



CIVIL ENGINEERING REPORT

IC3 Super West

17-23 Talavera Road, Macquarie Park NSW

PREPARED FOR
Macquarie Data Pty Ltd
Level 15, 2 Market St
Sydney NSW 2000

Ref: 170095-02-CR04
Rev: 4
Date: 22.10.21



Civil Engineering Report:

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
22.08.2021	1	Preliminary	S.Fryer	J.Gilligan
19.10.2021	2	Final	S.Fryer	J. Gilligan
22.10.2021	3	Add Topographic Assessment	S. Fryer	J.Gilligan
22.10.2021	4	Amend Topographic Assessment	S, Fryer	

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1. General

1.1 Introduction

Northrop Consulting Engineers have been appointed by Macquarie Data Centres (MDC) to undertake the civil engineering design for the proposed development of the Macquarie Park Data Centre Campus IC3 Super West site at 17-23 Talavera Road, Macquarie Park.

This Civil Engineering Report serves to support the State Significant Development Application (SSDA) relating to the proposed development.

This report is to be read in conjunction with the following reports and documents:

1. Response to SEARs – 17 -23 Talavera Road Macquarie Park Data Centre – SSD- 24299707 letter prepared by City of Ryde dated 10 August 2021.
2. City of Ryde's Technical Manual
3. City of Ryde's Development Control Plan (DCP) 2014
4. City of Ryde's Macquarie Park Public Domain Technical Manual

This Civil Engineering Report has been prepared by Northrop Consulting Engineers on behalf of Macquarie Data Centres (MDC) C/- GIDDIS Project Management.

The following Civil Engineering Report has been produced to support the Environmental Impact Statement (EIS) prepared by Willowtree Planning PTY Ltd (Willowtree Planning).

The EIS has been submitted to the New South Wales (NSW) Department of Planning, Industry and Environment (DPIE), in support of an application for State Significant Development (SSD), for the construction and operation of a data centre, involving earth works, provision of infrastructure and expansion of an existing data centre at 17 – 23 Talavera Road, Macquarie Park (Lot 527 DP 752035).

The proposal represents an extension to the approved data centre (LDA/2018/0322) to allow for additional data storage capacity at the subject site, improving the overall operational efficiencies and provision of technology services to customers and the wider locality.

The proposal involves the construction and operation of an expansion to an existing data centre located at 17-23 Talavera Road, Macquarie Park (Lot 527 in DP 752035), comprising:

- a five-storey building
- ancillary office space and staff amenities
- a back-up power system
- associated infrastructure, car parking, loading docks and landscaping

The subject site is located within the City of Ryde Local Government Area (LGA). The proposal seeks to operate 24 hours per day, seven (7) days per week.

The particulars of this proposal are summarised below:

- Minor earthworks involving cut and fill works
- Infrastructure comprising civil works and utilities servicing
- Construction of a five (5) storey building extension, comprising up to:
 - 14 data halls
 - 18 back up generators
 - Fitout of the building for use as a data centre (on an as-needs basis)

1.2 Site Description

The site is described as Lot 527 DP 752035, commonly known as 17 – 23 Talavera Road, Macquarie Park. The site has a total area of approximately 20,000m², with access achieved via Talavera Road.

The site forms part of the Macquarie Park Corridor, which is the strategic centre of Macquarie Park, being a health and education precinct and an important economic and employment powerhouse in Sydney's North District.

The site is described through its current commercial setting as an existing Data Centre (LDA/2018/0322), adjoining surrounding commercial premises along Talavera Road, and forming part of the wider Macquarie Park Corridor.

The site is situated approximately 12.5 km northwest of the Sydney CBD and 11.3 km northeast of Parramatta. It is within close proximity to transport infrastructure routes (predominantly the bus and rail networks), as well as sharing direct links with the wider regional road network, including Talavera Road, Lane Cove Road, Epping Road and the M2 Motorway.

These road networks provide enhanced connectivity to the subject site and wider locality. Additionally, the site is located within close proximity to active transport links, such as bicycle routes, providing an additional mode of accessible transport available to the subject site



Figure 1: The site 17 – 23 Talavera Road, Macquarie Park, being Lot 527 DP 752035.



Figure 2: Proposed Extent of Works

The site falls within the Industrial Creek catchment. Industrial Creek generally flows south to North discharging into the Lane Cove River. Industrial Creek has been built over during development of Macquarie Park and now consists mainly of below ground pipes and culverts. Industrial Creek flows through an Ø1800 pipeline located with the site.

1.3 Secretary's Environmental Assessment Requirements

This Civil Engineering Report is prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs). The SEARs for the proposal outline Key Issues to be addressed as part of this EIS and includes:

The following Secretaries Environmental Assessment Requirements (SEARS) are addressed within Table 1 of this report.

Table 1

SEARs Items	Secretary's Environmental Assessment Requirements	Response
Soils and water	- a topographic assessment and justification demonstrating that any proposed earthworks are responsive and contextually appropriate	Section 3 of Civil Engineering Report
Agency Response	- Attachment 2 Government Authority Advice.	The Civil Engineering Report responds to the civil engineering issues raised in the City of Ryde's letter "Response to SEARS – 17-23 Talavera Rd MACQUARIE PARK DATA CENTRE – SSD 24299707 dated 10 August 2021 addressed to DPIE Items 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 and 2.8.

2. Response to Concerns Raised by Council

Detailed commentary relating to each of the concerns raised in Council's Response to SEARs letter is provided below. The commentary seeks to demonstrate how a particular concern has been addressed in the SSDA proposal and where required provides supporting information confirm validity of the applicant's approach.

2.1 Response to Concerns

2.1.1 Item 2.1 Planning Compliance Report

2.1 Planning Compliance Report: The development will be subject to the RLEP2-14 and the standards and requirements of the City of Ryde Development Control Plan DCP 2014 Part 4.5 Macquarie Park Corridor, Macquarie Park, and the Public Domain Technical Manual City of Ryde (PDTM) Section 6 - Macquarie Park.

Public Domain improvements are a condition of consent in LDA2018/322. This condition called for kerb, gutter and verge to be reconstructed in accordance with the Public Domain Manual, This work has been completed and approved by Council. The proposed development doesn't require any further works to be performed in the roadway as no adjustments to the existing driveways are proposed. The approved public domain plans, submitted under Section 138 as conditioned in LDA 2018/322 are provided in Appendix A.

2.1.2 Item 2.2 Pavement Plan

2.2. Pavement Plan: The pavements of the footway and driveway crossings are to be designed and constructed according to the requirements of the Public Domain Technical Manual (PDTM), Section 6 - Macquarie Park.

The footway and driveway crossing to the Talavera Road frontage as part of the public domain works condition in LDA2018/322. The approved public domain plans, submitted under Section 138 as conditioned in LDA 2018/322 are provided in Appendix A.

2.1.3 Item 2.3 The Local Bicycle Network

2.3. The Local Bicycle Network is to be maintained along the frontage of the development site as per requirement of the DCP 2014 in the form of an Off-Road shared way and in accordance with the Macquarie Park Public Domain Technical Manual.

An off-road shared way in accordance with the Macquarie Park Public Domain Technical Manual has been provided to the Talavera Road frontage as conditioned in LDA2018/322. The approved public domain plans detailing these works, submitted under Section 138 as conditioned in LDA 2018/322 are provided in Appendix A.

2.1.4 Item 2.4 Design Concept Plan for Road

2.4. Design concept plan for Road 1: A future Road 1 which will be on the southern side of the proposed development, there will be difference in the design levels between Road 1 and future internal driveway. As such, a design concept plan for Road 1 must be submitted to Council for further assessment and comments.

The property directly to the south of the site being 63-71 Waterloo Rd Macquarie Park, has submitted a development application (LDA 2021/0184) for a mixed use development comprising of two commercial towers and extension of Road 1 along the northern boundary of the lot (adjoin the south boundary of the data centre site). As the matter has been referred to the Land and Environment Court design documentation of the proposed road is unavailable. However, we understand that engineering drawings for Road 1 did not form part of the application.

Further discussions with Council and adjacent land holders have provided an indication of the proposed Road 1 levels with the lot which are as follows.

Assumed Road Level Western Boundary RL 54.10

Assumed Road Level Eastern Boundary RL 53.33



Figure 3: Assumed Road 1 Levels

A low height retaining wall is proposed along the southern boundary of the site to allow formation of the circulation driveway. This wall ranges in height from 0.5m to 0.65m in height to match the existing boundary

The proposed design levels of 63-71 Waterloo will place the future Road 1 approximately 1.2m above the existing boundary level. Considering, the retaining required for the data centre development it would result in a retaining wall of up 1.8m high to be constructed along the boundary. It is highly likely the Road 1 construction will occur after completion of the data centre works. Thus we envisage that the smaller 0.5m to 0.65m high wall as part of the data centre site will be demolished to make way for the larger 1.8m high retaining wall supporting future Road 1 to be constructed at some point in the future.

Several typical retaining wall construction type options (as block work retaining wall, or cantilevered piles with concrete infill panels) could be utilized to construct the wall.

2.1.5 Item 2.5 Retaining Wall Details

2.5. Retaining Wall details: Due to possible future major excavation for the new Road 1, all the retaining wall on the southern side of this property must be designed to support the neighbouring properties, all the new retaining walls must be within the private land and the depth of these retaining walls must be designed as part of the concept plan for road number 1 layout

The proposed design levels of 63-71 Waterloo will place the future Road 1 approximately 1.2m above the existing boundary level. Considering, the retaining required for the data centre development it would result in a retaining wall of up 1.8m high to be constructed along the boundary. It is highly likely the Road 1 construction will occur after completion of the data centre works. Thus we envisage that the smaller 0.5m to 0.65m high wall as part of the data centre site will be demolished to make way for the larger 1.8m high retaining wall supporting future Road 1 to be constructed at some point in the future.

Several typical retaining wall construction type options (as block work retaining wall, or cantilevered piles with concrete infill panels) could be utilized to construct the wall.

The retaining walls to the southern boundary will retain fill as the proposed Road 1 level is approximately 1.2 above the existing southern boundary level. As this retaining wall will be supporting future Council infrastructure we envisage the wall will be constructed as part of Road 1 works and located wholly within the future Road 1 corridor.

An annotated civil drawing describing the location of the wall and associated height required as part of this development application, is presented in Appendix B.

2.1.6 Item 2.6 Engineering Design Plans

2.6. Engineering Design Plans: All new/existing Councils drainage components, stormwater pipes, kerb inlet pits, overland flow paths for the new development and discharge points shall be shown on the engineering design plans. The applicant is to provide suitably prepared engineering plans providing details that demonstrate the smooth connection of the proposed works with the remaining street scape. This will include relevant existing and design surface levels, drainage pit configurations, kerb returns and s-kerbs that would enable street sweepers to properly manoeuvre the indented section of the road pavement.

The proposed development does not require the adjustment of any of Council's drainage assets. All works are to be performed within the site and utilise existing connections to Council's drainage infrastructure within the site. Refer to Northrop's Trunk Stormwater Drainage System Report and Stormwater Management Report submitted as part of the response to SEARs for specific detail of drainage works to be performed near Council assets.

The site has been designed so that overland flow can safely pass through the site. The work will involve modification of the surface levels on the western side of the site to accommodate over land flow. Modifications to Council's drainage system are not proposed as part of these works. Refer to Northrop's Flood and Overland Flow report submitted as part of the response to SEARs for specific detail on overland flow.

2.1.7 Item 2.7 Services and Utilities Engineering Design Plans

2.7 Services and Utilities Report/Plan: Any relocation/adjustment of all public utility services affected by the proposed works shall be clearly indicated in proposed design. All of the requirements of the public Authority shall be complied with underground Utility Services: All telecommunication and utility services are to be adjusted to match the new finished footpath/nature strip levels.

All public utility services affected by the proposed development shall be clearly indicated in proposed design plans and all the existing/ future easements burdening the site must be show on the revised civil plans including the location of the services, depth, type and numbers.

Adjustments of utility services was performed as part of the public domain works conditioned in LDA2018/322. This work is now complete. No further works are required in the verge due to the proposed data centre expansion. The approved public domain plans detailing utility works, submitted under Section 138 as conditioned in LDA 2018/322 are provided in Appendix A.

2.1.8 Item 2.8 Road Details

2.8. Road details: The full reconstruction of half road width for the Talavera Road frontage of the development site will be required in accordance with the City of Ryde DCP 2014 Part 8.5 - Public Civil Works, Clause 1.1.4 – Constructing Half Road and the re-alignment and adjustments to Council's infrastructure, where required, in order to ensure a smooth transition is achieved between the new and existing

Refurbishment of the road pavement is not required as resurfacing works have been performed by Council in the last two years. Furthermore, the integration of the public domain works (being replacement of the kerb and gutter) under LDA 2018/322 and completed by Macquarie Data consider the long-term performance of the road pavement, based on a strategy agreed with Council.

