)), in which case the "Detailed Calculation" spreadsheets should be used.

Total Basin Volume

Site	C_v	R x-day y-%ile	Total catchment area (ha)	Settling zone volume (m^3)	Sediment storage volume (m^3)	Total basin volume (m^3)
South	0.51	35	0.34	60.69	30	91.035
North	0.51	35	1.237	220.8045	110	331.20675

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
SEDIMENT AND EROSION CONTROL DETAILS

JOB NUMBER: 130945

DRAWING NUMBER: C12.11 REVISION: G

DRAWING SHEET SIZE = A1

VERIFIER: T.NATSA
JOB MANAGER: C.PALADA
DESIGNED: C.PALADA
DRAWN: S.WEEKS

LEGEND

DEPTH OF CUT

- -4.0m TO -2.5m
- -2.5m TO -2.0m
- -2.0m TO -1.5m
- -1.5m 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 1.5m
- 1.5m TO 2.0m
- 2.0m TO 2.5m
- 2.5m TO 4.0m

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR EARTHWORKS GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES / DTM FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. STRIP EXISTING TOPSOIL IN CONSULTATION WITH THE GEOTECHNICAL ENGINEER / REPORT.
5. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
6. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS; ie SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS AND THE LIKE.
7. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
8. BULK EARTHWORKS ARE BASED ON THE FOLLOWING DEPTHS FROM FINISHED SURFACE LEVELS;
   - 8.1. ASPHALT PAVEMENT 500mm
   - 8.2. RIGID PAVEMENT TYPE 1 275mm
   - 8.3. RIGID PAVEMENT TYPE 2 220mm
   - 8.4. FOOTPATH PAVEMENT 150mm
   - 8.5. LANDSCAPE AREA 150mm
9. APPROXIMATE BULK EARTHWORK VALUES AS FOLLOWS;
   - 9.1. CUT -4435 cu.m
   - 9.2. FILL +659 cu.m
   - 9.3. BALANCE -3775 cu.m
10. NOTE: THE ABOVE VALUES HAVE BEEN TAKEN WITH THE ASSUMPTION OF A 200mm SITE STRIPPING OF TOPSOIL.
11. TEMPORARY 1:2 SLOPES FOR EXCAVATIONS HAVE BEEN ADOPTED (UNO). CONTRACTOR TO CONFIRM ADEQUACY WITH GEOTECHNICAL ENGINEER.
12. WHERE EXCAVATION EXPOSES HEAVY CLAY / BED ROCK, SUBGRADE TO BE PREPARED IN ACCORDANCE WITH GEOTECHNICAL ENGINEERS DIRECTION (INCLUDING ALL CHANNELS CUT ALONG CONTOUR LINES TO A DEPTH OF 150mm).

FOR CONSTRUCTION

DRAWN: S.WEEKS DESIGNED: C.PALADA JOB MANAGER: C.PALADA VERIFIER: T.NATSA

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F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

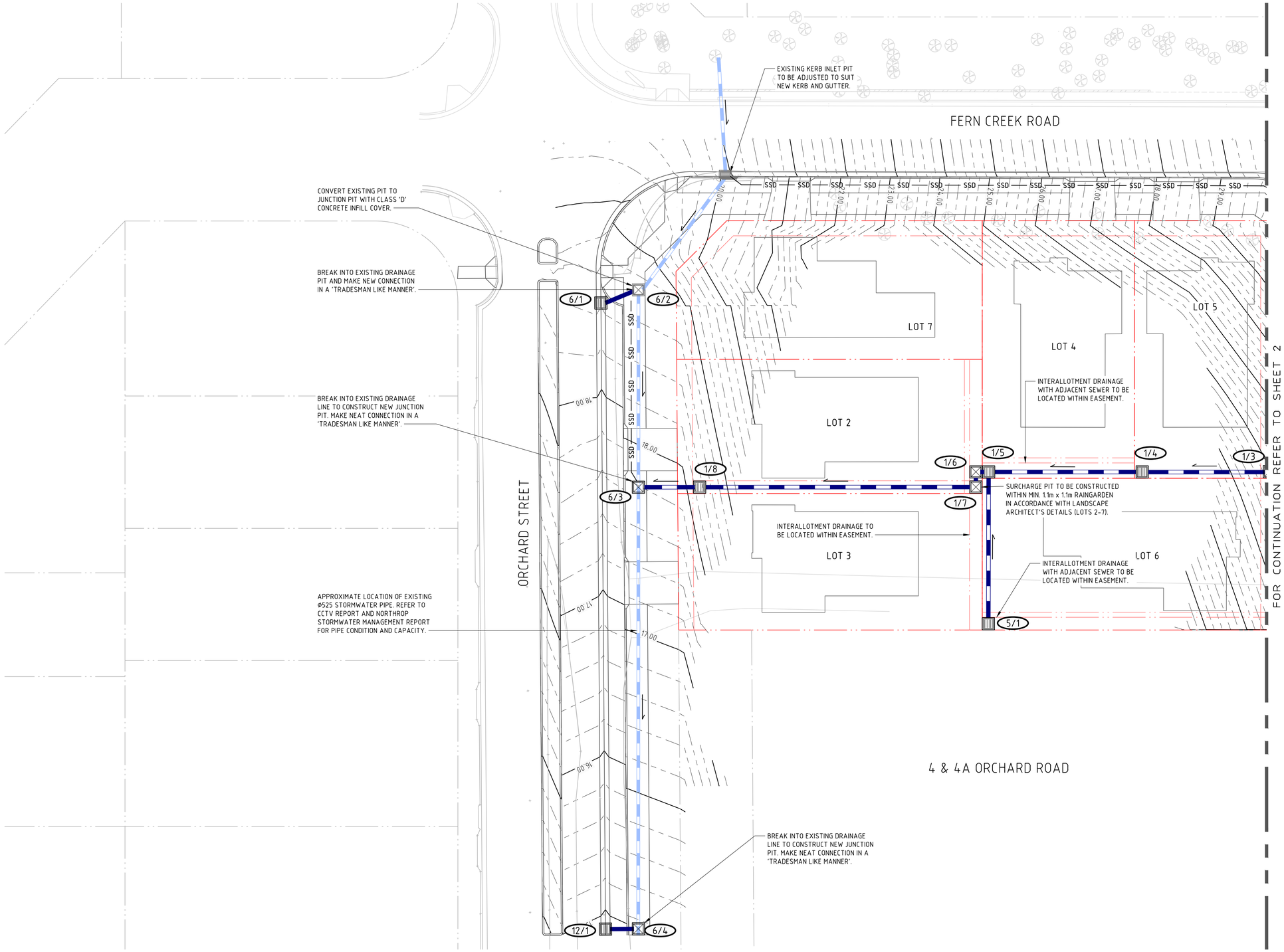
DRAWING TITLE: SUBDIVISION - STAGE 1

BULK EARTHWORKS CUT TO FILL PLAN

JOB NUMBER: 130945

DRAWING NUMBER: C13.01 REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- STORMWATER PIPE
- EXISTING STORMWATER PIPE
- KERB OUTLETS
- GRASS SWALE
- KERB INLET PIT
- JUNCTION PIT
- SURFACE INLET PIT
- STACKED ROCK HEADWALL
- 1 / 1 — STORMWATER PIT TAG
- OSD1 — ON-SITE DETENTION TANK
- SSD — SUBSOIL DRAINAGE
- 20yr FLOOD EXTENTS
- 100yr FLOOD EXTENTS
- PMF FLOOD EXTENTS

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR STORMWATER GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. SUBSOIL DRAINAGE TO RETAINING WALLS, KERBS AND SWALE DRAINS NOT SHOWN FOR CLARITY - REFER RELEVANT DETAILS.
5. REFER 'STORMWATER LONGITUDINAL SECTIONS C14.11-C14.13' FOR PIPE INFORMATION.
6. REFER 'STORMWATER LONGITUDINAL SECTIONS C14.11-C14.13' PIT INFORMATION.
7. ALL STORMWATER INLET PITS TO BE FITTED WITH 'ENVIROPOD' INSERT AND 200 MICRON FILTER.
8. PROVIDE DRAINAGE CONNECTIONS TO KERB IN ACCORDANCE WITH COUNCIL STANDARD DETAILS AND SPECIFICATION.
9. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATIONS.
10. REFER 'STORMWATER MANAGEMENT DEVICES C14.21' FOR OSD TANK STRUCTURE DETAILS.
11. HOUSE LOTS / DRIVEWAYS AND LOT GRADING BY OTHERS.

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.MATSA

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

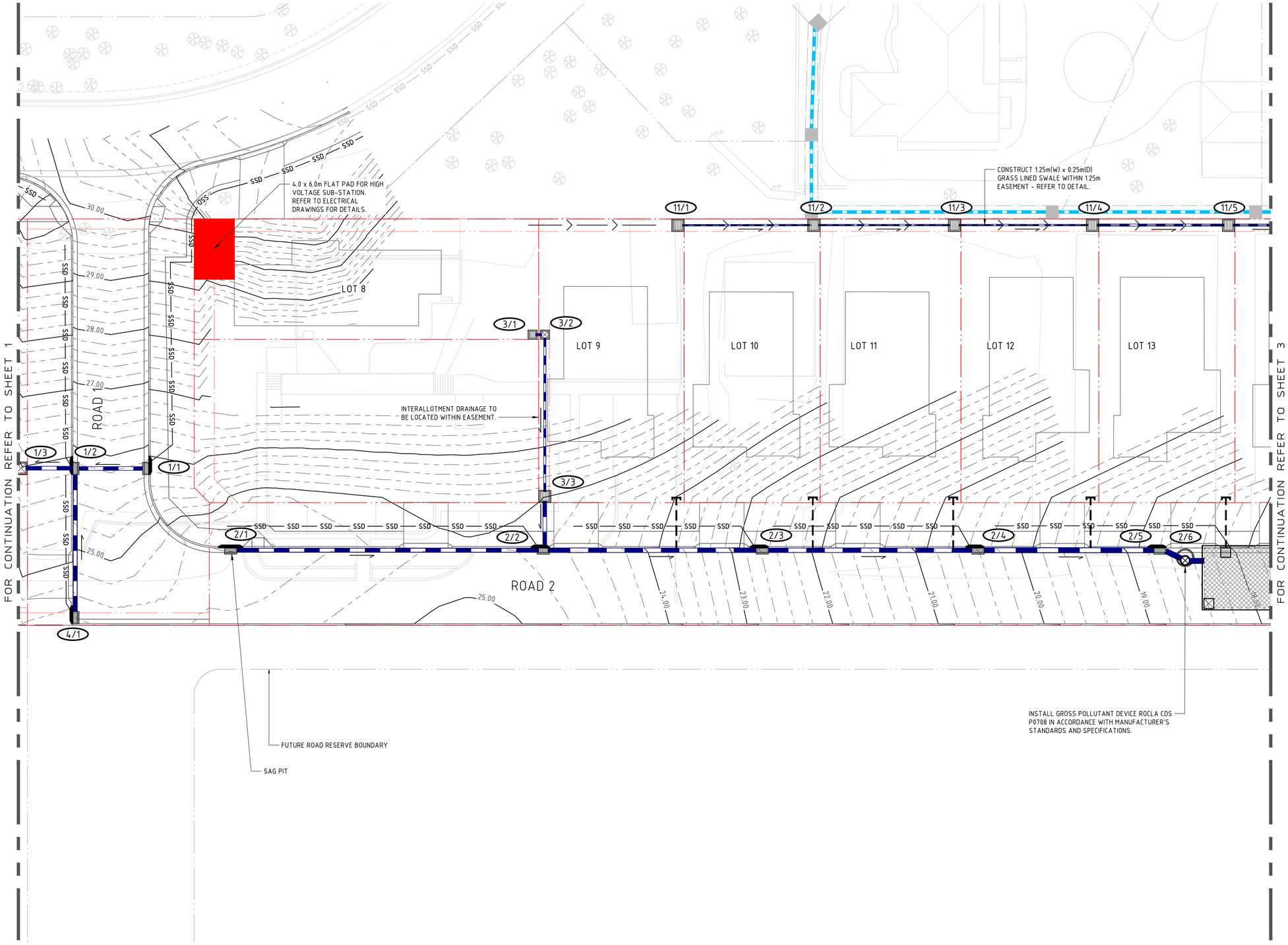
STORMWATER MANAGEMENT PLAN - SHEET 1

JOB NUMBER: 130945

DRAWING NUMBER: C14.01

REVISION: G

DRAWING SHEET SIZE = A1



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DRAWN: S.WEEKS
DESIGNED: C.PALADA
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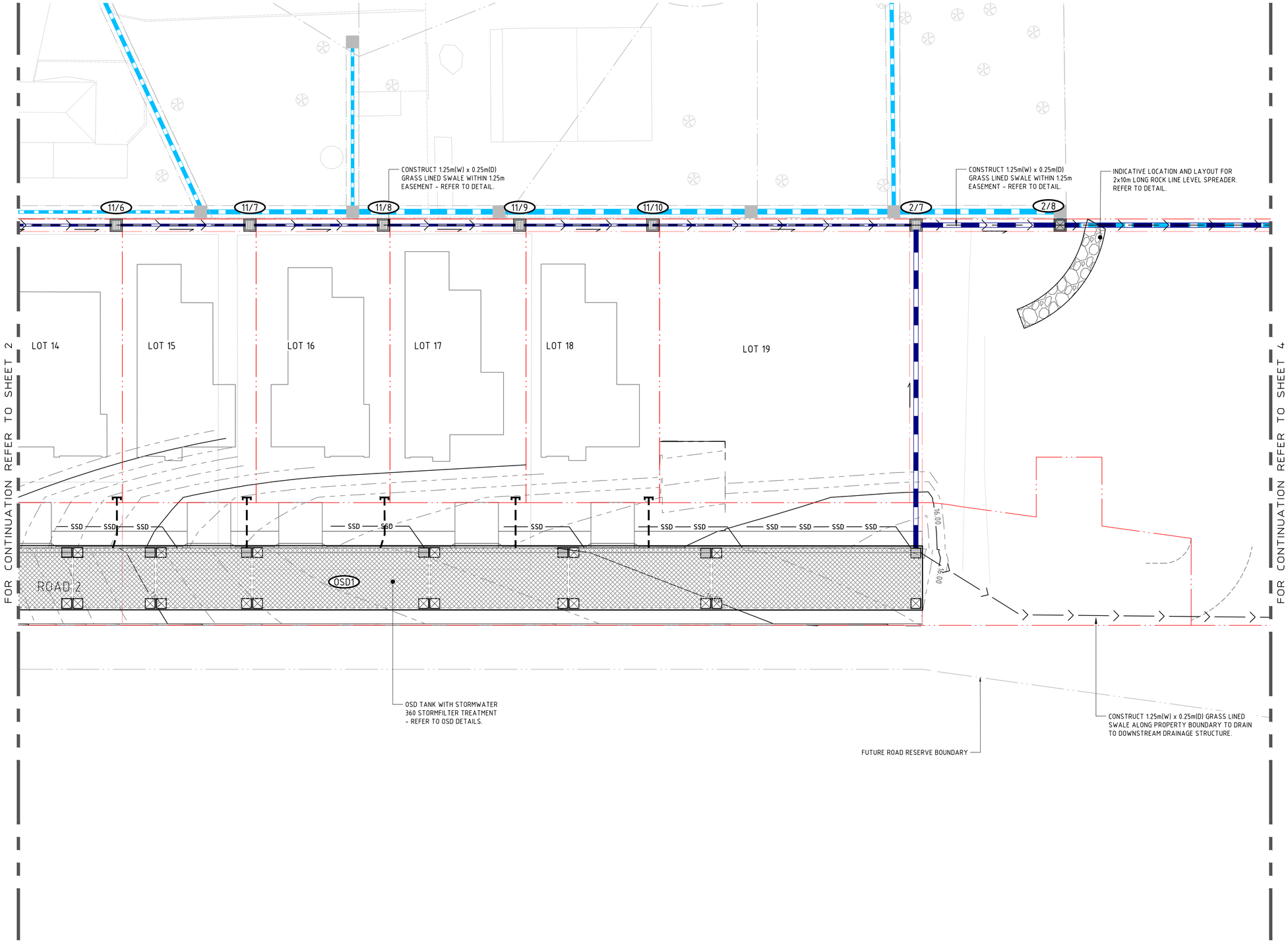
PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
STORMWATER MANAGEMENT PLAN - SHEET 2

JOB NUMBER: 130945
DRAWING NUMBER: C14.02
REVISION: G
DRAWING SHEET SIZE = A1



LEGEND

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5. REFER 'STORMWATER LONGITUDINAL SECTIONS C14.11-C14.13' FOR PIPE INFORMATION.
6. REFER 'STORMWATER LONGITUDINAL SECTIONS C14.11-C14.13' PIT INFORMATION.
7. ALL STORMWATER INLET PITS TO BE FITTED WITH 'ENVIROPOD' INSERT AND 200 MICRON FILTER.
8. PROVIDE DRAINAGE CONNECTIONS TO KERB IN ACCORDANCE WITH COUNCIL STANDARD DETAILS AND SPECIFICATION.
9. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATIONS.
10. REFER 'STORMWATER MANAGEMENT DEVICES C14.21' FOR OSD TANK STRUCTURE DETAILS.
11. HOUSE LOTS / DRIVEWAYS AND LOT GRADING BY OTHERS.

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	18.08.17
D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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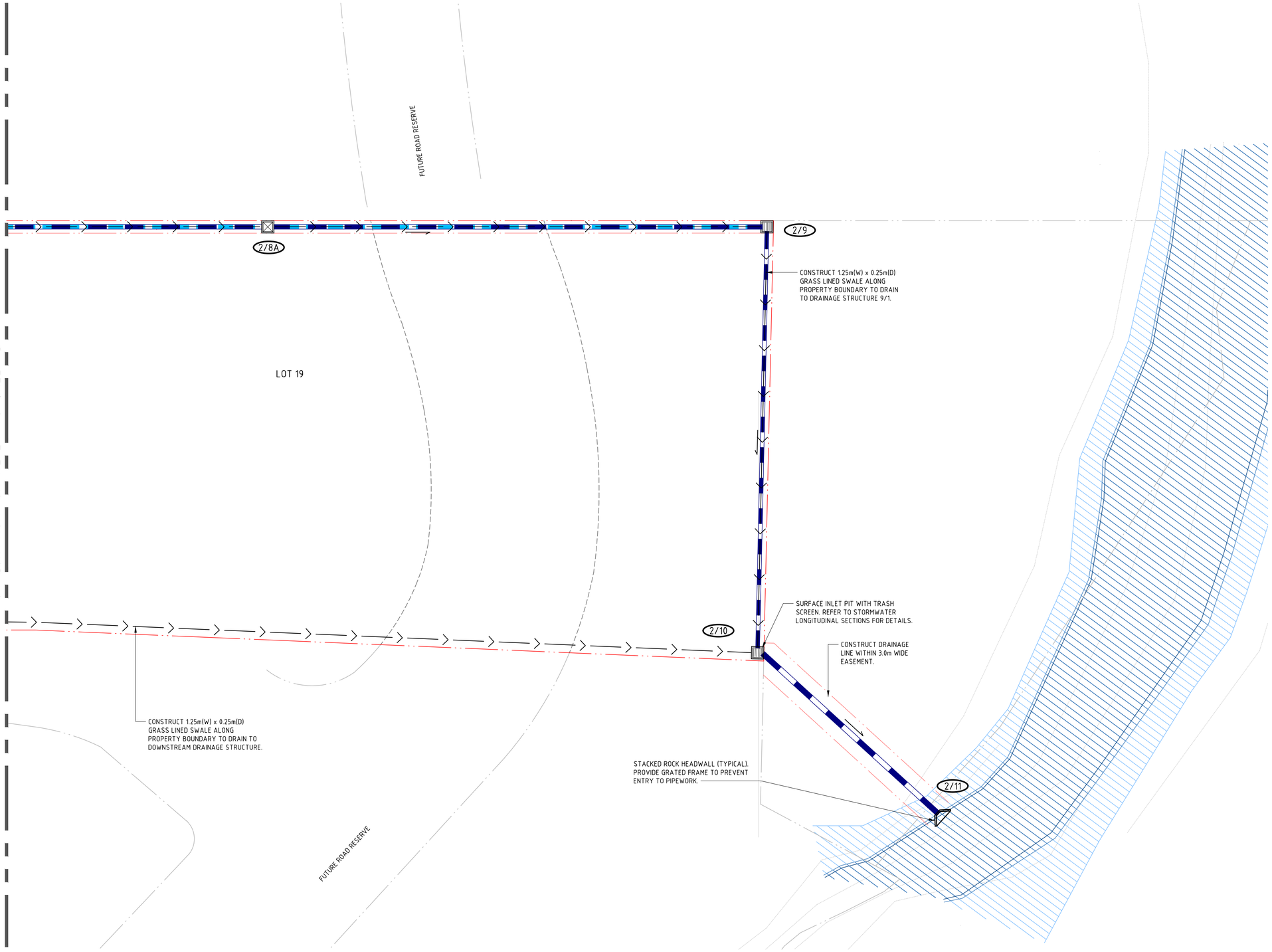
0 2 4 6 8 10m SCALE 1:200

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: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
STORMWATER MANAGEMENT PLAN - SHEET 3

JOB NUMBER: 130945
DRAWING NUMBER: C14.03
REVISION: G
DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- STORMWATER PIPE
- EXISTING STORMWATER PIPE
- KERB OUTLETS
- GRASS SWALE
- KERB INLET PIT
- JUNCTION PIT
- SURFACE INLET PIT
- STACKED ROCK HEADWALL
- 1 / 1 — STORMWATER PIT TAG
- OSD1 — ON-SITE DETENTION TANK
- SSD — SUBSOIL DRAINAGE
- 20yr FLOOD EXTENTS
- 100yr FLOOD EXTENTS
- PMF FLOOD EXTENTS

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR STORMWATER GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. SUBSOIL DRAINAGE TO RETAINING WALLS, KERBS AND SWALE DRAINS NOT SHOWN FOR CLARITY - REFER RELEVANT DETAILS.
5. REFER 'STORMWATER LONGITUDINAL SECTIONS C14.11-C14.13' FOR PIPE INFORMATION.
6. REFER 'STORMWATER LONGITUDINAL SECTIONS C14.11-C14.13' PIT INFORMATION.
7. ALL STORMWATER INLET PITS TO BE FITTED WITH 'ENVIROPOD' INSERT AND 200 MICRON FILTER.
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DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
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0 2 4 6 8 10m SCALE 1:200

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

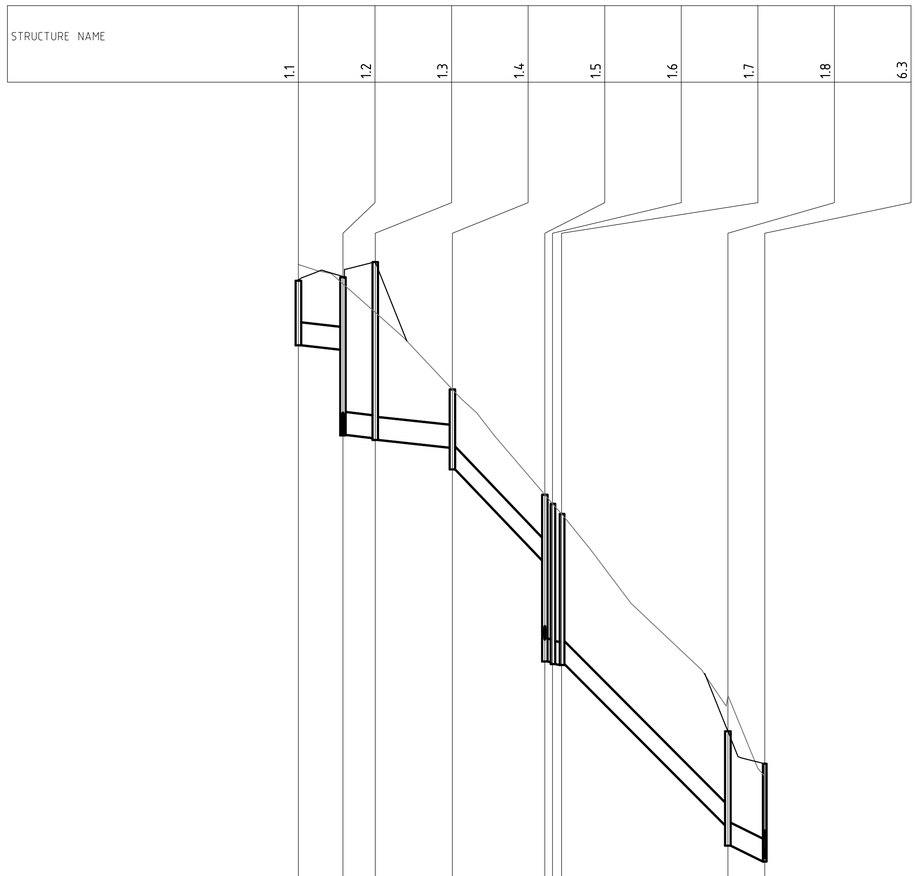
STORMWATER MANAGEMENT PLAN - SHEET 4

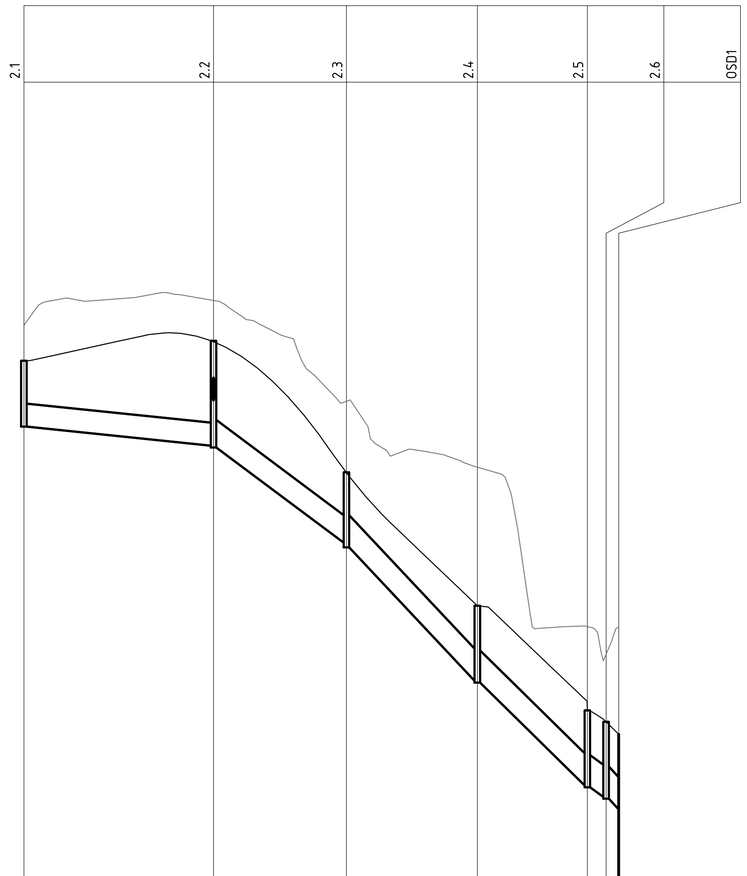
JOB NUMBER: 130945

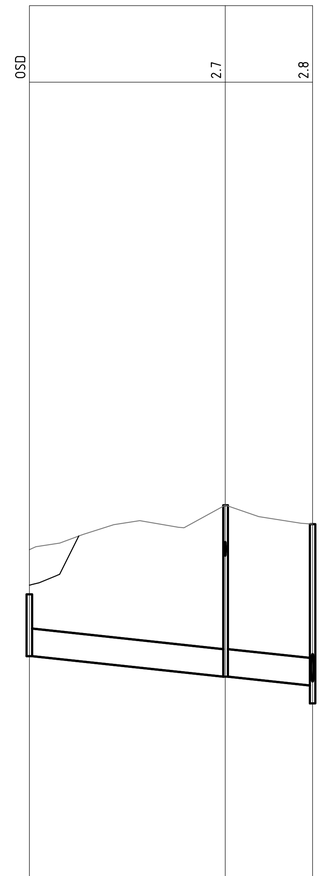
DRAWING NUMBER: C14.04

REVISION: G

DRAWING SHEET SIZE = A1







VERIFIER: T.NATSA

JOB MANAGER: C.PALADA

DESIGNED: C.PALADA

DRAWN: S.WEEKS

	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	6.3
PIPE GRADE (%)	G=1.0%	G=1.0%	G=1.0%	G=9.9%	G=1.0%	G=1.0%	G=9.7%	G=4.3%	
PIPE SIZE (mm)	375	375	375	375	375	375	375	375	
DATUM RL	12.0								
FINISHED SURFACE	25.676	25.732	25.980	23.901	22.182	22.035	21.870	18.322	17.792
NATURAL SURFACE	25.940	25.624	25.158	23.901	22.182	22.035	21.870	18.908	17.584
PIPE INVERT LEVEL	24.622	24.549 23.150	23.158	23.106 23.076	22.950 22.596	21.107 19.461	19.448 19.418	19.403 19.403 19.403	16.786 16.456	16.196 16.196 16.253
DEPTH TO INVERT	1.054	1.183 2.574	2.874 2.904	0.951 1.305	1.075 2.721	2.587 2.617	2.467 2.452	1.536 1.866	1.597 1.539
CHAINAGE	0.000	7.269	12.543	25.141	40.228	41.478	42.965	70.107	76.120

LINE 1
SCALE HORIZONTAL = 1:500
VERTICAL = 1:50

	2.1	2.2	2.3	2.4	2.5	2.6	OSD1
PIPE GRADE (%)	G=1.0%	G=7.2%	G=10.2%	G=9.3%	G=5.1%	G=8.3%	
PIPE SIZE (mm)	375	450	525	525	525	525	
DATUM RL	12.0						
FINISHED SURFACE	24.369	24.695	22.549	20.370	18.662	18.477	18.276
NATURAL SURFACE	24.949	25.352	23.708	22.632	20.030	19.580	20.021
PIPE INVERT LEVEL	23.294	22.984 22.954	21.399 21.324	19.145 19.115	17.437 17.407	17.252 17.222	17.051 15.115
DEPTH TO INVERT	1.075	1.711 1.741	1.150 1.225	1.225 1.255	1.225 1.255	1.225 1.255	1.225 3.161
CHAINAGE	-84.007	-53.056	-31.365	-9.992	7.962	11.027	13.083

LINE 2
SCALE HORIZONTAL = 1:500
VERTICAL = 1:50

	OSD	2.7	2.8
PIPE GRADE (%)	G=1.0%	G=1.0%	
PIPE SIZE (mm)	450	450	
DATUM RL	7.0		
FINISHED SURFACE	15.557	17.012	16.703
NATURAL SURFACE	16.285	17.012	16.703
PIPE INVERT LEVEL	14.548	14.213 14.213	14.070
DEPTH TO INVERT	1.009	2.799 2.799	2.633
CHAINAGE	0.000	31.959	46.230

LINE 2 CONTINUED
SCALE HORIZONTAL = 1:500
VERTICAL = 1:50

FOR CONSTRUCTION

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G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT
Monado CONSTRUCTIONS Pty Ltd

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ARCHITECT
STEPHEN BOWERS ARCHITECTS

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0 5 10 15 20 25m SCALE 1:500

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

PROJECT
6 ORCHARD STREET, WARRIEWOOD, NSW 2012

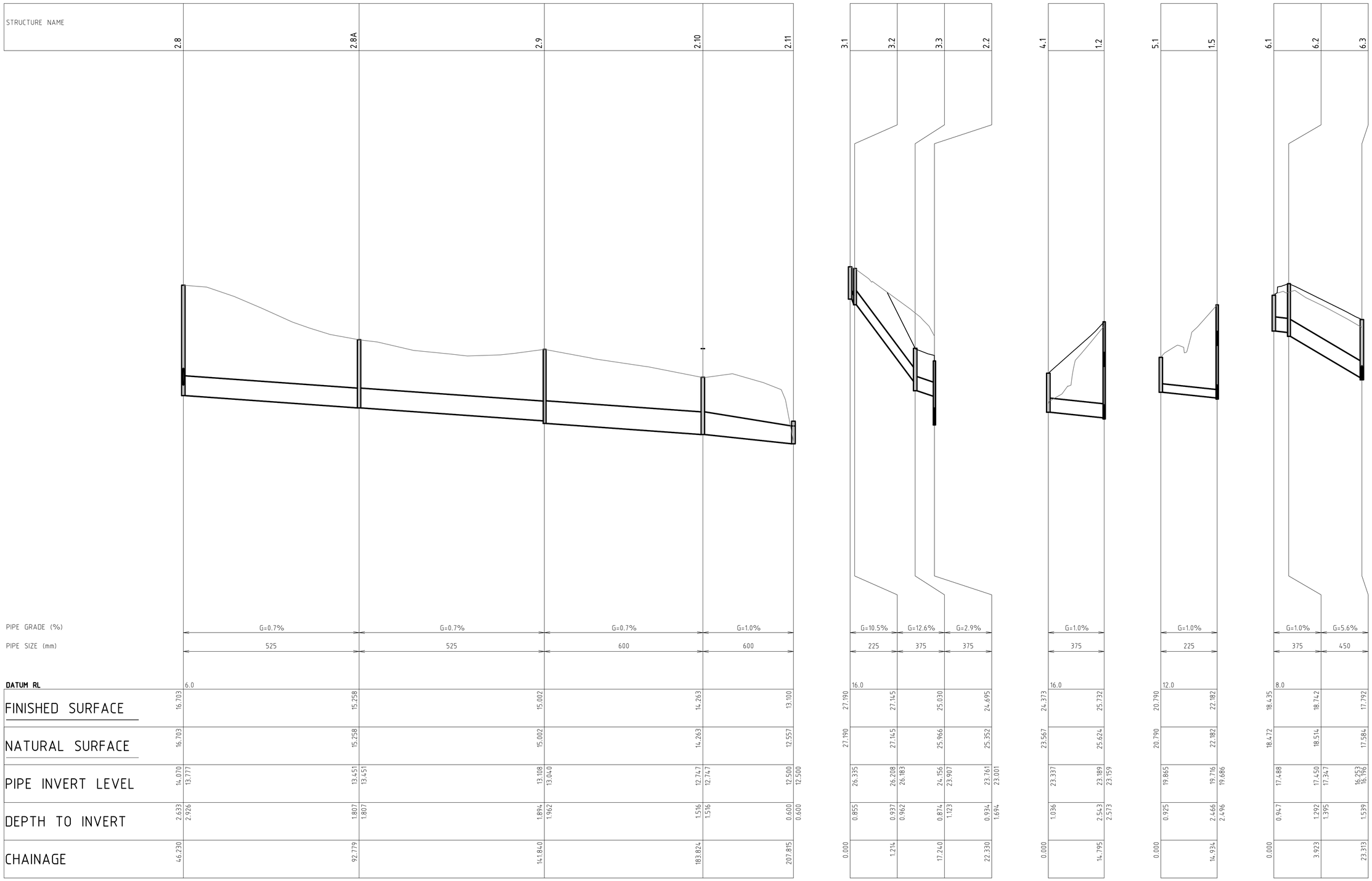
DRAWING TITLE
SUBDIVISION - STAGE 1

STORMWATER LONGITUDINAL SECTIONS - SHEET 1

JOB NUMBER **130945**

DRAWING NUMBER **C14.11** REVISION **G**

DRAWING SHEET SIZE = A1



VERIFIER: T.MATSA

JOB MANAGER: C.PALADA

DESIGNED: C.PALADA

DRAWN: S.WEEKS

FOR CONSTRUCTION

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PROJECT
6 ORCHARD STREET, WARRIEWOOD, NSW 2012