The to protect the integrity of Council's asset we suggest that a dilapidation report be prepared for the existing road pavement and verge to the frontage prior to the commencement of construction. Any damaged that occurs to the road as a result of construction activities shall be repaired by the applicant.

3. Topographic Assessment

Minor earthworks are proposed as part of the development. The earthworks are required to allow formation of the overland flow path, such that it minimises the depth and spread of water and allow b construction of the perimeter access driveway. Northrop drawing DAC03.01 is presented in Appendix D indicating the extent of earthworks and the relative change in surface level as a resulting from the earthworks.

The earthworks beneath the building footprint range from a maximum of 0.25m cut to a maximum of 0.25m of fill. One meter of filling is required to allow formation of the pad for the services platform on the western side of the building.

Deeper cut operations are required adjacent to the southern and western boundary of up to 0.5m are proposed. Existing boundary levels will be maintained with the introduction low height retaining walls (up to 0.6m high will) partially along each boundary.

Adjacent to the south west corner of the site, cut of up 1.25m is required to remove a landscape mound.

The following earthworks volumes have been estimated.

Cut 799 m³

Fill 1019 m³

Import 220 m³

We anticipate most of the imported material will be road base to allow formation of roads.

Earthworks will occur under engineering supervision as the resultant surface will need to be suitable for future vehicle and building loads.

An erosion and sediment control plan (refer Stormwater Management Report) will be implemented during earthworks to manage the impacts of erosion and sedimentation.

Overall, the earthworks are minor and will result from some material being exported from site. Earthworks proposed generally lower the site levels to improve access and overland flow outcomes.

4. Conclusion

The majority of the works (being public domain) called for by City Ryde's response to SEARs has been addressed under Section 138 works performed under LDA2018/322. This work includes adjustment of utility services, reconstruction of footpaths and vehicle cross overs, provision of a cycleway and replacement of kerb and gutter. This work is completed to the satisfaction of Council.

The proposed development does not require any further works to the public domain.

The development's stormwater drainage works will occur entirely within the site utilising existing connections to Council's drainage system. Adjustments to Council system are not proposed or required.

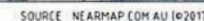
Modifications of the overland flow path through the site is required. This work is described in detail in the Flood and Overland Flow Report submitted as part of the response to SEARs. The report concludes that an overland flow path can be maintained through the site in accordance with Council's requirements and without negatively impacting properties elsewhere in the catchment.

A strategy will be proposed for refurbishment of the existing road pavement in Talavera Road. Works will be dictated by the results of a mechanical analysis of the existing pavement and determination of the sub grade CBR. This approach will minimise disruption to road users and have better environmental outcomes.

5. Appendix A

Public Domain Plans Approved and Completed under LDA2018/322

IC3 PUBLIC DOMAIN WORKS - LDA 2018/0322
CIVIL ENGINEERING PACKAGE



CITY OF RYDE
APPROVED FOR CONSTRUCTION

Signed: 
Date: 05/05/2020

**Subject to the Conditions
of Development Consent**

LDA 2018/0322

THE APPROVAL OF THIS SET OF DRAWINGS
DOES NOT INCLUDE ANY WORKS WITHIN
THE SITE BOUNDARIES!



NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	SYMBOL	PROJECT	DRAWING TITLE	JOB NUMBER
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13 12 19	 macquarie TELECOM GROUP	 GREENBOX ARCHITECTURE INTERIOR DESIGN URBAN DESIGN	 NORTHROP Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 5241 4188 Fax (02) 5241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	17-23 TALAVERA ROAD MACQUARIE PARK IC3 PUBLIC DOMAIN WORKS LDA 2018/0322	CIVIL ENGINEERING PACKAGE COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN	170095 DRAWING NUMBER C11.01 REVISION 04
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16 12 19						
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20 12 19						
04	ISSUED FOR APPROVAL	AP	-	AR	31 03 20						
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS NORTHROP CONSULTANTS HAS BEEN ADVISED						THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTANTS ENGINEERS PTY LTD					
						SCALE 1:2000 @ A1 					

DRAWN: A. PACIBEN	DESIGNED: A. RIVETT	JOB MANAGER: A. RIVETT	VERIFIER: S. FRYER
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- 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. A 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 COUNCIL'S REQUIREMENTS.

- 1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK
- 2 NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS
- 3 ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORK
- 4 DETAIL SURVEY DATA WAS SUPPLIED BY LINKER SURVEYING, DRAWING DATED 27 03 2018
- 5 EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

1. ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DO 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 THE WORKS TO BE RELOCATED 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

THE 2D DESIGN FILE SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO USE IN THE CONSTRUCTION WORKS.

HARD COPY/PDF PLANS AND DOCUMENTS TAKE PRECEDENCE OVER THE SUPPLIED ELECTRONIC INFORMATION AND ANY INCONSISTENCIES SHOULD IMMEDIATELY BE REPORTED TO NORTHPROP CONSULTING ENGINEERS FOR VERIFICATION PRIOR TO USE BY THE CONTRACTOR.

NORTHPROP 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.

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 COUNCIL'S 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 COUNCIL'S 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 COUNCIL'S STORMWATER SYSTEM. ENSURE WHOLE SITE RUN-OFF IS DIRECTED TO TEMPORARY SEDIMENT BASIN.

1 ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING
PLAN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY,
11 PROTECTING THEM WITH BARRIER FENCING OR SIMILAR
MATERIALS INSTALLED OUTSIDE THE DRIP LINE.
13 ENSURING THAT NOTHING IS NEEDED TO ANY PART OF THE TREE
CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY. COUNCIL'S
AND/OR INDEPENDENT ARBORISTS TO BE CONSULTED WHERE
TREE ROOTS ARE TO BE REMOVED AND/OR CUT.

1. AT THE COMMENCEMENT OF FILLING OPERATIONS FOR BULK EARTHWORKS A GEOTECHNICAL ENGINEER IS TO VISIT THE SITE & CONFIRM THE SUITABILITY OF THE METHODOLOGY OF ACHIEVING THE REQUIRED COMPACTION REQUIREMENTS
2. STRIP TOPSOIL, VEGETABLE MATTER AND RUBBLE TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE AS DIRECTED BY THE SUPERINTENDENT
3. WHERE FILLING IS REQUIRED TO ACHIEVE DESIGN SUBGRADE, PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF TEN PASSES OF A VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) IN THE PRESENCE OF THE SUPERINTENDENT
4. THE CONTRACTOR IS TO ALLOW FOR A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO PROVIDE ADVICE AND CERTIFICATION OF ANY WORKS ASSOCIATED WITH TREATING OR MANAGING UNSUITABLE GROUND CONDITIONS THROUGHOUT THE CONTRACT (e.g. STABILITY OF EXCAVATIONS, POOR SUBGRADE, etc)
5. ALL SOFT, WET OR UNSUITABLE MATERIAL IS TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS BELOW
6. PROVIDE CERTIFICATES VERIFYING THE QUALITY OF IMPORTED MATERIAL FOR THE SUPERINTENDENTS APPROVAL
7. ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS (LOOSE) AND COMPACTED AT OPTIMUM MOISTURE CONTENT (1.0r - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH A5289 2.11, A5289 5.7.1 AND A5289 5.8.6 OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITY.

LOCATION	COMPACTION REQUIREMENT
LANDSCAPED AREAS	98% SMD
ROADS	100% SMD IN ACCORDANCE WITH
COUNCIL SPECIFICATIONS	
PAVED AREAS	100% SMD IN ACCORDANCE WITH
COUNCIL SPECIFICATIONS	

8. TESTING OF THE SUBGRADE FOR BUILDINGS SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY
9. ALLOW THE FOLLOWING COMPACTION TESTING BY NATA REGISTERED LABORATORY FOR PLATFORMS AND FILL LAYERS IN ACCORDANCE WITH THE LATEST VERSION OF A5379B (MINIMUM 3 TESTS PER LAYER) OR 1 TEST PER MATERIAL TYPE PER 2500sqm OR 1 TEST
10. WHERE TEST RESULTS ARE BELOW THE SPECIFIED COMPACTION, RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION STANDARDS ARE ACHIEVED, OTHERWISE SUBGRADE REPLACEMENT IS REQUIRED IF COMPACTION STANDARDS ARE NOT ACHIEVED
11. ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND UNO NO ADDITIONAL PAYMENTS WILL BE MADE FOR EXCAVATION IN WET OR HARD GROUND
12. WHERE THERE IS INSUFFICIENT EXCAVATED MATERIAL SUITABLE FOR FILLING OR SUBGRADE REPLACEMENT, THE CONTRACTOR IS TO ALLOW TO IMPORT FILL. IMPORTED FILL SHALL COMPLY WITH THE FOLLOWING:
 - 12.1 BE OF VIRGIN EXCAVATED NATURAL MATERIAL OR
 - 12.2 CONTRACTOR TO PROVIDE EVIDENCE IMPORT IS SUITABLE USE
 - 12.3 PLASTICITY INDEX BETWEEN 2-5% AND CBR > 8
 - 12.4 FREE FROM ORGANIC AND PERISHABLE MATERIAL
 - 12.5 MAXIMUM SIZE 50mm, PASSING 75 MICRON SIEVE (>25%)
13. THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLERS MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED AT THEIR COST
14. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE AND MAINTAIN THE INTEGRITY OF ALL SERVICES, CONDUITS AND PIPES DURING CONSTRUCTION. SPECIFICALLY DURING THE BACKFILLING AND COMPACTION PROCEDURE. ANY AND ALL DAMAGE TO NEW OR EXISTING SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST
15. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE
- SERVICE TRENCHES**
16. SAWCUT EXISTING SURFACES PRIOR TO EXCAVATION. BACKFILL ALL TRENCHES UNDER EXISTING ROADS, PAVEMENTS AND PATHS WITH STABILISED SAND 5% CEMENT OR D6540 MATERIAL (5% CEMENT) (COMPACTED IN 200mm THICK LAYERS TO 98% MHDD TO UNDERSIDE OF PAVEMENT)
17. BACKFILL ALL TRENCHES NOT UNDER ROADS, PAVEMENTS, PATHS AND BUILDINGS WITH APPROVED EXCAVATED OR IMPORTED MATERIAL, COMPACTED TO 95% SMD.

- 1 ALL WORKS TO BE IN ACCORDANCE WITH RELEVANT LOCAL COUNCIL /
REGULATORY AUTHORITY'S 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 ADJUT 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

- 1 ALL SIGNAGE TO BE INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS 1742 / RMS STANDARDS AND SPECIFICATIONS
- 2 LINE MARKING AND PAINT SHALL BE IN ACCORDANCE WITH AS1742 3
- 3 PAINT SHALL BE TYPE 3 CLASS 'A' AND THE COLOUR SHALL BE WHITE AND NOT SUBJECT TO DISCOLOURATION BY BITUMEN FROM ROAD SURFACE ALL PAINT TO BE APPLIED BY MECHANICAL SPRAYER.
- 4 LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING
- 5 PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm AND 0.60mm.

LDA 2018/0322

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% NOTIFIED MAXIMUM DRY DENSITY
SUBBASE 98% NOTIFIED MAXIMUM DRY DENSITY
SUBGRADE 100% STANDARD MAXIMUM DRY DENSITY
3. THE CONTRACTOR SHALL CONFIRM THE DESIGN FOR 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. REGISTERED LABORATORY FOR BASE LAYER, SUBBASE LAYER AND SUBGRADE LAYER IN ACCORDANCE WITH THE LATEST VERSION OF A53798 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 19 sq.m.
7. PAVEMENT HOLD POINTS
71. SUB-GRADE PROOF ROLL PRIOR TO SET-UP AND FORM FOR CONCRETE POUR
72. INSPECTION OF FORMWORK / STEEL PRIOR TO CONCRETE POUR.
73. SUBMISSION OF SUB-GRADE AND BASE DENSITY TESTS.

- GENERAL
11. ALL ASPHALTIC CONCRETE (AC) WORK TO BE PREPARED AND CARRIED OUT IN ACCORDANCE WITH GOOD ASPHALTIC PAVING PRACTICE AS DESCRIBED IN AS2150-2005 "ASPHALT (HOT-MIXED) PAVING - GUIDE TO GOOD PRACTICE" AND CURRENT RMS SPECIFICATIONS.
2. PAVEMENT PREPARATION
21. 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.
22. PRIME ALL SURFACES TO BE SEALED. ALLOW PRIME TO SETTLE FOR A MINIMUM OF 3 DAYS BEFORE APPLYING TACK COAT AND ASPHALT.
23. SWEEP PUGHED SURFACES BEFORE APPLYING TACK COAT.
24. ALL DEFECTS ORS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT UP TO GENERAL LEVEL OF PAVEMENT WITH ASPHALTIC CONCRETE BEFORE LAYING OF MAIN COURSE.
25. 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
31. ALL ASPHALT SHALL BE PLACED UTILISING APPROVED MECHANICAL PAVING MACHINES. DO NOT HAND PLACE ASPHALT WITHOUT PRIOR APPROVAL FROM ENGINEER.
4. JOINTS
41. THE NUMBER OF JOINTS BOTH LONGITUDINAL AND TRANSVERSE SHALL BE KEPT TO A MINIMUM.
42. THE DENSITY AND FINISH FURNISH AT JOINTS SHALL BE SIMILAR TO THOSE OF THE REMAINDER OF THE LAYER.
5. COMPACTION
51. ALL COMPACTION SHALL BE UNDERTAKEN USING SELF PROPELLED ROLLERS.
52. 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.
53. 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.
54. ROLLED SURFACES SHALL BE SMOOTH AND FREE OF UNDESIRABLES, BONY AND/OR UNEVEN SURFACES WILL BE REJECTED.
55. PROVIDE 2 NO. MINIMUM COMPACTION TESTS.

1. CARRY OUT ALL CONCRETE WORK IN ACCORDANCE WITH AS3600 AND NATAPEC CONCRETE STANDARDS

2. CONCRETE PROPERTIES AND COVER TO REINFORCING

ELEMENT	CONCRETE STRENGTH f _{cu} (MPa)	MAX. 56 DAY DRYING SHRINKAGE	COVER (mm)
SLABS ON GROUND	32	650microns	TOP 40 BTM 40

MAXIMUM AGGREGATE SIZE = 20mm U.N.O.
SLUMP DURING PLACING = 75mm
EXPOSURE CLASSIFICATION = B1
NO ADJUSTURES SHALL BE USED IN CONCRETE MIX UNLESS APPROVED BY STRUCTURAL ENGINEER IN WRITING

3. CONCRETE PROPERTIES FOR SLABS SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS

- MINIMUM CEMENT CONTENT 250kg/cum
- 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

4. SUBMIT FOR APPROVAL THE FOLLOWING TO THE CIVIL ENGINEER

- CURING PROCEDURE (PVA MEMBRANES NOT PERMITTED)
- STRIPPING PROCEDURE
- DETAILS AND LOCATION OF CAST IN SERVICES
- CONDUITS, PENETRATIONS AND CONSTRUCTION JOINT LOCATIONS

5. ALL CONCRETE MIXES SHALL BE DESIGNED BY A RECOGNISED TESTING LAB AND SUBMITTED FOR REVIEW BY THE CIVIL ENGINEER

6. ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE CIVIL ENGINEER FOR REVIEW

7. PROJECT CONTROL TESTING SHALL BE CARRIED OUT ON ALL CONCRETE IN ACCORDANCE WITH AS1979 TEST CYLINDERS ARE TO BE KEPT ON SITE

8. 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.

9. FOR TENDER PURPOSES ASSUME MINIMUM STRIPPING TIMES AND EXTENT OF BACK PROPPING AS PER AS3610-1995 SECTION 5.0 AND AS PER GENERAL NOTES FOR FORMWORK AND PROPPING

10. FORMWORK FINISH CLASSIFICATION TO AS3600

ELEMENT	CLASS
- SLABS	2

11. COMPACT ALL CONCRETE INCLUDING FOOTINGS AND SLABS, USING MECHANICAL VIBRATORS

12. PLACE CONCRETE CONTINUOUSLY BETWEEN CONSTRUCTION JOINTS SHOWN ON PLAN DO NOT BREAK OR INTERRUPT SUCCESSIVE POURS SUCH THAT COLD JOINTS OCCUR ANY REVISIONS OR ADDITIONS TO CONSTRUCTION JOINTS SHOWN ON PLAN REQUIRE APPROVAL FROM THE STRUCTURAL ENGINEER

13. CONCRETE PROFILES

- SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES
- NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN SHOWN IN THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER
- PROVIDE DRIP GROOVES AT ALL EXPOSED EDGES, CHAMFERS, DRIP GROOVES, REGLETS ETC TO BE TO ARCHITECTS DETAILS.

15. ALL PENETRATIONS TO HAVE 2-N16 TRIMMER BARS TOP AND BOTTOM TO EACH FACE U.N.O. EXTEND TRIMMERS 600 BEYOND PENETRATION

16. SETDOWNS OR FALLS IN FLOOR SURFACES ARE NOT PERMITTED UNLESS SHOWN ON DRAWINGS. MAINTAIN MINIMUM SLAB THICKNESS SHOWN ON PLAN WHERE FALLS OCCUR

- 1 THE CURING PROCESS FOR NEW CONCRETE IS TO INCORPORATE THE FOLLOWING ASPECTS, GENERALLY AS ORDERED:
- 11 SPRAY CURING COMPOUND
- 12 SAWCUT JOINTS AS LOCATED AND SPECIFIED AS SOON AS CURING PERMS.
- 13 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.

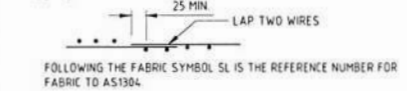
REVISION	DESCRIPTION	ISSUED	VER D	APP'D	DATE	CLIENT	ARCHITECT	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR AND MAY BE INCOMPLETE IF LOADED TO BLACK & WHITE	PROJECT	DRAWING TITLE	JOB NUMBER	
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13 12 19	 macquarie TELECOM GROUP	 GREENBOX ARCHITECTURE INTERIOR DESIGN URBAN DESIGN	 NORTHROP Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 61 094 433 100	17-23 TALAVERA ROAD MACQUARIE PARK IC3 PUBLIC DOMAIN WORKS LDA 2018/0322	CIVIL ENGINEERING PACKAGE SPECIFICATION NOTES - SHEET 01	170095	
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16 12 19							
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20 12 19							
04	ISSUED FOR APPROVAL	AP	-	AR	31 03 20							
						DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD				DRAWING NUMBER C11.11	REVISION 04
											DRAWING SHEET SIZE = A1	

DRAWN	A. PACIBEN	DESIGNED	A. RIVETT	JOB MANAGER	A. RIVETT	VERIFIER	S. FRYER
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- 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

- 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 100 CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS
- 6 CEMENT TYPE SHALL BE IACSE SPECIFICATION TYPE 5L
- 7 PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379 TEST CYLINDERS ARE TO BE KEPT ON SITE
- 8 ALL COMPRESSION 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 Y 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.



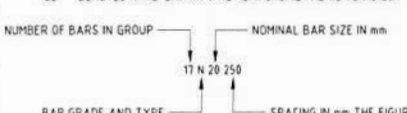
15 POLYETHYLENE SHEET SHALL BE PLACED BELOW ALL CONCRETE PAVEMENTS.

16 ALL PENETRATIONS TO HAVE 2/N12 TRIMMER BARS TOP AND BOTTOM TO EACH FACE UNO. EXTEND TRIMMERS 700 BEYOND PENETRATION. MAINTAIN 40mm COVER TOP AND BOTTOM.

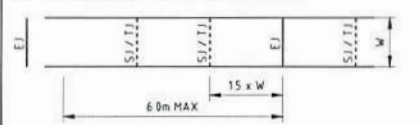
17	FORMWORK CLASS SHALL BE IN ACCORDANCE WITH AS3600	
18	SURFACE FINISHES	
	<u>ELEMENT</u>	<u>FORMWORK CLASS</u>
	STORMWATER PIT	OFF FORM
	PAVEMENTS	MACHINE FLOAT / BROOM FINISH
	KERBS	STEEL FLOAT / TROWEL

19. REINFORCEMENT SYMBOLS

N	DENOTES GRADE 450 N BARS TO A51302 GRADE N
R	DENOTES 230 R HOT ROLLED PLAIN BARS TO A51302
SL	DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO A51304



- 1 PROVIDE TO BE ABLE/FLEX 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 UNO ON THE DESIGN DRAWINGS
- 5 EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 6m CENTRES
- 6 WEAKENED PLANT JOINTS (SAWM OR TOOL JOINTS) ARE TO BE LOCATED AT A MAX SPACING OF 15m 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 KERB EXPANSION JOINTS SHALL BE FORMED FROM 10mm ABLEFLEX FOR FULL DEPTH OF SECTION.
- 10 KERB EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, TANGENT POINTS OF CURVES & CORNERS AND AT 12m MAX CENTRES.
- 11 KERB TOOLED JOINTS TO BE MIN 3mm WIDE AND LOCATED AT MAX 3m CENTRES.
- 12 INTEGRAL KERB JOINTS SHALL MATCH THE LOCATION OF PAVEMENT JOINTS.

ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY TO NORTHROP ENGINEERS FOR CLARIFICATION		
COUNCIL DETAILS - CITY OF RYDE		
COMPONENT	DWG REFERENCE	DRAWING TITLE
KERB AND GUTTER	CIV 111	STANDARD KERBS AND GUTTERS
DRIVEWAY LAYBACK	CIV 33	HEAVY DUTY DRIVEWAY LAYBACK
SHARED PATH MARKING	CIV 62	SHARED PATH TWO WAY OFFROAD SIGNAGE AND REMARKING
CONCRETE PAVING	PV11	PAVEMENT TOWN CENTRE TYPE CONCRETE
GRANITE PAVING	PV12	PAVEMENT TYPE GRANITE
JOINTING	PV31 & PV311	JOINT TYPES
JOINTING	PV32 & PV33	JOINT TYPES
JOINTING	PV331 & PV34	JOINT TYPES
JOINTING	PV36	CONCRETE SLAB JOINT SETOUT
GRANITE PAVING	PV41 & PV42	PAVING SETOUT AND CUTTING EXAMPLES
GRANITE PAVING	PV491 & PV493	MACQUARIE PARK VEHICLE CROSSING
GRANITE PAVING	PV61 & PV62	STEEL EDGE TYPES GRANITE PAVING TO GARDEN BED
SIGNAGE	TMS11	TYPICAL SIGN POSTING DETAILS
EROSION AND SEDIMENT	ESC 5	KERB INLET SEDIMENT TRAP

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 PRACTICING SURVEYOR. THE WAE DRAWINGS SHALL CLEARLY SHOW, STORMWATER GRATE/ COVER LEVELS, STORMWATER PIT INVERT LEVELS AND CORRESPONDING INVERT LEVELS OF ANY INCOMING OR OUTGOING PIPES, DIAMETER OF ALL PIPES, DIMENSIONS AND VOLUME OF ON-SITE RETENTION FACILITIES, INVERT LEVELS OF CURB/ 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 CORRECT 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 THE FOLLOWING: 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 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.

	PURSUANT TO REGULATION A275(1) OF THE WORK HEALTH AND SAFETY REGULATIONS 2011, SO FAR AS WE ARE REASONABLY AWARE AND BASED ON THE DESIGNS FOR WHICH WE HAVE BEEN COMMISSIONED, WE NOTE THE HAZARDS RELATING TO THE DESIGN OF THE CIVIL WORKS DESCRIBED ON THE BELOW HAZARD IDENTIFICATION AND RISK ASSESSMENT RECORD.						
(a) CREATE A RISK TO THE HEALTH OR SAFETY OF PERSONS WHO ARE TO CARRY OUT ANY CONSTRUCTION WORK ON THE STRUCTURE OR PART, AND (b) ARE ASSOCIATED ONLY WITH THE PARTICULAR DESIGN AND NO WITH OTHER DESIGNS OF THE SAME TYPE	THIS SAFETY REPORT HAS NOT IDENTIFIED HAZARDS RELATING TO THE DESIGN OF THE CIVIL WORKS SHOWN ON THESE DRAWINGS THAT WOULD NORMALLY BE EXPECTED IN OTHER DESIGNS OF THE SAME TYPE THE METHOD OF CONSTRUCTION AND THE MAINTENANCE OF SAFETY DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR AND OWNER IF ANY OF THE CIVIL ENGINEERING ELEMENTS UNDER OUR DESIGN PRESENTS DIFFICULTY IN RESPECT TO SAFETY, THE MATTER SHALL BE REFERRED TO NORTHROP CONSULTING ENGINEERS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.						
THE FOLLOWING ITEMS HAVE BEEN IDENTIFIED AS SAFETY RISKS	<table border="1"> <tr> <td data-bbox="1570 1005 1626 1060"> </td><td data-bbox="1626 1005 1837 1060"> UNDERGROUND HV CABLES CROSSING PROPOSED UNDERGROUND STORMWATER WORKS </td></tr> <tr> <td data-bbox="1570 1060 1626 1115"> </td><td data-bbox="1626 1060 1837 1115"> OSD TANK CONSIDERED A CONFINED SPACE </td></tr> <tr> <td data-bbox="1570 1115 1626 1245"> </td><td data-bbox="1626 1115 1837 1245"> WORKS WITHIN OVERLAP FLOW PATH AND REGION OF LOCALISED FLOODING </td></tr> </table>		UNDERGROUND HV CABLES CROSSING PROPOSED UNDERGROUND STORMWATER WORKS		OSD TANK CONSIDERED A CONFINED SPACE		WORKS WITHIN OVERLAP FLOW PATH AND REGION OF LOCALISED FLOODING
	UNDERGROUND HV CABLES CROSSING PROPOSED UNDERGROUND STORMWATER WORKS						
	OSD TANK CONSIDERED A CONFINED SPACE						
	WORKS WITHIN OVERLAP FLOW PATH AND REGION OF LOCALISED FLOODING						