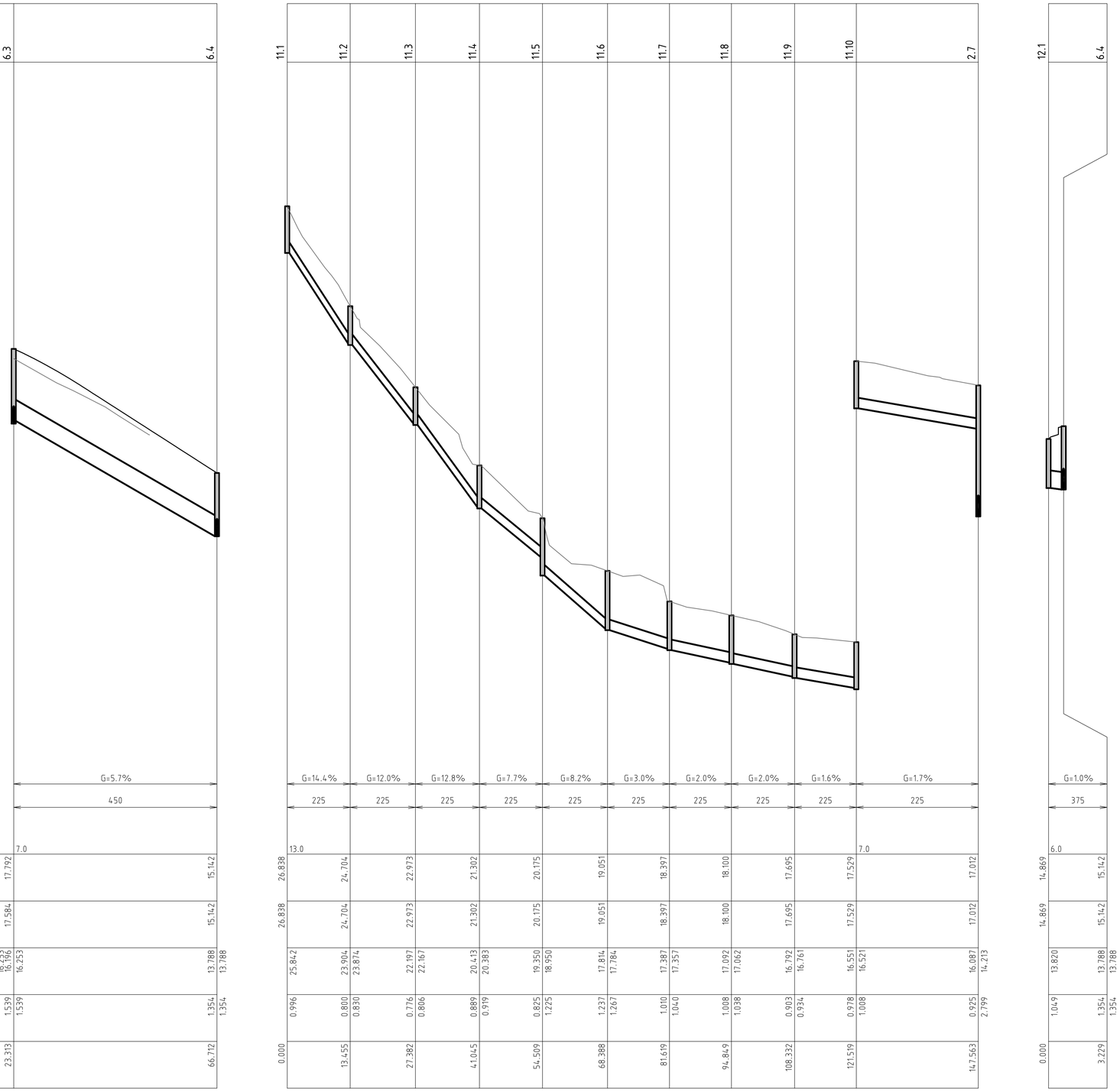
DRAWING TITLE
SUBDIVISION - STAGE 1
STORMWATER LONGITUDINAL SECTIONS - SHEET 2

JOB NUMBER **130945**

DRAWING NUMBER **C14.12** REVISION **G**

DRAWING SHEET SIZE = A1

STRUCTURE NAME



VERIFIER: T.NATSA

JOB MANAGER: C.PALADA

DESIGNED: C.PALADA

DRAWN: S.WEEKS

PIPE GRADE (%)	G=5.7%																												
PIPE SIZE (mm)	450																												
DATUM RL	7.0																												
FINISHED SURFACE	17.792																												15.142
NATURAL SURFACE	17.584																												15.142
PIPE INVERT LEVEL	16.253	16.196	16.253																										13.788	13.788
DEPTH TO INVERT	1.539		1.539																										1.354	1.354
CHAINAGE	23.313																												66.712

LINE 6 CONTINUED
SCALE HORIZONTAL = 1:500
VERTICAL = 1:50

PIPE GRADE (%)	G=14.4%		G=12.0%		G=12.8%		G=7.7%		G=8.2%		G=3.0%		G=2.0%		G=2.0%		G=1.6%		G=1.7%										
PIPE SIZE (mm)	225		225		225		225		225		225		225		225		225		225										
DATUM RL	13.0																		7.0										
FINISHED SURFACE	26.838		24.704		22.973		21.302		20.175		19.051		18.397		18.100		17.695		17.529						17.012				
NATURAL SURFACE	26.838		24.704		22.973		21.302		20.175		19.051		18.397		18.100		17.695		17.529						17.012				
PIPE INVERT LEVEL	25.842		23.904	23.874	22.197	22.167	20.413	20.383	19.350	18.950	17.814	17.784	17.387	17.357	17.092	17.062	16.792	16.761	16.551	16.521					16.087				14.213
DEPTH TO INVERT	0.996		0.800	0.830	0.776	0.806	0.889	0.919	0.825	1.225	1.237	1.267	1.010	1.040	1.008	1.038	0.903	0.934	0.978	1.008					0.925				2.799
CHAINAGE	0.000		13.455		27.382		41.045		54.509		68.388		81.619		94.849		108.332		121.519						147.563				

LINE 11
SCALE HORIZONTAL = 1:500
VERTICAL = 1:50

PIPE GRADE (%)	G=1.0%																												
PIPE SIZE (mm)	375																												
DATUM RL	6.0																												
FINISHED SURFACE	14.869																												15.142
NATURAL SURFACE	14.869																												15.142
PIPE INVERT LEVEL			13.820																										13.788	13.788
DEPTH TO INVERT			1.049																										1.354	1.354
CHAINAGE	0.000																												3.229

LINE 12
SCALE HORIZONTAL = 1:500
VERTICAL = 1:50

FOR CONSTRUCTION

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G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT
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PROJECT
6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE
SUBDIVISION - STAGE 1

STORMWATER LONGITUDINAL SECTIONS - SHEET 3

JOB NUMBER 130945

DRAWING NUMBER C14.13

REVISION G

DRAWING SHEET SIZE = A1

DRAINAGE STRUCTURE SCHEDULE

PIT ID	STRUCTURE DESCRIPTION	GRATE & FRAME SIZE	CHAMBER SIZE	LINTEL TYPE & SIZE	ACCESS COVER & CLASS	SETOUT RL	INVERT RL	DEPTH TO IL	REMARKS
1/1	NEW KERB INLET PIT	900 x 450	900 x 900	1.8m CONCRETE LINTEL	GALV. BICYCLE SAFE COVER 'D'	25.68	24.62	1.05	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
1/2	NEW KERB INLET PIT	900 x 450	900 x 900	1.8m CONCRETE LINTEL	GALV. BICYCLE SAFE COVER 'D'	25.73	23.16	2.57	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
1/3	NEW JUNCTION PIT	900 x 900	900 x 900		CONCRETE INFILL COVER 'B'	25.98	23.08	2.90	
1/4	NEW SURFACE INLET PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	23.90	22.60	1.30	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
1/5	NEW SURFACE INLET PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	22.18	19.46	2.72	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
1/6	NEW JUNCTION PIT	900 x 900	900 x 900		CONCRETE INFILL COVER 'B'	22.04	19.42	2.62	
1/7	NEW JUNCTION PIT	900 x 900	900 x 900		CONCRETE INFILL COVER 'B'	21.87	19.40	2.47	
1/8	NEW SURFACE INLET PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	18.32	16.46	1.87	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
2/1	NEW KERB INLET PIT (SAG)	900 x 450	900 x 900	1.8m CONCRETE LINTEL (SAG)	GALV. BICYCLE SAFE COVER 'D'	24.37	23.34	1.03	SAG PIT. PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
2/2	NEW KERB INLET PIT	900 x 450	900 x 900	1.8m CONCRETE LINTEL	GALV. BICYCLE SAFE COVER 'D'	24.70	23.00	1.69	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
2/3	NEW KERB INLET PIT	900 x 450	900 x 900	1.8m CONCRETE LINTEL	GALV. BICYCLE SAFE COVER 'D'	22.55	21.19	1.36	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
2/4	NEW KERB INLET PIT	900 x 450	900 x 900	1.8m CONCRETE LINTEL	GALV. BICYCLE SAFE COVER 'D'	20.37	19.09	1.29	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
2/5	NEW KERB INLET PIT	900 x 450	900 x 900	1.8m CONCRETE LINTEL	GALV. BICYCLE SAFE COVER 'D'	18.66	17.39	1.27	INSTALL TO MANUFACTURERS SPECIFICATIONS
2/6	NEW GPT 'MODEL P0708				GALV. BICYCLE SAFE COVER 'D'	18.48	17.15	1.33	INSTALL TO MANUFACTURERS SPECIFICATIONS
2/7	NEW SURFACE INLET PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	17.01	14.21	2.80	
2/8	NEW JUNCTION PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	16.70	13.78	2.93	
2/8A	NEW JUNCTION PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	15.26	13.45	1.81	
2/9	NEW SURFACE INLET PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	15.00	13.04	1.96	
2/10	NEW SURFACE INLET PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	15.02	12.75	2.28	
2/11	NEW HEADWALL					12.97	12.50	0.47	ROCK STACKED HEADWALL TO STANDARD DETAIL
3/1	NEW SURFACE INLET PIT	600 x 600	600 x 600		GALV. HEEL SAFE COVER 'B'	27.19	26.34	0.86	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
3/2	NEW JUNCTION PIT	600 x 600	600 x 600		GALV. HEEL SAFE COVER 'B'	27.15	26.18	0.96	
3/3	NEW SURFACE INLET PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'D'	25.03	23.91	1.12	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
4/1	NEW KERB INLET PIT	900 x 900	900 x 900	1.8m CONCRETE LINTEL	GALV. BICYCLE SAFE COVER 'D'	24.37	23.34	1.04	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
5/1	NEW SURFACE INLET PIT	600 x 900	600 x 900		GALV. BICYCLE SAFE COVER 'B'	20.79	19.87	0.93	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
6/1	NEW DISH DRAIN / V GRATE PIT	900 x 900	900 x 900		GALV. BICYCLE SAFE COVER 'D'	18.44	17.49	0.95	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'
6/2	NEW JUNCTION PIT	900 x 900	900 x 900		CONCRETE INFILL COVER 'D'	18.74	17.35	1.40	CONVERT EXISTING S.I.P. TO J.P.
6/3	NEW JUNCTION PIT	900 x 900	900 x 900		CONCRETE INFILL COVER 'D'	17.79	16.25	1.54	BREAK EXISTING LINE AND CONSTRUCT NEW PIT
6/4	NEW JUNCTION PIT	900 x 900	900 x 900		CONCRETE INFILL COVER 'D'	15.14	13.76	1.38	CONVERT EXISTING S.I.P. TO J.P.
11/1	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	26.84	25.84	1.00	
11/2	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	24.70	23.87	0.83	
11/3	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	22.97	22.17	0.81	
11/4	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	21.30	20.38	0.92	
11/5	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	20.18	18.95	1.23	
11/6	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	19.05	17.78	1.27	
11/7	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	18.40	17.36	1.04	
11/8	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	18.10	17.06	1.04	
11/9	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	17.70	16.76	0.93	
11/10	NEW SURCHARGE PIT	900 x 900	900 x 900		GALV. HEEL SAFE COVER 'B'	17.53	16.52	1.01	
12/1	NEW DISH DRAIN / V GRATE PIT	900 x 900	900 x 900		GALV. BICYCLE SAFE COVER 'D'	14.87	13.82	1.05	PROVIDE LITTER BASKET INSERT 'ENVIROPOD'

DRAWN: S.WEEKS DESIGNED: C.PALADA JOB MANAGER: C.PALADA VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
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E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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0 1 2 3 4 5m SCALE 1:100
0 5 10 15 20 25m SCALE 1:500

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Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

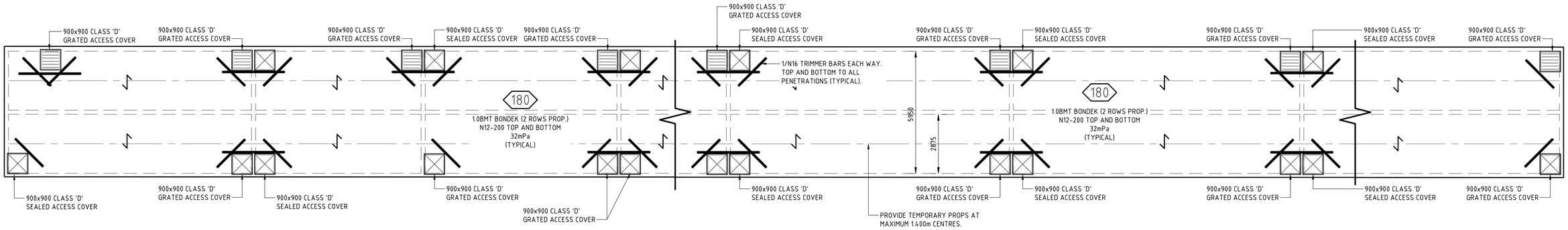
STORMWATER LONGITUDINAL SECTIONS AND PIT SCHEDULE - SHEET 4

JOB NUMBER: 130945

DRAWING NUMBER: C14.14

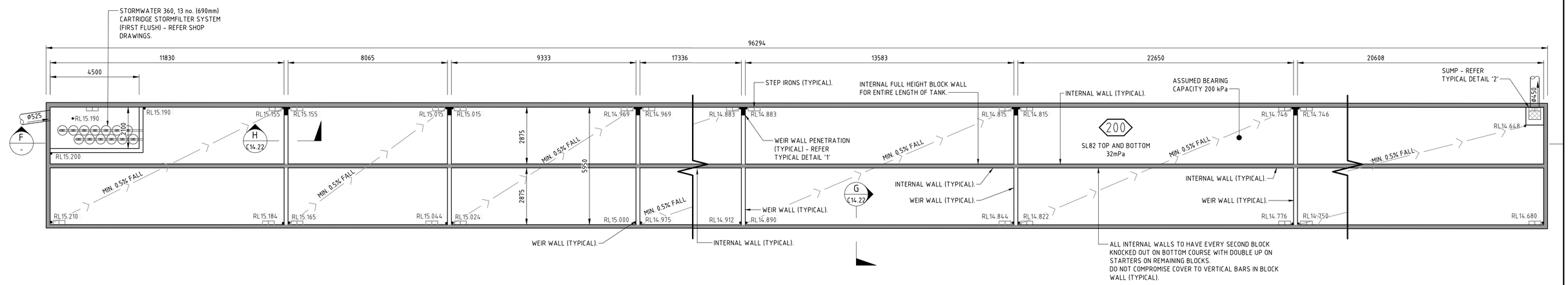
REVISION: G

DRAWING SHEET SIZE = A1



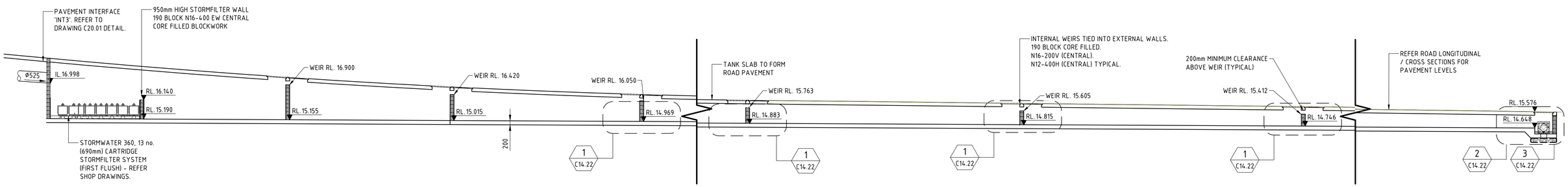
ON-SITE DETENTION TANK 'OSD' - ROOF PLAN

VOLUME = 510m³
SCALE: 1:100



ON-SITE DETENTION TANK 'OSD' - BASE PLAN

VOLUME = 510m³
SCALE: 1:100



SECTION F

GENERAL NOTES:

1. FOR TANK LOCATIONS REFER STORMWATER DRAINAGE DRAWINGS.
2. PROVIDE STEP IRONS IN ACCORDANCE WITH AUSTRALIAN STANDARDS.
3. FINISH TO MATCH ADJACENT CONCRETE PAVEMENTS.
4. ALL PITS TO BE CHILDPROOF LOCKABLE J BOLTS OR APPROVED EQUIVALENT.
5. TANK SUBGRADE BEAR CAPACITY ASSUMED TO BE 200kPa. CONTRACTOR TO CONFIRM PRIOR TO CONSTRUCTION.
6. ALL GRATED ACCESS COVERS TO HAVE ENVIROPOD INSTALLED TO MANUFACTURERS SPECIFICATIONS.

FOR CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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0 1 2 3 4 5m SCALE 1:100

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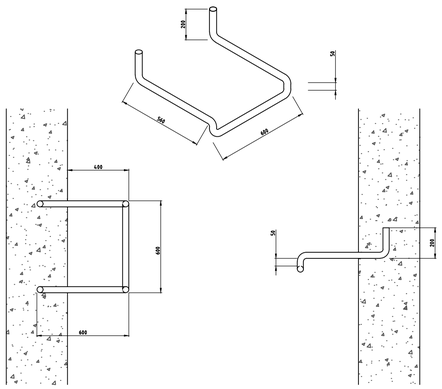
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

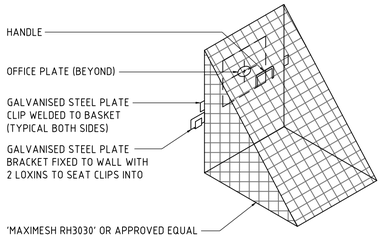
DRAWING TITLE: SUBDIVISION - STAGE 1
STORMWATER MANAGEMENT DEVICES - SHEET 1

JOB NUMBER: 130945
DRAWING NUMBER: C14.21
REVISION: G
DRAWING SHEET SIZE = A1

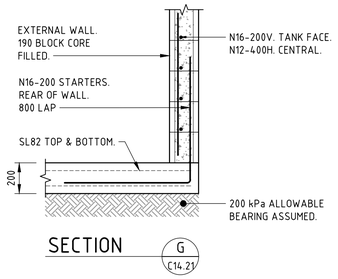


STEP IRON DETAIL

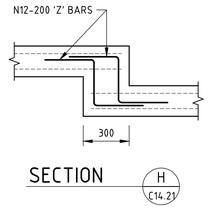
STEP IRON OF 20mm GALVANISED STEEL MADE TO SHAPE AND DIMENSIONS AS SHOWN, PLACED AT 300 CENTRES AND STAGGERED HORIZONTALLY FOR ALL PITS DEEPER THAN 1.0m. THE USE OF PROPRIETARY STEP IRONS ARE ACCEPTABLE PROVIDED THE PRODUCT IS IN ACCORDANCE WITH AUSTRALIAN STANDARDS



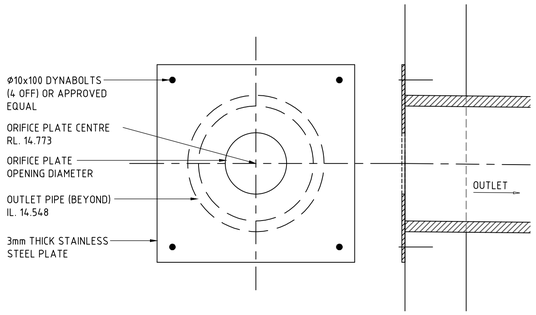
TRASH SCREEN DETAIL



TYPICAL EDGE DETAIL



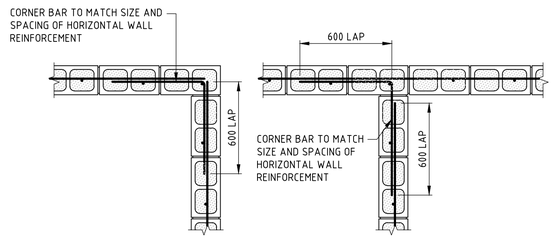
TYPICAL STEP DETAIL



ORIFICE PLATE DETAIL

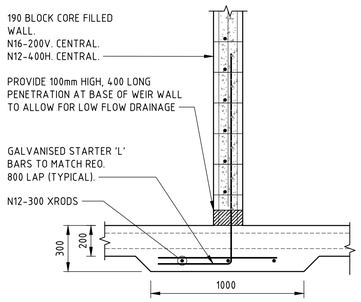
- ORIFICE PLATE 'OP1' - Φ288mm

TO BE LOCATED AT ALL ENTRY POINTS INSIDE OSD TANK

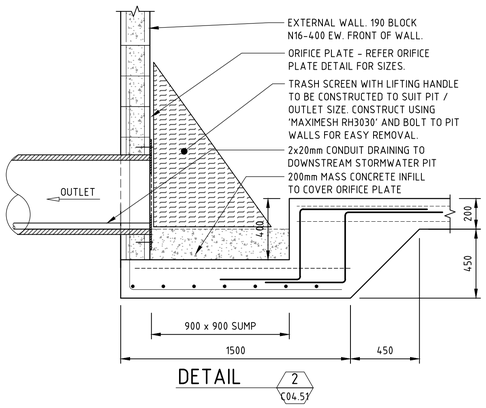


TYPICAL REINFORCED BLOCKWALL PLANS

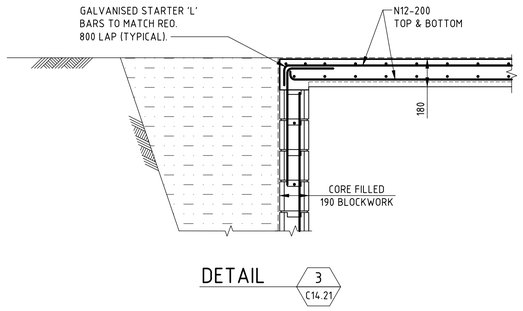
APPLY SEALANTS AS SPECIFIED TO EACH FACE OF BLOCK WALL.



TYPICAL INTERNAL AND WEIR WALL DETAIL



TYPICAL SUMP DETAIL



TYPICAL OSD DETAIL

GENERAL NOTES:

1. FOR TANK LOCATIONS REFER STORMWATER DRAINAGE DRAWINGS.
2. PROVIDE STEP IRONS IN ACCORDANCE WITH AUSTRALIAN STANDARDS.

FOR CONSTRUCTION

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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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: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

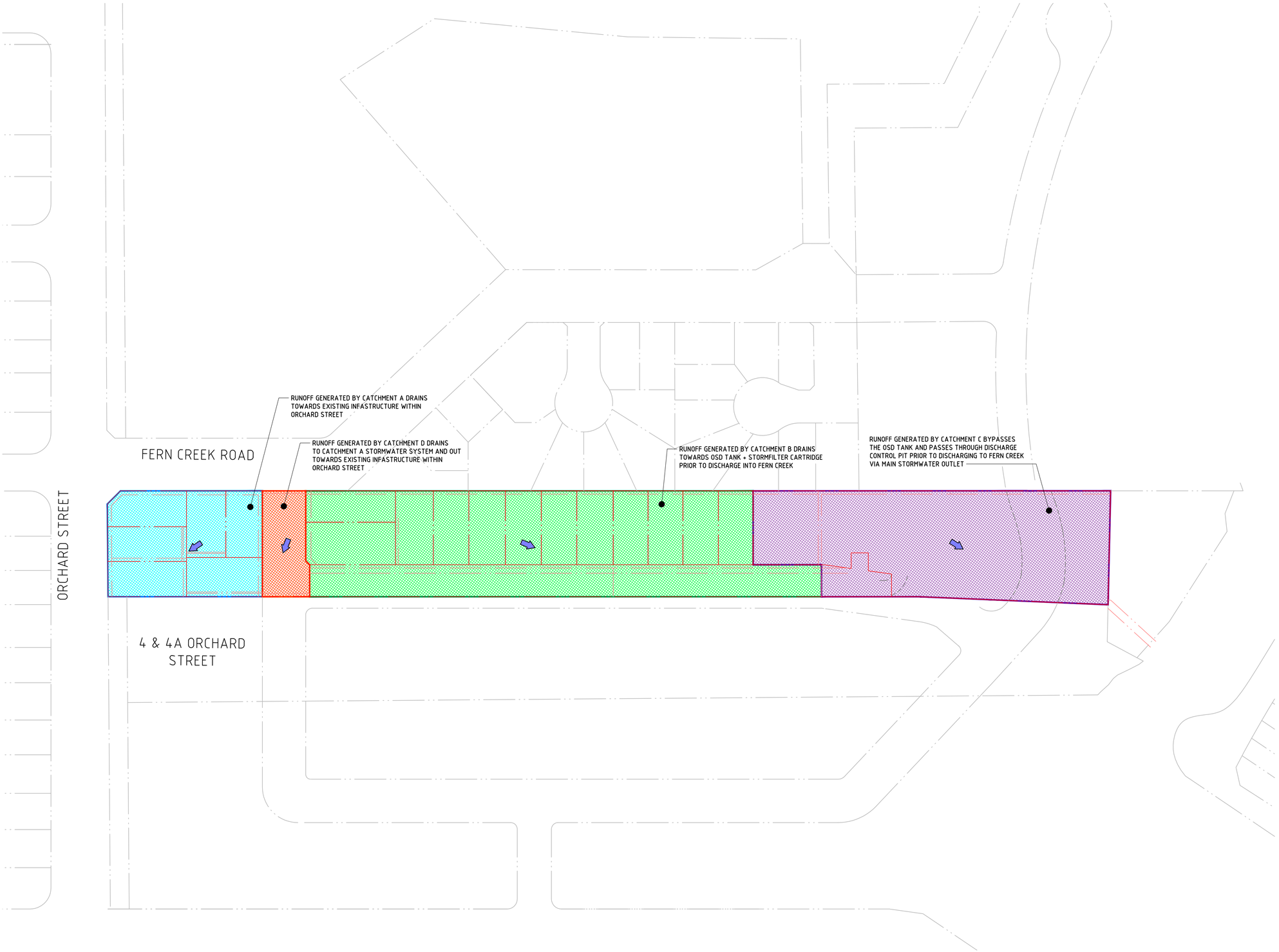
STORMWATER MANAGEMENT DEVICES - SHEET 2

JOB NUMBER: 130945

DRAWING NUMBER: C14.22

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- CATCHMENT AREA - A ORCHARD STREET DISCHARGE
- CATCHMENT AREA - B FERN CREEK DISCHARGE, THROUGH OSD
- CATCHMENT AREA - C FERN CREEK DISCHARGE, OSD BYPASS
- CATCHMENT AREA - D PRIVATE ROAD DISCHARGE, OSD BYPASS
- OVERLAND FLOW

NOTES

1. REFER TO C11.02 +C14.01 FOR STORMWATER DRAINAGE NOTES.
2. REFER TO C14.01-C14.03 FOR STORMWATER DRAINAGE PLANS.
3. REFER TO FLOOD AND STORMWATER MANAGEMENT REPORT PREPARED BY NORTHROP ENGINEERS FOR DETAILS RELATING TO CATCHMENT CHARACTERISTICS ETC.
4. CATCHMENT A AREA = 2353 m^2
   CATCHMENT B AREA = 7140 m^2
   CATCHMENT C AREA = 5244 m^2
   CATCHMENT D AREA = 683 m^2

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

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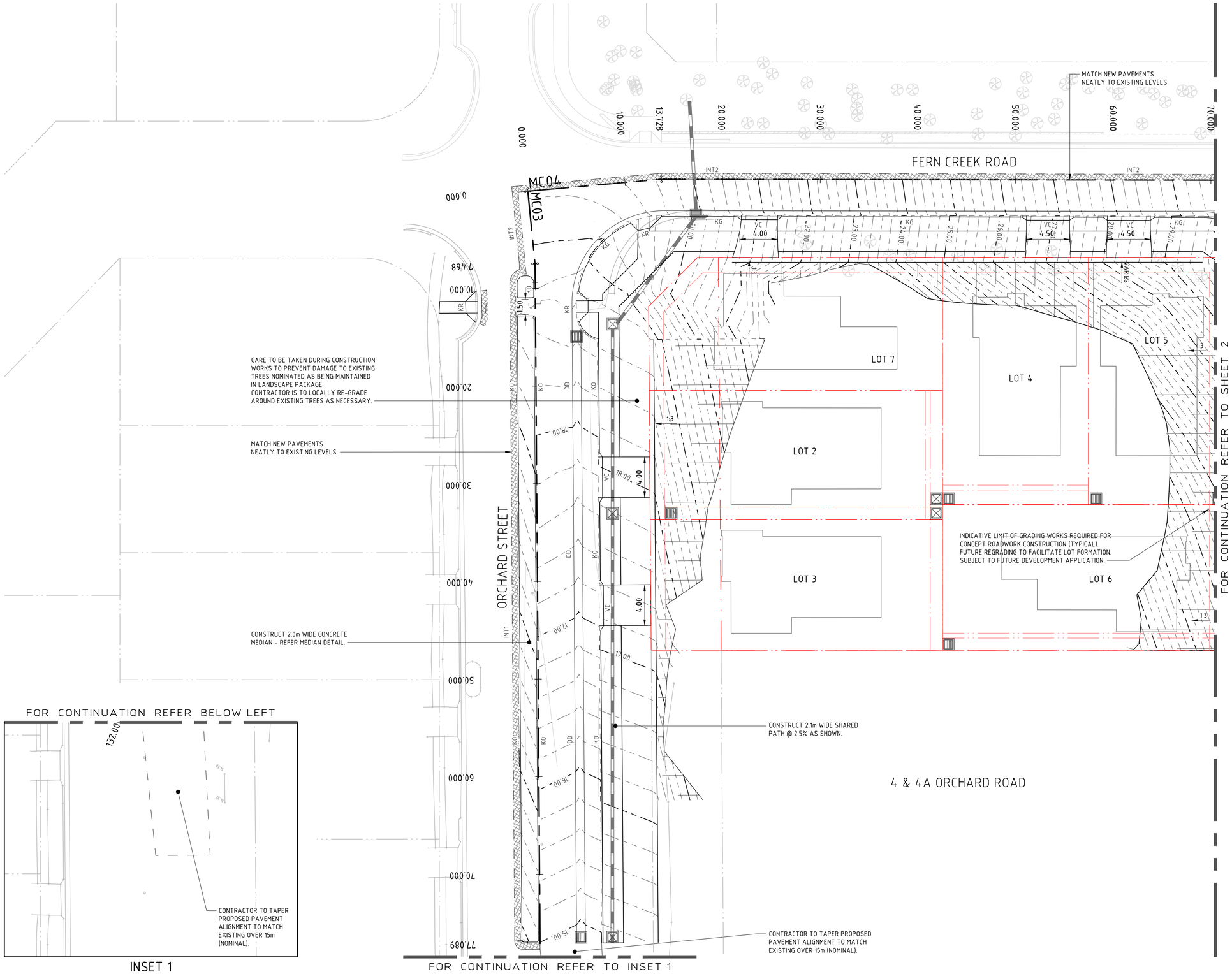
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
STORMWATER CATCHMENT PLAN

JOB NUMBER: 130945
DRAWING NUMBER: C14.31
REVISION: G
DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- SUBDIVISION BOUNDARY
- KO — INTEGRAL KERB
- KG — KERB AND GUTTER
- IKG — INTEGRAL KERB AND GUTTER
- DD — DISH DRAIN
- VC — VEHICULAR CROSSING
- KR — KERB RAMP
- KERB INLET PIT
- JUNCTION PIT
- ON-SITE DETENTION TANK
- 10.00 — CONTOURS
- LIMIT OF GRADING WORKS
- MC01 — CONTROL LINE
- CH.0.000 — CHAINAGE

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR SITEWORKS GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. DRIVEWAYS WITHIN INTERNAL LOT DEVELOPMENTS (BY OTHERS).
5. REFER LONGITUDINAL SECTIONS C18.11 - C18.13 AND CROSS SECTIONS C18.21 - C18.36 FOR GRADING.

DRAWN: S.WEEKS DESIGNED: CPALADA JOB MANAGER: CPALADA VERIFIER: T.NATSA

FOR CONSTRUCTION

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

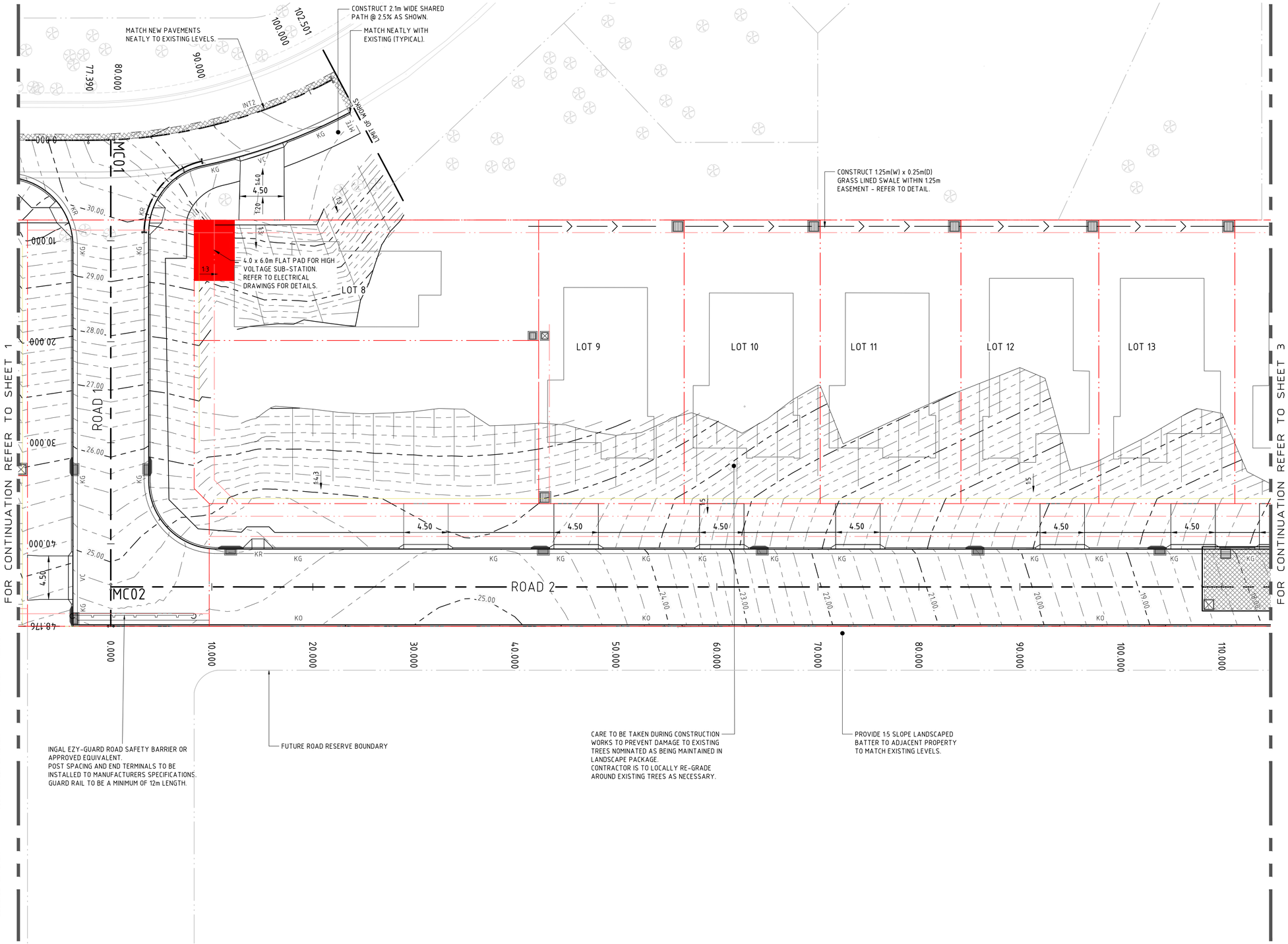
DRAWING TITLE: SUBDIVISION - STAGE 1

SITEWORKS AND GRADING PLAN - SHEET 1

JOB NUMBER: 130945

DRAWING NUMBER: C15.01 REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- SUBDIVISION BOUNDARY
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- KG — KERB AND GUTTER
- IKG — INTEGRAL KERB AND GUTTER
- DD — DISH DRAIN
- VC — VEHICULAR CROSSING
- KR — KERB RAMP
- KERB INLET PIT
- JUNCTION PIT
- ON-SITE DETENTION TANK
- 10.00 — CONTOURS
- LIMIT OF GRADING WORKS
- MC01 — CONTROL LINE
- CH.0.000 — CHAINAGE

GENERAL NOTES:

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4. DRIVEWAYS WITHIN INTERNAL LOT DEVELOPMENTS (BY OTHERS).
5. REFER LONGITUDINAL SECTIONS C18.11 - C18.13 AND CROSS SECTIONS C18.21 - C18.36 FOR GRADING.