CITY OF RYDE
APPROVED FOR CONSTRUCTION

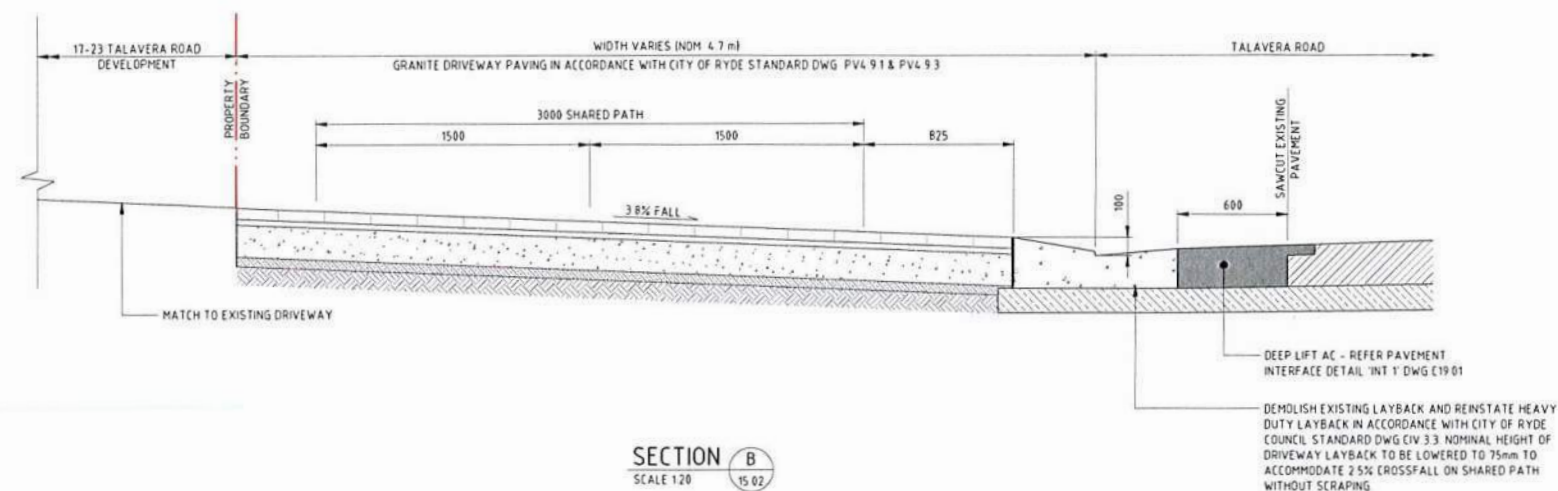
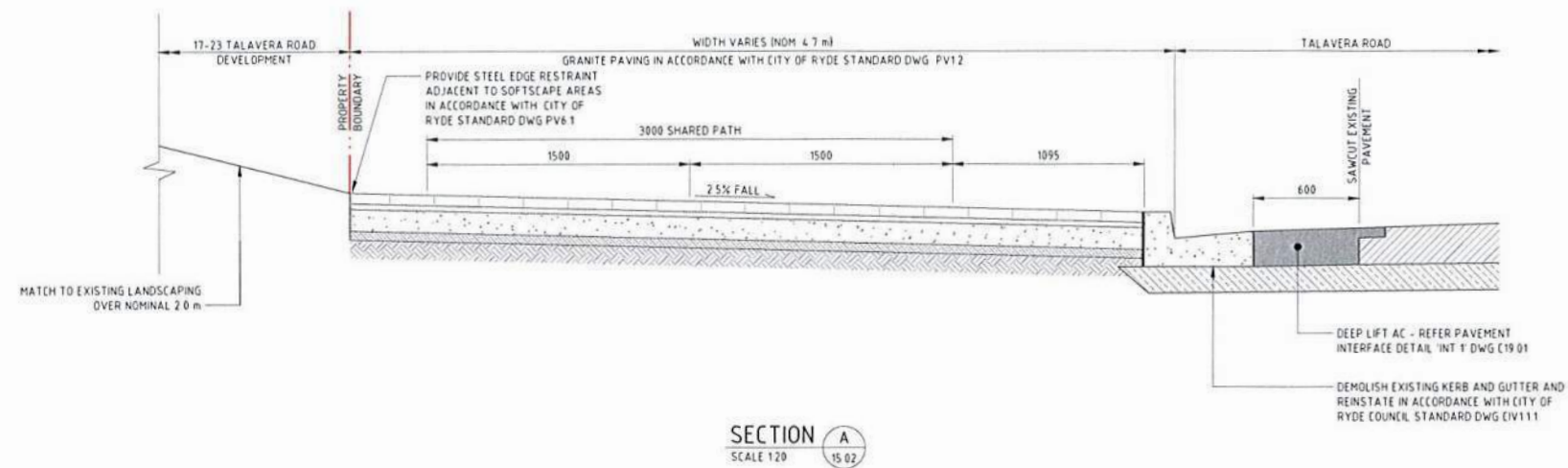
Signed.....
Date..... 05/05/2020

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REVISION	DESCRIPTION	ISSUED	VER D	APP D	DATE	CLIENT	ARCHITECT	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE	PROJECT	DRAWING TITLE	JOB NUMBER
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13 12 19	 macquarie TELECOM GROUP	 GREENBOX ARCHITECTURE INTERIOR DESIGN URBAN DESIGN	 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	17-23 TALavera ROAD MACQUARIE PARK IC3 PUBLIC DOMAIN WORKS LDA 2018/0322	CIVIL ENGINEERING PACKAGE SPECIFICATION NOTES - SHEET 02	170095
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16 12 19						
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20 12 19						
04	ISSUED FOR APPROVAL	AP	-	AR	31 03 20						
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LDA 2018/0322

DRAWN: A. PACIBEN
 DESIGNED: A. RIVETT
 JOB MANAGER: A. RIVETT
 VERIFIER: S. FRYER

REVISION	DESCRIPTION	ISSUED	VER D	APP'D	DATE
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13.12.19
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16.12.19
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20.12.19
04	ISSUED FOR APPROVAL	AP	-	AR	31.03.20

macquarie
 TELECOM GROUP

GREENBOX
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PROJECT
17-23 TALAVERA ROAD
MACQUARIE PARK
IC3 PUBLIC DOMAIN WORKS
LDA 2018/0322

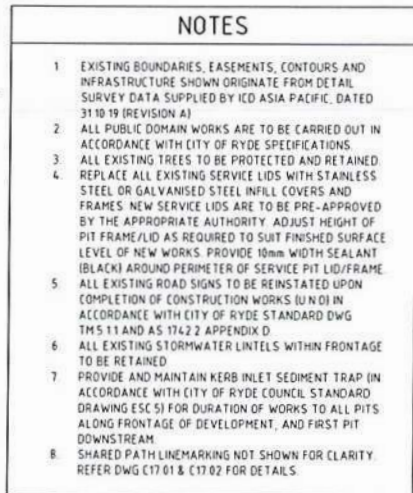
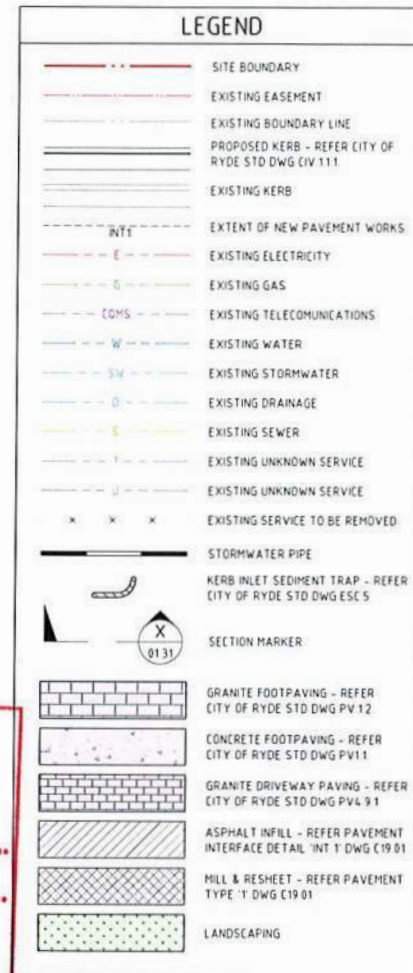
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CIVIL ENGINEERING PACKAGE
TYPICAL CROSS SECTIONS -
SHEET 01

JOB NUMBER
170095
 DRAWING NUMBER
C11.31
 REVISION
04
 DRAWING SHEET SIZE: A1

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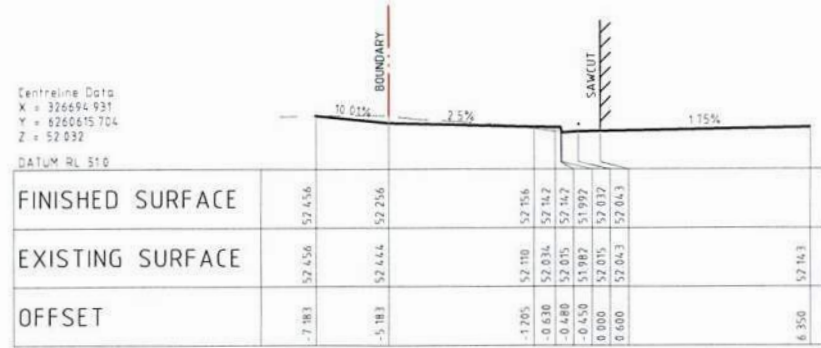
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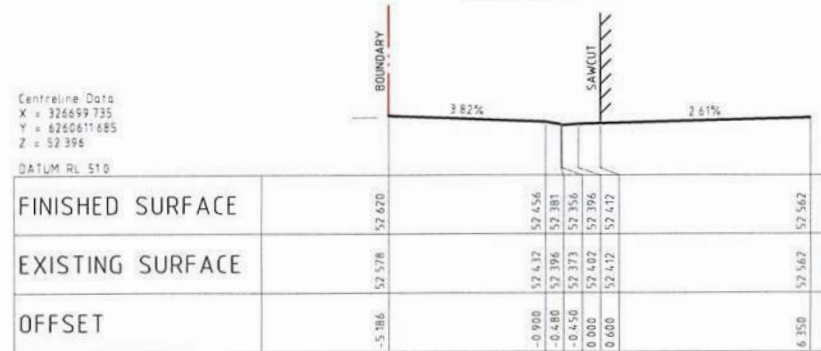
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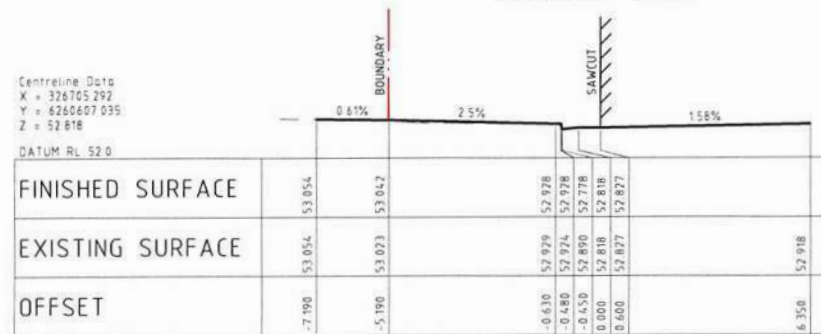
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170095	
DRAWING NUMBER	REVISION
C14.01	04



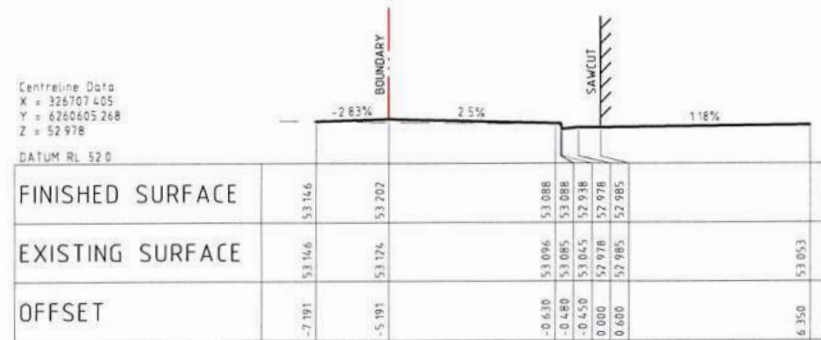
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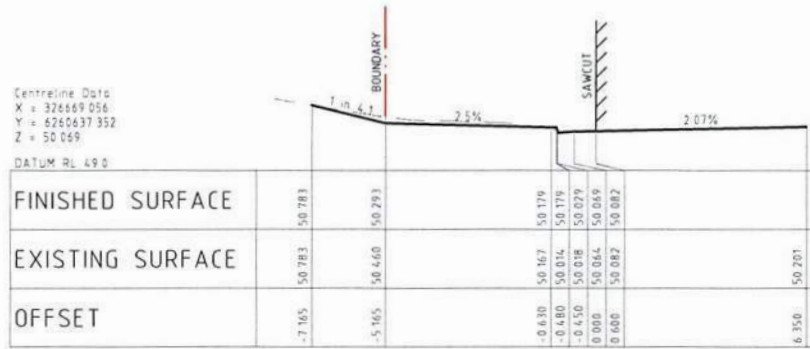
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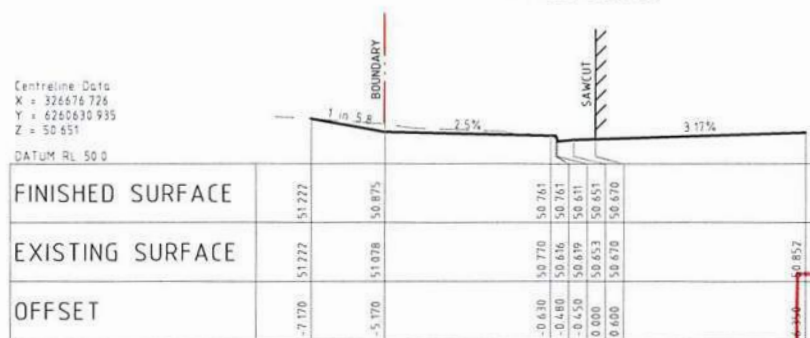
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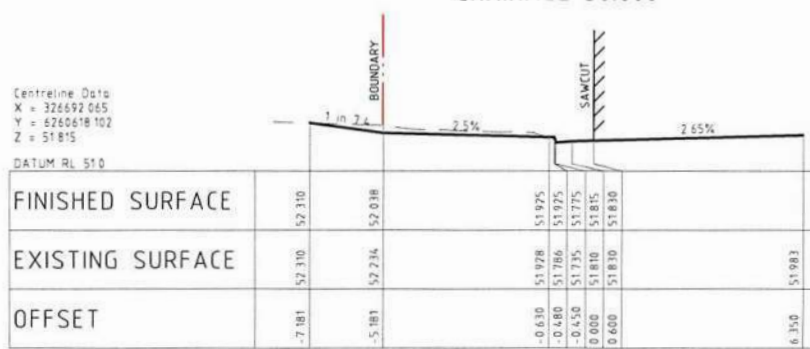
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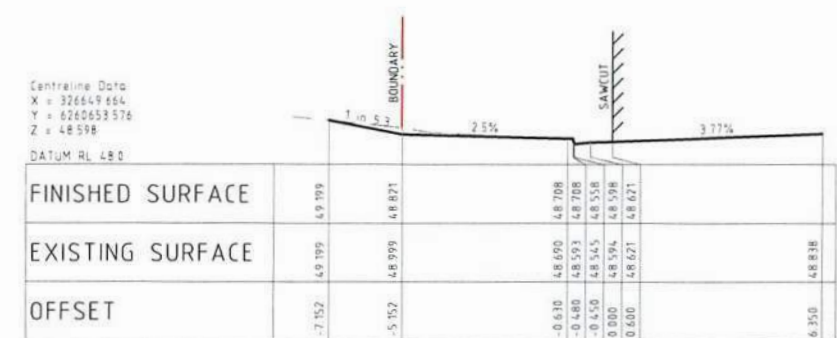
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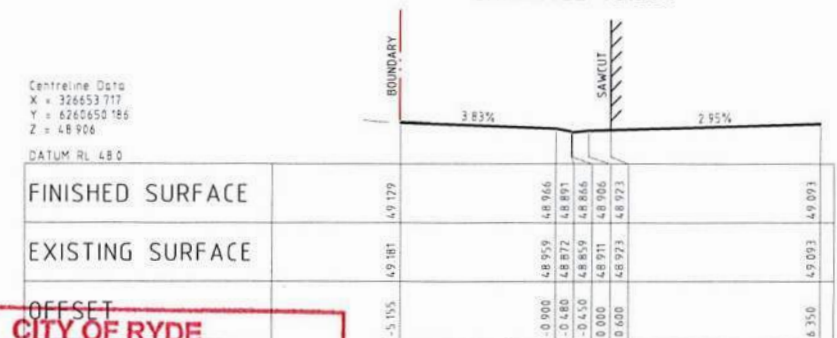
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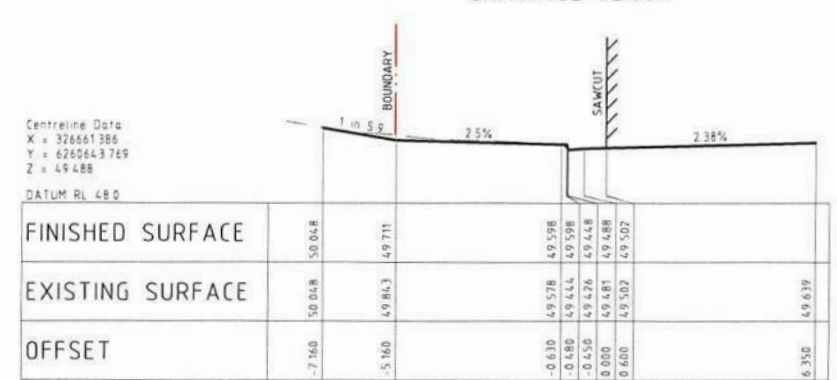
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CHAINAGE 70.000



CHAINAGE 62.954



CHAINAGE 60.000

CITY OF RYDE
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LDA 2018/0322



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REVISION	DESCRIPTION	ISSUED	VER	APP'D	DATE	CLIENT	ARCHITECT	PROJECT	DRAWING TITLE	JOB NUMBER
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13.12.19	macquarie TELECOM GROUP	GREENBOX ARCHITECTURE INTERIOR DESIGN URBAN DESIGN	17-23 TALAVERA ROAD MACQUARIE PARK	CIVIL ENGINEERING PACKAGE	170095
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16.12.19			IC3 PUBLIC DOMAIN WORKS LDA 2018/0322	VERGE CROSS SECTIONS - SHEET 01	
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20.12.19					
04	ISSUED FOR APPROVAL	AP	-	AR	31.03.20					

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

DRAWING NUMBER **C14.41**

REVISION **04**

DRAWING SHEET SIZE = A1

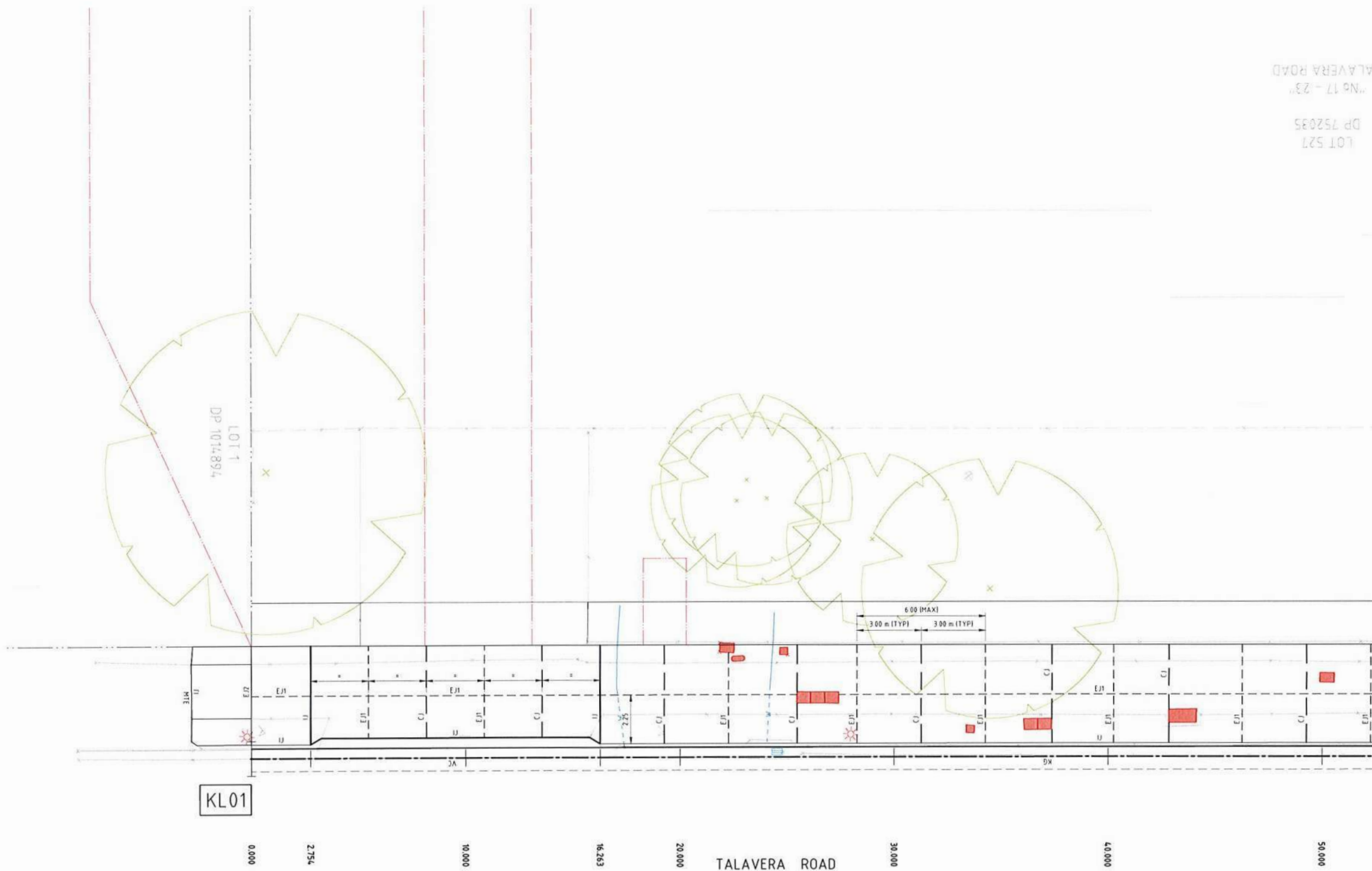


LDA 2018 / 0322

DRAWN A. PACIBEN **DESIGNED** A. RIVETT **JOB MANAGER** A. RIVETT **VERIFIER** S. FRYER

REVISION						DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	ARCHITECT	PROJECT		DRAWING TITLE		JOB NUMBER				
01	ISSUED FOR CLIENT REVIEW						AP	-	AR	13/12/19	 macquarie TELECOM GROUP	 GREENBOX ARCHITECTURE INTERIOR DESIGN URBAN DESIGN	 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	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR AND MAY NOT BE COMPLETE IF COPIED TO BLACK & WHITE.	SCALE 1:1 @ A1 	17-23 TALAVERA ROAD MACQUARIE PARK	CIVIL ENGINEERING PACKAGE	170095				
02	RE-ISSUED FOR CLIENT REVIEW						AP	-	AR	16/12/19									IC3 PUBLIC DOMAIN WORKS LDA 2018/0322	VERGE CROSS SECTIONS - SHEET 02	DRAWING NUMBER C14.42	REVISION 04
03	ISSUED FOR COUNCIL REVIEW						AP	-	AR	20/12/19												
04	ISSUED FOR APPROVAL						AP	-	AR	31/03/20												
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DESIGNED: A. RIVETT
JOB MANAGER: A. RIVETT
VERIFIER: S. FRYER



LEGEND	
	PROPOSED BOUNDARY LINE
	EXISTING BOUNDARY LINE
	EASEMENT LINE
	ISOLATION JOINT TO CITY OF RYDE COUNCIL DETAILS
	CONSTRUCTION JOINT TO CITY OF RYDE COUNCIL DETAILS
	EXPANSION JOINT TO CITY OF RYDE COUNCIL DETAILS
	EXPANSION JOINT TO CITY OF RYDE COUNCIL DETAILS
	EXPANSION JOINT TO CITY OF RYDE COUNCIL DETAILS
	EXISTING SERVICE LIDS, ROAD FURNITURE, ETC. TO BE ADJUSTED/RETAINED
	EXISTING / PROPOSED LIGHT POLE

NOTES	
1.	JOINTING SHOWN REFERS TO JOINTING OF UNDERLYING CONCRETE. JOINTING TO BE GENERALLY IN ACCORDANCE WITH CITY OF RYDE STANDARD DWG PV3 6.
2.	PROVIDE ISOLATION JOINTS TO ALL EXISTING SERVICE PITS, ROAD FURNITURE, ETC.
3.	OVERLYING PAVING NOT SHOWN FOR CLARITY. JOINTS IN CONCRETE TO BE REFLECTED THOUGH PAVING IN ACCORDANCE WITH CITY OF RYDE STANDARD DETAILS.