VERIFIER: T.NATSA
JOB MANAGER: C.PALADA
DESIGNED: C.PALADA
DRAWN: S.WEEKS

FOR CONSTRUCTION

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F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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0 2 4 6 8 10m SCALE 1:200

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

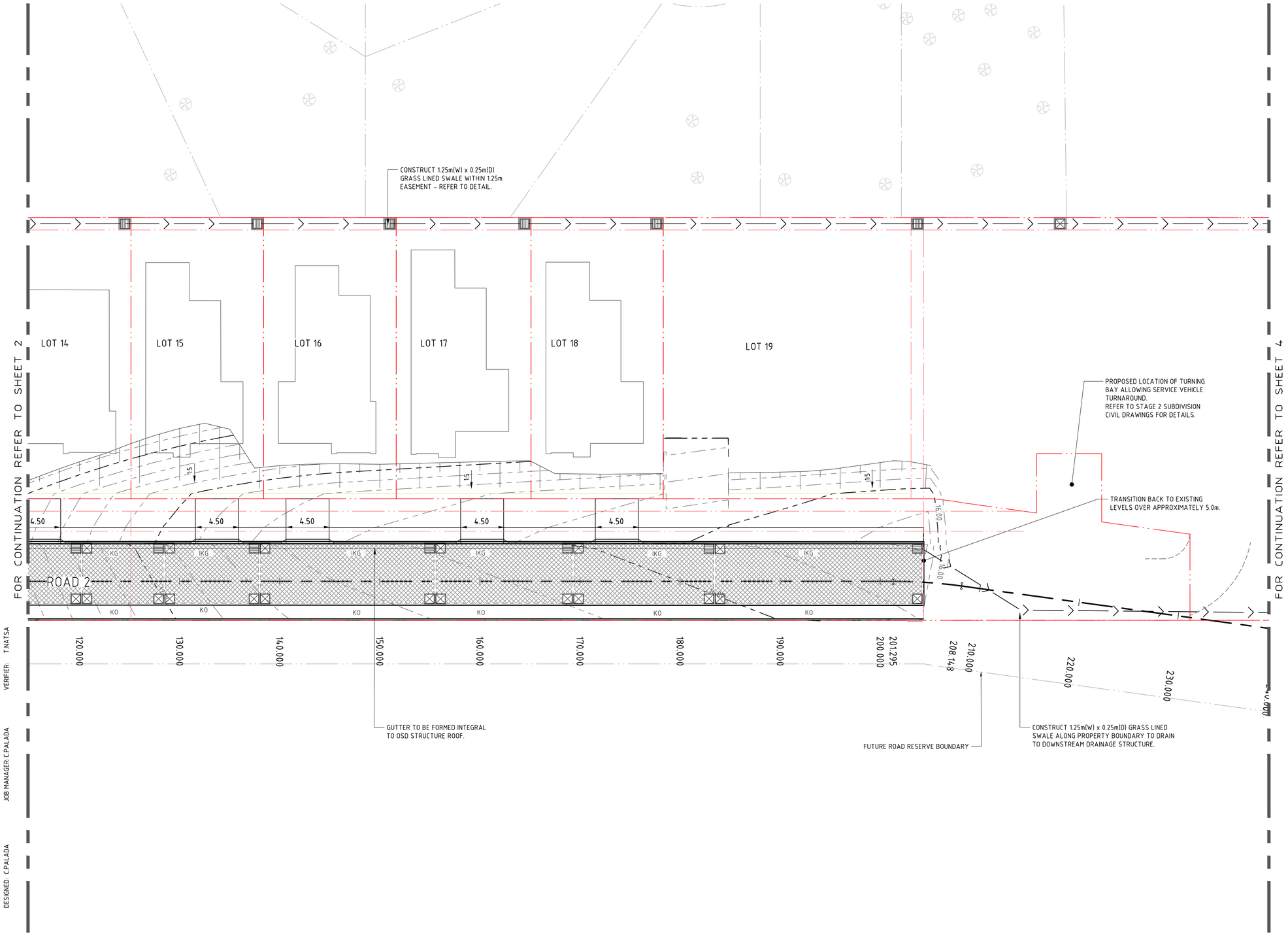
SITEWORKS AND GRADING PLAN - SHEET 2

JOB NUMBER: 130945

DRAWING NUMBER: C15.02

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- SUBDIVISION BOUNDARY
- KO — INTEGRAL KERB
- KG — KERB AND GUTTER
- IKG — INTEGRAL KERB AND GUTTER
- DD — DISH DRAIN
- VC — VEHICULAR CROSSING
- KR — KERB RAMP
- KERB INLET PIT
- JUNCTION PIT
- ON-SITE DETENTION TANK
- 10.00 — CONTOURS
- LIMIT OF GRADING WORKS
- MC01 — CONTROL LINE
- CH.0.000 — CHAINAGE

GENERAL NOTES:

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3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. DRIVEWAYS WITHIN INTERNAL LOT DEVELOPMENTS (BY OTHERS).
5. REFER LONGITUDINAL SECTIONS C18.11 - C18.13 AND CROSS SECTIONS C18.21 - C18.36 FOR GRADING.

VERIFIER: T.NATSA
JOB MANAGER: C.PALADA
DESIGNED: C.PALADA
DRAWN: S.WEEKS

FOR CONSTRUCTION

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D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
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F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT: Monado Constructions Pty Ltd

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

ARCHITECT: STEPHEN BOWERS ARCHITECTS

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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: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

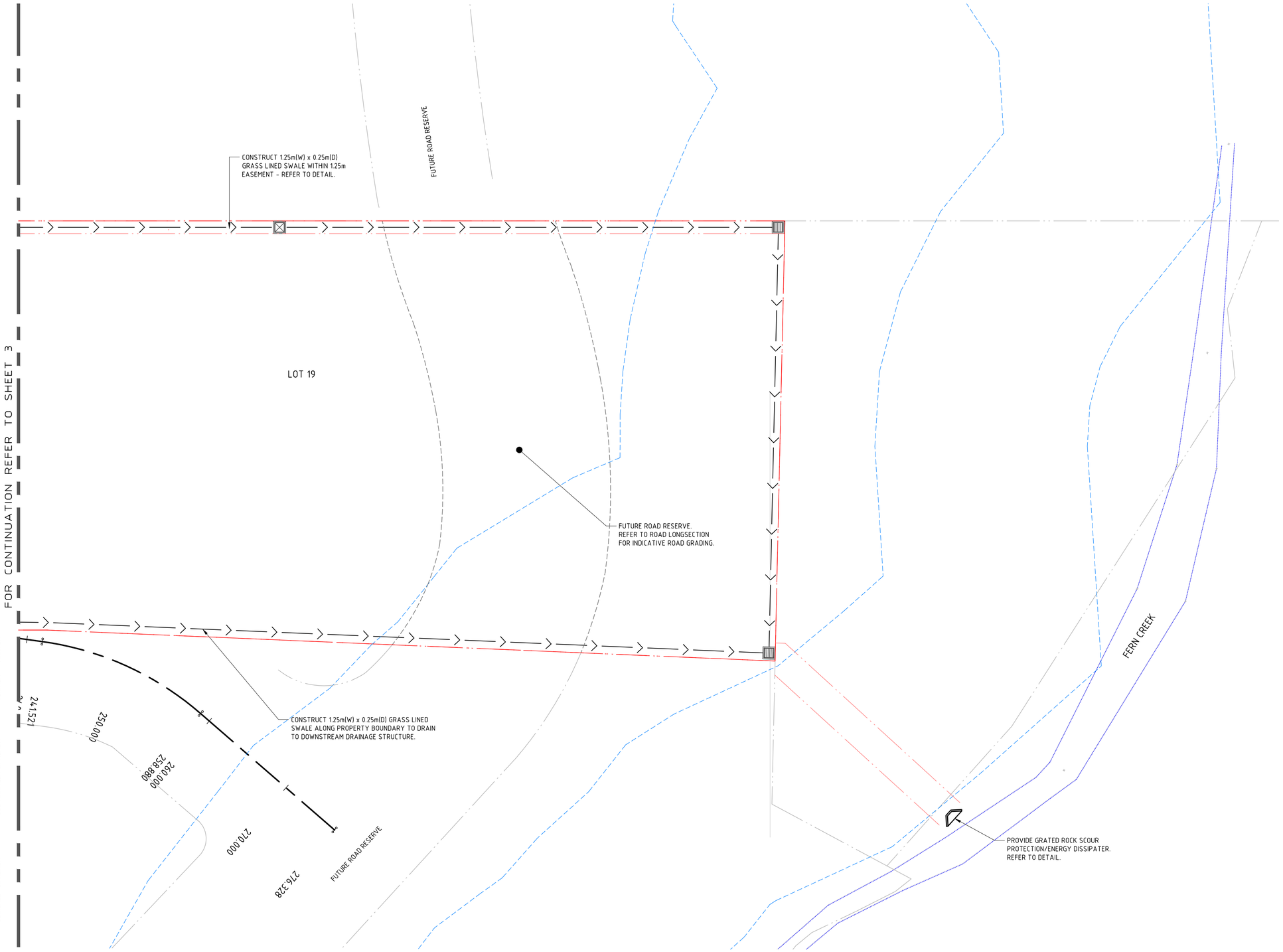
SITEWORKS AND GRADING PLAN - SHEET 3

JOB NUMBER: 130945

DRAWING NUMBER: C15.03

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- SUBDIVISION BOUNDARY
- KO — INTEGRAL KERB
- KG — KERB AND GUTTER
- IKG — INTEGRAL KERB AND GUTTER
- DD — DISH DRAIN
- VC — VEHICULAR CROSSING
- KR — KERB RAMP
- KERB INLET PIT
- JUNCTION PIT
- ON-SITE DETENTION TANK
- 10.00 — CONTOURS
- LIMIT OF GRADING WORKS
- MC01 — CONTROL LINE
- CH.0.000 — CHAINAGE

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR SITEWORKS GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. DRIVEWAYS WITHIN INTERNAL LOT DEVELOPMENTS (BY OTHERS).
5. REFER LONGITUDINAL SECTIONS C18.11 - C18.13 AND CROSS SECTIONS C18.21 - C18.36 FOR GRADING.

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.MATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT: Monado Constructions Pty Ltd

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

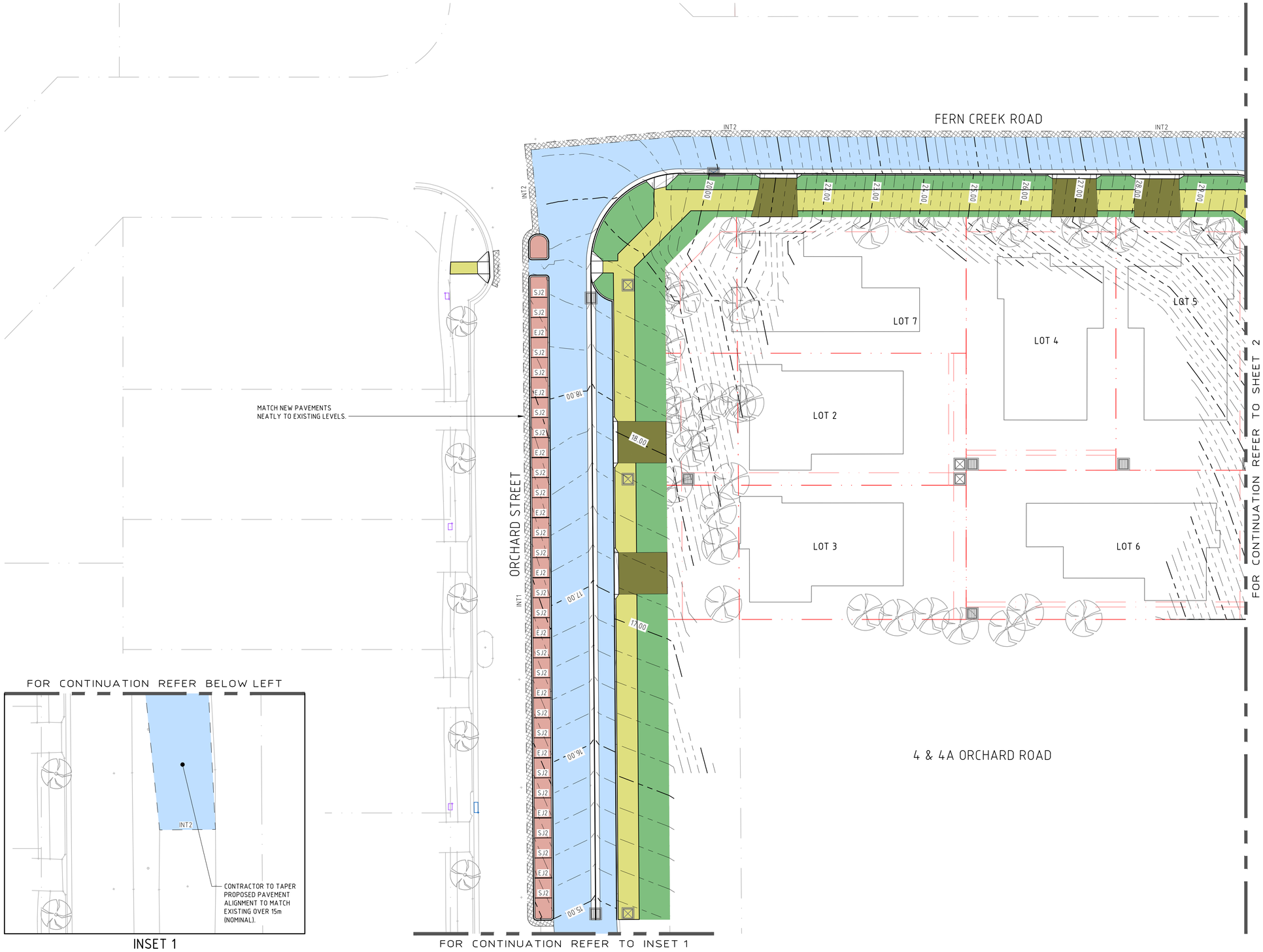
SITEWORKS AND GRADING PLAN - SHEET 4

JOB NUMBER: 130945

DRAWING NUMBER: C15.04

REVISION: G

DRAWING SHEET SIZE = A1



INSET 1

LEGEND

- BOUNDARY LINE
- SUBDIVISION BOUNDARY
- SAWCUT AND PAVEMENT INFILL
- FLEXIBLE PAVEMENT - TYPE 1
- RIGID PAVEMENT - TYPE 1
- RIGID PAVEMENT - TYPE 2 - DRIVEWAY
- RIGID PAVEMENT - TYPE 3 - THICKENING
- FOOTPATH PAVEMENT - TYPE 1
- CONCRETE MEDIAN
- LANDSCAPING (BY OTHERS)
- CJ1 — TRAFFICABLE CONTRACTION JOINT
- SJ1 — TRAFFICKED SAWN JOINT
- SJ2 — SAWN JOINT NON-TRAFFICABLE
- EJ2 — EXPANSION JOINT NON-TRAFFICABLE
- INT1 — INTERFACE 1 DETAILS
- INT2 — INTERFACE 2 DETAILS
- INT3 — INTERFACE 3 DETAILS
- INT4 — INTERFACE 4 DETAILS
- T — TRIMMER BARS
- ON-SITE DETENTION TANK
- KERB INLET PIT
- JUNCTION PIT

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR PAVEMENT GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. CONTRACTOR TO CONFIRM ALL CBR VALUES PRIOR TO COMMENCEMENT OF WORKS.
5. ENSURE ALL INTERFACES WITH EXISTING MATCH NEATLY - REFER STANDARD INTERFACE DETAILS ON DETAILS SHEET.
6. PROVIDE ISOLATION JOINT TO REAR OF KERBS, ABUTMENTS TO RETAINING WALLS AND UTILITY SERVICE PITS / POLES - REFER DETAIL 'IJ'.
7. PROVIDE TURF / LANDSCAPING TO ALL BATTERS IN ACCORDANCE WITH LANDSCAPE ARCHITECT.
8. REFER SPECIFICATION NOTES FOR ALL FOOTPATH JOINTING REQUIREMENTS.
9. REFER C20.01 FOR PAVEMENT DETAILS.

FOR CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

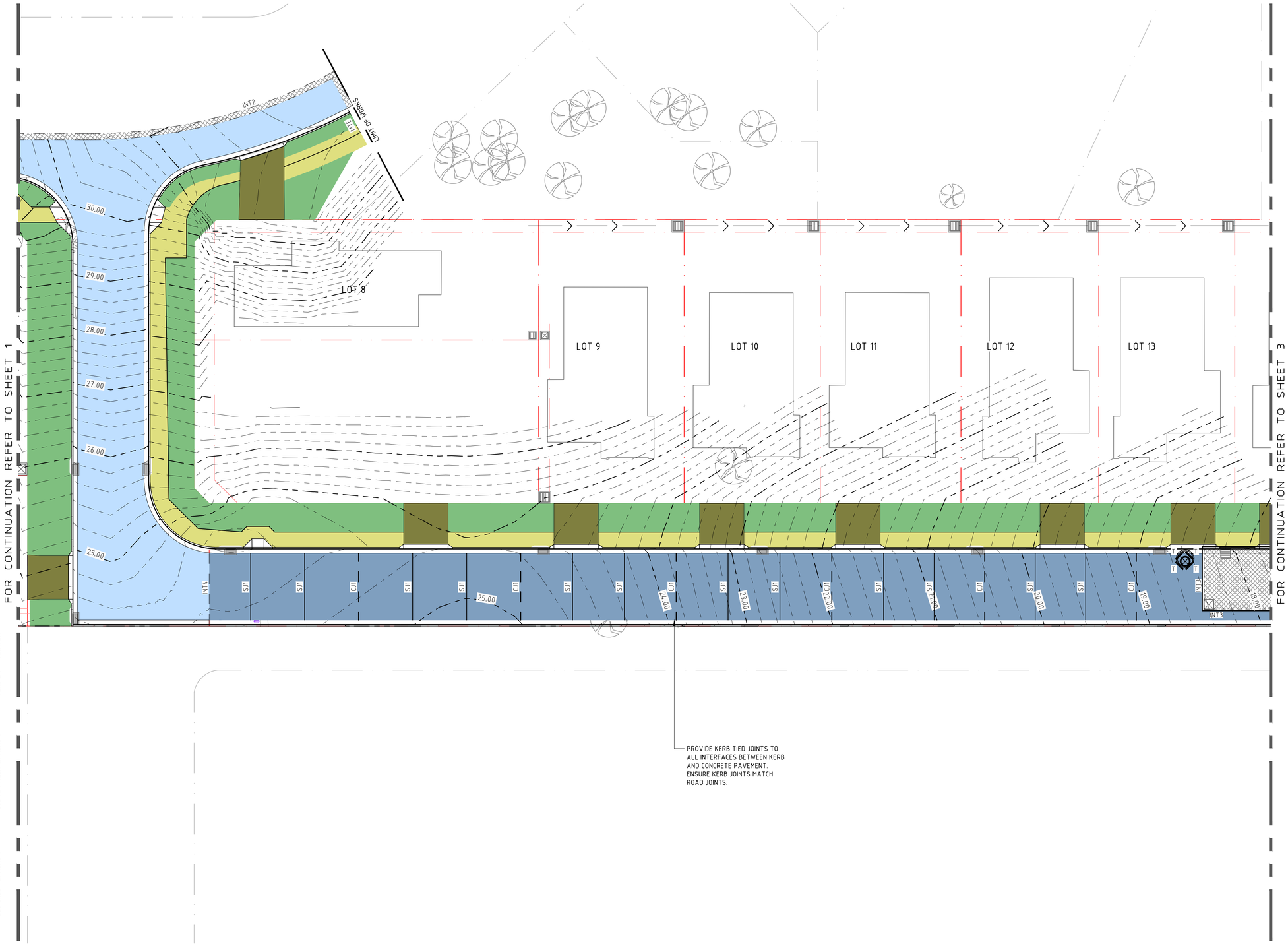
PAVEMENT AND JOINTING PLAN - SHEET 1

JOB NUMBER: 130945

DRAWING NUMBER: C16.01

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- SUBDIVISION BOUNDARY
- SAWCUT AND PAVEMENT INFILL
- FLEXIBLE PAVEMENT - TYPE 1
- RIGID PAVEMENT - TYPE 1
- RIGID PAVEMENT - TYPE 2 - DRIVEWAY
- RIGID PAVEMENT - TYPE 3 - THICKENING
- FOOTPATH PAVEMENT - TYPE 1
- CONCRETE MEDIAN
- LANDSCAPING (BY OTHERS)
- CJ1 — TRAFFICABLE CONTRACTION JOINT
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7. PROVIDE TURF / LANDSCAPING TO ALL BATTERS IN ACCORDANCE WITH LANDSCAPE ARCHITECT.
8. REFER SPECIFICATION NOTES FOR ALL FOOTPATH JOINTING REQUIREMENTS.
9. REFER C20.01 FOR PAVEMENT DETAILS.

FOR CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

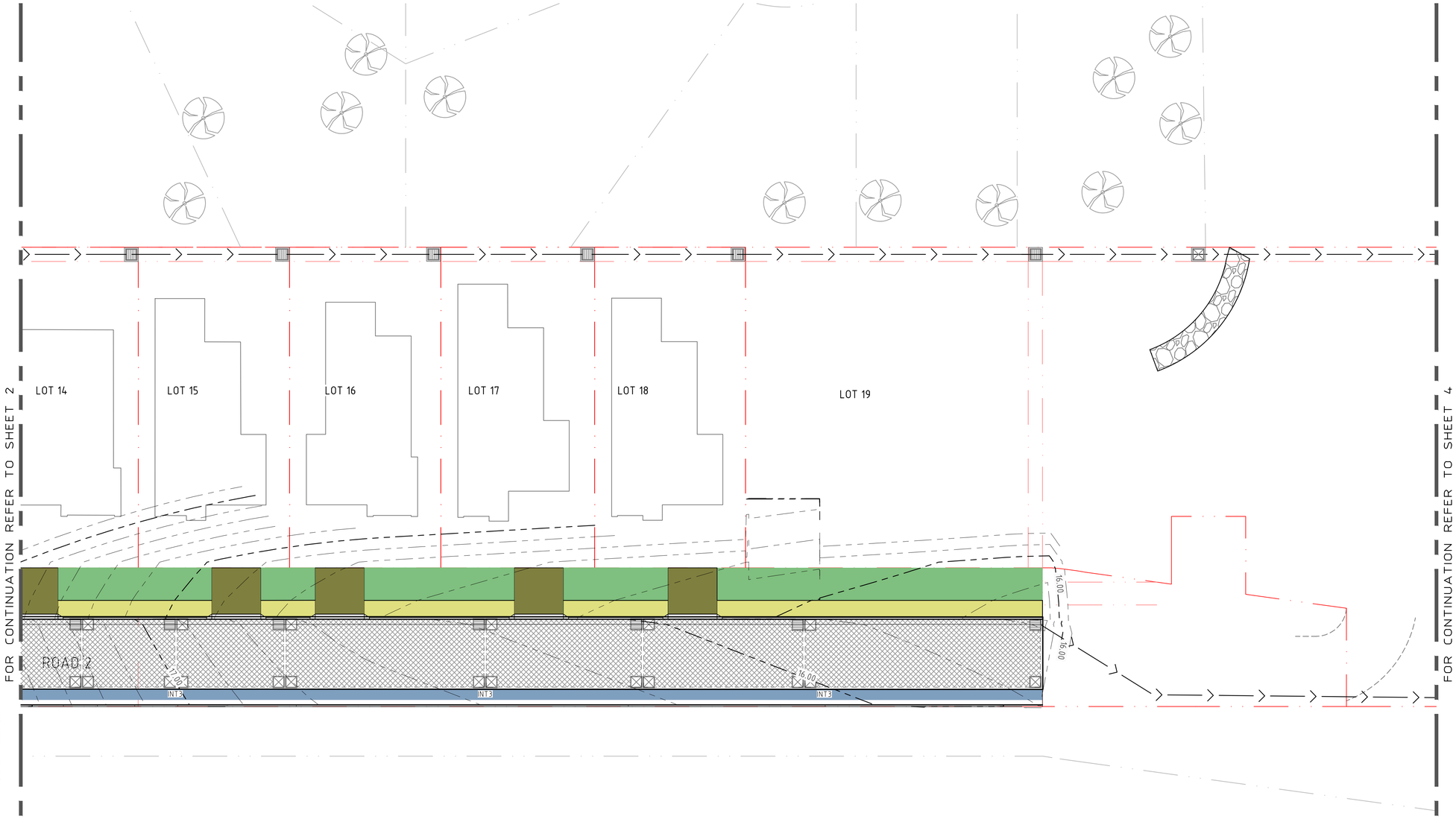
PAVEMENT AND JOINTING PLAN - SHEET 2

JOB NUMBER: 130945

DRAWING NUMBER: C16.02

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- SUBDIVISION BOUNDARY
- SAWCUT AND PAVEMENT INFILL
- FLEXIBLE PAVEMENT - TYPE 1
- RIGID PAVEMENT - TYPE 1
- RIGID PAVEMENT - TYPE 2 - DRIVEWAY
- RIGID PAVEMENT - TYPE 3 - THICKENING
- FOOTPATH PAVEMENT - TYPE 1
- CONCRETE MEDIAN
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- JUNCTION PIT

GENERAL NOTES:

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7. PROVIDE TURF / LANDSCAPING TO ALL BATTERS IN ACCORDANCE WITH LANDSCAPE ARCHITECT.
8. REFER SPECIFICATION NOTES FOR ALL FOOTPATH JOINTING REQUIREMENTS.
9. REFER C20.01 FOR PAVEMENT DETAILS.

FOR CONSTRUCTION

VERIFIER: T.NATSA
JOB MANAGER: C.PALADA
DESIGNED: C.PALADA
DRAWN: S.WEEKS

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

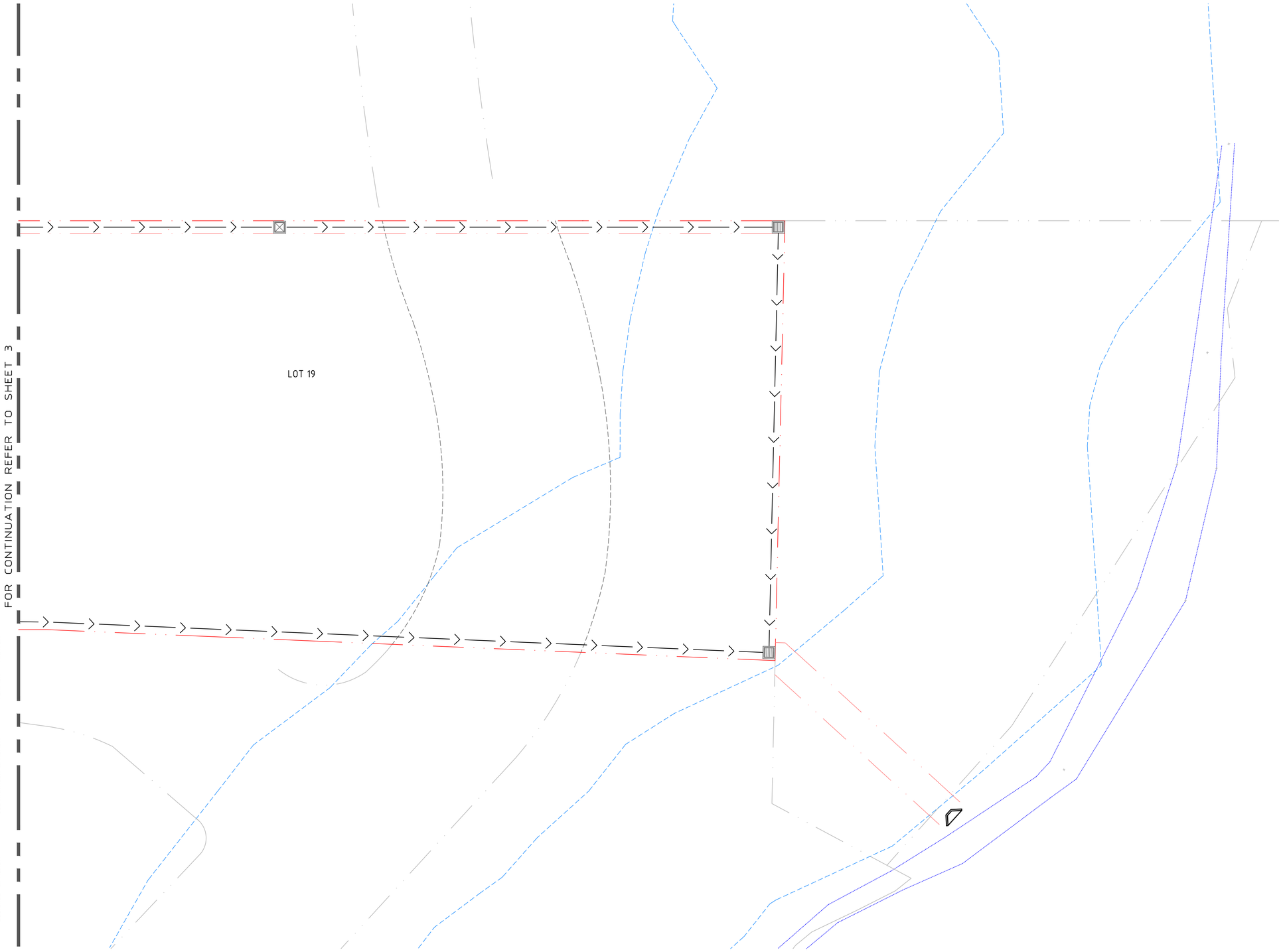
PAVEMENT AND JOINTING PLAN - SHEET 3

JOB NUMBER: 130945

DRAWING NUMBER: C16.03

REVISION: G

DRAWING SHEET SIZE = A1



FOR CONTINUATION REFER TO SHEET 3

VERIFIER: T.NATSA

JOB MANAGER: C.PALADA

DESIGNED: C.PALADA

DRAWN: S.WEEKS

LEGEND

- BOUNDARY LINE
- SUBDIVISION BOUNDARY
- SAWCUT AND PAVEMENT INFILL
- FLEXIBLE PAVEMENT - TYPE 1
- RIGID PAVEMENT - TYPE 1
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GENERAL NOTES:

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8. REFER SPECIFICATION NOTES FOR ALL FOOTPATH JOINTING REQUIREMENTS.
9. REFER C20.01 FOR PAVEMENT DETAILS.