CITY OF RYDE
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LDA 2018/0322

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13 12 19
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03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20 12 19
04	ISSUED FOR APPROVAL	AP	-	AR	31 03 20

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GREENBOX
ARCHITECTURE INTERIOR DESIGN URBAN DESIGN

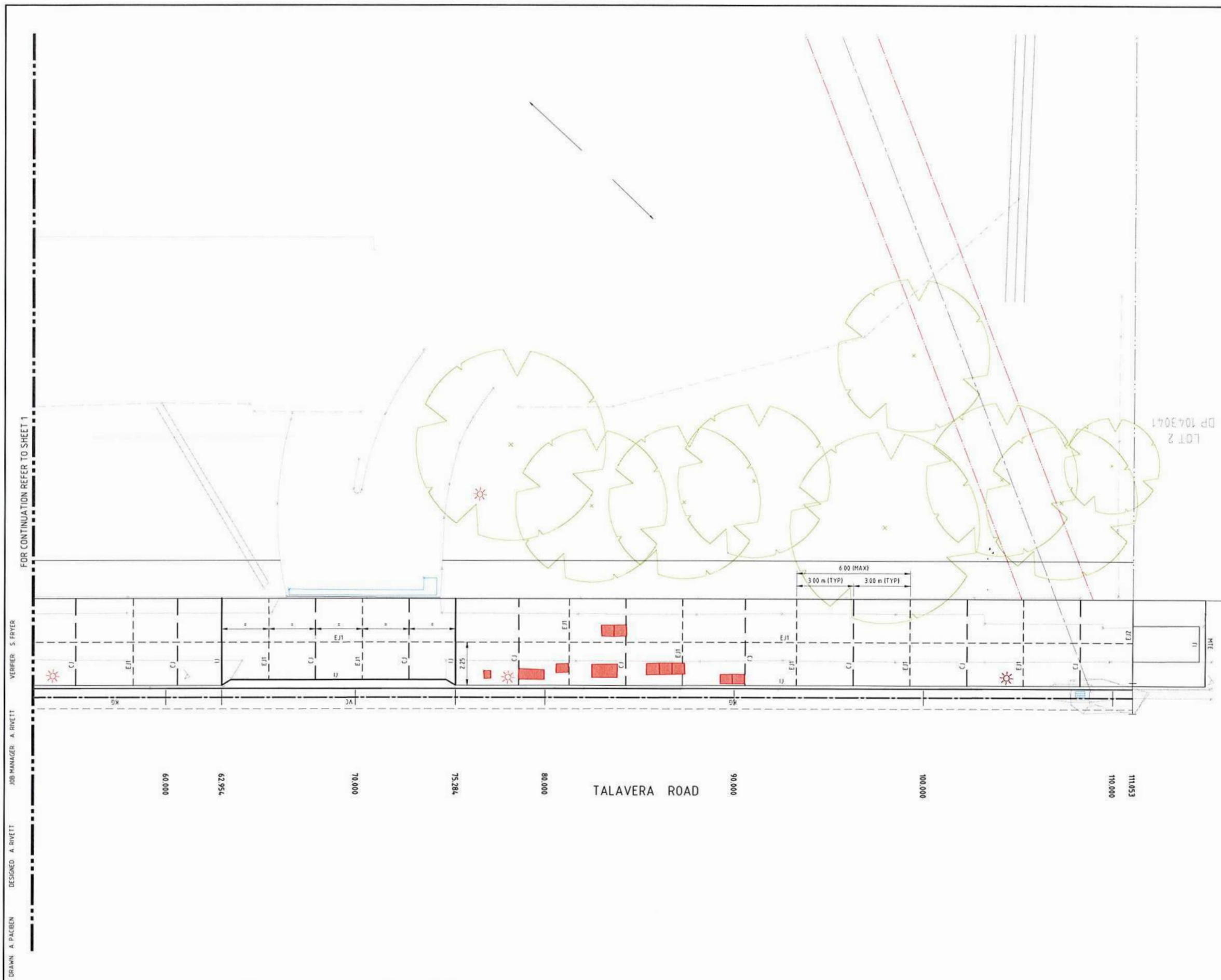
NORTHROP
Sydney
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Email sydney@northrop.com.au ABN 81 094 433 100

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PROJECT
17-23 TALAVERA ROAD
MACQUARIE PARK
IC3 PUBLIC DOMAIN WORKS
LDA 2018/0322

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
JOINTING PLAN - SHEET 01

JOB NUMBER
170095
DRAWING NUMBER
C16.21
REVISION
04
DRAWING SHEET SIZE: A1



LEGEND	
	PROPOSED BOUNDARY LINE
	EXISTING BOUNDARY LINE
	EASEMENT LINE
	ISOLATION JOINT TO CITY OF RYDE COUNCIL DETAILS
	CONSTRUCTION JOINT TO CITY OF RYDE COUNCIL DETAILS
	EXPANSION JOINT TO CITY OF RYDE COUNCIL DETAILS
	EXPANSION JOINT TO CITY OF RYDE COUNCIL DETAILS
	EXPANSION JOINT TO CITY OF RYDE COUNCIL DETAILS
	EXISTING SERVICE LIDS, ROAD FURNITURE, ETC. TO BE ADJUSTED/RETAINED
	EXISTING / PROPOSED LIGHT POLE

NOTES	
1	JOINTING SHOWN REFERS TO JOINTING OF UNDERLYING CONCRETE. JOINTING TO BE GENERALLY IN ACCORDANCE WITH CITY OF RYDE STANDARD DWG PV3 6
2	PROVIDE ISOLATION JOINTS TO ALL EXISTING SERVICE PITS, ROAD FURNITURE, ETC.
3	OVERLYING PAVING NOT SHOWN FOR CLARITY. JOINTS IN CONCRETE TO BE REFLECTED THROUGH PAVING IN ACCORDANCE WITH CITY OF RYDE STANDARD DETAILS

CITY OF RYDE
APPROVED FOR CONSTRUCTION

Signed

Date **05/05/2020**

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of Development Consent

LDA 2018 / 0322

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13.12.19
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16.12.19
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20.12.19
04	ISSUED FOR APPROVAL	AP	-	AR	31.03.20

CLIENT

macquarie
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ARCHITECT

GREENBOX
ARCHITECTURE INTERIOR DESIGN URBAN DESIGN

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SCALE 1:100 @ A1

0 1 2 3 4 5m

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PROJECT

17-23 TALAVERA ROAD
MACQUARIE PARK

IC3 PUBLIC DOMAIN WORKS
LDA 2018/0322

DRAWING TITLE

CIVIL ENGINEERING PACKAGE

JOINTING PLAN - SHEET 02

JOB NUMBER

170095

DRAWING NUMBER

C16.22

REVISION

04

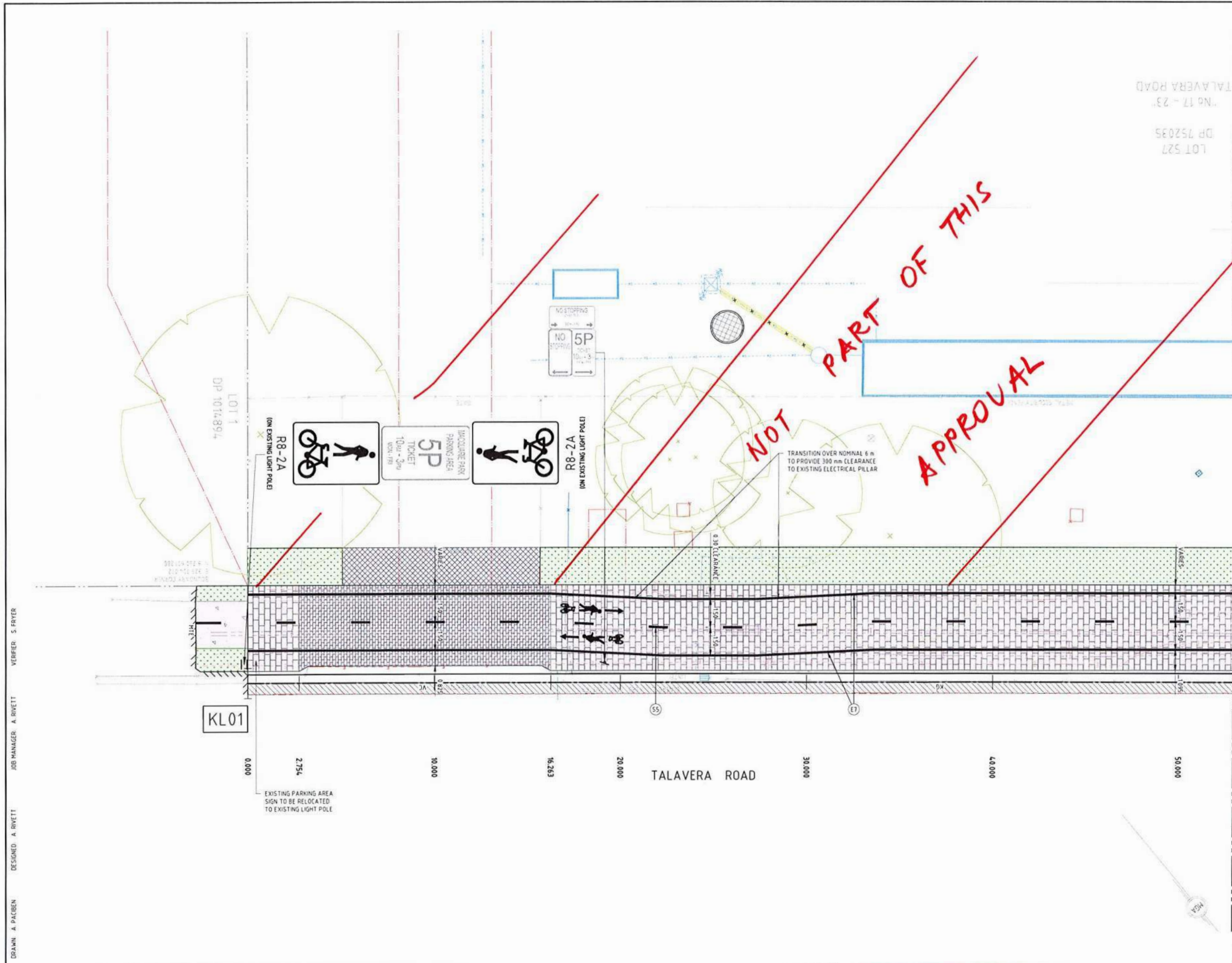
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NOT FOR CONSTRUCTION



DESIGNED: A. RIVETT
JOB MANAGER: A. RIVETT
VERIFIER: S. FRYER

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Plotted By: A.Pacben
Date: 21-03-20 12:30pm



LEGEND

- EXISTING SIGN TO BE REINSTATED UPON COMPLETION OF CONSTRUCTION WORK
- PROPOSED SIGN
- SIGNPOST
- LINEMARKING LINETYPE AS SPECIFIED - REFER CITY OF RYDE STD DWG CIV 6.2 FOR DETAILS
- SHARED PATH PAVEMENT MARKINGS IN ACCORDANCE WITH CITY OF RYDE STD DWG CIV 6.2

NOTES

- ALL EXISTING ROAD SIGNS TO BE REINSTATED UPON COMPLETION OF CONSTRUCTION WORK UNO
- ALL SIGNAGE TO BE INSTALLED IN ACCORDANCE WITH CITY OF RYDE STANDARD DWG TMS 11 AND AS 1742.2 APPENDIX D
- ALL LINEMARKING AND SHARED PATH PAVEMENT MARKING TO BE IN ACCORDANCE WITH CITY OF RYDE STANDARD DWG CIV 6.2