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

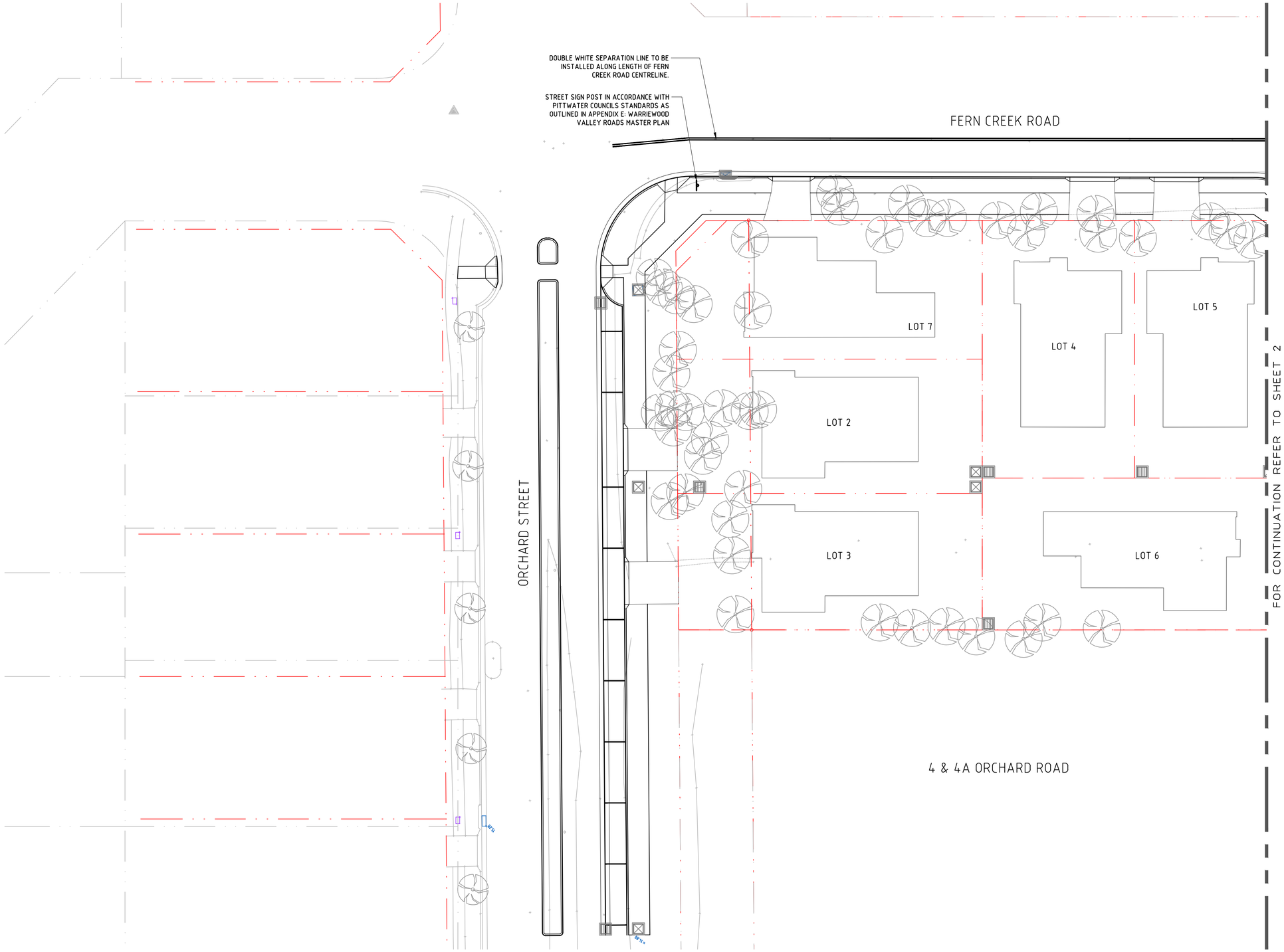
PAVEMENT AND JOINTING PLAN - SHEET 4

JOB NUMBER: 130945

DRAWING NUMBER: C16.04

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- LIMIT OF WORKS
- STREET SIGNS
- PROPOSED DOUBLE SEPARATION LINE
- PROPOSED SOLID YELLOW LINE
- D4-1-1 — PROPOSED DIRECTIONAL SIGN
- D4-5 — PROPOSED END OF ROAD SIGN

GENERAL NOTES

1. REFER TO SPECIFICATION NOTES FOR SIGNAGE AND LINEMARKING GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUTIN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

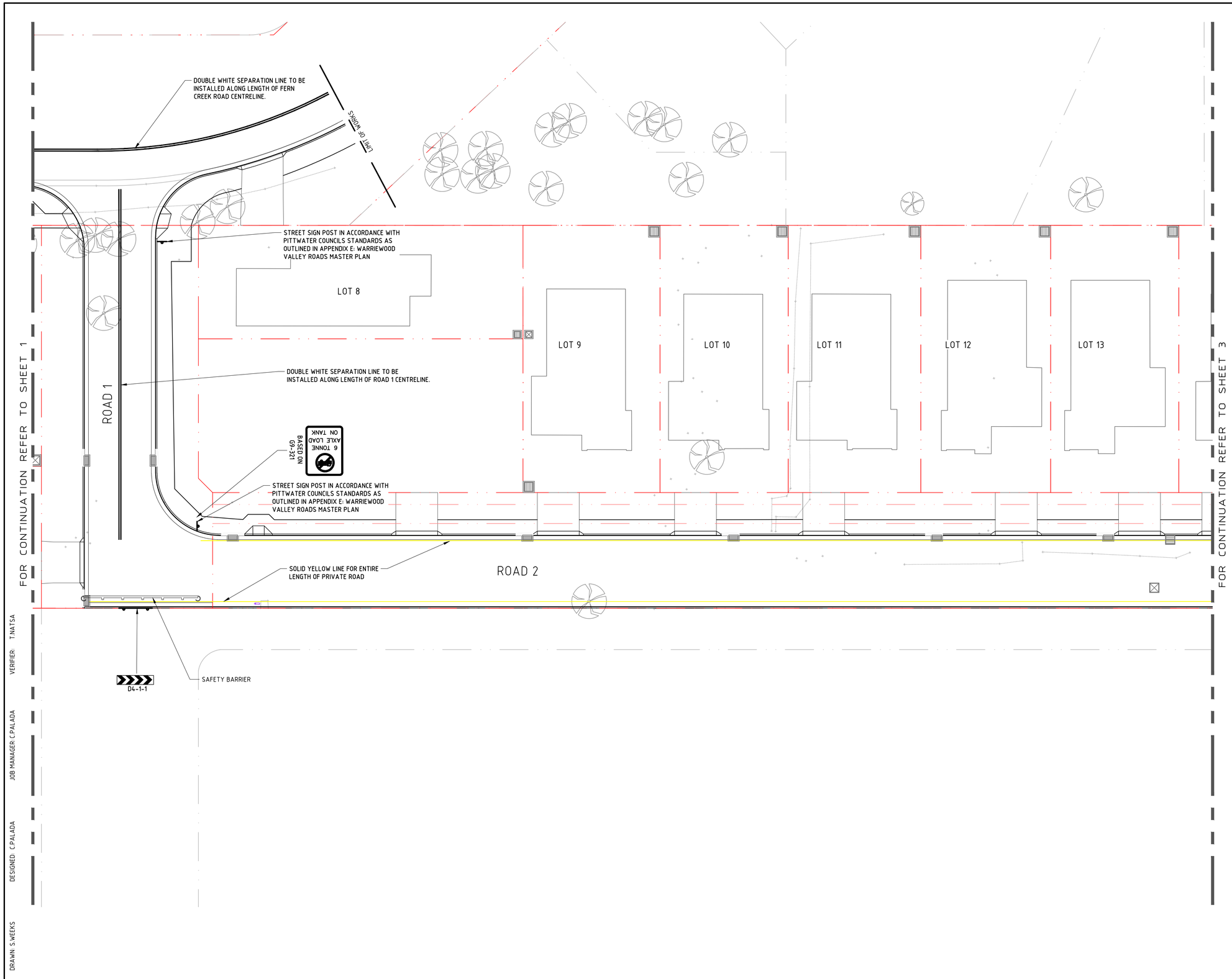
LINEMARKING AND SIGNAGE PLAN - SHEET 1

JOB NUMBER: 130945

DRAWING NUMBER: C17.01

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- LIMIT OF WORKS
- STREET SIGNS
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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

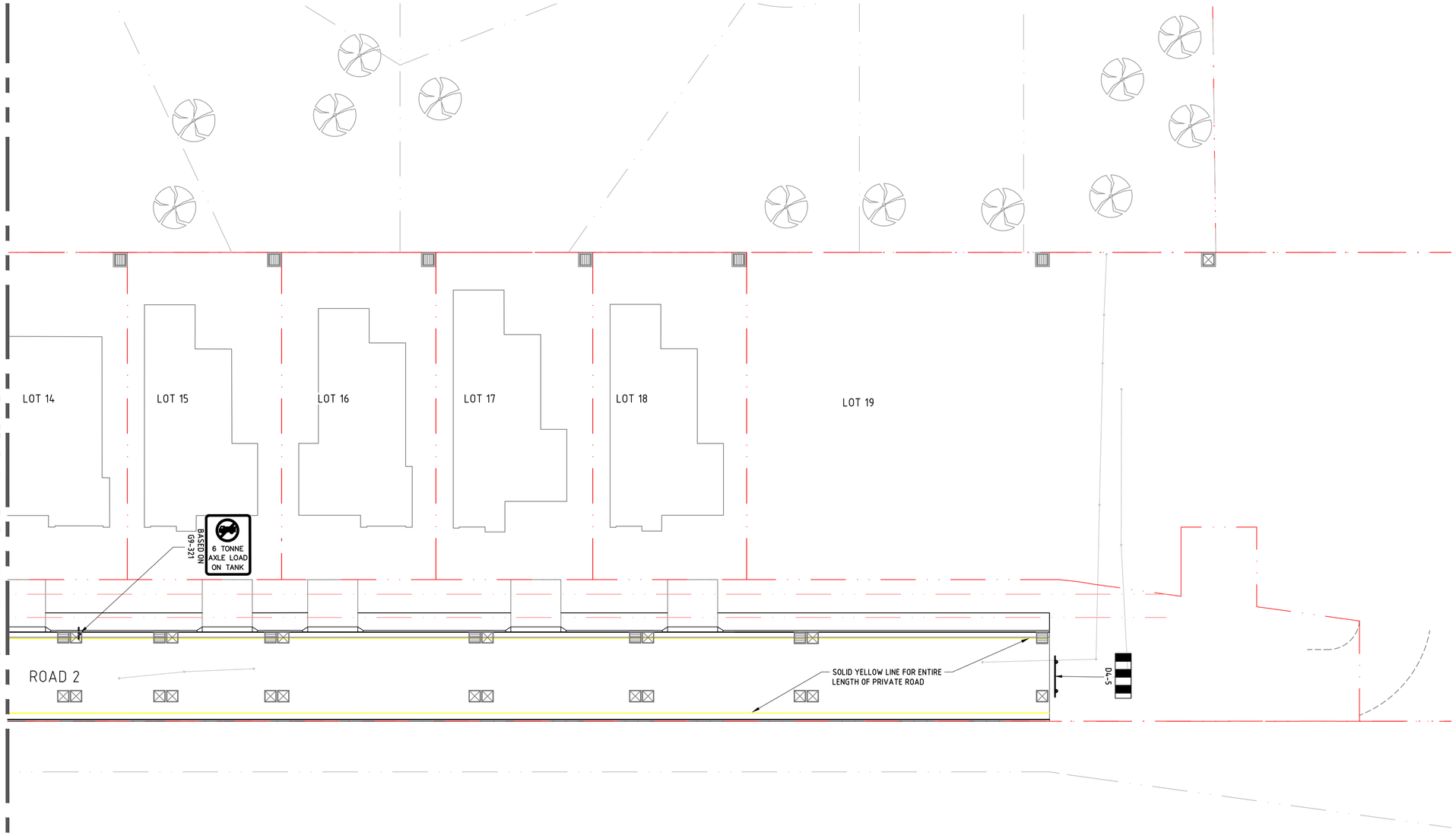
LINEMARKING AND SIGNAGE PLAN - SHEET 2

JOB NUMBER: 130945

DRAWING NUMBER: C17.02

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- LIMIT OF WORKS
- STREET SIGNS
- PROPOSED DOUBLE SEPARATION LINE
- PROPOSED SOLID YELLOW LINE
- D4-1-1 — PROPOSED DIRECTIONAL SIGN
- D4-5 — PROPOSED END OF ROAD SIGN

GENERAL NOTES

1. REFER TO SPECIFICATION NOTES FOR SIGNAGE AND LINEMARKING GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUTIN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	18.08.17
D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT: Monado Constructions Pty Ltd

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

ARCHITECT: STEPHEN BOWERS ARCHITECTS

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0 2 4 6 8 10m SCALE 1:200

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

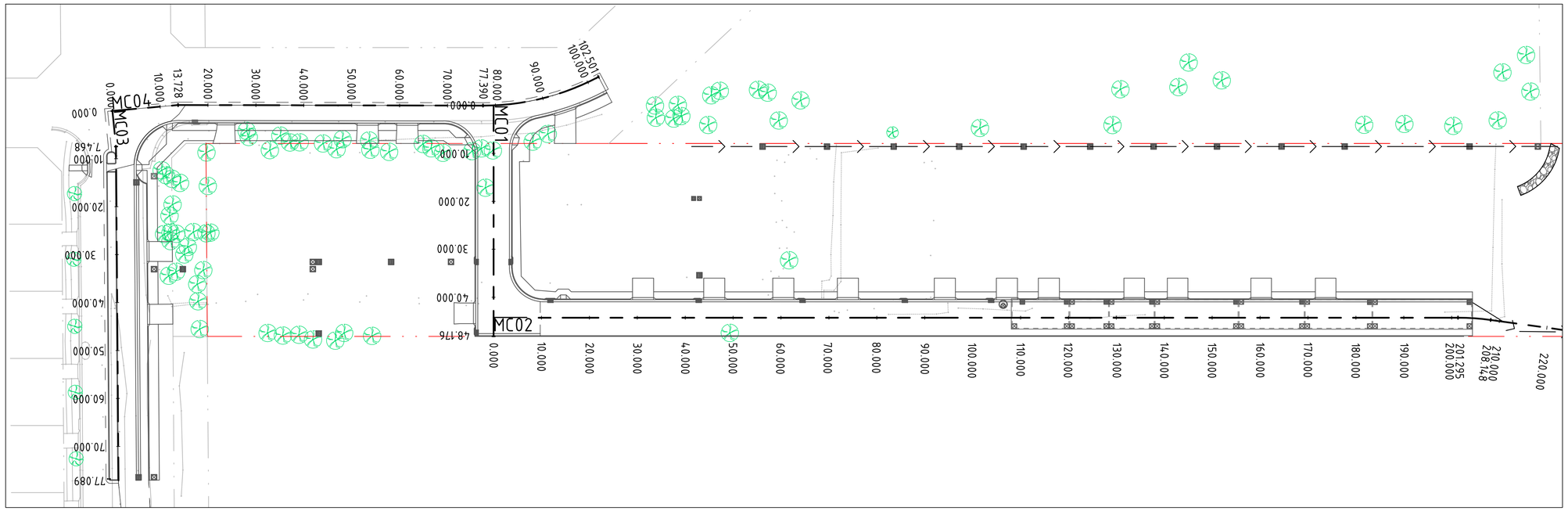
LINEMARKING AND SIGNAGE PLAN - SHEET 3

JOB NUMBER: 130945

DRAWING NUMBER: C17.03

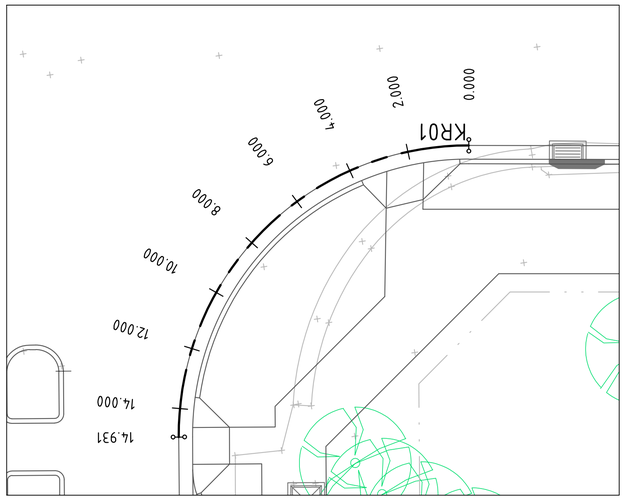
REVISION: G

DRAWING SHEET SIZE = A1



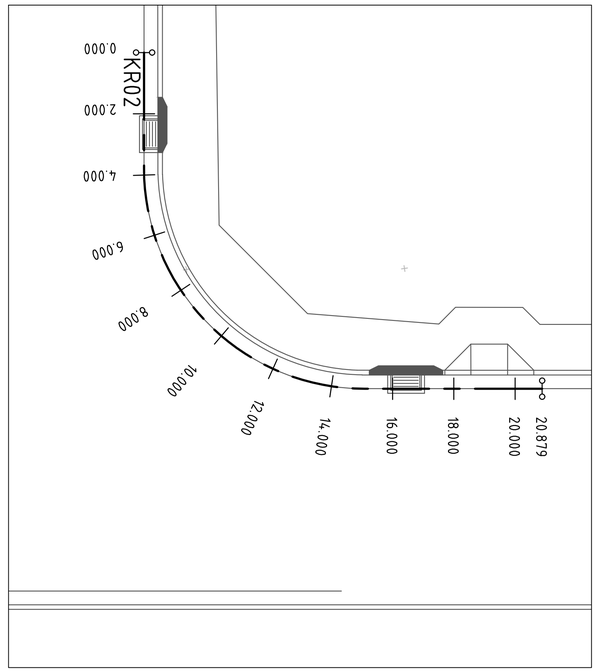
SETOUT PLAN - MC01, MC02, MC03 AND MC04

SCALE 1:500



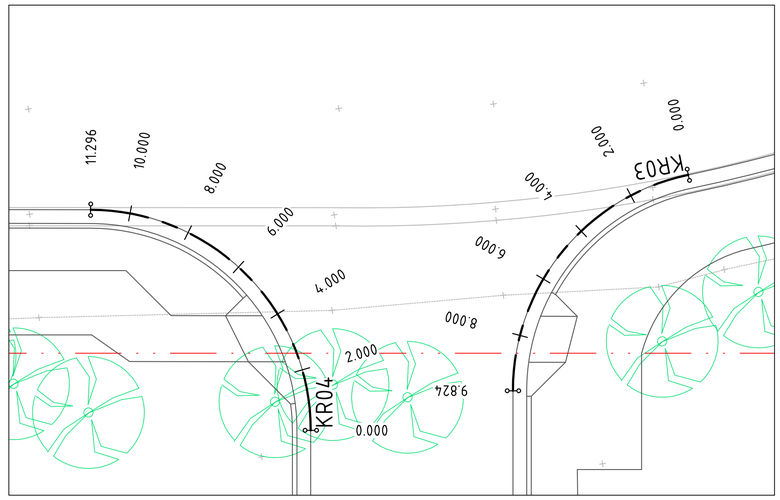
SETOUT PLAN - KR01

SCALE 1:100



SETOUT PLAN - KR02

SCALE 1:100



SETOUT PLAN - KR03 AND KR04

SCALE 1:100

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

GENERAL NOTES:

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

FOR CONSTRUCTION

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0 1 2 3 4 5m SCALE 1:100

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

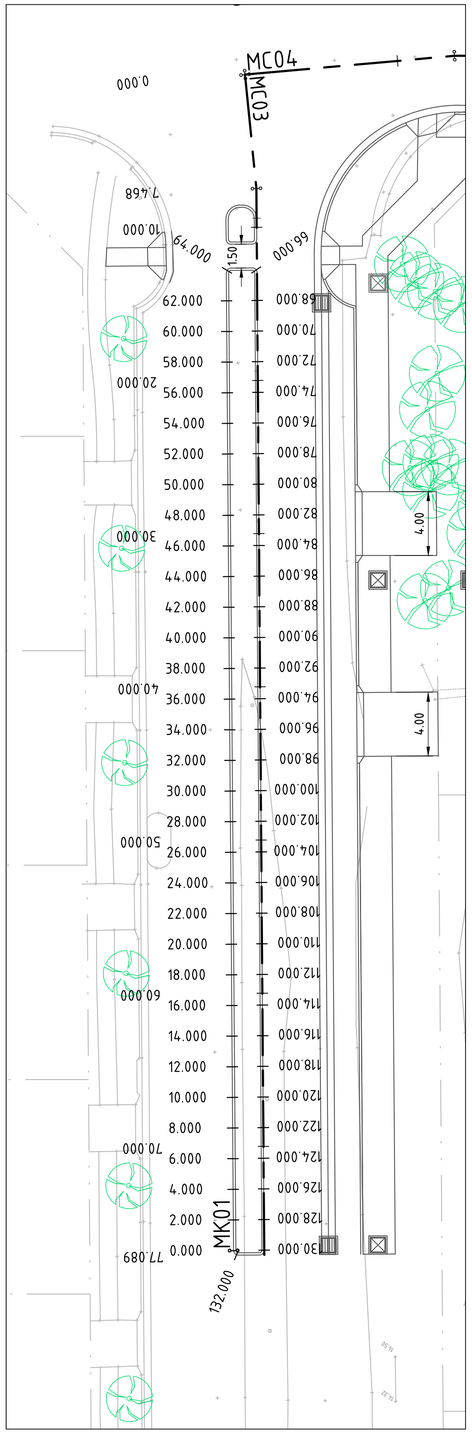
SETOUT PLAN - SHEET 1

JOB NUMBER: 130945

DRAWING NUMBER: C18.01

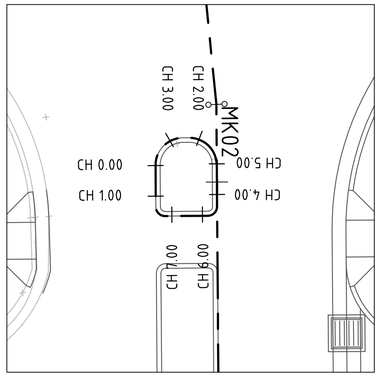
REVISION: G

DRAWING SHEET SIZE = A1



SETOUT PLAN - MK01

SCALE 1:200



SETOUT PLAN - MK02

SCALE 1:100

GENERAL NOTES:

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

D CLINES RD->MC01

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	341259.150	6271071.750	30.669	98°30'48.33"
IP 2	48.176	341306.795	6271064.618	24.446	98°30'48.33"

D CLINES RD->MC02

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	341302.936	6271065.195	24.785	8°30'52.27"			
IP 2	201.295	341332.740	6271264.272	15.732				
IP 3	204.722	341333.248	6271267.666	15.679		R = 50.003	6.853	7°51'08.95"
IP 4	208.148	341334.215	6271270.958	15.622				
IP 5	241.521	341343.620	6271302.979	14.908				
IP 6	250.200	341346.136	6271311.547	14.705		R = 29.999	17.359	33°09'11.33"
IP 7	258.880	341352.928	6271317.344	14.530				
IP 8	276.328	341366.200	6271328.671	14.189	49°31'11.94"			

D CLINES RD->MC03

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	341248.516	6270992.895	19.024	92°48'21.33"
IP 2	7.468	341255.975	6270992.530	18.698	
IP 3	77.089	341324.903	6270982.732	14.992	98°05'23.20"

D CLINES RD->MC04

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	341248.516	6270992.895	19.000	3°22'28.90"			
IP 2	13.728	341249.324	6271006.599	19.639				
IP 3	77.390	341258.864	6271069.542	30.449				
IP 4	89.945	341260.784	6271082.211	31.406		R = -51.229	25.111	28°05'04.58"
IP 5	102.501	341256.514	6271094.291	31.766	340°32'04.03"			

D CLINES KR->KR01

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	341252.566	6271006.434	19.572	188°37'03.84"			
IP 2	7.466	341251.137	6270997.004	19.016		R = -9.450	14.931	90°31'41.49"
IP 3	14.931	341260.579	6270995.662	18.631	98°05'22.35"			

D CLINES KR->KR02

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	341289.308	6271070.572	26.081	98°30'48.39"			
TC	3.775	341293.041	6271070.013	25.548	98°30'48.39"			
IP 2	9.429	341300.161	6271068.948	24.841		R = -7.200	11.310	89°59'56.82"
CT	15.084	341301.227	6271076.068	24.428	8°30'51.56"			
IP 3	20.879	341302.085	6271081.799	24.487	8°30'51.56"			

D CLINES KR->KR03

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	341262.582	6271080.362	31.209	176°41'35.81"			
IP 2	4.912	341262.919	6271074.522	30.612		R = -7.200	9.824	78°10'51.85"
IP 3	9.824	341268.704	6271073.656	29.777	98°30'43.96"			

D CLINES KR->KR04

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	341269.005	6271066.938	29.571	278°30'45.15"			
IP 2	5.648	341261.897	6271068.002	29.914		R = -7.200	11.296	89°53'34.86"
IP 3	11.296	341260.820	6271060.896	29.350	188°37'10.30"			

D CLINES KR->MK01

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	341324.324	6270980.795	14.753	278°05'23.29"			
TC	63.835	341261.124	6270989.778	18.344	278°05'23.29"			
IP 2	64.071	341260.827	6270989.820	18.356		R = 0.300	0.471	90°00'00.00"
CT	64.307	341260.869	6270990.117	18.367	8°05'23.29"			
TC	65.707	341261.066	6270991.503	18.436	8°05'23.29"			
IP 3	65.942	341261.108	6270991.800	18.448		R = 0.300	0.471	90°00'00.00"
CT	66.178	341261.405	6270991.758	18.460	98°05'23.29"			
TC	130.013	341324.605	6270982.775	15.000	98°05'23.29"			
IP 4	130.249	341324.902	6270982.732	14.975		R = 0.300	0.471	90°00'00.00"
CT	130.484	341324.860	6270982.435	14.951	188°05'23.29"			
TC	131.884	341324.663	6270981.049	14.805	188°05'23.29"			
IP 5	132.120	341324.621	6270980.752	14.781		R = 0.300	0.471	89°59'39.44"
IP 6	132.356	341324.324	6270980.794					
IP 7	132.356	341324.324	6270980.794		278°05'04.20"			

D CLINES KR->MK02

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	341257.935	6270992.251	18.612	98°05'23.29"			
TC	1.350	341259.272	6270992.061	18.553	98°05'23.29"			
IP 2	1.586	341259.569	6270992.019	18.542		R = 0.300	0.471	90°00'00.00"
CT	1.821	341259.527	6270991.722	18.531	188°05'23.29"			
TC	3.221	341259.330	6270990.336	18.464	188°05'23.29"			
IP 3	3.457	341259.287	6270990.039	18.453		R = 0.300	0.471	90°00'00.00"
CT	3.692	341258.990	6270990.081	18.442	278°05'23.29"			
TC	5.042	341257.654	6270990.271	18.519	278°05'23.29"			
IP 4	5.749	341256.763	6270990.398	18.559		R = 0.900	1.414	90°00'00.00"
CT	6.456	341256.889	6270991.289	18.599	8°05'23.29"			
TC	6.656	341256.918	6270991.487	18.610	8°05'23.29"			
IP 5	7.363	341257.044	6270992.378	18.610		R = 0.900	1.414	89°59'57.85"
IP 6	8.070	341257.935	6270992.251		98°05'21.14"			

FOR CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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0 2 4 6 8 10m SCALE 1:200
0 1 2 3 4 5m SCALE 1:100

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

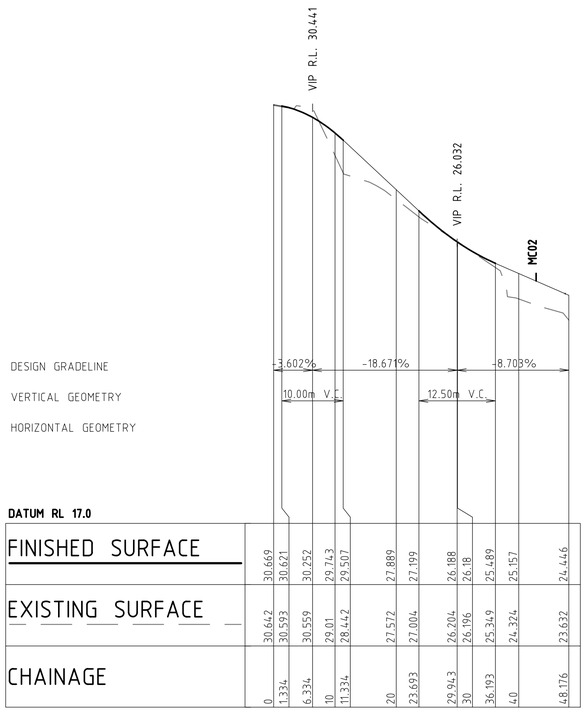
SETOUT PLAN AND TABLES - SHEET 2

JOB NUMBER: 130945

DRAWING NUMBER: C18.02

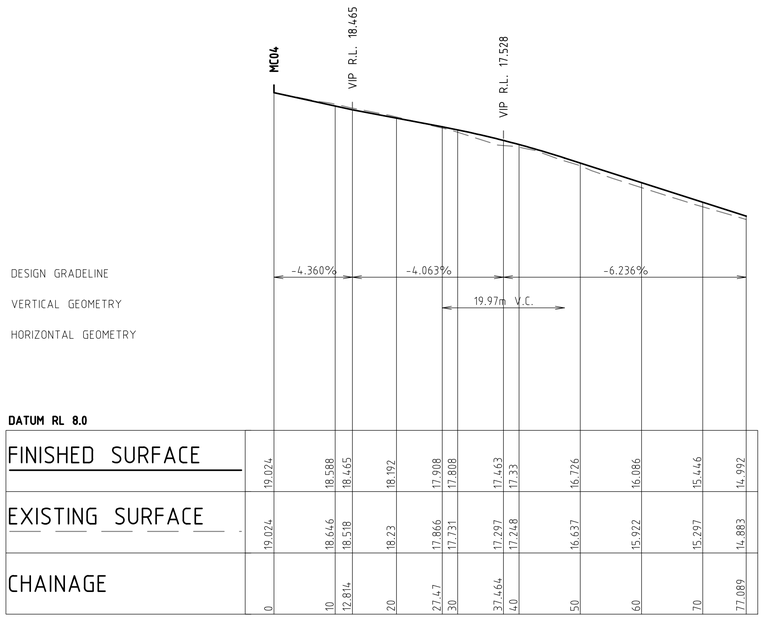
REVISION: G

DRAWING SHEET SIZE = A1



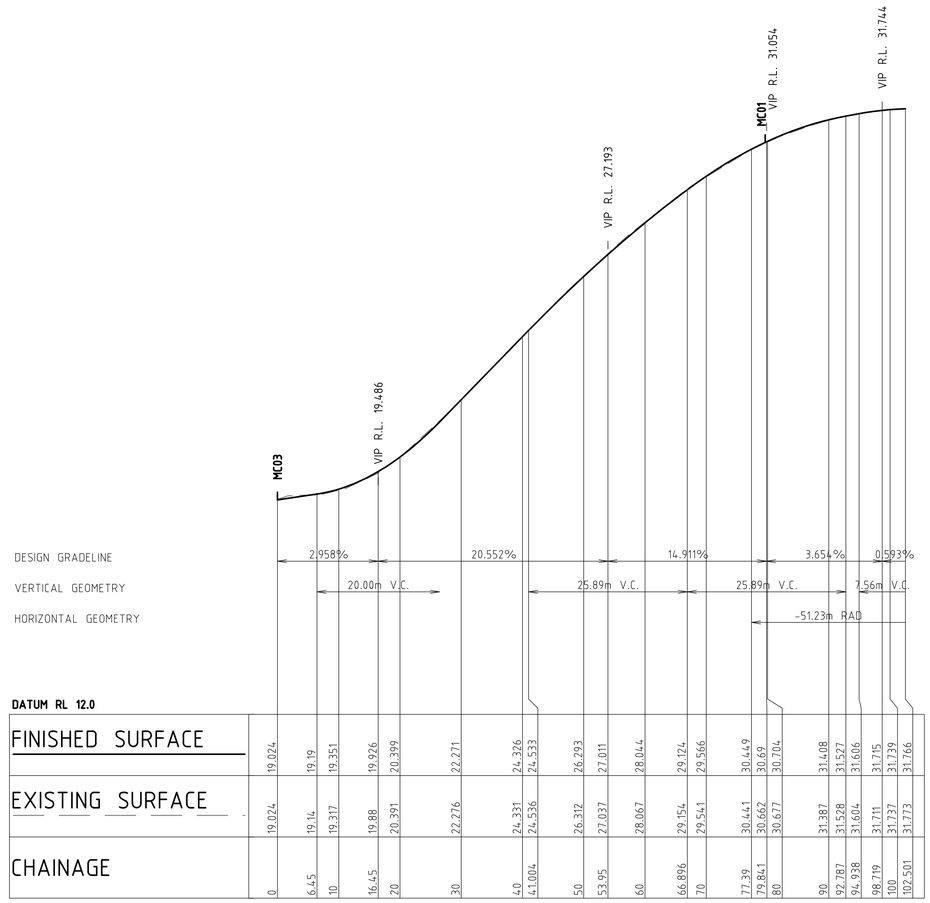
LONGITUDINAL SECTION ALONG MC01

HORIZONTAL SCALE 1:500@A1
VERTICAL SCALE 1:100@A1



LONGITUDINAL SECTION ALONG MC03

HORIZONTAL SCALE 1:500@A1
VERTICAL SCALE 1:100@A1



LONGITUDINAL SECTION ALONG MC04

HORIZONTAL SCALE 1:500@A1
VERTICAL SCALE 1:100@A1

VERIFIER: T.NATSA

JOB MANAGER: C.PALADA

DESIGNED: C.PALADA

DRAWN: S.WEEKS

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G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

LONGITUDINAL SECTIONS - SHEET 1

JOB NUMBER: 130945

DRAWING NUMBER: C18.11

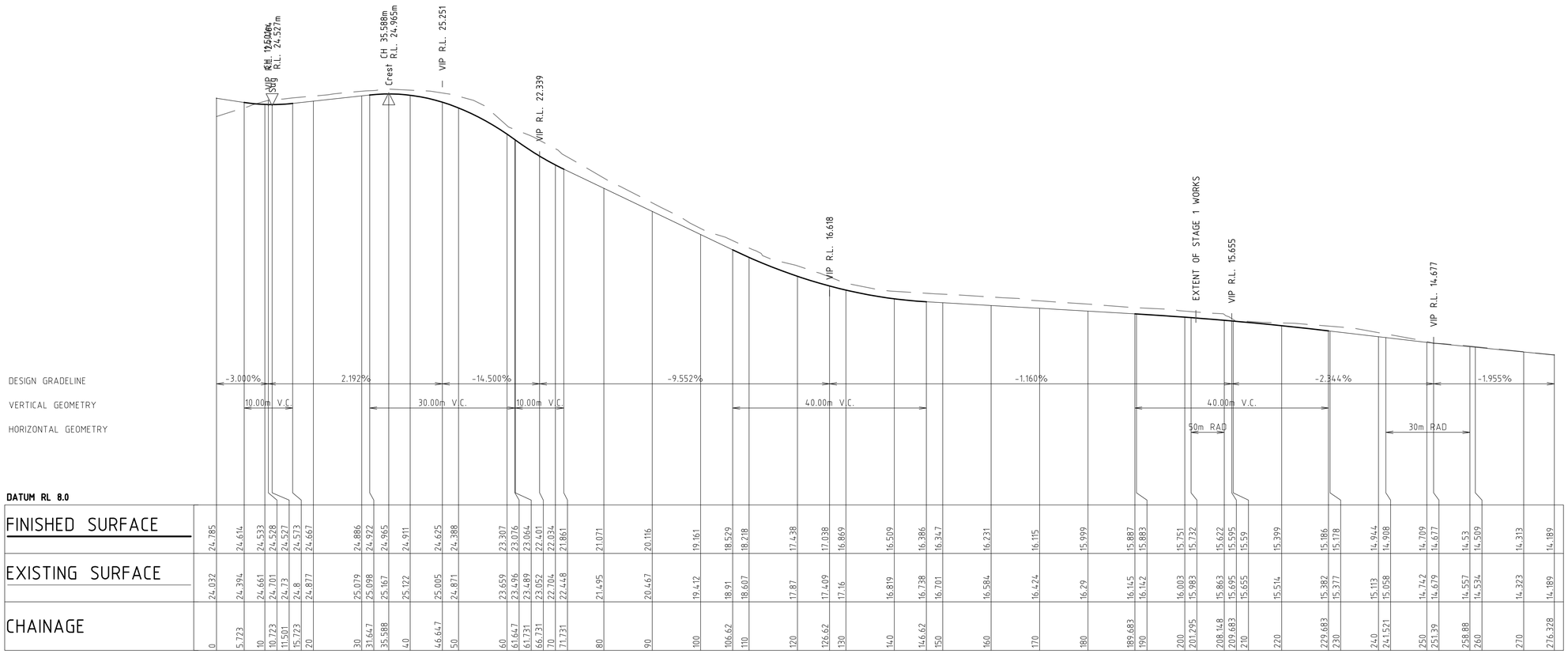
REVISION: G

DRAWING SHEET SIZE = A1

DESIGN GRADELINE

VERTICAL GEOMETRY

HORIZONTAL GEOMETRY



DATUM RL 8.0

FINISHED SURFACE	24.785	24.614	24.533	24.528	24.527	24.573	24.667	24.886	24.922	24.965	24.911	24.625	24.388	23.307	23.076	23.064	22.401
EXISTING SURFACE	24.032	24.394	24.661	24.701	24.73	24.8	24.877	25.079	25.098	25.167	25.122	25.005	24.871	23.659	23.496	23.489	23.052
CHAINAGE	0	5.723	10	10.723	11.501	15.723	20	30	31.647	35.588	40	46.647	50	60	61.647	61.731	66.731

FINISHED SURFACE	22.034	21.861	21.071	20.116	19.161	18.529	18.218	17.438	17.038	16.869	16.509	16.386	16.347	16.231	16.115	15.999	15.887
EXISTING SURFACE	22.704	22.448	21.495	20.467	19.412	18.91	18.607	17.87	17.409	17.16	16.819	16.738	16.701	16.584	16.424	16.29	16.145
CHAINAGE	70	71.731	80	90	100	106.62	110	120	126.62	130	140	146.62	150	160	170	180	189.683

FINISHED SURFACE	15.883	15.751	15.732	15.622	15.595	15.59	15.399	15.186	15.178	14.944	14.908	14.709	14.677	14.53	14.509	14.313	14.189
EXISTING SURFACE	16.142	16.003	15.983	15.863	15.695	15.655	15.514	15.382	15.377	15.113	15.058	14.742	14.679	14.557	14.534	14.323	14.189
CHAINAGE	190	200	201.295	208.148	209.683	210	220	229.683	230	240	241.521	250	251.39	258.88	260	270	276.328

LONGITUDINAL SECTION ALONG MC02

HORIZONTAL SCALE 1:500@A1
VERTICAL SCALE 1:100@A1

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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CLIENT
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ARCHITECT
STEPHEN BOWERS
ARCHITECTS

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PROJECT
6 ORCHARD STREET,
WARRIEWOOD, NSW 2012

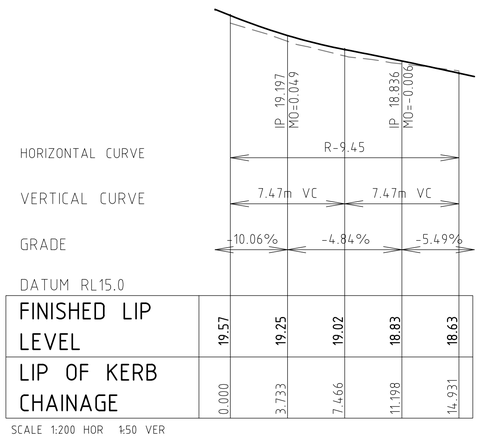
DRAWING TITLE
SUBDIVISION - STAGE 1
LONGITUDINAL SECTIONS - SHEET 2

JOB NUMBER
130945

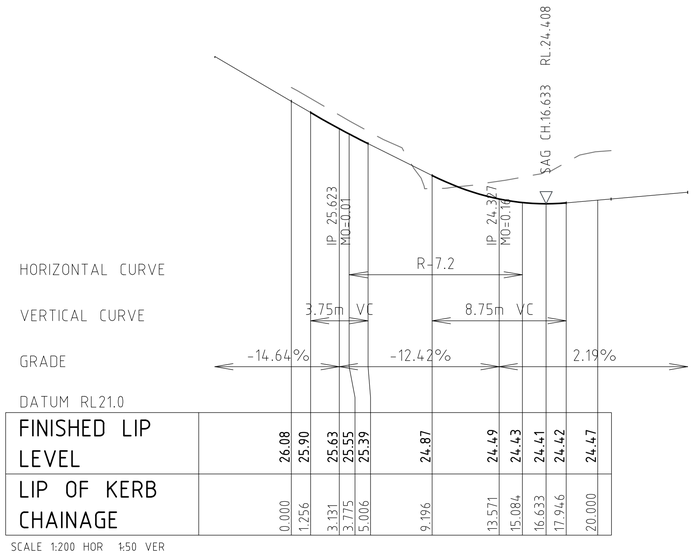
DRAWING NUMBER
C18.12

REVISION
G

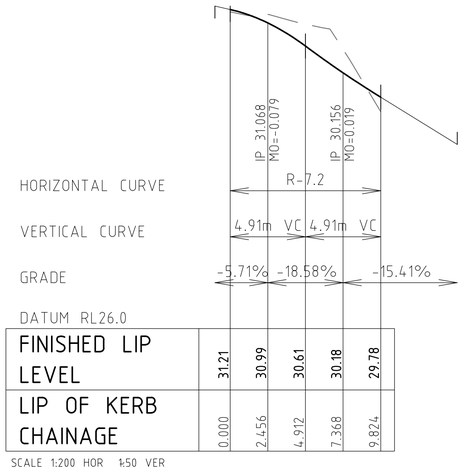
DRAWING SHEET SIZE = A1



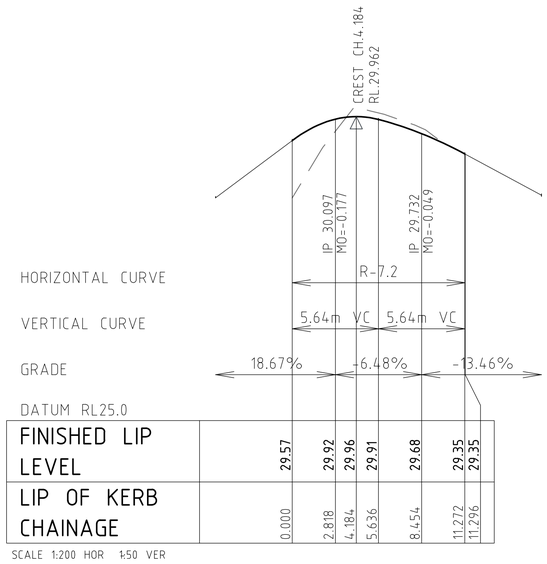
LONGITUDINAL SECTION ALONG KR01



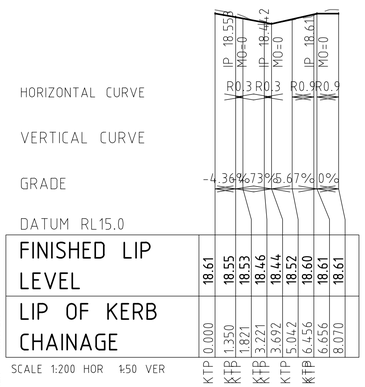
LONGITUDINAL SECTION ALONG KR02



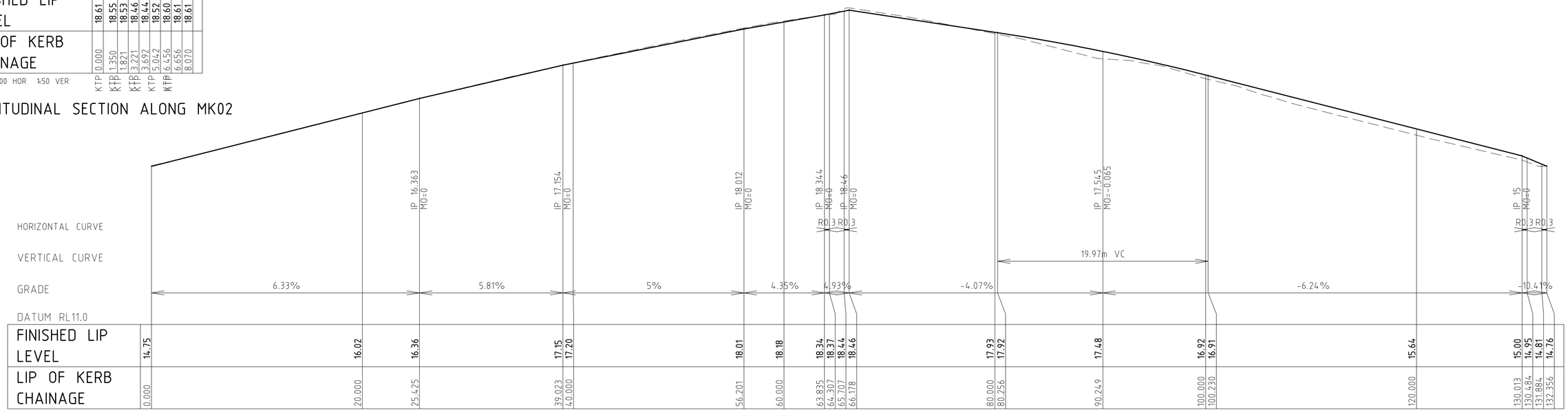
LONGITUDINAL SECTION ALONG KR03



LONGITUDINAL SECTION ALONG KR04



LONGITUDINAL SECTION ALONG MK02



LONGITUDINAL SECTION ALONG MK01

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	18.08.17
D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT: Monado Constructions Pty Ltd

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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0 2 4 6 8 10m
0.0 0.5 1.0 1.5 2.0 2.5m
SCALE 1:200
SCALE 1:50

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: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
LONGITUDINAL SECTIONS - SHEET 3

JOB NUMBER: 130945
DRAWING NUMBER: C18.13
REVISION: G
DRAWING SHEET SIZE = A1

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

Centreline Data
X = 341306.795
Y = 6271064.618
Z = 24.446

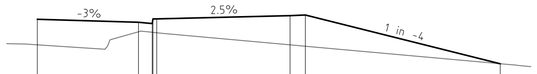
DATUM RL 21.0

FINISHED SURFACE	24.446	24.347	24.307	24.457	24.457	24.565	24.585	22.374
EXISTING SURFACE	23.632	23.416	23.385	23.384	23.375	23.064	23.025	22.374
OFFSET	0.000	3.300	3.750	3.775	3.900	8.250	8.750	17.595

CHAINAGE 48.176

Centreline Data
X = 341298.709
Y = 6271065.828
Z = 25.157

DATUM RL 23.0

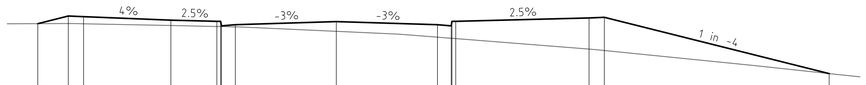


FINISHED SURFACE	25.157	25.058	25.018	25.168	25.168	25.277	25.297	23.707
EXISTING SURFACE	24.324	24.748	24.733	24.730	24.718	24.324	24.279	23.707
OFFSET	0.000	3.300	3.750	3.775	3.900	8.250	8.750	15.112

CHAINAGE 40.000

Centreline Data
X = 341278.929
Y = 6271068.789
Z = 27.889

DATUM RL 25.0

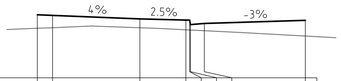


FINISHED SURFACE	27.823	28.071	28.051	27.937	27.900	27.900	27.750	27.790	27.889	27.790	27.750	27.900	27.900	28.009	28.029	26.193
EXISTING SURFACE	27.823	27.826	27.819	27.761	27.730	27.728	27.727	27.718	27.572	27.381	27.345	27.343	27.333	26.991	26.946	26.193
OFFSET	-9.744	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900	8.250	8.750	16.092

CHAINAGE 20.000

Centreline Data
X = 341268.215
Y = 6271070.393
Z = 29.876

DATUM RL 28.0



FINISHED SURFACE	30.059	30.039	29.925	29.887	29.887	29.737	29.717	29.876
EXISTING SURFACE	29.617	29.637	29.635	29.569	29.563	29.561	29.539	29.365
OFFSET	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000

CHAINAGE 9.167

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.MATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
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G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT
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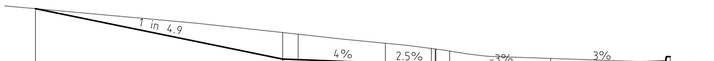
PROJECT
6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE
SUBDIVISION - STAGE 1
CROSS SECTION ALONG MC01 - SHEET 1

JOB NUMBER **130945**
DRAWING NUMBER **C18.21**
REVISION **G**
DRAWING SHEET SIZE = A1

Centreline Data
X = 341308.205
Y = 6271100.390
Z = 24.965

DATUM RL 24.0

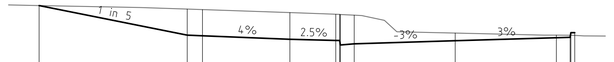


FINISHED SURFACE	26.792	25.448	25.128	25.014	24.976	24.976	24.826	24.866	24.965	25.064	25.078	25.228	25.228
EXISTING SURFACE	26.792	26.014	25.959	25.664	25.494	25.477	25.474	25.410	25.167	25.055	25.040	25.039	25.037
OFFSET	-16.824	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 35.588

Centreline Data
X = 341317.742
Y = 6271164.093
Z = 19.161

DATUM RL 18.0



FINISHED SURFACE	20.311	19.344	19.324	19.210	19.172	19.172	19.022	19.062	19.161	19.260	19.274	19.424	19.424
EXISTING SURFACE	20.311	20.194	20.177	20.079	20.026	20.020	20.019	19.996	19.412	19.343	19.342	19.341	19.335
OFFSET	-13.585	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 100.000

Centreline Data
X = 341305.897
Y = 6271084.974
Z = 24.667

DATUM RL 24.0

FINISHED SURFACE	26.968	24.849	24.829	24.715	24.678	24.678	24.528	24.568	24.667	24.766	24.779	24.929	24.929
EXISTING SURFACE	26.968	25.902	25.844	25.530	25.387	25.375	25.372	25.329	24.877	24.783	24.776	24.775	24.773
OFFSET	-17.594	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 20.000

Centreline Data
X = 341314.781
Y = 6271144.313
Z = 21.071

DATUM RL 20.0

FINISHED SURFACE	23.035	21.254	21.234	21.120	21.082	21.082	20.932	20.972	21.071	21.170	21.184	21.334	21.334
EXISTING SURFACE	23.035	22.896	22.891	22.863	22.849	22.848	22.843	22.758	21.495	21.198	21.166	21.165	21.156
OFFSET	-17.655	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 80.000

Centreline Data
X = 341304.639
Y = 6271076.569
Z = 24.527

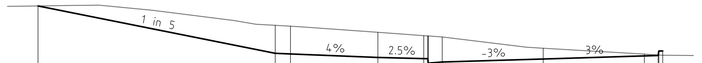
DATUM RL 23.0

FINISHED SURFACE	24.527	24.626	24.639	24.789	24.789
EXISTING SURFACE	24.730	24.536	24.507	24.506	24.498
OFFSET	0.000	3.300	3.750	3.775	3.900

CHAINAGE 11.501

Centreline Data
X = 341311.820
Y = 6271124.534
Z = 23.307

DATUM RL 22.0



FINISHED SURFACE	25.039	23.490	23.470	23.356	23.318	23.318	23.168	23.208	23.307	23.406	23.420	23.510	23.510
EXISTING SURFACE	25.039	24.406	24.377	24.177	24.069	24.060	24.058	24.024	23.659	23.465	23.438	23.437	23.430
OFFSET	-16.493	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 60.000

Centreline Data
X = 341302.936
Y = 6271065.196
Z = 24.785

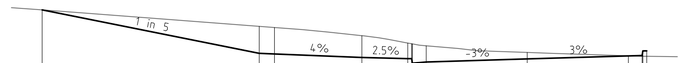
DATUM RL 22.0

FINISHED SURFACE	24.785	24.498	24.512	24.662	24.662
EXISTING SURFACE	24.033	23.782	23.673	23.667	23.633
OFFSET	0.000	3.300	3.750	3.775	3.900

CHAINAGE 0.001

Centreline Data
X = 341308.859
Y = 6271104.754
Z = 24.911

DATUM RL 24.0



FINISHED SURFACE	26.512	25.094	25.074	24.960	24.922	24.922	24.772	24.812	24.911	25.010	25.024	25.174	25.174
EXISTING SURFACE	26.512	25.975	25.937	25.672	25.430	25.406	25.402	25.341	25.122	25.013	24.998	24.997	24.995
OFFSET	-15.839	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 40.000

DRAWN: S.WEEKS DESIGNED: CPALADA JOB MANAGER: CPALADA VERIFIER: TNATSA

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

CROSS SECTION ALONG MC02 - SHEET 1

JOB NUMBER: 130945

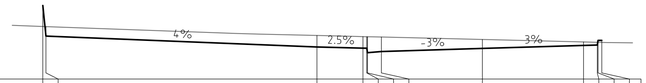
DRAWING NUMBER: C18.26

REVISION: G

DRAWING SHEET SIZE = A1

Centreline Data
X = 341329.587
Y = 6271243.211
Z = 15.999

DATUM RL 15.0

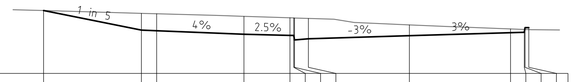


FINISHED SURFACE	17.401	16.401	16.047	16.010	16.010	15.860	15.900	15.999	16.098	16.111	16.261	16.261
EXISTING SURFACE	16.715	16.712	16.421	16.385	16.382	16.381	16.370	16.290	16.211	16.200	16.199	16.196
OFFSET	-14.350	-14.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 180.000

Centreline Data
X = 341326.626
Y = 6271223.431
Z = 16.231

DATUM RL 15.0

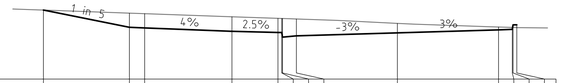


FINISHED SURFACE	17.052	16.413	16.393	16.279	16.242	16.242	16.092	16.132	16.231	16.330	16.343	16.493	16.493
EXISTING SURFACE	17.052	16.962	16.948	16.863	16.814	16.810	16.809	16.795	16.584	16.454	16.437	16.436	16.431
OFFSET	-11.943	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 160.000

Centreline Data
X = 341323.665
Y = 6271203.652
Z = 16.509

DATUM RL 15.0

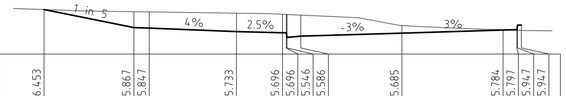


FINISHED SURFACE	17.253	16.691	16.671	16.557	16.520	16.520	16.370	16.410	16.509	16.608	16.621	16.771	16.771
EXISTING SURFACE	17.253	17.154	17.136	17.035	16.982	16.978	16.977	16.961	16.819	16.701	16.686	16.685	16.681
OFFSET	-11.557	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 140.000

Centreline Data
X = 341333.285
Y = 6271267.281
Z = 15.685

DATUM RL 15.0

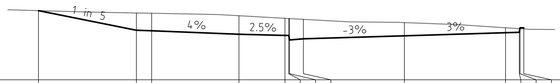


FINISHED SURFACE	16.453	15.867	15.847	15.733	15.696	15.696	15.546	15.586	15.685	15.784	15.797	15.947	15.947
EXISTING SURFACE	16.453	16.383	16.376	16.333	16.300	16.294	16.293	16.272	15.931	15.791	15.778	15.777	15.773
OFFSET	-11.682	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 204.354

Centreline Data
X = 341320.703
Y = 6271183.872
Z = 17.438

DATUM RL 16.0

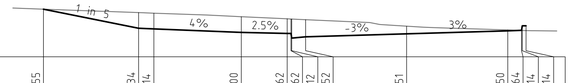


FINISHED SURFACE	18.260	17.621	17.601	17.487	17.449	17.449	17.299	17.339	17.438	17.537	17.551	17.701	17.701
EXISTING SURFACE	18.260	18.182	18.172	18.092	18.008	18.001	18.000	17.975	17.870	17.700	17.670	17.669	17.661
OFFSET	-11.945	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 120.000

Centreline Data
X = 341332.548
Y = 6271262.990
Z = 15.751

DATUM RL 15.0



FINISHED SURFACE	16.555	15.934	15.914	15.800	15.762	15.762	15.612	15.652	15.751	15.850	15.864	16.014	16.014
EXISTING SURFACE	16.555	16.443	16.426	16.312	16.241	16.235	16.234	16.213	16.003	15.877	15.863	15.862	15.858
OFFSET	-11.859	-8.750	-8.250	-5.400	-3.900	-3.775	-3.750	-3.300	0.000	3.300	3.750	3.775	3.900

CHAINAGE 200.000

DRAWN: S.WEEKS
DESIGNED: CPALADA
JOB MANAGER: CPALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	18.08.17
D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT
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ARCHITECT
STEPHEN BOWERS ARCHITECTS

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0 1 2 3 4 5m SCALE 1:100

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

PROJECT
6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE
SUBDIVISION - STAGE 1
CROSS SECTION ALONG MC02 - SHEET 2

JOB NUMBER **130945**
DRAWING NUMBER **C18.27**
REVISION **G**
DRAWING SHEET SIZE = A1

Centreline Data
X = 341324.903
Y = 6270982.732
Z = 14.992

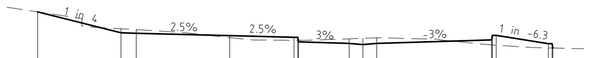
DATUM RL 14.0

FINISHED SURFACE	15.228	15.208	15.132	15.079	15.079	14.929	14.880	14.840	14.880	14.992
EXISTING SURFACE	15.218	15.186	15.015	14.949	14.955	14.956	15.029	15.044	15.047	14.883
OFFSET	-12.100	-11.600	-8.550	-6.450	-6.325	-6.300	-4.650	-4.200	-3.750	0.000

CHAINAGE 77.089

Centreline Data
X = 341307.984
Y = 6270985.137
Z = 16.086

DATUM RL 15.0



FINISHED SURFACE	17.001	16.322	16.302	16.225	16.173	16.173	16.023	15.973	15.933	15.973	16.086	16.236	16.236	15.966	15.966	15.816
EXISTING SURFACE	17.001	16.451	16.424	16.162	16.074	16.073	16.073	16.122	16.139	16.156	15.922	15.921	15.913	15.826	15.823	
OFFSET	-14.818	-12.100	-11.600	-8.550	-6.450	-6.325	-6.300	-4.650	-4.200	-3.750	0.000	0.025	0.150	1.850	1.975	2.000

CHAINAGE 60.000

Centreline Data
X = 341288.183
Y = 6270987.952
Z = 17.330

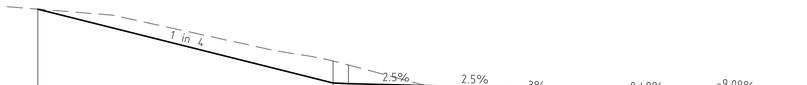
DATUM RL 16.0

FINISHED SURFACE	18.759	17.565	17.545	17.469	17.417	17.417	17.267	17.217	17.177	17.217	17.330	17.480	17.480	17.174	17.174	17.024
EXISTING SURFACE	18.759	17.871	17.750	17.254	17.211	17.220	17.221	17.286	17.300	17.315	17.248	17.247	17.240	17.034	17.030	17.029
OFFSET	-16.874	-12.099	-11.599	-8.550	-6.450	-6.325	-6.300	-4.650	-4.200	-3.750	0.000	0.025	0.150	1.850	1.975	2.000

CHAINAGE 40.000

Centreline Data
X = 341268.382
Y = 6270990.766
Z = 18.192

DATUM RL 17.0

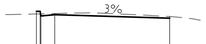


FINISHED SURFACE	20.967	18.558	18.538	18.462	18.409	18.409	18.259	18.210	18.170	18.210	18.192	18.342	18.342	18.187	18.187	18.037
EXISTING SURFACE	20.967	19.274	19.147	18.381	18.207	18.225	18.228	18.274	18.282	18.290	18.230	18.229	18.223	18.067	18.064	18.064
OFFSET	-21.735	-12.097	-11.597	-8.550	-6.450	-6.325	-6.300	-4.650	-4.200	-3.750	0.000	0.025	0.150	1.850	1.975	2.000

CHAINAGE 20.000

Centreline Data
X = 341260.052
Y = 6270991.950
Z = 18.518

DATUM RL 17.0



FINISHED SURFACE	18.741	18.741	18.591	18.631	18.518
EXISTING SURFACE	18.656	18.659	18.659	18.669	18.573
OFFSET	-4.350	-4.225	-4.200	-3.750	0.000

CHAINAGE 11.586

DRAWN: S.WEEKS DESIGNED: C.PALADA JOB MANAGER: C.PALADA VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	18.08.17
D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
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F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT
STEPHEN BOWERS ARCHITECTS

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

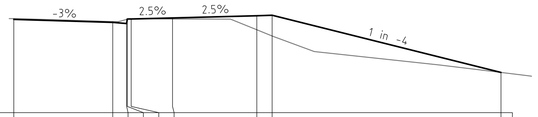
PROJECT
6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE
SUBDIVISION - STAGE 1
CROSS SECTION ALONG MC03 - SHEET 1

JOB NUMBER **130945**
DRAWING NUMBER **C18.31**
REVISION **G**
DRAWING SHEET SIZE = A1

Centreline Data
X = 341256.258
Y = 6271052.349
Z = 28.044

DATUM RL 25.0

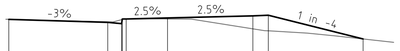


FINISHED SURFACE	28.044	27.947	27.907	28.057	28.057	28.090	28.159	28.179	26.311
EXISTING SURFACE	28.067	27.971	28.041	28.047	28.065	28.055	27.702	27.499	26.311
OFFSET	0.000	3.230	3.680	3.705	3.830	5.180	7.930	8.430	15.902

CHAINAGE 60.000

Centreline Data
X = 341253.261
Y = 6271032.575
Z = 24.326

DATUM RL 23.0

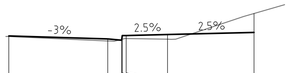


FINISHED SURFACE	24.326	24.229	24.189	24.339	24.339	24.373	24.443	24.463	23.689
EXISTING SURFACE	24.331	24.245	24.320	24.328	24.346	24.342	24.021	23.954	23.689
OFFSET	0.000	3.230	3.680	3.705	3.830	5.180	7.968	8.468	11.564

CHAINAGE 40.000

Centreline Data
X = 341250.264
Y = 6271012.801
Z = 20.407

DATUM RL 19.0

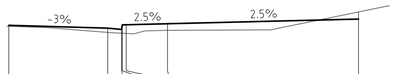


FINISHED SURFACE	20.407	20.310	20.270	20.420	20.420	20.454	20.524
EXISTING SURFACE	20.391	20.244	20.295	20.301	20.325	20.300	21.140
OFFSET	0.000	3.230	3.680	3.705	3.830	5.180	8.004

CHAINAGE 20.000

Centreline Data
X = 341249.372
Y = 6271006.918
Z = 19.684

DATUM RL 18.0

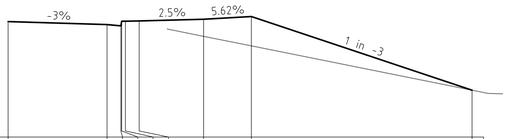


FINISHED SURFACE	19.684	19.588	19.548	19.698	19.698	19.731	19.887
EXISTING SURFACE	19.650	19.448	19.424	19.423	19.417	19.519	20.119
OFFSET	0.000	3.230	3.680	3.705	3.830	5.180	11.416

CHAINAGE 14.050

Centreline Data
X = 341256.514
Y = 6271094.291
Z = 31.766

DATUM RL 28.0

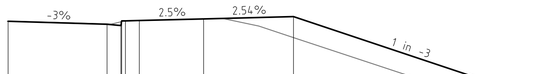


FINISHED SURFACE	31.766	31.669	31.629	31.779	31.779	31.791	31.843	31.931	29.529
EXISTING SURFACE							31.287	30.974	29.529
OFFSET	0.000	3.230	3.680	3.705	3.830	4.280	6.380	7.939	15.145

CHAINAGE 102.501

Centreline Data
X = 341257.290
Y = 6271091.914
Z = 31.739

DATUM RL 28.0



FINISHED SURFACE	31.739	31.642	31.602	31.752	31.752	31.763	31.816	31.890	29.388
EXISTING SURFACE	31.738	31.650	31.725	31.732	31.748	31.761	31.820	31.207	29.388
OFFSET	0.000	3.230	3.680	3.705	3.830	4.280	6.380	9.317	16.825

CHAINAGE 100.000

DRAWN: S.WEEKS
DESIGNED: CPALADA
JOB MANAGER: CPALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	18.08.17
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E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT
STEPHEN BOWERS ARCHITECTS

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0 1 2 3 4 5m SCALE 1:100

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

PROJECT
6 ORCHARD STREET, WARRIEWOOD, NSW 2012

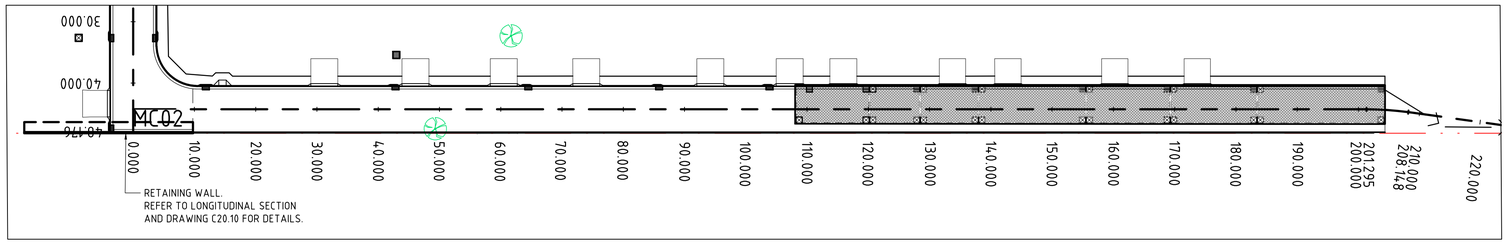
DRAWING TITLE
SUBDIVISION - STAGE 1

CROSS SECTION ALONG MC04 - SHEET 1

JOB NUMBER **130945**

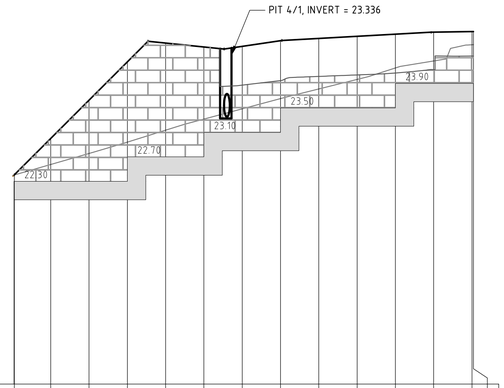
DRAWING NUMBER **C18.36** REVISION **G**

DRAWING SHEET SIZE = A1



RETAINING WALL PLAN

SCALE 1:500



DATUM RL 19.0

FINISHED SURFACE (TOP OF KERB)		23.01	23.634	24.259	24.566	24.502	24.512	24.605	24.642	24.676	24.711	24.744	24.754	24.754
EXISTING SURFACE	22.404	22.584	22.764	22.948	23.143	23.325	23.492	23.659	23.817	23.972	24.159	24.273	24.539	24.541
CHAINAGE FOR ADJACENT ROAD (MC01)									2.405	4.905	7.405	9.905	12.405	12.5
RW CHAINAGE	0	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25	27.5	30	30.095

RETAINING WALL LONGITUDINAL SECTION

HORIZONTAL SCALE 1:200@A1
VERTICAL SCALE 1:50@A1

NOTES:
STANDARD 400mm STEP UP OR DOWN FOR ALL RETAINING WALL FOUNDATIONS AS SHOWN.
REFER TO DRAWING C20.10 FOR DETAILS.
REFER TO DRAWING C20.10 FOR PENETRATION DETAILS.

GENERAL NOTES:

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

FOR CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR CONSTRUCTION CERTIFICATE	SW	TN	CP	22.09.17
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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0 1 2 3 4 5m SCALE 1:100

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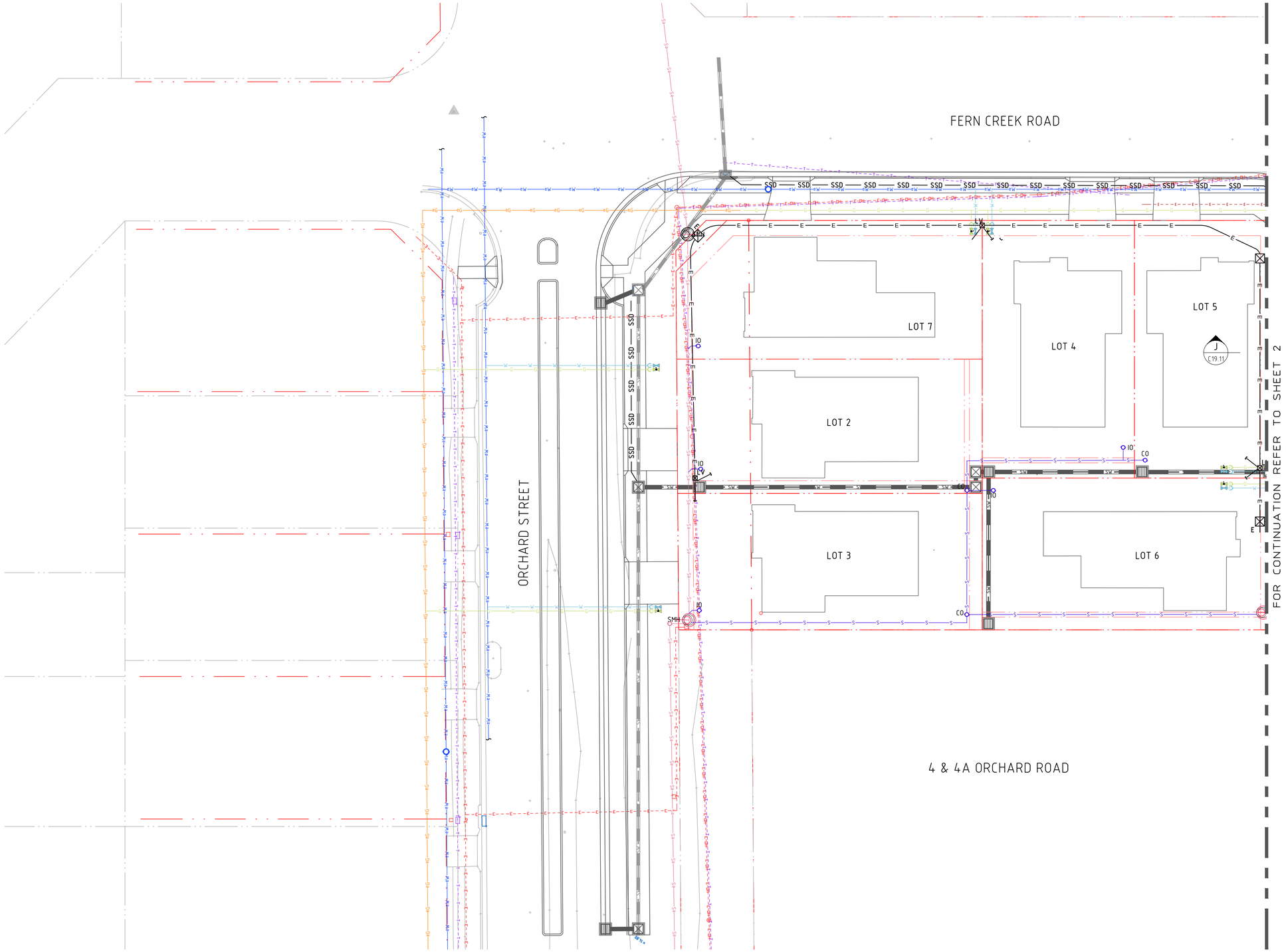
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
RETAINING WALL PLAN AND LONGITUDINAL SECTION

JOB NUMBER: 130945
DRAWING NUMBER: C18.41
REVISION: D
DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- PROPOSED STORMWATER PIPE
- EXISTING STORMWATER PIPE
- ON-SITE DETENTION TANK
- EXISTING ELECTRICAL CONDUITS
- PROPOSED CONSUMER MAINS CONDUIT ROUTE
- SUBSOIL DRAINAGE
- PROPOSED ELECTRICAL PIT
- PROPOSED ELECTRICAL SWITCHBOARD
- PROPOSED LIGHT POLE
- EXISTING GAS LINE
- PROPOSED GAS LINE
- PROPOSED GAS CONNECTION
- PROPOSED GAS VALVE
- EXISTING TELSTRA LINE
- PROPOSED COMMS CONDUITS
- PROPOSED TELSTRA CONDUITS
- PROPOSED COMMS PIT
- PROPOSED TELSTRA PIT
- EXISTING WATER LINE
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT LINE
- PROPOSED WATER CONNECTION
- PROPOSED WATER VALVE
- PROPOSED HYDRANT VALVE
- PROPOSED HYDRANT
- EXISTING SEWER LINE
- PROPOSED SEWER LINE
- PROPOSED SANITARY WASTE
- PROPOSED SEWER CONNECTION
- PROPOSED SEWER MANHOLE
- PROPOSED SEWER PUMP-OUT PIT

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR EXISTING SERVICES GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. ALL EXISTING 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.
5. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATION.
6. NEW SERVICES SHOWN ON PLANS ARE INDICATIVE ONLY FOR CLARITY - REFER 'TYPICAL SECTIONS C28.10' AND OTHER RELEVANT CONSULTANTS DRAWINGS FOR EXACT SETOUT LOCATIONS AND DETAILS.