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Signed.....
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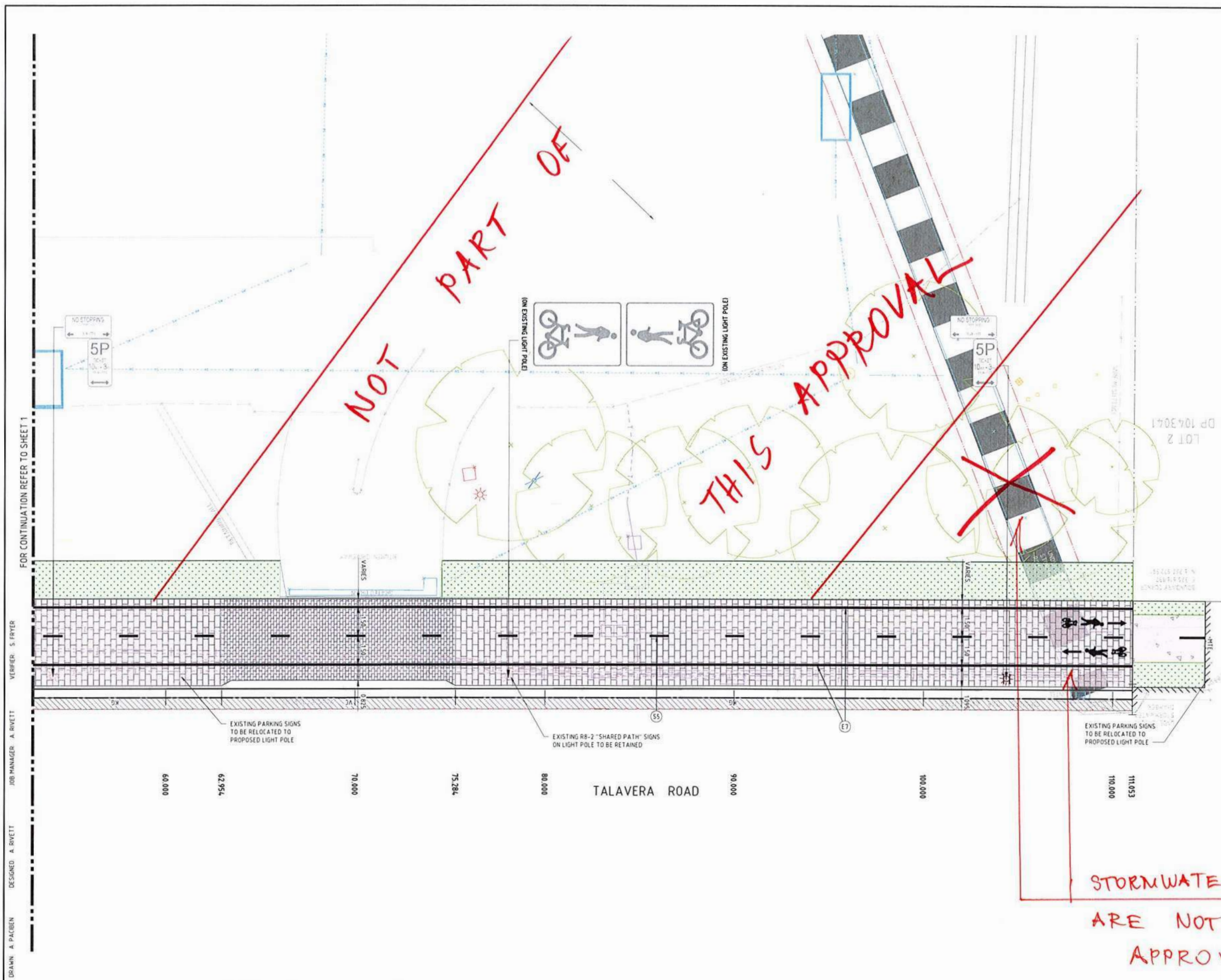
LDA 2018/0322

REVISION 01 ISSUED FOR CLIENT REVIEW 02 RE-ISSUED FOR CLIENT REVIEW 03 ISSUED FOR COUNCIL REVIEW 04 ISSUED FOR APPROVAL	ISSUED AP - AR 13.12.19 AP - AR 16.12.19 AP - AR 20.12.19 AP - AR 31.03.20	CLIENT 	ARCHITECT 	SCALE 1:100 @ A1	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.	 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 17-23 TALAVERA ROAD MACQUARIE PARK IC3 PUBLIC DOMAIN WORKS LDA 2018/0322	DRAWING TITLE CIVIL ENGINEERING PACKAGE SIGNAGE AND LINEMARKING PLAN - SHEET 01	JOB NUMBER 170095 DRAWING NUMBER C17.01 REVISION 04 DRAWING SHEET SIZE - A1
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DRAWN: A. PALCEN
DESIGNED: A. RIVETT
JOB MANAGER: A. RIVETT
VERIFIER: S. FRYER



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LEGEND

- EXISTING SIGN TO BE REINSTATED UPON COMPLETION OF CONSTRUCTION WORK
- PROPOSED SIGN
- SIGNPOST
- LINEMARKING LINETYPE AS SPECIFIED - REFER CITY OF RYDE STD DWG CIV 6.2 FOR DETAILS
- SHARED PATH PAVEMENT MARKINGS IN ACCORDANCE WITH CITY OF RYDE STD DWG CIV 6.2

- NOTES**
1. ALL EXISTING ROAD SIGNS TO BE REINSTATED UPON COMPLETION OF CONSTRUCTION WORK UNO.
 2. ALL SIGNAGE TO BE INSTALLED IN ACCORDANCE WITH CITY OF RYDE STANDARD DWG TMS.11 AND AS 1742.2 APPENDIX D.
 3. ALL LINEMARKING AND SHARED PATH PAVEMENT MARKING TO BE IN ACCORDANCE WITH CITY OF RYDE STANDARD DWG CIV 6.2.

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Signed:
 Date: 05/05/2020

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LDA 2018/0322

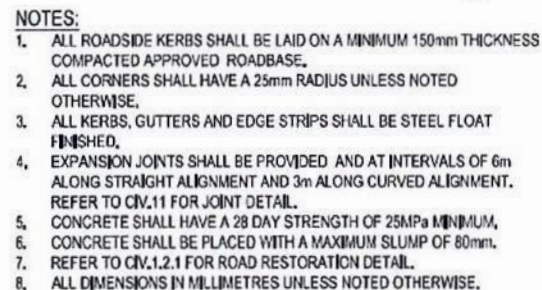
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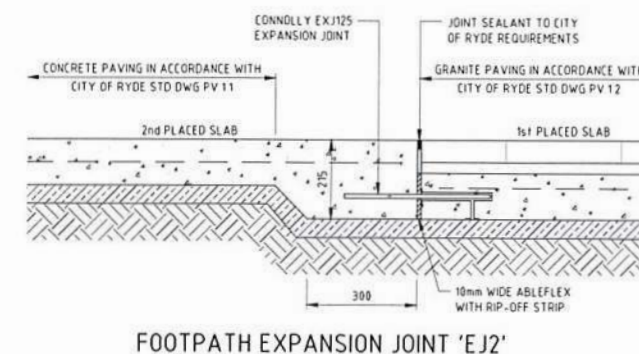
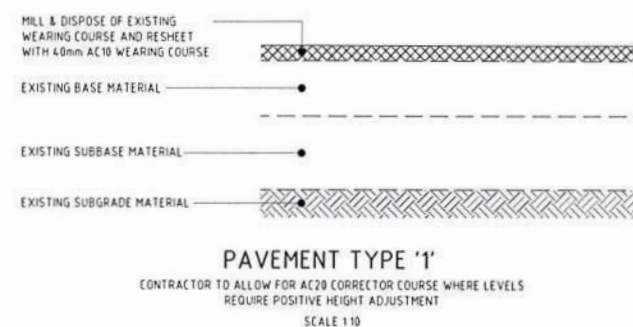
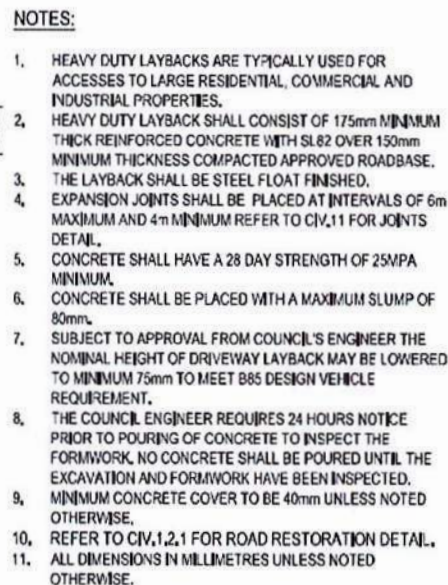
REVISION		DESCRIPTION		ISSUED	VER'D	APP'D	DATE	CLIENT  macquarie TELECOM GROUP	ARCHITECT  GREENBOX ARCHITECTURE INTERIOR DESIGN URBAN DESIGN	 NORTHROP Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	PROJECT 17-23 TALAVERA ROAD MACQUARIE PARK IC3 PUBLIC DOMAIN WORKS LDA 2018/0322	DRAWING TITLE CIVIL ENGINEERING PACKAGE SIGNAGE AND LINEMARKING PLAN - SHEET 02	JOB NUMBER 170095 DRAWING NUMBER C17.02 REVISION 04 DRAWING SHEET SIZE - A1	
01	ISSUED FOR CLIENT REVIEW		AP	-	AR	13/12/19								
02	RE-ISSUED FOR CLIENT REVIEW		AP	-	AR	16/12/19								
03	ISSUED FOR COUNCIL REVIEW		AP	-	AR	20/12/19								
04	ISSUED FOR APPROVAL		AP	-	AR	31/03/20								
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FOR CONTINUATION REFER TO SHEET 1

DESIGNED: A. RIVETT
 JOB MANAGER: A. RIVETT
 VERIFIER: S. FRYER
 DRAFTER: A. PACBEN



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01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13 12 19
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16 12 19
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20 12 19
04	ISSUED FOR APPROVAL	AP	-	AR	31 03 20

CLIENT  **macquarie**
TELECOM GROUP

ARCHITECT
GREENBOX
ARCHITECTURE INTERIOR DESIGN URBAN DESIGN
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PROJECT
17-23 TALAVERA ROAD
MACQUARIE PARK
IC3 PUBLIC DOMAIN WORKS
LDA 2018/0322

DRAWING TITLE	CIVIL ENGINEERING PACKAGE
	DETAILS - SHEET 01

JOB NUMBER	
170095	
DRAWING NUMBER	REVISION
C19.01	04

PAVEMENT TYPE: CONCRETE

CONCRETE SLAB:

PLACE 125mm THICK CONCRETE (25MPa) WITH SL72 MESH MINIMUM COVER 40mm.
PLACE CONCRETE BLINDING LAYER ON MINIMUM 50mm DEEP DGB20 TO 98% STANDARD DRY COMPACTION IN ACCORDANCE WITH AS1289.5.1.1, REFER TO DETAIL PV1.1 & PV1.2 ANY SOFT SPOTS IN SUB-GRADE TO BE REMOVED AND IDENTIFIED WITH CITY OF RYDE (CoR) PROJECT MANAGER.

SURFACE FINISH:

BROOM FINISH:
BROOM FINISH STROKES TO BE IN ONE DIRECTION PERPENDICULAR TO LINE OF TRAVEL. ALL EDGES TO BE FINISHED WITH 20-40mm EDGING TOOL.

EXPOSED AGGREGATE:

AGGREGATE TO BE EXPOSED IN A UNIFORM MANNER TO PREVENT IRREGULAR OR SPOTTY FINISH. SURFACE RETARDANTS MAY BE USED TO INCREASE WORKABILITY. PREFERRED TECHNIQUE FOR EXPOSING IS ACID WASH OR ABRASIVE BLASTING.

PIGMENTED FINISH (CCS):

COLOURED PIGMENT AT THE SPECIFIED RATES TO BE MIXED THROUGHOUT CONCRETE BATCH TO MATCH CCS COLOURS. REFER LANDSCAPE PLANS FOR CCS COLOUR.

COVING FINISH:

STROKES TO BE IN UNIFORM MANNER IN DIRECTION AS INDICATED BY LANDSCAPE PLANS.

SLAB JOINTS:

ISOLATION JOINTS:

10mm WIDE FULL DEPTH FLEXIBLE FOAM ISOLATION JOINT (CONNOLLY JOINT OR APPROVED EQUIVALENT) TO BE APPROVED BY SUPERINTENDENT PRIOR TO CONSTRUCTION. PLACE BETWEEN CONCRETE SLAB AND BACK OF KERB, AND BUILDING LINE, AND EXISTING ITEMS IDENTIFIED IN JOINTING PLAN. ISOLATION JOINT FOAM TO FINISH 20mm BELOW FINISHED SURFACE TO ACCOMMODATE BACKING ROD AND APPROVED SEALANT. REFER TO DETAILS PV3.3, PV3.4, & PV3.6

EXPANSION JOINTS:

10mm WIDE FULL DEPTH FLEXIBLE FOAM EXPANSION JOINT (CONNOLLY JOINT OR APPROVED EQUIVALENT) TO BE APPROVED BY SUPERINTENDENT PRIOR TO CONSTRUCTION. PLACE PERPENDICULAR TO KERB AND BUILDING LINE AT MAXIMUM 6.0m INTERVALS, WHERE WIDTH OF PAVEMENT (BETWEEN KERB AND BUILDING LINE) IS GREATER THAN 3m. PLACE EXPANSION JOINT CENTRALLY IN CONCRETE SLAB. REFER TO DETAILS PV3.1, PV3.1.1 & PV3.6

CONTROL JOINTS:

PLACE 3-5mm WIDE x 40mm DEEP SAW CUT CONTROL JOINT PERPENDICULAR TO KERB AND BUILDING LINE AS SHOWN ON JOINTING PLAN. ENSURE ALL CUTS ARE CONTINUOUS AND STRAIGHT. SAW CUT TO STOP 50mm SHORT OF ADJACENT JOINT OR OBJECT. REFER TO DETAIL PV3.4 & PV3.6

KEY JOINTS:

PLACE KEY JOINT PERPENDICULAR TO KERB AND BUILDING LINE AS REQUIRED BY ACCORDANCE WITH JOINTING SETOUT PLAN. REFER TO DETAILS PV3.2 & PV3.5

EDGING:

GENERAL EDGING TO CONCRETE SURFACE TO BE CARRIED OUT IN ACCORDANCE WITH SURFACE FINISH TREATMENT

BROOM FINISH - EDGING TOOL 20-40mm

EXPOSED AGGREGATE - EXPOSED FULLY TO EDGE

PIGMENT CCS - EDGING TOOL 20-40mm

FINISH: BROOM FINISH CONCRETE WITH 50mm COVING TOOL TO EDGE. REFER SPECIFICATION & FINISHES DRAWINGS FOR CCS COLOUR AND OR AGGREGATE

CONCRETE: 25MPa & 80mm SLUMP
125mm DEEP, STANDARD AGGREGATE
UNLESS OTHERWISE SPECIFIED, REFER FINISHES DRAWINGS

SL72 STEEL MESH WITH MIN 40mm COVER, 80mm CHAIRS & PLATES

MINIMUM 50mm DEEP DGB20 TO 98% STANDARD DRY COMPACTION

FALL 1% - 2.5% TYPICAL

EXISTING SUBGRADE

175 50 125

PV TOWN CENTRE PAVEMENT TYPE CONCRETE - TYPICAL

1.1 SCALE 1:10 AT A4

INSTALLATION OF GRANITE

CONCRETE BLINDING LAYER:

PLACE 125mm THICK CONCRETE (25MPa) WITH SL72 MESH MINIMUM COVER 40mm.
PLACE CONCRETE BLINDING LAYER ON MINIMUM 50mm DEEP DGB20 TO 98% STANDARD DRY COMPACTION IN ACCORDANCE WITH AS1289.5.1.1, REFER TO DETAIL PV1.1 & PV1.2 ANY SOFT SPOTS IN SUB-GRADE TO BE REMOVED AND IDENTIFIED WITH SUPERINTENDENT.