FOR CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
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D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT: Monado Constructions Pty Ltd

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

ARCHITECT: STEPHEN BOWERS ARCHITECTS

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

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

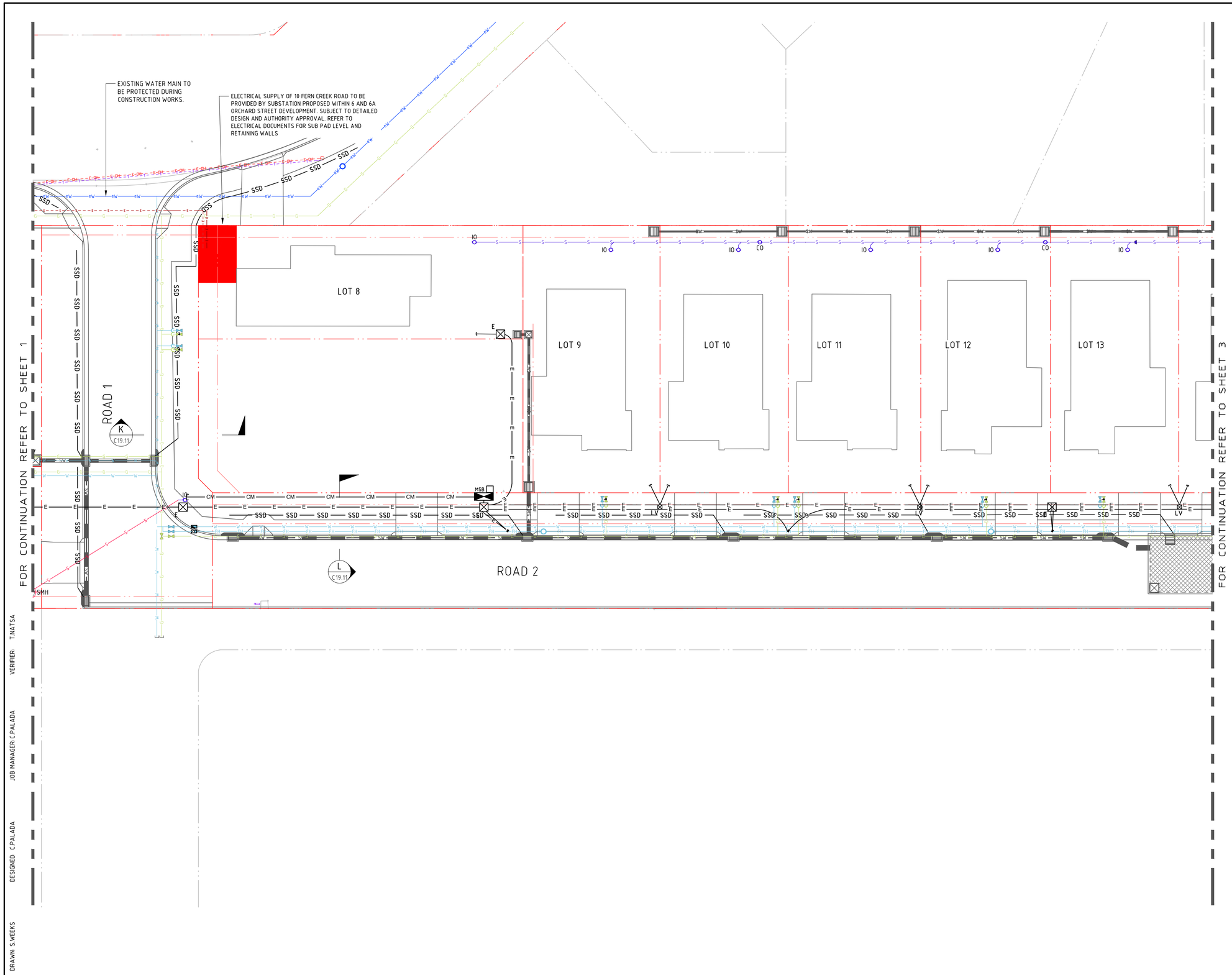
SERVICES MASTER PLAN - SHEET 1

JOB NUMBER: 130945

DRAWING NUMBER: C19.01

REVISION: G

DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- PROPOSED STORMWATER PIPE
- EXISTING STORMWATER PIPE
- ON-SITE DETENTION TANK
- EXISTING ELECTRICAL CONDUITS
- PROPOSED CONSUMER MAINS CONDUIT ROUTE
- SUBSOIL DRAINAGE
- PROPOSED ELECTRICAL PIT
- PROPOSED ELECTRICAL SWITCHBOARD
- PROPOSED LIGHT POLE
- EXISTING GAS LINE
- PROPOSED GAS LINE
- PROPOSED GAS CONNECTION
- PROPOSED GAS VALVE
- EXISTING TELSTRA LINE
- PROPOSED COMMS CONDUITS
- PROPOSED TELSTRA CONDUITS
- PROPOSED COMMS PIT
- PROPOSED TELSTRA PIT
- EXISTING WATER LINE
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT LINE
- PROPOSED WATER CONNECTION
- PROPOSED WATER VALVE
- PROPOSED HYDRANT VALVE
- PROPOSED HYDRANT
- EXISTING SEWER LINE
- PROPOSED SEWER LINE
- PROPOSED SANITARY WASTE
- PROPOSED SEWER CONNECTION
- PROPOSED SEWER MANHOLE
- PROPOSED SEWER PUMP-OUT PIT

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR EXISTING SERVICES GENERAL REQUIREMENTS.
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6. NEW SERVICES SHOWN ON PLANS ARE INDICATIVE ONLY FOR CLARITY – REFER 'TYPICAL SECTIONS C28.10' AND OTHER RELEVANT CONSULTANTS DRAWINGS FOR EXACT SETOUT LOCATIONS AND DETAILS.

FOR CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
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F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT: Monado Constructions Pty Ltd

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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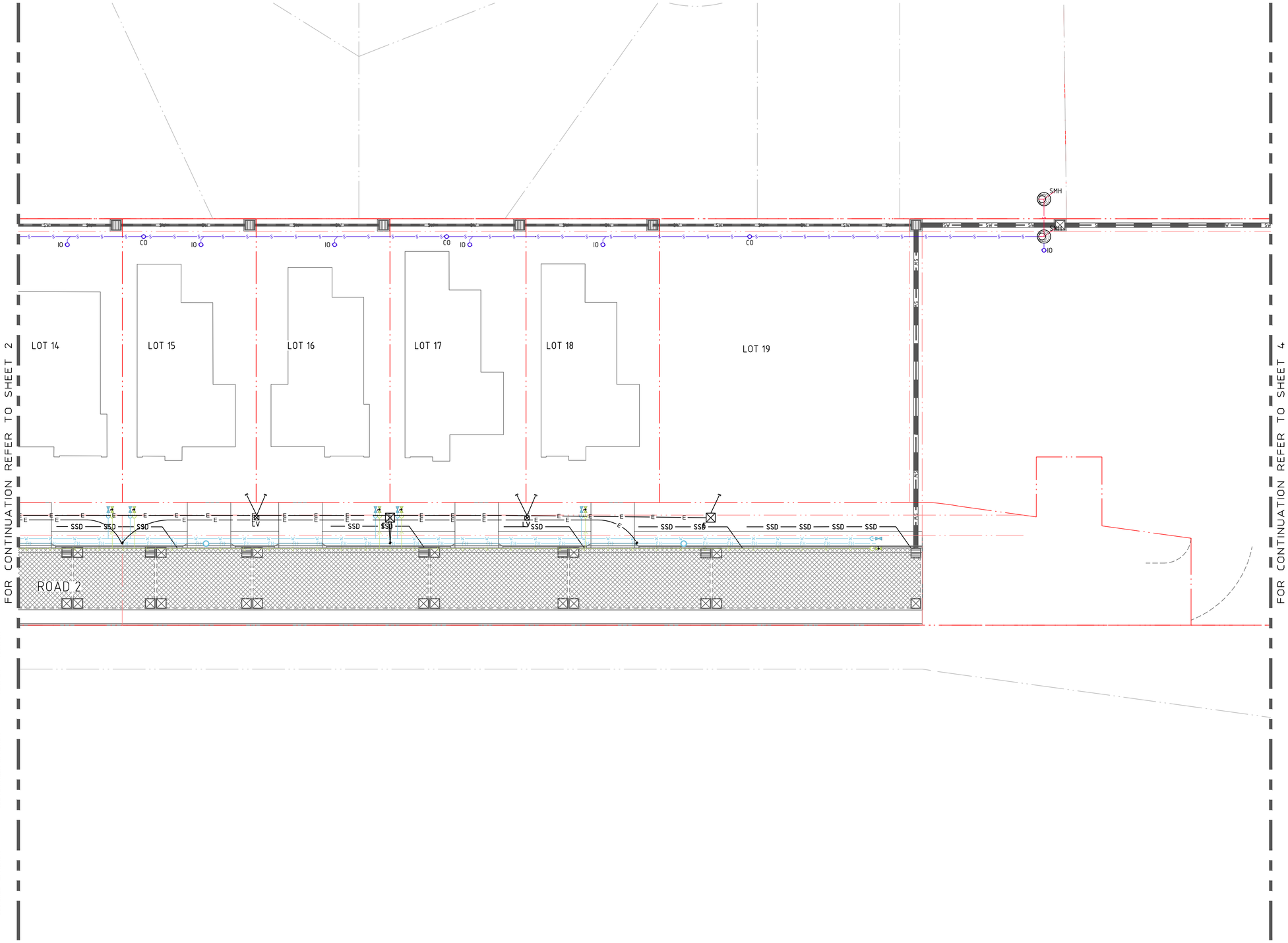
0 2 4 6 8 10m SCALE 1:200

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: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
SERVICES MASTER PLAN - SHEET 2

JOB NUMBER: 130945
DRAWING NUMBER: C19.02
REVISION: G
DRAWING SHEET SIZE = A1



LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- PROPOSED STORMWATER PIPE
- EXISTING STORMWATER PIPE
- ON-SITE DETENTION TANK
- EXISTING ELECTRICAL CONDUITS
- PROPOSED CONSUMER MAINS CONDUIT ROUTE
- SUBSOIL DRAINAGE
- PROPOSED ELECTRICAL PIT
- PROPOSED ELECTRICAL SWITCHBOARD
- PROPOSED LIGHT POLE
- EXISTING GAS LINE
- PROPOSED GAS LINE
- PROPOSED GAS CONNECTION
- PROPOSED GAS VALVE
- EXISTING TELSTRA LINE
- PROPOSED COMMS CONDUITS
- PROPOSED TELSTRA CONDUITS
- PROPOSED COMMS PIT
- PROPOSED TELSTRA PIT
- EXISTING WATER LINE
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT LINE
- PROPOSED WATER CONNECTION
- PROPOSED WATER VALVE
- PROPOSED HYDRANT VALVE
- PROPOSED HYDRANT
- EXISTING SEWER LINE
- PROPOSED SEWER LINE
- PROPOSED SANITARY WASTE
- PROPOSED SEWER CONNECTION
- PROPOSED SEWER MANHOLE
- PROPOSED SEWER PUMP-OUT PIT

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR EXISTING SERVICES GENERAL REQUIREMENTS.
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FOR CONSTRUCTION

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.MATSA

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CLIENT: Monado CONSTRUCTIONS Pty Ltd

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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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

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

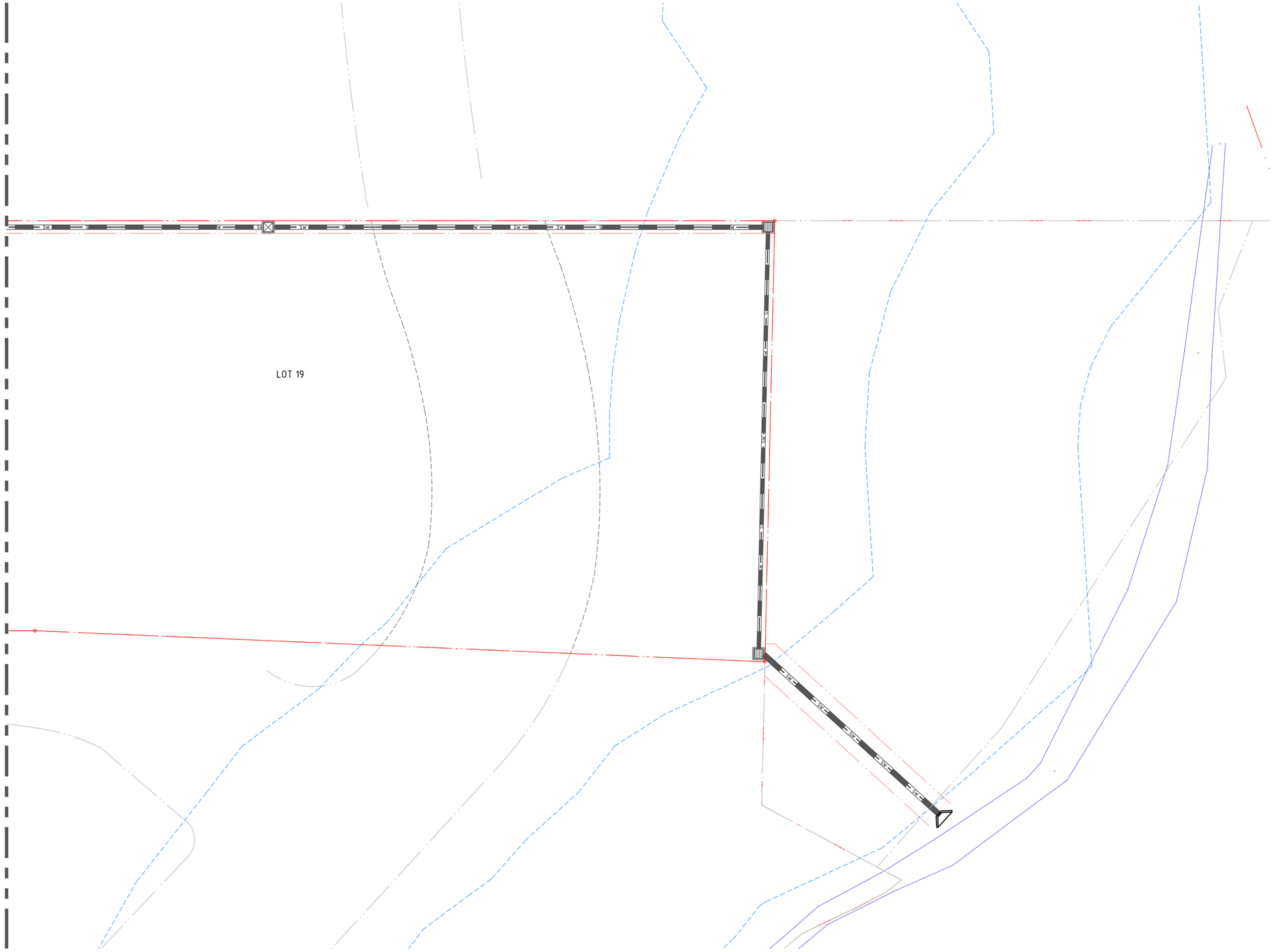
SERVICES MASTER PLAN - SHEET 3

JOB NUMBER: 130945

DRAWING NUMBER: C19.03

REVISION: G

DRAWING SHEET SIZE = A1



FOR CONTINUATION REFER TO SHEET 4

VERIFIER: T.NATSA

JOB MANAGER: C.PALADA

DESIGNED: C.PALADA

DRAWN: S.WEEKS

LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- PROPOSED STORMWATER PIPE
- EXISTING STORMWATER PIPE
- ON-SITE DETENTION TANK
- EXISTING ELECTRICAL CONDUITS
- CM — PROPOSED CONSUMER MAINS CONDUIT ROUTE
- E — SUBSOIL DRAINAGE
- SSD — PROPOSED ELECTRICAL PIT
- PROPOSED ELECTRICAL SWITCHBOARD
- PROPOSED LIGHT POLE
- EXISTING GAS LINE
- PROPOSED GAS LINE
- PROPOSED GAS CONNECTION
- PROPOSED GAS VALVE
- EXISTING TELSTRA LINE
- COMS — PROPOSED COMMS CONDUITS
- T — PROPOSED TELSTRA CONDUITS
- C — PROPOSED COMMS PIT
- T — PROPOSED TELSTRA PIT
- EXISTING WATER LINE
- W — PROPOSED WATER LINE
- FH — PROPOSED FIRE HYDRANT LINE
- PROPOSED WATER CONNECTION
- PROPOSED WATER VALVE
- PROPOSED HYDRANT VALVE
- PROPOSED HYDRANT
- EXISTING SEWER LINE
- S — PROPOSED SEWER LINE
- S — PROPOSED SANITARY WASTE
- PROPOSED SEWER CONNECTION
- PROPOSED SEWER MANHOLE
- PROPOSED SEWER PUMP-OUT PIT

GENERAL NOTES:

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2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

SERVICES MASTER PLAN - SHEET 4

JOB NUMBER: 130945

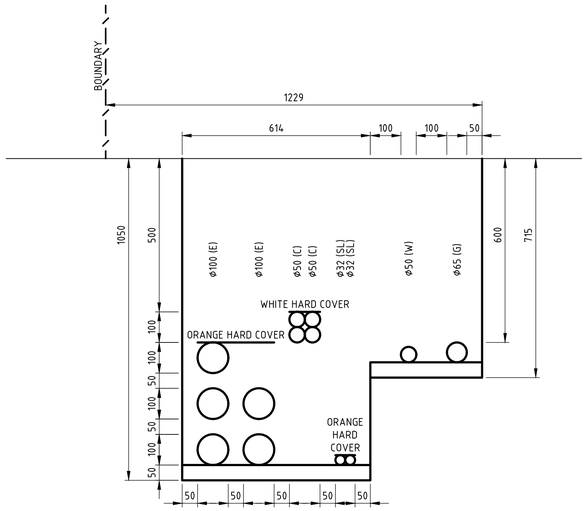
DRAWING NUMBER: C19.04

REVISION: G

DRAWING SHEET SIZE = A1

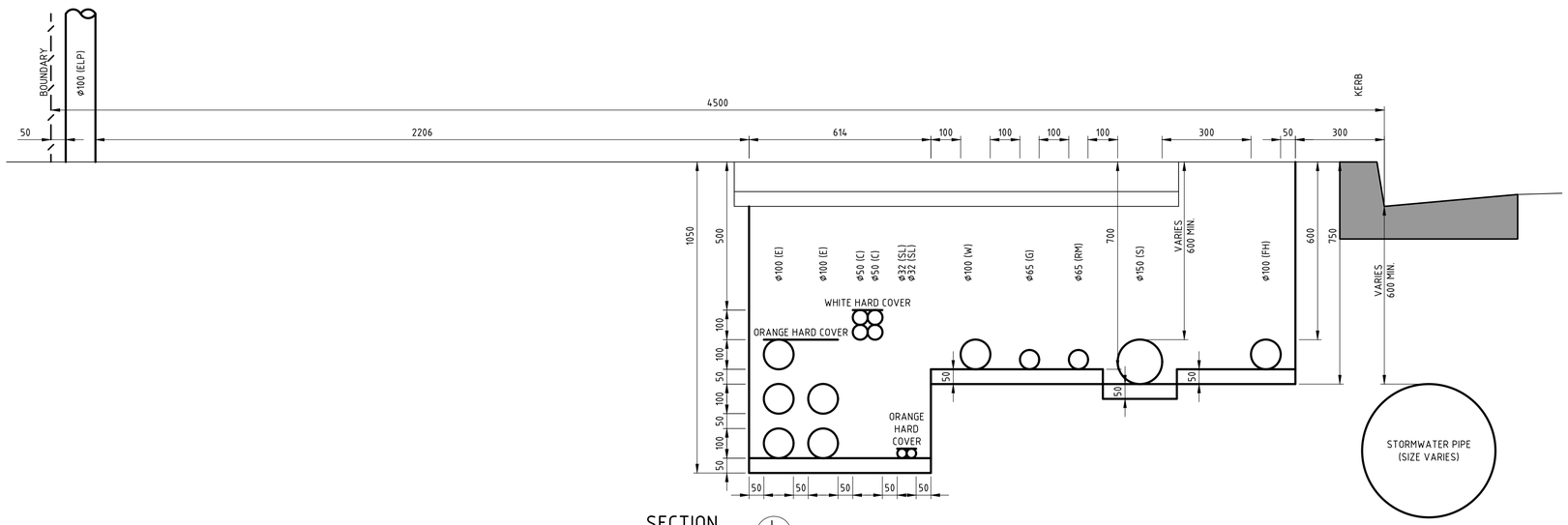
GENERAL NOTES:

1. SERVICE TRENCH LAYOUT SUBJECT TO CHANGE BASED ON AUTHORITY APPROVAL AND DETAILED DESIGNED DRAWINGS FROM OTHER ENGINEERING DISCIPLINES.



SECTION K C18.02

SERVICE TRENCH 2
ROAD 1 (NORTHERN SIDE WITHIN BOUNDARY)
TYPICAL DETAIL



SECTION L C18.02

SERVICE TRENCH 3
ROAD 2 (WESTERN SIDE)
TYPICAL DETAIL

DRAWN: S.WEEKS DESIGNED: C.PALADA JOB MANAGER: C.PALADA VERIFIER: T.MATSA

FOR CONSTRUCTION

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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0.0 0.1 0.2 0.3 0.4 0.5m SCALE 1:10

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Sydney
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Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

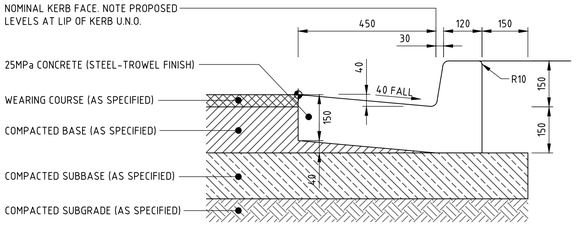
TYPICAL SERVICES SECTIONS

JOB NUMBER: 130945

DRAWING NUMBER: C19.11

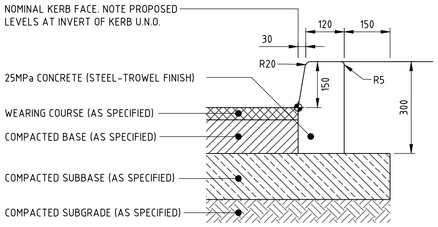
REVISION: G

DRAWING SHEET SIZE = A1



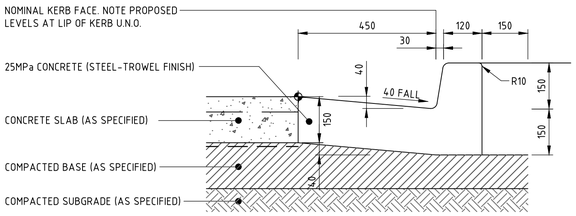
KERB & GUTTER 'KG' - FLEXIBLE PAVEMENT TYPE '1'

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



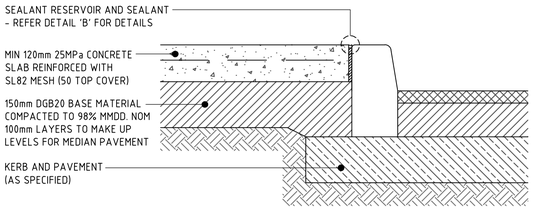
KERB ONLY 'KO'

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



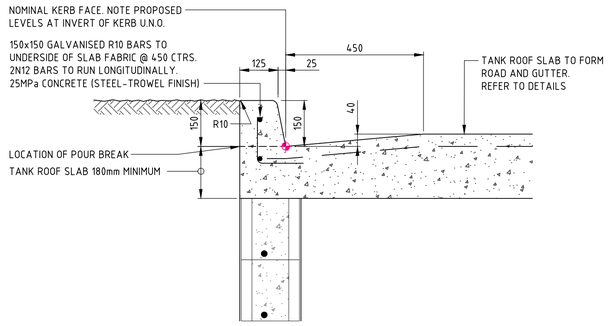
KERB & GUTTER 'KG' - RIGID PAVEMENT TYPE '1'

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



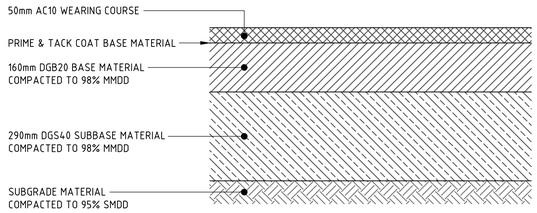
CONCRETE MEDIAN 'ME'

MIN CBR 5% (CONTRACTOR TO CONFIRM ONSITE).
WHERE CONCRETE MEDIAN IS TO BE INSTALLED OVER EXISTING ASPHALT, BASE MATERIAL MAY BE SUBSTITUTED FOR 30mm SAND LEVELING LAYER OR BLACK PLASTIC MEMBRANE / BOND BREAKER.
PROVIDE SAWN JOINTS @ 2m CENTRES / EXPANSION JOINTS @ 6m CENTRES.



INTEGRAL KERB & GUTTER 'IKG' DETAIL

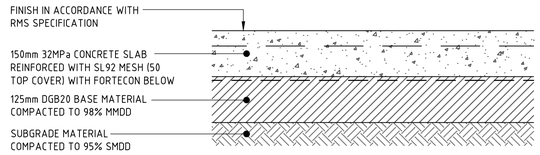
EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS TO ALIGN WITH PAVEMENT JOINTING. ALL RADII TO BE 20mm U.N.O.



FLEXIBLE PAVEMENT TYPE '1'

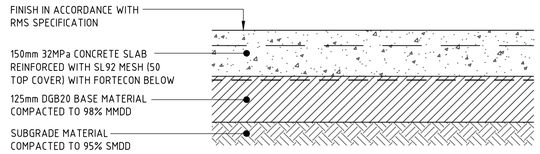
MIN CBR 5% (CONTRACTOR TO CONFIRM ONSITE)

NOTE: NO SOIL DATA AVAILABLE AT TIME OF DESIGN.
CONTRACTOR TO CONFIRM CBR = 5% OR GREATER.
OBTAIN ENGINEER'S APPROVAL BEFORE CONSTRUCTION.



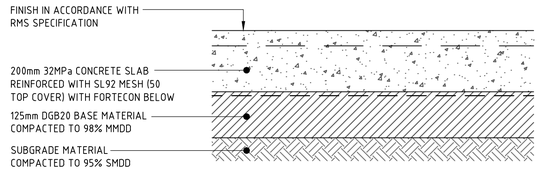
RIGID PAVEMENT TYPE '1'

MIN CBR 10% (CONTRACTOR TO CONFIRM ONSITE)



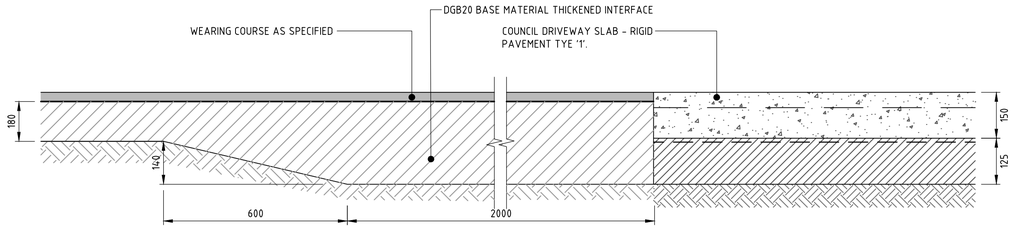
RIGID PAVEMENT TYPE '2' - DRIVEWAY

MIN CBR 10% (CONTRACTOR TO CONFIRM ONSITE)



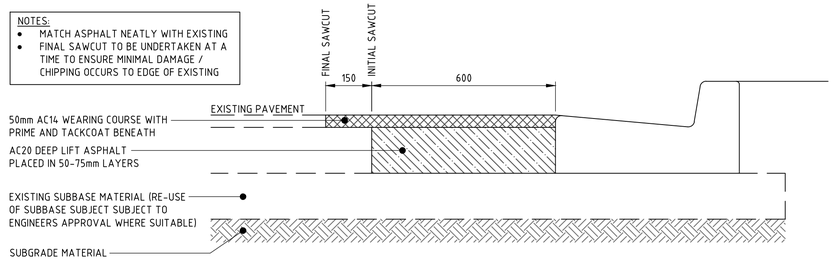
RIGID PAVEMENT TYPE '3' - THICKENING

MIN CBR 10% (CONTRACTOR TO CONFIRM ONSITE)



ASPHALT PAVEMENT TO CONCRETE PAVEMENT INTERFACE 'INT 4'

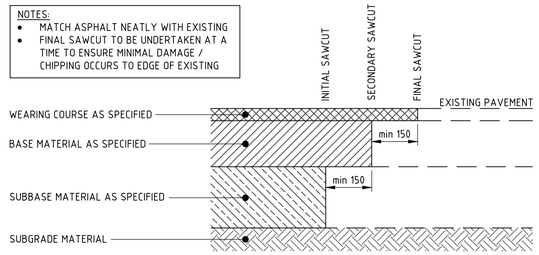
NOTES:
- MATCH ASPHALT NEATLY WITH EXISTING
- FINAL SAWCUT TO BE UNDERTAKEN AT A TIME TO ENSURE MINIMAL DAMAGE / CHIPPING OCCURS TO EDGE OF EXISTING



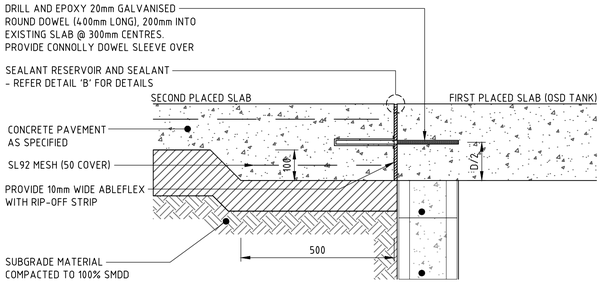
PAVEMENT INTERFACE 'INT1'

MIN CBR 50% (CONTRACTOR TO CONFIRM ONSITE)

NOTES:
- MATCH ASPHALT NEATLY WITH EXISTING
- FINAL SAWCUT TO BE UNDERTAKEN AT A TIME TO ENSURE MINIMAL DAMAGE / CHIPPING OCCURS TO EDGE OF EXISTING

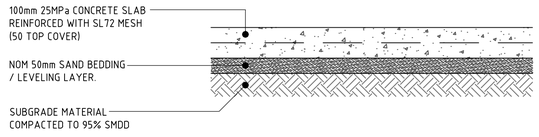


PAVEMENT INTERFACE 'INT2'



PAVEMENT INTERFACE 'INT3'

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



FOOTPATH PAVEMENT TYPE '1'

MIN CBR 10% (CONTRACTOR TO CONFIRM ONSITE).
CONTRACTOR TO ALLOW FOR JOINTS - REFER JOINT DETAILS

FOR CONSTRUCTION

VERIFIER: T.NATSA
JOB MANAGER: C.PALADA
DESIGNED: C.PALADA
DRAWN: S.WEEKS

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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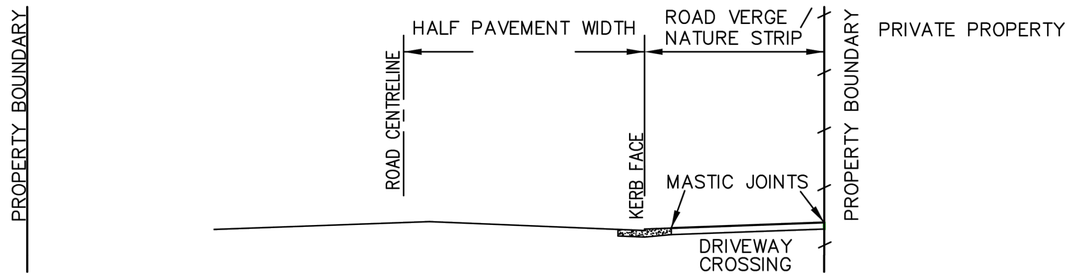
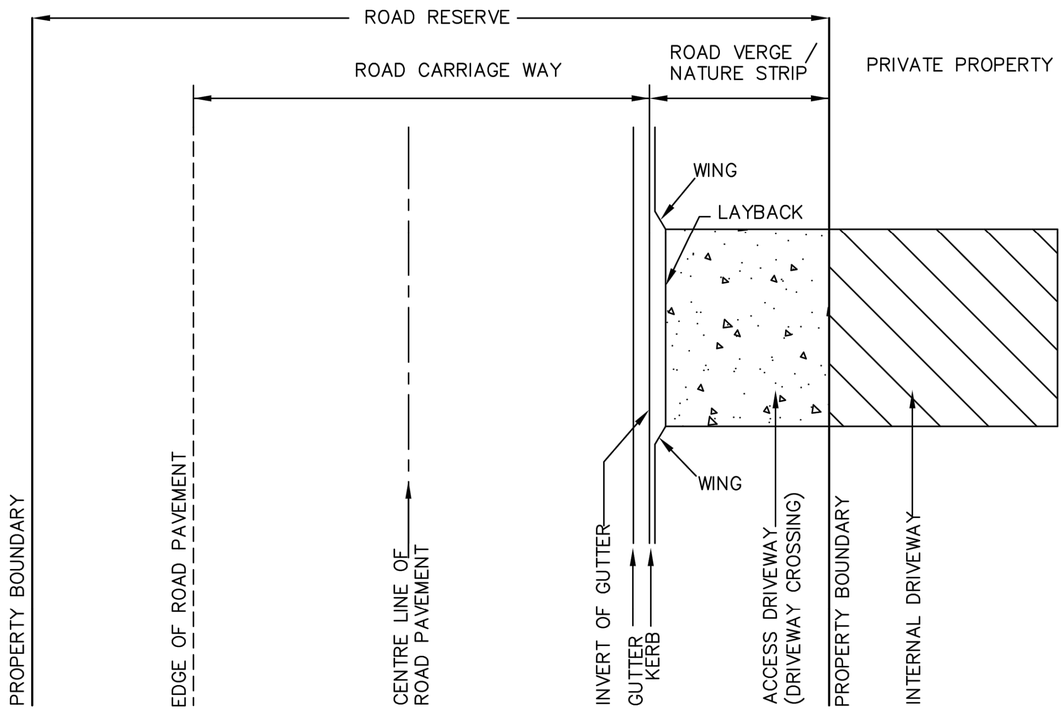
PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
DETAILS - SHEET 1

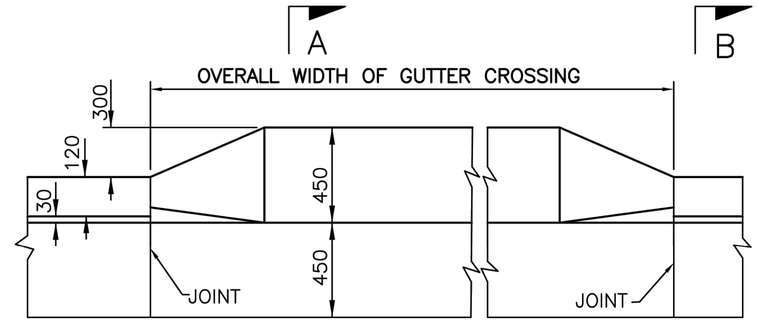
JOB NUMBER: 130945
DRAWING NUMBER: C20.01
REVISION: G
DRAWING SHEET SIZE = A1



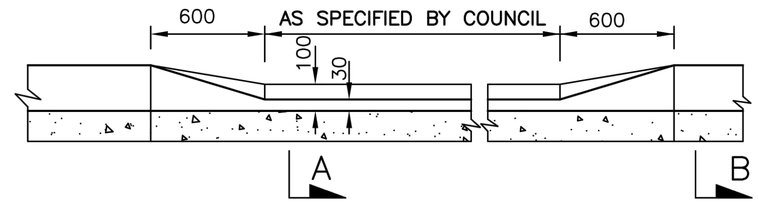
CROSS SECTION–ROAD FROM CENTRELINE TO PROPERTY BOUNDARY



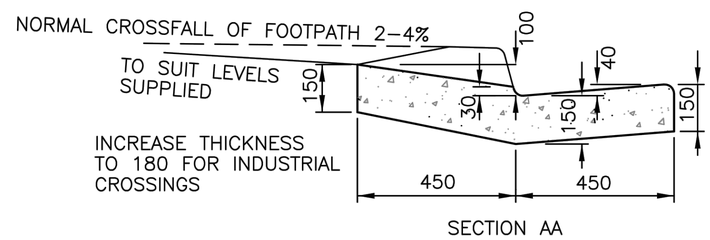
PLAN



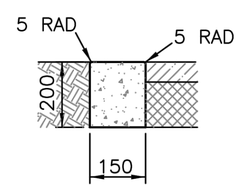
PLAN



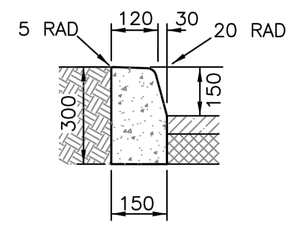
ELEVATION AT KERB FACE



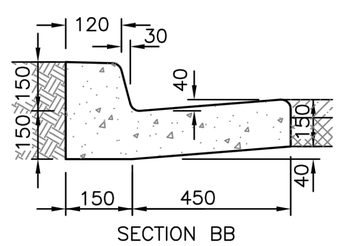
GUTTER CROSSING



EDGE STRIP



KERB ONLY



INTEGRAL K.& G.

NOTES

- all construction to be concrete plain uncoloured 25MPa at 28 days.
- thickness single dwelling – 150mm with SL82 mesh. Multiple or industrial – 180mm with SL92 mesh.
- at least 24 hours notice of intention to pour shall be given to the Council's Urban Infratructure Unit and no concrete shall be placed until the formwork has been approved.
- where kerb and gutter does not exist, the future alignment of the kerb can be provided by Council

NOTES

CONCRETE TO BE MINIMUM COMPRESSIVE STRENGTH 25MPa AT 28 DAYS.

DRAWN: S.WEEKS DESIGNED: C.PALADA JOB MANAGER: C.PALADA VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	18.08.17
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E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

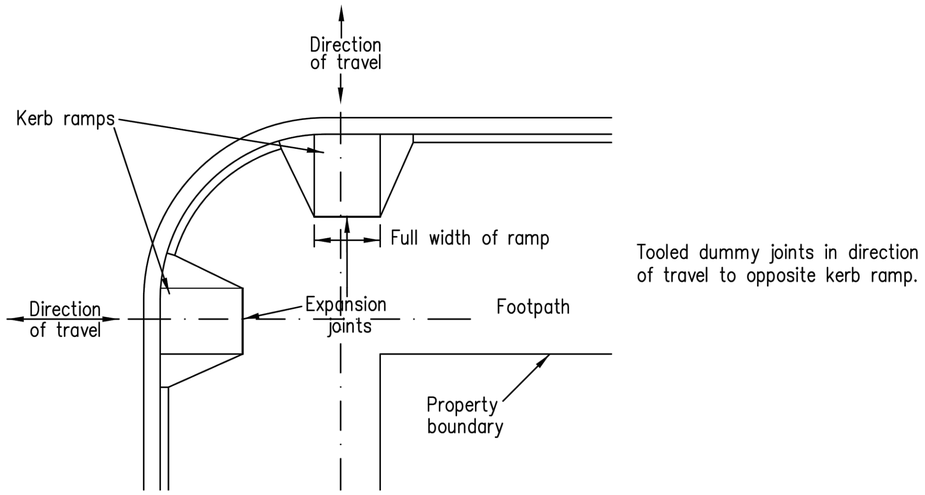
DETAILS - SHEET 2

JOB NUMBER: 130945

DRAWING NUMBER: C20.02

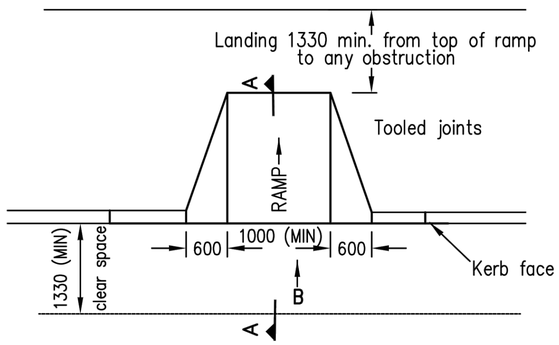
REVISION: G

DRAWING SHEET SIZE = A1

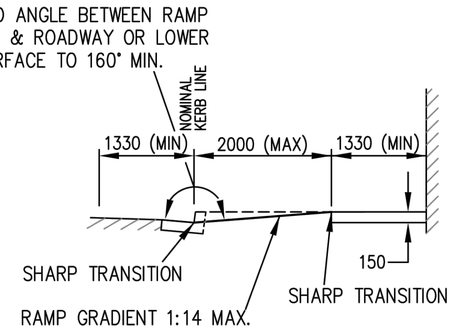


LOCATION OF KERB RAMPS

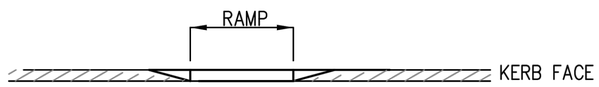
* Kerb ramps shall be graded in the direction of travel as shown above.



TOP VIEW



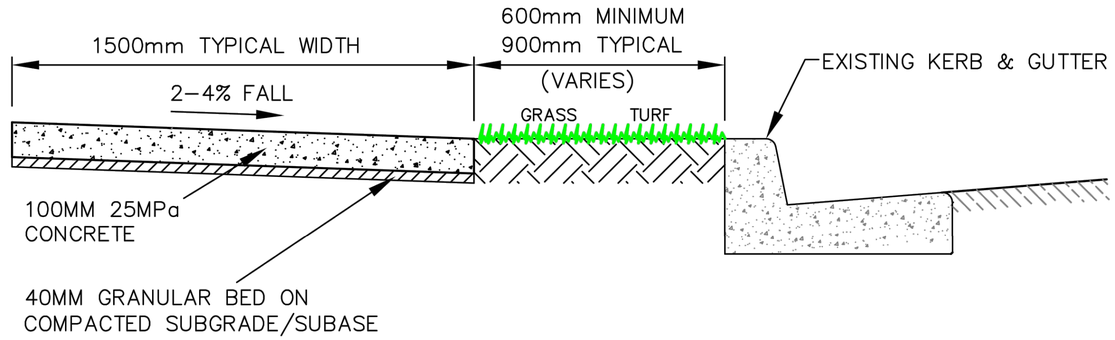
SECTION A–A



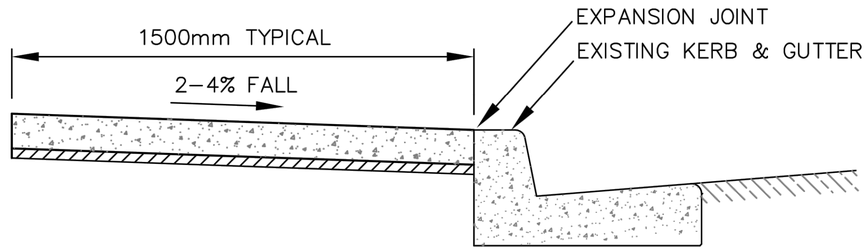
VIEW B

NOTES:

1. the ramp and sloping sides should be slip resistant and finished in a contrasting pumpkin colour.
2. no lip where ramp meets gutter.



(PREFERRED OPTION)



ADJOINING KERB & GUTTER

NOTES

1. footpath width to be 1200mm min. unless otherwise approved by Council. Shared paths to be 2500mm wide.
2. final layout and location to be approved by Council and shall comply where required with AS 1428.1 for disabled access.
3. construction shall be 100mm min. thickness 25MPa concrete laid on a 40mm min. thickness granular bed.
4. subgrade to be trimmed to line and level compacted to 95% standard compaction.
5. bedding material to be approved by Council.
6. joints shall be a combination of : A) dummy joints at either 1200mm centres or equal to path width if > 1200mm. B) full depth expansion joints of 10mm mastic at 6000mm (max) centres and at adjoining structures if width > 1500mm.
7. all edges to be rounded with edging tools.
8. surface finish to be broom finish and the surface shall not exhibit any ponding.
9. at vehicle crossing use driveway construction standard.

DRAWN: S.WEEKS DESIGNED: C.PALADA JOB MANAGER: C.PALADA VERIFIER: T.NATSA

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F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

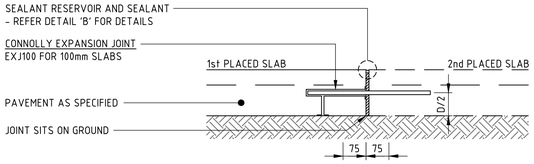
DETAILS - SHEET 3

JOB NUMBER: 130945

DRAWING NUMBER: C20.03

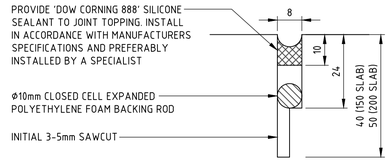
REVISION: G

DRAWING SHEET SIZE = A1

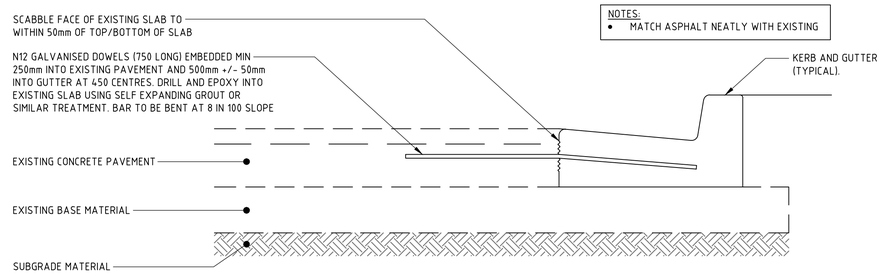


FOOTPATH EXPANSION JOINT 'EJ2'

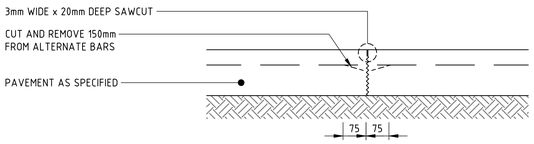
- TO ALSO BE USED AS A 'STOPWORK JOINT'
- MAXIMUM CONTINUOUS POUR NOT TO EXCEED 36m
- JOINT TO BE INSTALLED TO MANUFACTURERS SPECIFICATIONS
- REFER SPECIFICATION NOTES FOR JOINT SPACINGS (6m UNO)



DETAIL 'A'

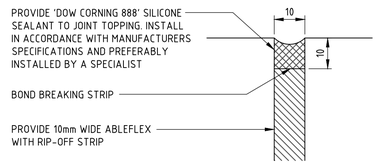


KERB TIED JOINT 'KTJ'

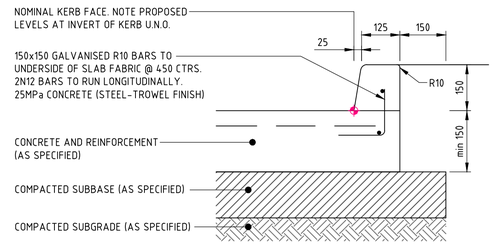


FOOTPATH SAWN / CONTRACTION JOINT 'SJ2'

- JOINT TO BE SAWN AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY THAT IT WILL NOT BE DAMAGED BY SAWING (MAX 24HRS)
- REFER SPECIFICATION NOTES FOR JOINT SPACINGS (2m UNO)

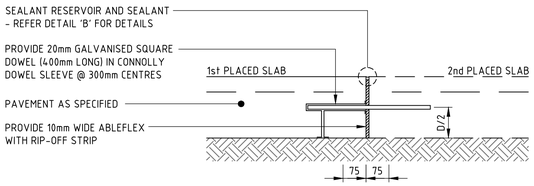


DETAIL 'B'



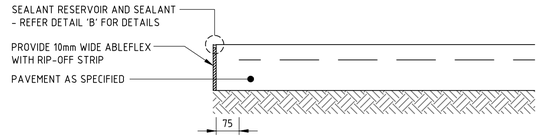
INTEGRAL KERB 'IK'

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



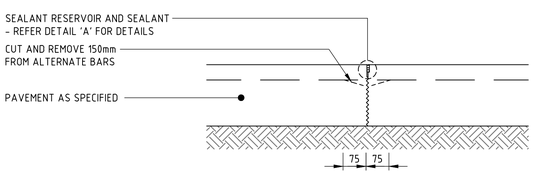
TRAFFICKED EXPANSION JOINT 'CJ1'

- TO ALSO BE USED AS A 'STOPWORK JOINT'
- JOINT TO BE INSTALLED TO MANUFACTURERS SPECIFICATIONS
- REFER SPECIFICATION NOTES FOR JOINT SPACINGS (18m UNO)



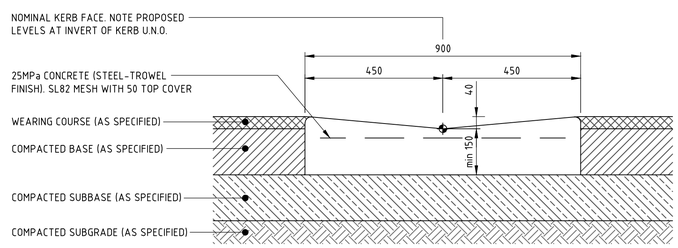
ISOLATION JOINT 'IJ'

- PROVIDE JOINT BETWEEN ALL NEW CONCRETE AND EXISTING STRUCTURES
- JOINT TO BE USED AGAINST ALL WALLS, FOOTINGS, COLUMNS, BACK OF KERB, SERVICE PITS, DRAINAGE PITS AND ALL SLAB PENETRATIONS



TRAFFICKED SAWN / CONTRACTION JOINT 'SJ1'

- JOINT TO BE SAWN AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY THAT IT WILL NOT BE DAMAGED BY SAWING (MAX 24HRS)
- REFER SPECIFICATION NOTES FOR JOINT SPACINGS (6m UNO)



DISH DRAIN - 900 WIDE 'DD'

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

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

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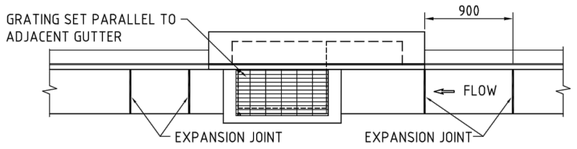
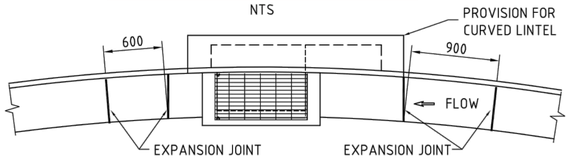
PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
DETAILS - SHEET 4

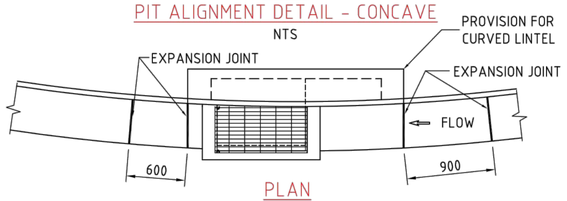
JOB NUMBER: 130945
DRAWING NUMBER: C20.04
REVISION: G
DRAWING SHEET SIZE = A1



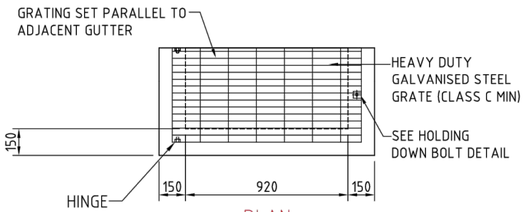
PLAN
PIT ALIGNMENT DETAIL - STRAIGHT
NTS



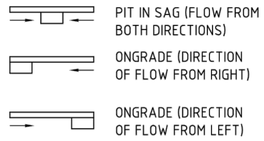
PLAN
PIT ALIGNMENT DETAIL - CONCAVE
NTS



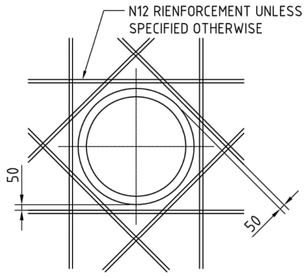
PLAN
PIT ALIGNMENT DETAIL - CONVEX
NTS



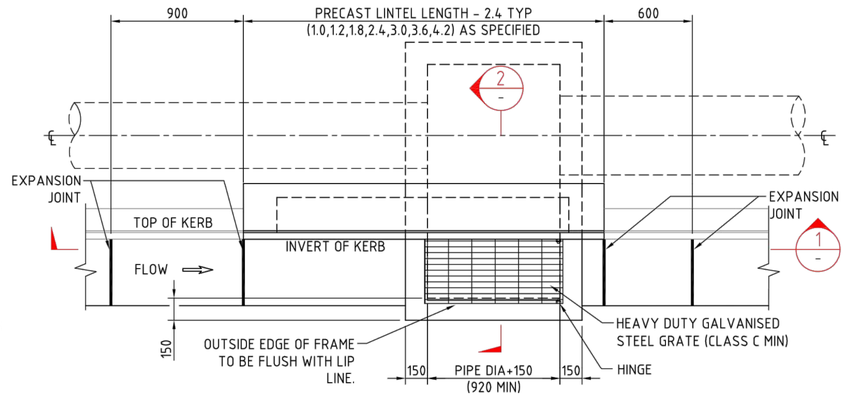
PLAN
GRATE WITH HOLDING DOWN BOLTS
NTS



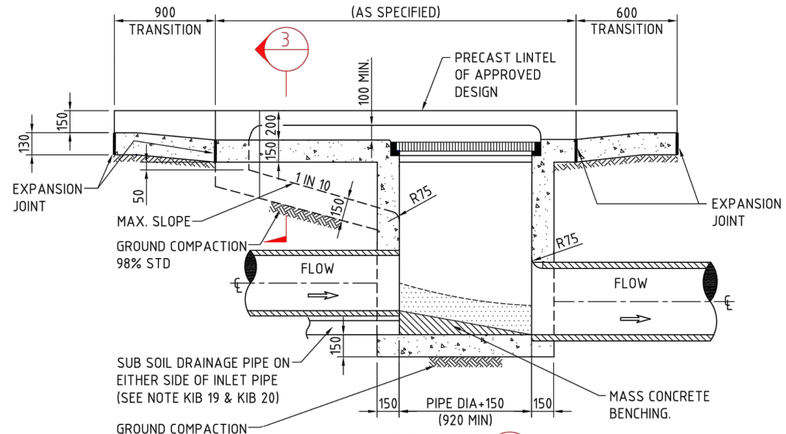
INLET PIT CONFIGURATION
NTS



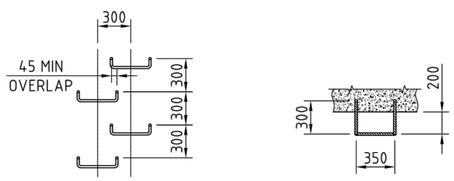
TYPICAL TRIMMER BAR DETAIL
NTS



PLAN
EXTENDED PIT WITH PIPE BEHIND KERB
NTS

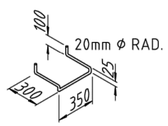


SECTION 1
NTS

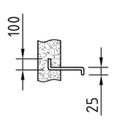


STEP IRON PLACEMENT DETAIL
NTS

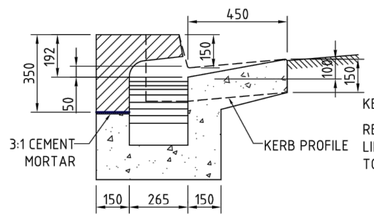
TOP VIEW ON STEP IRON
NTS



ISOMETRIC VIEW ON STE IRON
NTS



SIDE ELEVATION ON STEP IRON
NTS



SECTION 3
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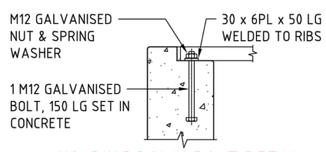
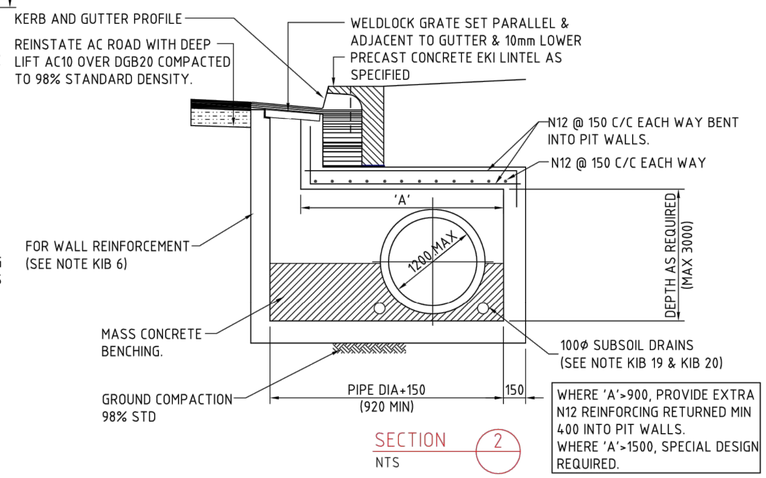


HOLDING DOWN BOLT DETAIL
NTS



SECTION 2
NTS

WHERE 'A'>900, PROVIDE EXTRA N12 REINFORCING RETURNED MIN 400 INTO PIT WALLS.
WHERE 'A'>1500, SPECIAL DESIGN REQUIRED.

GENERAL NOTES:

K1B CONCRETE MINUMUM GRADE 25MPa AT 28 DAYS (AS PER AS3600) UNLESS OTHERWISE STATED.

K2B WHERE PIT IS LOCATED IN SAG, INLET DEPRESSIONS ARE TO BE ADDED ON BOTH SIDES OF THE PIT.

K3B STEEL IN PRECAST LINETS TO BE GRADE N32.

K4B TOTAL LENGTH OF INLET VARIES DEPENDANT ON THE REQUIRED INLET CAPACITY (SEE DESIGN)

K5B KERB LEVELS SHALL BE AS PER GRADING ON THE DESIGN LONGITUDINAL SECTIONS.

K6B FOR PIT DEPTHS LESS THAN 3000mm PROVIDE N12 @250 CENTRES EACH WAY AT 50 COVER TO INSIDE FACE WALLS AND BASE. PROVIDE 400 LAP AT CORNERS. FOR PIT DEPTHS GREATER THAN 3000, SEPARATE DESIGN IS REQUIRED.

K7B PITS DEEPER THAN 1200mm TO BE FITTED WITH GALVANISED STEP IRONS AT 300mm CENTRES. REFER TO STEP IRON PLACEMENT DETAIL ON THIS DRAWING.

K8B PROPRIETARY STEPS MAY BE USED AS AN ALTERNATIVE IF APPROVED BY COUNCIL. THESE SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS INSTRUCTIONS.

K9B STEP IRONS SHALL BE LOCATED:
- DIRECTLY BELOW THE OPENING ON THE COVER.
- DESIRABLY ON A WALL WITHOUT PIPE OPENINGS.

K10B METAL FOR STEP IRONS SHALL BE STRUCTURAL GRADE 250 (AS PER AS 3678).

K11B STEP IRONS SHALL HAVE ROUNDED EDGES.

K12B ALL REINFORCEMENT LAPS 400mm LONG (MIN).

K13B ALL EXPOSED EDGES TO BE ROUNDED 20mm RADIUS.

K14B ALL BOLTS WASHERS AND NUTS TO BE GALVANISED.

K15B MINIMUM COVER TO REINFORCEMENT IS TO BE NO LESS THAN 50mm.

K16B STEEL GRATES AND FRAMES TO BE FABRICATED FROM MILD STEEL AND HOT DIP GALVANISED (AS PER AS1650).

K17B GRATE PATTERN AND BAR SIZE MAY VARY TO SUIT APPLICATION BUT TYPICALLY SHALL BE CLASS C AND BICYCLE SAFE (AS PER AS3996) UNLESS OTHERWISE STATED.

K18B WHERE PIPES ENTER PIT ON SKEW PIPE DIA=HORIZONTAL SKEW DIMENSIONS.

K19B 100mm DIA SUBSOIL DRAIN OUTLETS TO BE LOCATED 100mm ABOVE INVERT OF THE STORMWATER PIT. REFER TO DRG CI-DRG-005 SUBSOIL DRAINAGE AND OUTLET STRUCTURES.

K20B PROVIDE 3m LENGTH OF 100mm DIA SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK ADJACENT TO ALL INLET PIPES AND DRAINING TO PIT.

K21B FILL ANY GAPS WITH EPOXY RESIN MORTAR OR POLYESTER RESIN MORTAR.

K22B PIT SUBGRADE COMPACTION IS TO BE MIN 98% STANDARD.

K23B ALL DIMENSIONS ARE SHOWN IN MILLIMETRES U.N.O.

K24B MIN PIT DEPTH 800mm.

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	18.08.17
D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT: Monado CONSTRUCTIONS Pty Ltd

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

NOT TO SCALE

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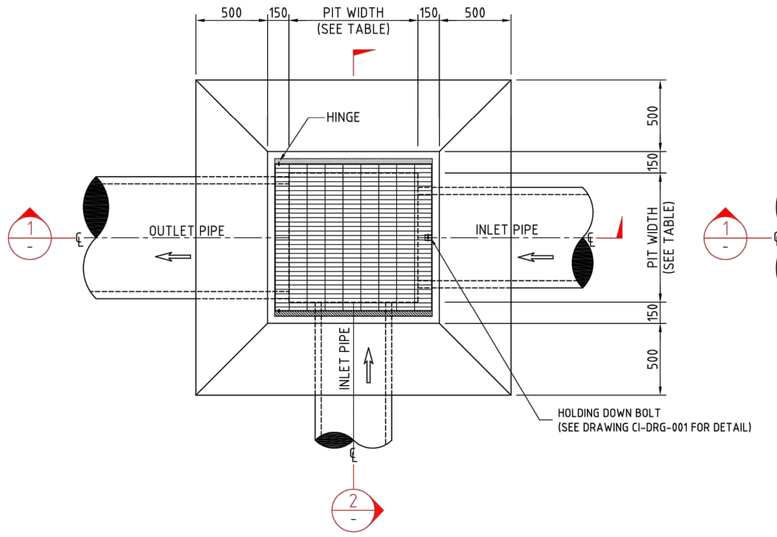
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
DETAILS - SHEET 5

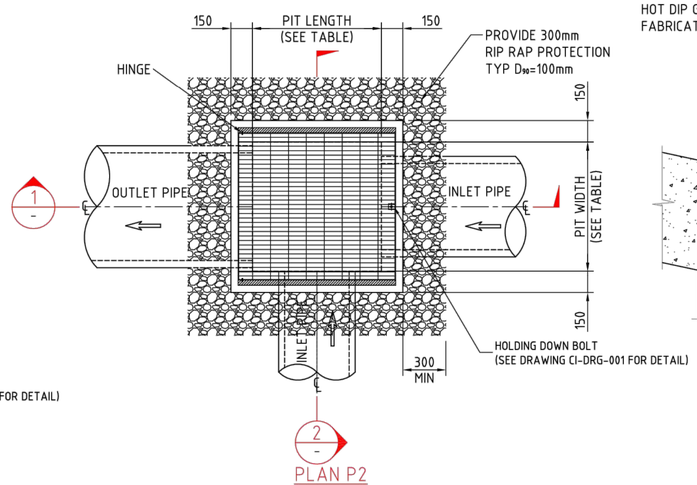
JOB NUMBER: 130945
DRAWING NUMBER: C20.05
REVISION: G
DRAWING SHEET SIZE = A1



PLAN P1

LETTERBOX SURCHARGE PIT P3

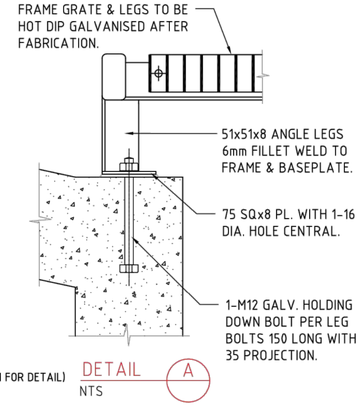
NTS



PLAN P2

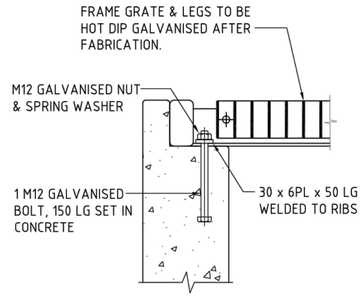
SURFACE LEVEL SUSCHARGE PIT

NTS



DETAIL A

NTS



DETAIL A

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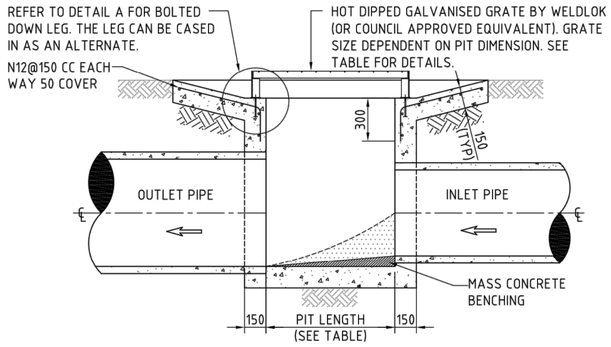
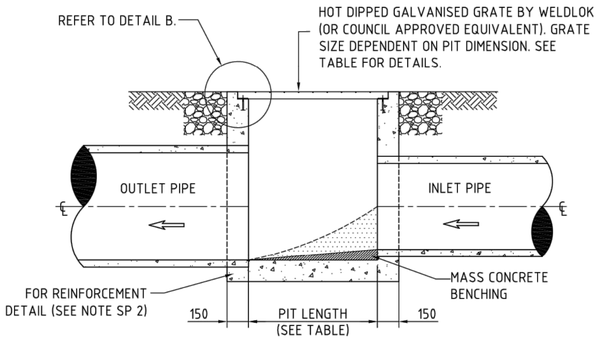


SECTION P1 1

NTS



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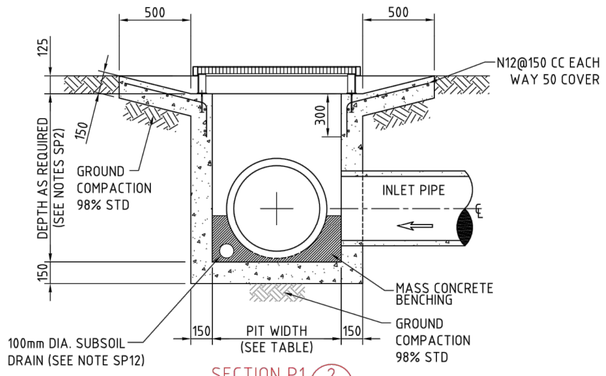

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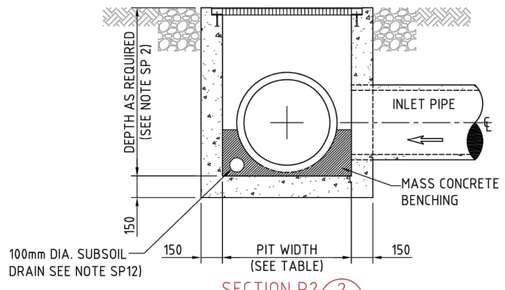

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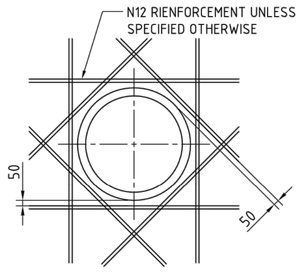

TYPICAL TRIMMER BAR DETAIL

NTS

GENERAL NOTES:

SP1. CONCRETE MINUMUM GRADE 25MPa AT 28 DAYS (AS PER AS3600) UNLESS OTHERWISE STATED.

SP2. FOR PIT DEPTHS LESS THAN 3000 PROVIDE N12@250 CENTRES EACH WAY AT 50 COVER TO INSIDE FACE WALLS AND BASE. PROVIDE 400 LAP AT CORNERS. FOR PIT DEPTHS GREATER THEN 3000, SEPARATE DESIGN IS REQUIRED.

SP3. ALL REINFORCEMENT LAPS 400mm LONG (min).

SP4. ALL EXPOSED EDGES TO BE ROUNDED 20mm RADIUS.

SP5. PITS DEEPER THAN 1200mm TO BE FITTED WITH GALVANISED STEP IRONS AT 300mm CENTRES. (REFER TO CI-DRG-001 PITTWATER COUNCIL STADARD DRAINAGE DRAWINGS KERB INLET PIT WITH PIPE UNDER KERB FOR DETAILS).

SP6. PROPRIETARY STEPS MAY BE USED IF APPROVED BY COUCIL AS AN ALTERNATIVE. THESE SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS INSTRUCTIONS.

SP7. ALL BOLTS WASHERS AND NUTS TO BE GALVANISED.

SP8. MINIMUM COVER OUTSIDE REINFORCEMENT NO LESS THAN 50mm.

SP9. STEEL GRATES AND FRAMES TO BE FABRICATED FROM MILD STEEL AND HOT DIP GALVANISED (AS PER AS1650).

SP10. GRATING PATTERN AND BAR SIZE MAY VARY TO SUIT APPLICATION BUT TYPICALLY SHALL BE CLASS C (AS PER AS3996) UNLESS OTHERWISE STATED.

SP11. WHERE PIPES ENTER PIT ON SKEW PIPE DIA=HORIZONTAL SKEW DIMENSIONS.

SP12. 100mm DIA SUBSOIL DRAIN OUTLETS TO BE LOCATED 100mm ABOVE INVERT OF THE STORMWATER PIT. REFER TO DRG CI-005 SUBSOILE DRAINAGE AND OULTET STRUCTURES.

SP13. PROVIDE 3m LENGTH OF 100mm DIA SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK ADJACENT TO INLET PIPES INVERTS AND DRAINING TO PIT.

SP17. PIT SUBGRADE COMPACTION TO BE MIN 98% STANDARD.

SP18. ALL DIMENSIONS SHOWN ARE IN MILLIMETRES U.N.O.

SP19. MIN PIT DEPTH 800mm

PIT SIZES TABLE

PIT SIZE	NOMINAL INSIDE PIT DIMENSIONS (mm)	WELDLOK GRATE TYPE OR EQUIVALENT
A	600 x 600	SPG66
B	600 x 900	SPG69
C	900 x 900	SPG99
D	900 x 1200	SPG912
E	1200 x 1200	SPG1212

DRAWN: S.WEEKS DESIGNED: CPALADA JOB MANAGER: CPALADA VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

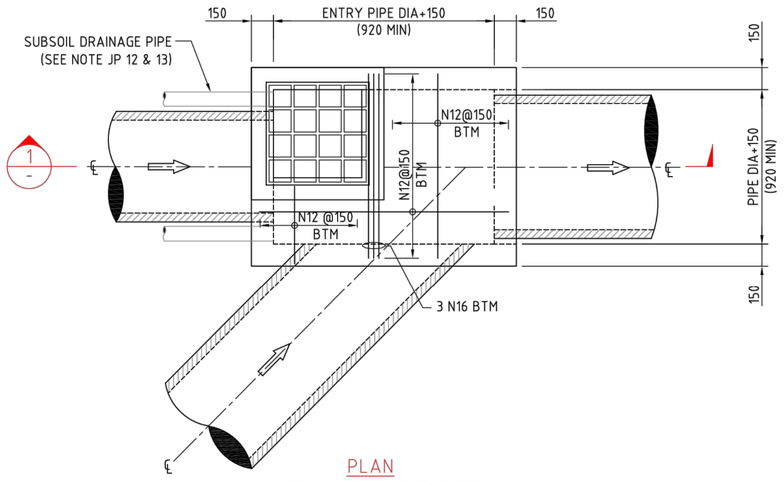
DETAILS - SHEET 6

JOB NUMBER: 130945

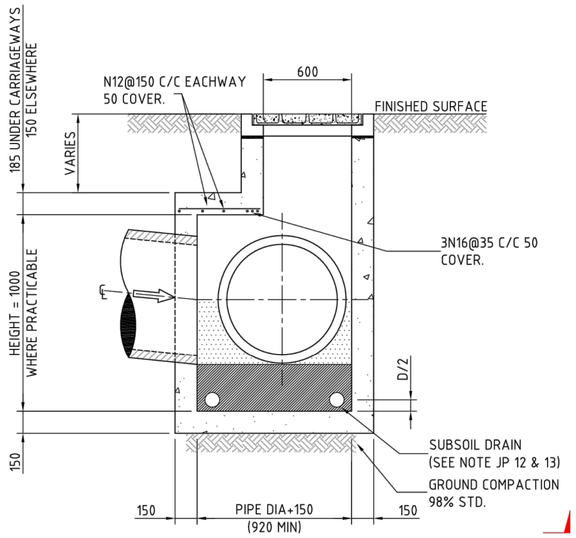
DRAWING NUMBER: C20.06

REVISION: G

DRAWING SHEET SIZE = A1



PLAN
JUNCTION PIT LARGE PIPES
NTS



SECTION 2 -
NTS

GENERAL NOTES:

JP 1. CONCRETE MINUMUM GRADE 25MPa AT 28 DAYS (AS PER AS3600) UNLESS OTHERWISE STATED.

JP 2. FOR PIT DEPTHS LESS THAN 3000 PROVIDE N12 @250 CENTRES EACH WAY AT 50 COVER TO INSIDE FACE WALLS AND BASE. PROVIDE 400 LAP AT CORNERS. FOR PIT DEPTHS GREATER THAN 3000, SEPARATE DESIGN IS REQUIRED

JP 3. ALL REINFORCEMENT LAPS 300mm LONG.

JP 4. DEPTH OF PIT NOT TO EXCEED 3500mm

JP 5. ALL EXPOSED EDGES TO BE ROUNDED 20mm RADIUS.

JP 6. PITS DEEPER THAN 1200mm TO BE FITTED WITH GALVANISED STEP IRONS AT 300mm CENTRES. REFER TO DRG CI-001 GULLY PIT WITH PIPE UNDER KERB.

JP 7. APPROVED PROPRIETARY STEPS MAY BE USED AS AN ALTERNATIVE. THESE SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS INSTRUCTIONS.

JP 8. ALL BOLTS WASHERS AND NUTS TO BE GALVANISED.

JP 9. MINIMUM COVER OUTSIDE REINFORCEMENT NO LESS THAN 50mm.

JP 10. INLET/OUTLET PLANS TO BE LOCATED AS PER DRAINAGE PLANS.

JP 11. AT RIGHT ANGLE CHANGE IN PIPE DIRECTION OUTLET, INVERT TO BE 150mm BELOW INLET INVERT.

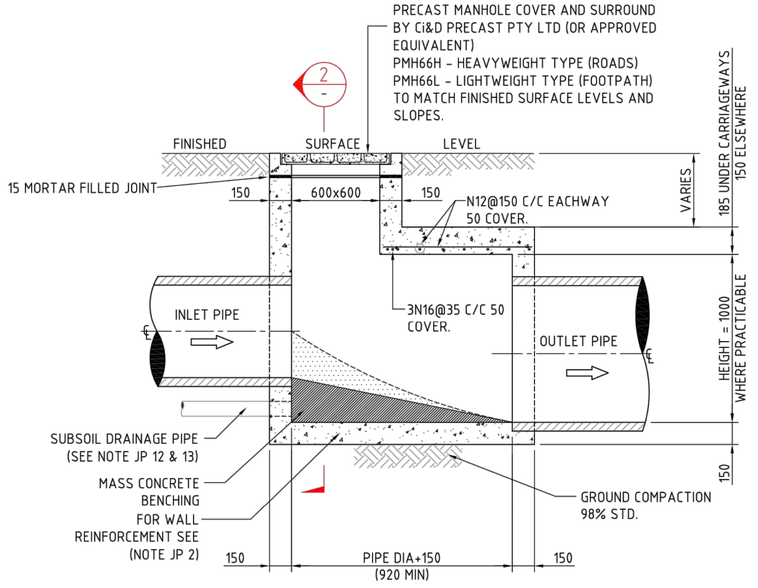
JP 12. 100mm DIA SUBSOIL DRAIN OUTLETS TO BE LOCATED 100mm ABOVE INVERT OF THE STORMWATER PIT. REFER TO DRG CI-005 SUBSOIL DRAINAGE AND OUTLET STRUCTURES.

JP 13. PROVIDE 3m LENGTH OF 100mm DIA SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK ADJACENT TO ALL INLET PIPES AND DRAINING TO PIT.

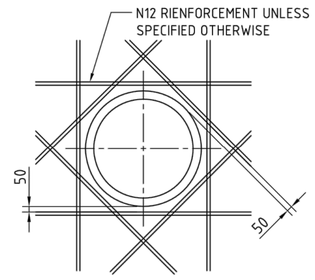
JP 14. PIT SUBGRADE COMPACTION TO BE MIN 98% STANDARD.

JP 15. ALL DIMENSIONS SHOWN ARE IN MILLIMETRES U.N.O.

JP 16. MIN PIT DEPTH 800mm



SECTION 1 -
NTS



TYPICAL TRIMMER
BAR DETAIL
NTS

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

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F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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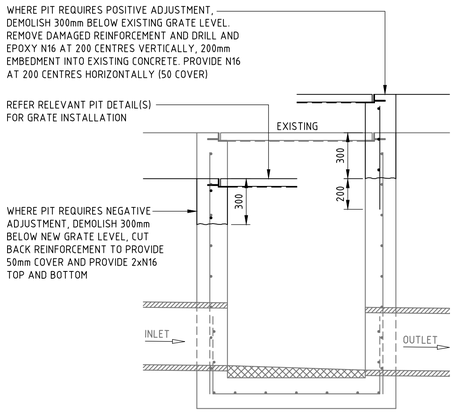
PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

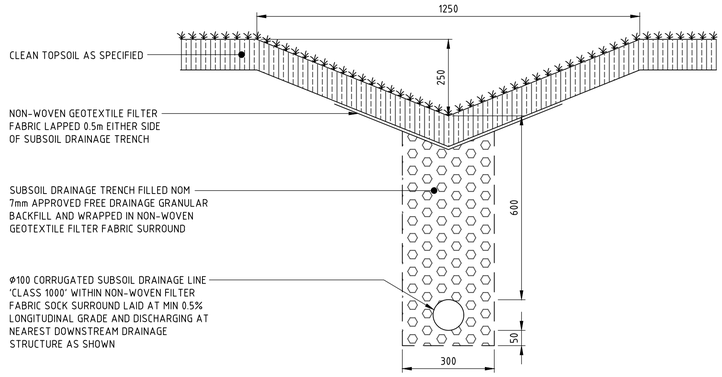
DRAWING TITLE: SUBDIVISION - STAGE 1
DETAILS - SHEET 7

JOB NUMBER: 130945
DRAWING NUMBER: C20.07
REVISION: G
DRAWING SHEET SIZE = A1

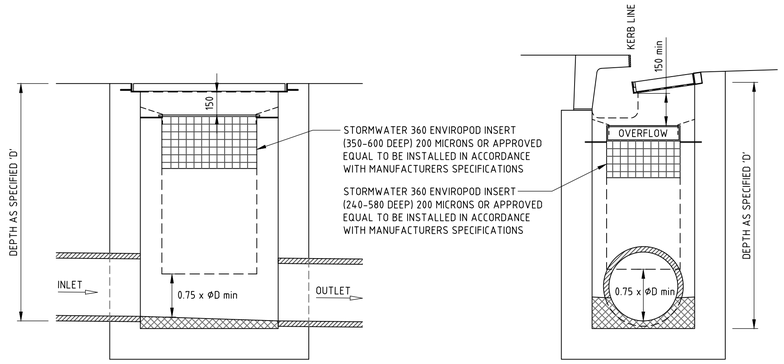


DRAINAGE PIT - LEVEL ADJUSTMENTS

ENSURE NEAT FINISH IS ACHIEVE AT INTERFACE WITH EXISTING. REFER RELEVANT PIT DETAIL(S) FOR GRATE INSTALLATION

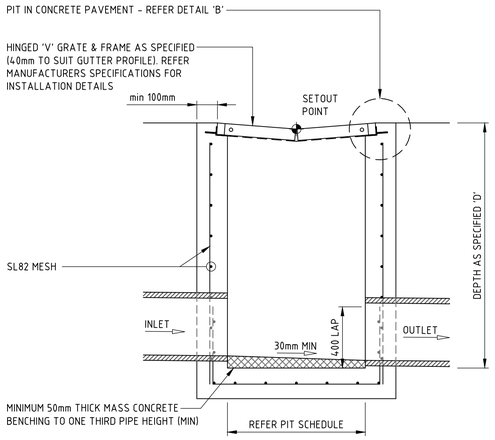


GRASS LINED SWALE

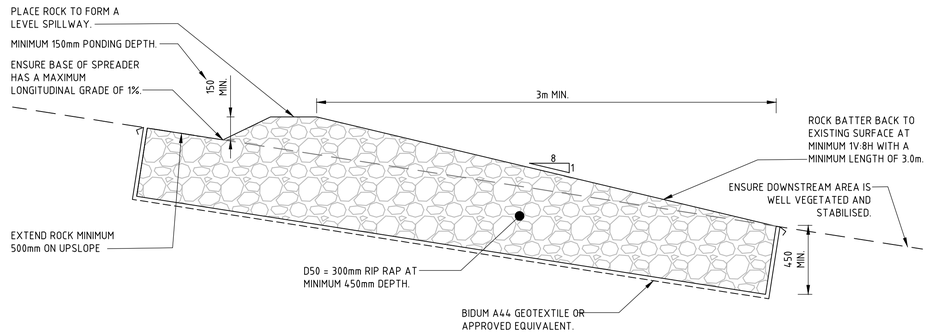


'ENVIROPOD' INSERTS

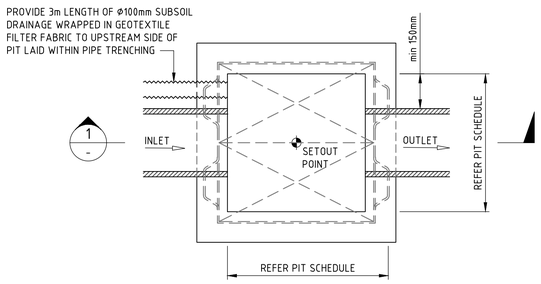
ENSURE MINIMUM 70mm CLEARANCE ACHIEVED BETWEEN ENVIROPOD CAGE AND PIT WALLS / FLOORS.
INSTALL ENVIROPOD INSERTS TO ALL GRATED INLET PITS U.N.O.



SECTION 1 -

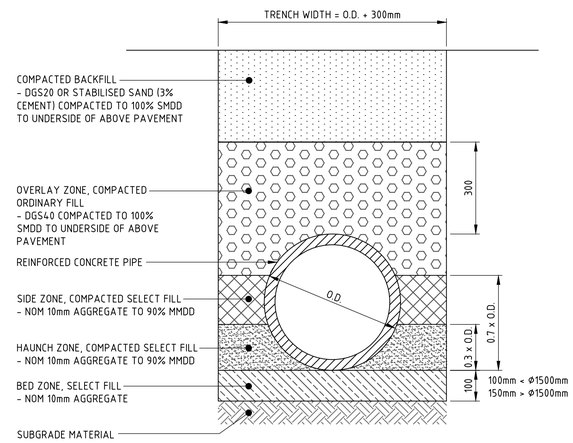


TYPICAL ROCK SPILLWAY DETAIL



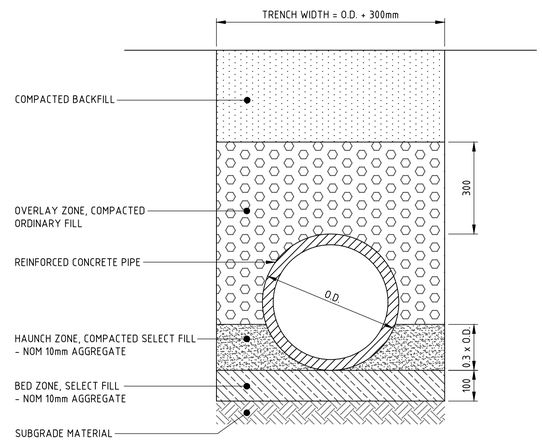
PLAN
DISH DRAIN / 'V' GRATE PIT

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)



TYPICAL PIPE TRENCH - UNDER ROADS

1. TRENCH WIDTH MAY NEED TO BE INCREASED SUBJECT TO ACHIEVING COMPACTION. ENSURE MINIMUM 300mm CLEARANCE BETWEEN, WHEN USING MULTIPLE PIPES TO ACHIEVE ADEQUATE COMPACTION.
2. MINIMUM PIPE COVER UNDER ROADS TO BE 600mm U.N.O. FOR CLASS '2' PIPES.
3. THE CONTRACTOR SHALL ENSURE THAT SHORING OF TRENCHES IS INSTALLED AS REQUIRED BY STATUTORY REQUIREMENTS.
4. ENSURE BACKFILLING COMPACTION MEETS THE FOLLOWING STANDARDS;
   4.1. TRENCHES UNDER PAVED AREAS / BUILDING - 100% SMDD



TYPICAL PIPE TRENCH - GENERAL AREAS

1. TRENCH WIDTH MAY NEED TO BE INCREASED SUBJECT TO ACHIEVING COMPACTION. ENSURE MINIMUM 300mm CLEARANCE BETWEEN, WHEN USING MULTIPLE PIPES TO ACHIEVE ADEQUATE COMPACTION.
2. MINIMUM PIPE COVER NOT UNDER ROADS TO BE 300mm U.N.O.
3. THE CONTRACTOR SHALL ENSURE THAT SHORING OF TRENCHES IS INSTALLED AS REQUIRED BY STATUTORY REQUIREMENTS.
4. ENSURE BACKFILLING COMPACTION MEETS THE FOLLOWING STANDARDS;
   4.1. TRENCHES UNDER PAVED AREAS / BUILDING - 100% SMDD
   4.2. TRENCHES NOT UNDER PAVEMENTS - 95% SMDD

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
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D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

CLIENT: Monado CONSTRUCTIONS Pty Ltd

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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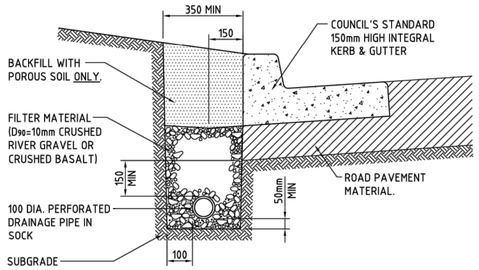
Email sydney@northrop.com.au ABN 81 094 433 100

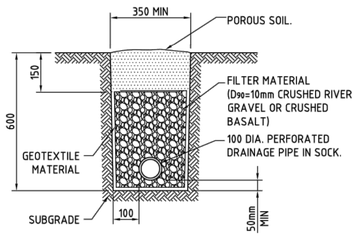
PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
DETAILS - SHEET 8

JOB NUMBER: 130945
DRAWING NUMBER: C20.08
REVISION: G
DRAWING SHEET SIZE = A1



TYPICAL INSTALLATION WITH KERB & GUTTER
NTS



TYPICAL INSTALLATION
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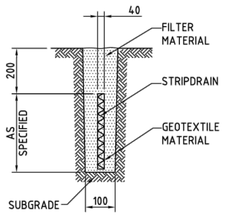


STRIP DRAIN
(SAND AS FILTER MATERIAL)
NTS

SAND FILTER MATERIAL GRADING	
AS. SIEVE SIZE mm	% PASSING
4.750	100
2.360	95-100
0.425	20-80
0.300	0-30
0.150	0-2
0.075	0-0.1

NOTES:

1SS SUB-SURFACE DRAINS TO BE LAID 300mm MINIMUM BELOW THE SUB-GRADE. WHERE A HIGH WATER TABLE IS PRESENT, DEEPER SUB-SURFACE DRAINS IN COMBINATION WITH MITRE DRAINS MAY BE USED.

2SS SUB-SURFACE DRAINS SHALL BE LAID A MINIMUM GRADE 1 IN 200 WHERE ROAD GRADING ALLOWS, THE SPACE BETWEEN THE INVERT OF THE SERVICE CONDUIT AND OBVERT OF THE SUB-SURFACE DRAIN SHALL BE 50mm.

3SS SELECTED FILTER MATERIAL TO BE CLEAN AGGREGATE GRADE 10 TO 20.

4SS FLUSHING POINTS ARE TO BE CONSTRUCTED AT THE HEAD OF LINES WITH CLEANING JUNCTIONS AT MAXIMUM 50m CENTRES IMMEDIATELY BEHIND KERB.

5SS PIPES AND FITTING SHALL BE EITHER SLOTTED POLYETHYLENE CLASS 400 (AS PER AS 2439) OR uPVC SEWER FITTINGS CLASS SH (AS PER AS1260).

6SS TRENCHES SHOULD HAVE CLEARLY CUT SIDES TO AVOID CONTAMINATION OF THE FILTER DURING CONSTRUCTION.

7SS ENSURE THAT PIPE IS LOCATED WITH ONLY POROUS SOIL ABOVE, AVOID HEAVY CLAY BACKFILL WHICH RESTRICTS THE FLOW OF WATER TO THE PIPE.

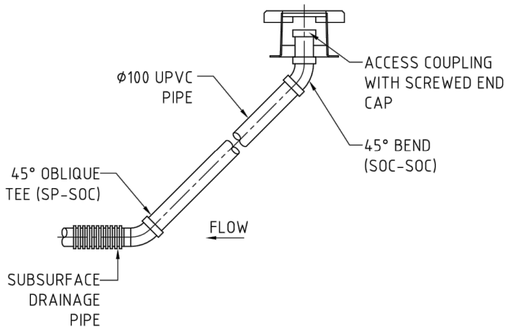
8SS A MAXIMUM FILTER AGGREGATE SIZE OF 10mm TO BE USED TO AVOID PUNCTURING THE PIPE.

9SS A MINIMUM OF 50mm LAYER OF MATERIAL TO BE FIRST PLACED IN TRENCH TO PROVIDE DRAINAGE PATH UNDERNEATH THE PLASTIC PIPE.

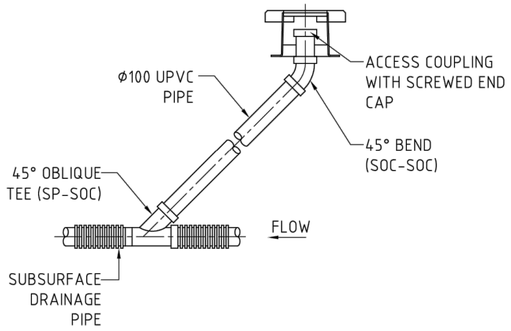
10SS PIPE IS TO BE PLACED IN THE CENTRE OF THE TRENCH, THE FILTER MATERIAL COMPACTED AT THE HAUNCHES, AROUND THE SIDE AND ABOVE THE PIPE.

11SS ALL FILTER MATERIAL SHALL BE GEOTEXTILE WRAPPED IN MIN 140g/m² NON WOVEN GEOTEXTIL (AS PER AS 2439.1).

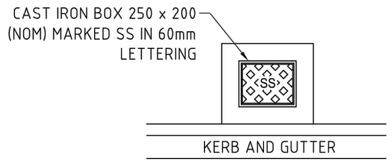
12SS FILTER MATERIAL IN STRIP DRAIN TO BE AS PER TABLE BELOW.



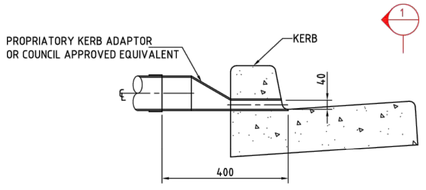
FLUSHING POINT HEAD OF LINE
NTS



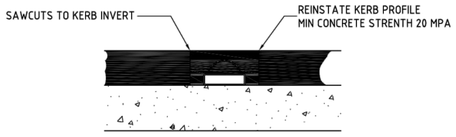
FLUSHING POINT ON LINE
NTS



FLUSHING POINT PLAN
NTS



ROOF WATER TO KERB OUTLET
NTS



SECTION 1
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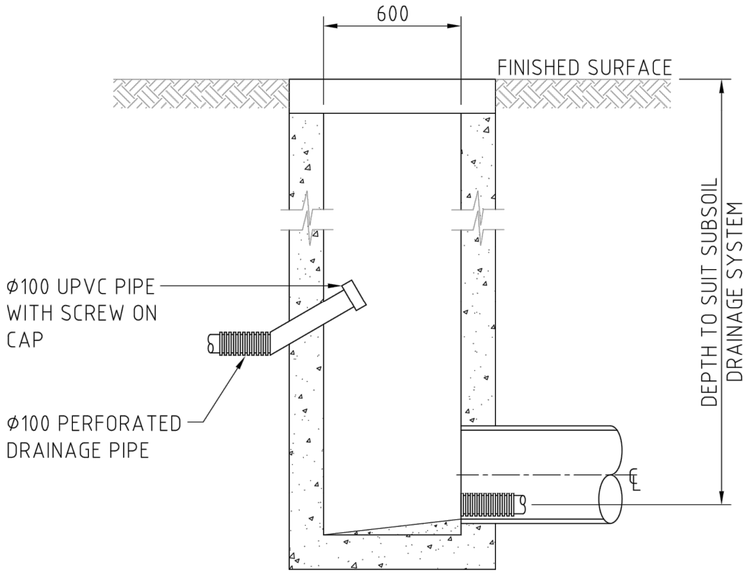

PIT CONNECTION
NTS

DRAWN: S.WEEKS
DESIGNED: C.PALADA
JOB MANAGER: C.PALADA
VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	11.08.17
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	18.08.17
D	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	22.09.17
E	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.11.17
F	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	16.01.18
G	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	SW		CP	13.02.18

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ARCHITECT: STEPHEN BOWERS ARCHITECTS

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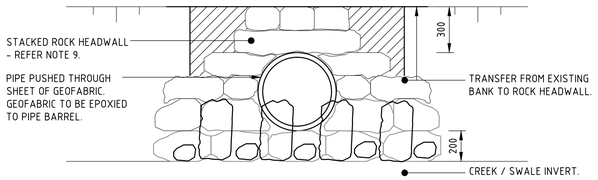
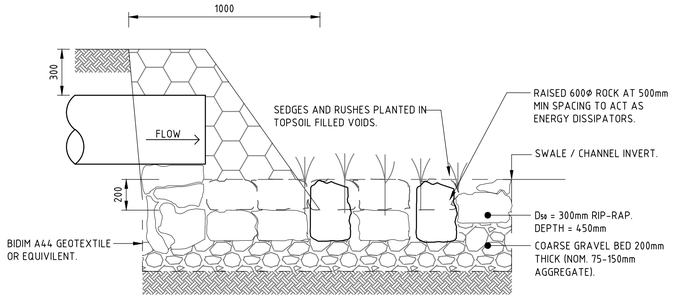
PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1
DETAILS - SHEET 9

JOB NUMBER: 130945
DRAWING NUMBER: C20.09
REVISION: G
DRAWING SHEET SIZE = A1



SECTION 1 (SCALE 1:20)



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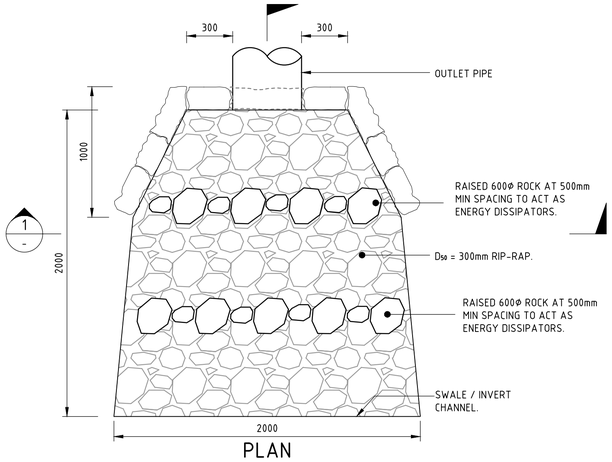
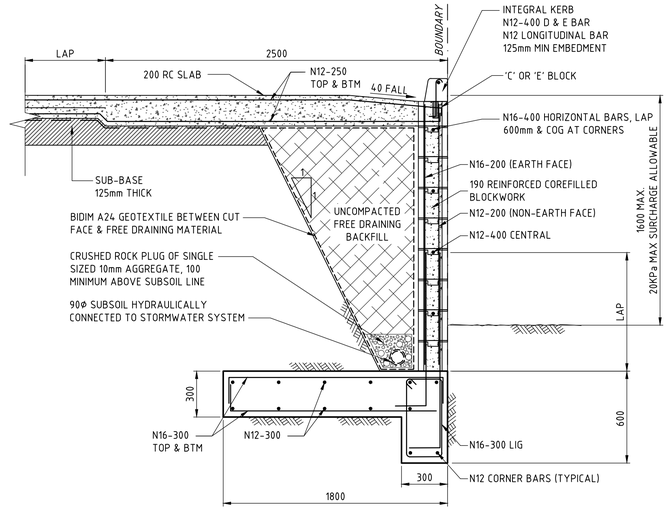


PLAN (SCALE 1:20)

ROCK SCOUR PROTECTION/ENERGY DISSIPATER

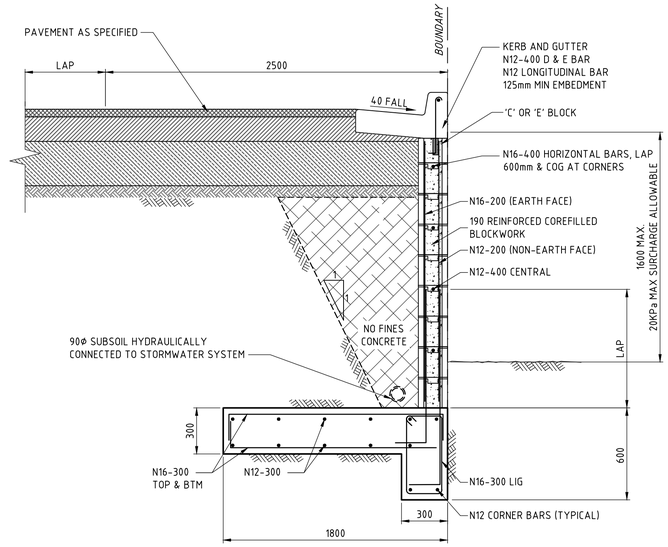
NOTES:

1. BACKFILL IS TO BE GRANULAR, FREE DRAINING AND COMPACTED TO 95% MAXIMUM DRY DENSITY.
2. FOUNDATION TO BE APPROVED FOR 200 kPa BEARING CAPACITY.
3. ROCK IS TO BE SOUND AND DURABLE.
4. ROCKS ARE TO BE PLACED IN SUCH A MANNER THAT THEY ARE STABLE AND INTERLOCKING AND LAID ROUGHLY COURSED AND BEDDED ON THEIR BROADEST BASE.
5. EACH ROCK SHALL BE:
   - ELONGATED TO ALLOW STACKING ON THE LONGEST AXIS.
   - ANGULAR IN SHAPE TO PROMOTE INTERLOCKING.
   - FREE FROM OVERBURDEN SOIL, SHALE AND ORGANIC MATERIAL.
6. WALL CONSTRUCTION TO BE SUPERVISED BY A SUITABILY QUALIFIED ENGINEER.
7. AIR VOIDS NOT TO EXCEED 30% VOLUME.
8. THE TOP COURSE OF ROCKS ON EMBANKMENT AND ADJACENT TO PIPE SHALL BE MORTARED INTO POSITION.
9. HEADWALL ROCK SPECIFICATION;
   - BREADTH (B) = 0.4 TO 0.6m
   - WIDTH (W) = 0.4 TO 0.6m
   - LENGTH (L) = 2x (B OR W) < L < 3x (B x W).
10. PROVIDE GRATED NON-ENTRY SYSTEM TO OUTLET TO PREVENT UNAUTHORISED ACCESS.



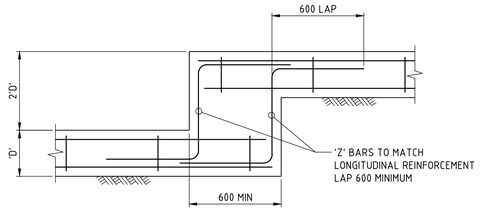
TYPICAL RETAINING WALL SECTION - CONCRETE PAVEMENT

RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- LOADINGS FOR HANDRAILS, BALUSTRADES & FENCES HAVE NOT BEEN INCLUDED IN DESIGN OF WALL. REFER TO ENGINEER IF THESE ARE REQUIRED.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION, CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.

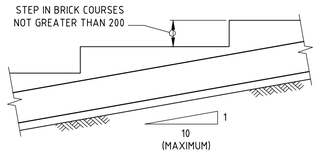


TYPICAL RETAINING WALL SECTION - FLEXIBLE PAVEMENT

RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- LOADINGS FOR HANDRAILS, BALUSTRADES & FENCES HAVE NOT BEEN INCLUDED IN DESIGN OF WALL. REFER TO ENGINEER IF THESE ARE REQUIRED.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION, CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.



TYPICAL FOOTING STEP >200



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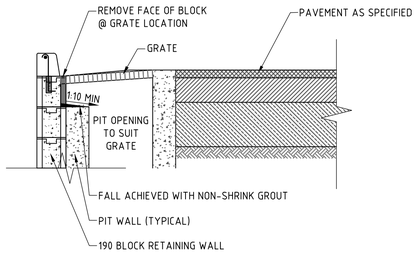

PIT DETAIL - PIT 5/1

DRAWN: S.WEEKS DESIGNED: C.PALADA JOB MANAGER: C.PALADA VERIFIER: T.NATSA

FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

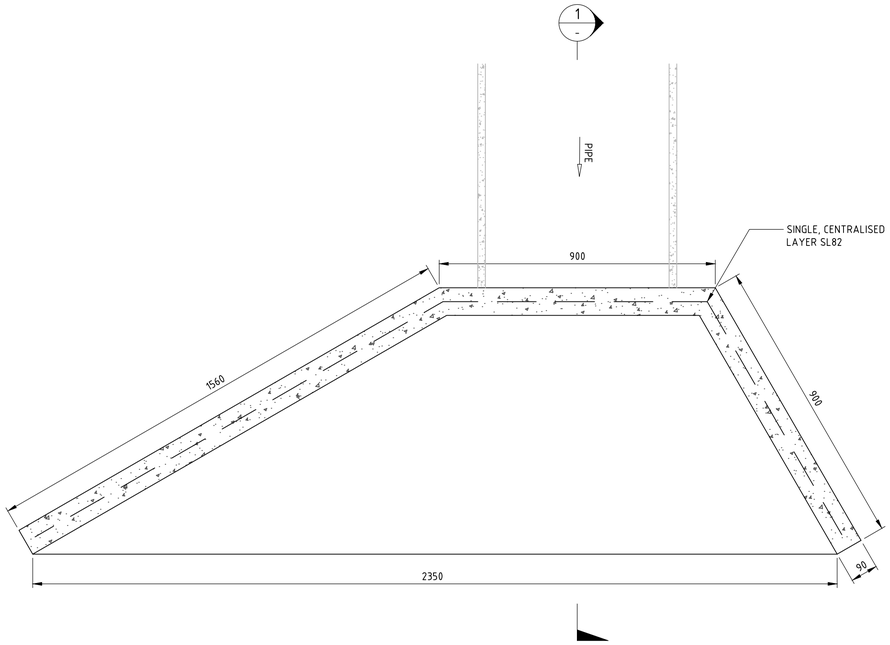
DETAILS - SHEET 10

JOB NUMBER: 130945

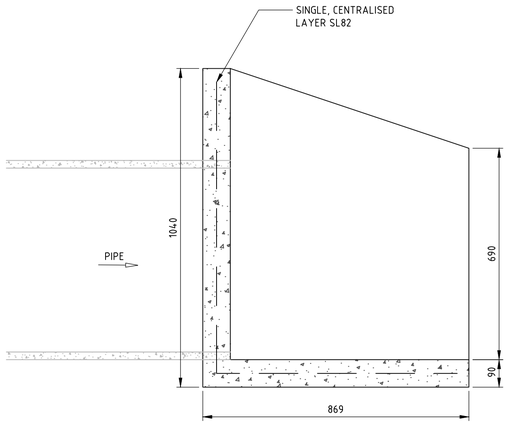
DRAWING NUMBER: C20.10

REVISION: G

DRAWING SHEET SIZE = A1



HEADWALL - PLAN



SECTION 1 -

DRAWN: S.WEEKS DESIGNED: C.PALADA JOB MANAGER: C.PALADA VERIFIER: T.MATSA

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0.0 0.1 0.2 0.3 0.4 0.5m SCALE 1:10

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PROJECT: 6 ORCHARD STREET, WARRIEWOOD, NSW 2012

DRAWING TITLE: SUBDIVISION - STAGE 1

DETAILS - SHEET 11

JOB NUMBER: 130945

DRAWING NUMBER: C20.11

REVISION: I

DRAWING SHEET SIZE = A1