PAVER JOINTING:

BETWEEN INDIVIDUAL PAVERS - JOIN FLUSH TOGETHER LEAVING A 2mm GAP. FORM CONTINUOUS EVEN SURFACE TO AVOID TRIP HAZARDS. THE JOINTS BETWEEN PAVERS ARE TO BE FILLED WITH ULTRA FINE SILICA SAND CEMENT MIX AS SUPPLIED BY BENEDICTS SAND AND SOIL (PH:2986 3550) OR AN APPROVED EQUIVALENT. AT ISOLATION AND EXPANSION JOINTS - FILL 5-10mm GAP WITH FOAM BACKING ROD AND APPROVED ONE COMPONENT, THIXOTROPIC, POLYURETHANE BASED JOINT SEALANT. SEALANT COLOUR TO BE BLACK UNLESS SPECIFIED OTHERWISE, REFER TO DETAILS PV3.1.1 - PV3.6

BLINDING SLAB JOINTS:

AS PER CONCRETE JOINTS WITH ADDITION OF ISOLATION JOINTS FOAM TO FINISH 20mm BELOW FINISHED PAVEMENT LEVEL TO ACCOMMODATE BACKING ROD AND APPROVED JOINT SEALANT. REFER DETAILS PV3.1.1 - PV3.6

SETOUT - PAVERS:

PAVERS SHALL BE SETOUT AS PER DIMENSIONS AND LOCATIONS AS SHOWN IN TYPICAL DETAILS PV4.1 - PV4.9

LAYING - PAVERS:

LAYING OF PAVERS IS TO COMMENCE FROM PROPERTY BOUNDARY TOWARDS BACK OF KERB. REFER TO DETAIL PV4.1 - PV4.9 UNLESS OTHERWISE SPECIFIED. ENSURE ALL PAVERS ARE FULLY BEDDED ON A 30mm THICK 8:1 SAND/CEMENT SCREED. SAND USED SHALL BE WHITE WELL GRADED WASHED SAND, PASSING A 4.75mm SIEVE. PAVERS ARE TO BE MANUALLY TAMPERED WITH A RUBBER Mallet INTO THE WET MORTAR. THE USE OF VIBRATING COMPACTION EQUIPMENT EG. WAKA PLATE, IS STRICTLY PROHIBITED. WHERE PAVERS ARE TO BE LAID IN A RADIAL OR CURVE ALIGNMENT, PAVERS TO BE CUT RADIAL TO CENTRE. REFER TO DETAILS PV4.1 - PV4.9 ALL PAVERS TO BE LAID LEVEL TO THOSE ADJACENT TO AVOID TRIP HAZARDS. MINIMUM CUT PAVEMENT WIDTH SHOULD BE NO LESS THAN 100mm UNLESS APPROVED BY SUPERINTENDENT.

KERB RAMP:

GENERALLY KERB RAMP ARE TO BE SETOUT AS SHOWN IN DETAILS PV4.6, PV4.7 & PV4.8 WHERE ANY CHANGES ARE REQUIRED, CONFIRM WITH SUPERINTENDENT. MINIMUM CUT PAVEMENT WIDTH IS TO BE 100mm UNLESS APPROVED BY SUPERINTENDENT.

GRADE > 1:8:

ALL PAVERS LAID ON A GRADE STEEPER THAN 1:8 (12.5%) ARE REQUIRED TO BE A "Y" RATED PAVEMENT WITH A BUSH HAMMERED FINISH.

ROOF OUTLETS:

WHERE ROOF OUTLET CONNECTIONS ARE TO BE PROVIDED USE 150mm x 50mm GALVANISED STEEL RECTANGULAR HOLLOW SECTION, WHERE MORTAR COVER CANNOT

BE ACHIEVED PAVERS ARE TO BE GLUED TO STEEL SECTION AS REQUIRED WITH HIGH STRENGTH EPOXY ADHESIVE.

SERVICE LID TREATMENT:

REPLACE ALL EXISTING SERVICE LIDS WITH STAINLESS STEEL OR GALVANISED STEEL IN-FILL COVERS AND FRAMES. NEW SERVICE LIDS ARE TO BE PRE APPROVED BY THE APPROPRIATE AUTHORITY. ADJUST HEIGHT OF PIT FRAME/ID AS REQUIRED TO SUIT FINISH LEVEL OF NEW WORK. PROVIDE 10mm WIDE SEALANT (COLOUR: BLACK) AROUND PERIMETER OF SERVICE PIT LID FRAME.

CLEANING OF PAVERS:

ALL PAVERS LAID DURING THE COURSE OF ONE WORKING DAY MUST HAVE JOINTING SAND BROOMED IN AND BE CLEANED AT THE END OF THAT DAY BEFORE PROCEEDING WITH LAYING OF SUBSEQUENT PAVERS. THIS IS TO PREVENT RESIDUE BUILD UP ON PAVERS WHICH MAY BECOME DIFFICULT TO CLEAN IF LEFT OVERNIGHT OR FOR PROLONGED PERIODS.

GRANITE PAVING AS PER PAVEMENT SPECIFICATION

NOMINAL 2mm GAP TO BE DRY SWEEPED WITH SAND CEMENT

30mm WET SAND/CEMENT MIX REFER PAVEMENT SPECIFICATION

CONCRETE BLINDING SLAB AS PER PV1.1 MINUS FINISH REQUIREMENTS

EXISTING SUBGRADE

FALL TO KERB 1% - 2.5% TYPICAL

60 30 265 125 50

PV PAVEMENT TYPE GRANITE - TYPICAL

1.2 SCALE 1:10 AT A4

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GRANITE PAVEMENT SPECIFICATION	
Type:	General Paver - Select flame polished granite Grade > 1.8 Paver - Select bush hammered granite
Description:	Natural stone which is of uniform quality, sound, free from defects (such as vents, cracks, fissures, seams, porous inclusions, foreign material, loose surface material striations, stains, and discolouration) liable to affect its strength, appearance, durability, or proper functioning under the intended conditions of use.
Matching:	Select stone for the optimum matching of visual properties such as colour and pattern.
Finish:	General Paver: W rated - Sawn edges with polished surface to provide a finish in accordance with AS/NZS 4586 2004. Grade > 1.8 Paver: V rated - Sawn edges with bush hammered surface to provide a finish in accordance with AS/NZS 4586 2004.
Colour:	Raven Black or colour code G664 Header paving and banding as per landscape drawings. For Top Ryde CBD, Rosa (matching existing material laid in Bladand Rd, Ryde)
Size:	Footpaths 600 x 300 x 60 mm (infill pavers); 300 x 300 x 60 mm (Header pavers) Driveways 600 x 300 x 60 mm (infill pavers); 300 x 300 x 60 mm (Header pavers) Commercial Driveways: Transition pavers 600 x 150 x 60 mm; Infill pavers 300 x 150 x 60 mm Special pavers: 150 x 150 x 60 mm
Breaking Load:	Minimum 5kN
Tolerance:	Plan area +1mm Thickness +1mm
Water Absorption:	Maximum 0.3% Moisture Content And Total Water Absorption in accordance with ASTM C97
Chamfers and Edges:	Stone edge is not to be chamfered unless specified. Finish to exposed edges to match surface finish - no sawn edges to be exposed

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PAVEMENT TYPE: CONCRETE

REFER PV1.1

PVC CAPPING FINISHED FLUSH WITH SURFACE. REFER SPECIFICATION FOR COLOUR

EXPANSION JOINT - CONNOLLY JOINT OR APPROVED EQUIVALENT

DIRECTION OF MOVEMENT

PV CONCRETE EXPANSION JOINT (EJ) - TYPICAL
3.1 SCALE 1:5 AT A4

PAVEMENT TYPE: GRANITE

REFER PV1.2

JOINT SEALANT (PJ), COLOUR BLACK

FOAM BACKING ROD TO CONTROL JOINT DEPTH. ENSURE JOINTING SAND IS CLEANED OUT PRIOR TO INSTALLING

EXPANSION JOINT - CONNOLLY JOINT OR APPROVED EQUIVALENT

DIRECTION OF MOVEMENT

PV GRANITE EXPANSION JOINT (EJ)
3.1.1 SCALE 1:5 AT A4

NOTES:
REFER JOINTING PLAN FOR SETOUT & JOINT TYPE / LOCATION.
ALL SURFACE JOINTS AS INDICATED ON FINISHES PLANS.
SEEK CLARIFICATION IF REQUIRED

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REVISION	DESCRIPTION	ISSUED	VER D	APP D	DATE	CLIENT	ARCHITECT	PROJECT	DRAWING TITLE	JOB NUMBER	DRAWING NUMBER	REVISION
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13/12/19	macquarie TELECOM GROUP	GREENBOX ARCHITECTURE INTERIOR DESIGN URBAN DESIGN	17-23 TALAVERA ROAD MACQUARIE PARK	CIVIL ENGINEERING PACKAGE	170095	C19.02	04
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16/12/19			IC3 PUBLIC DOMAIN WORKS LDA 2018/0322	DETAILS - SHEET 02			
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20/12/19							
04	ISSUED FOR APPROVAL	AP	-	AR	31/03/20							

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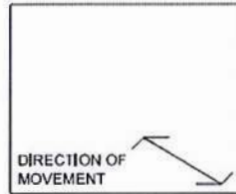
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Email sydney@northrop.com.au ABN 81 094 433 100

PAVEMENT TYPE: CONCRETE
REFER PV1,1

PVC CAPPING FINISHED FLUSH WITH
SURFACE, REFER SPECIFICATION FOR
COLOUR

KEY JOINT APPROVED BY
COUNCIL'S DESIGN
ENGINEER

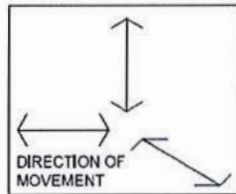


PV
3.2 CONCRETE KEY JOINT (KJ)
SCALE 1:5 AT A4

PAVEMENT TYPE: CONCRETE
REFER PV1,1

PVC CAPPING FINISHED FLUSH WITH
SURFACE, REFER SPECIFICATION FOR
COLOUR

ISOLATION JOINT - CONNOLLY
JOINT OR APPROVED EQUIVALENT



PV
3.3 CONCRETE ISOLATION JOINT (IJ)
SCALE 1:5 AT A4

NOTES:
REFER JOINTING PLAN FOR SETOUT & JOINT TYPE / LOCATION.
ALL SURFACE JOINTS AS INDICATED ON FINISHES PLANS,
SEEK CLARIFICATION IF REQUIRED

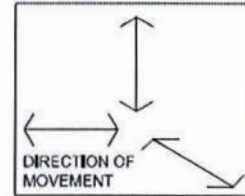
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PAVEMENT TYPE: GRANITE
REFER PV1,2

JOINT SEALANT (PJ), COLOUR BLACK

FOAM BACKING ROD TO ISOLATION
JOINT DEPTH, GRANITE PAVING JOINT
TO ALIGN WITH LOCATION OF
ISOLATION JOINT (REFER JOINTING
PLANS), ENSURE JOINTING SAND IS
CLEANED OUT PRIOR TO INSTALLING

ISOLATION JOINT - CONNOLLY JOINT OR
APPROVED EQUIVALENT, EXTEND
ISOLATION JOINT 60-70mm ABOVE
SURFACE OF BLINDING SLAB TO ALIGN
JOINT IN GRANITE PAVERS

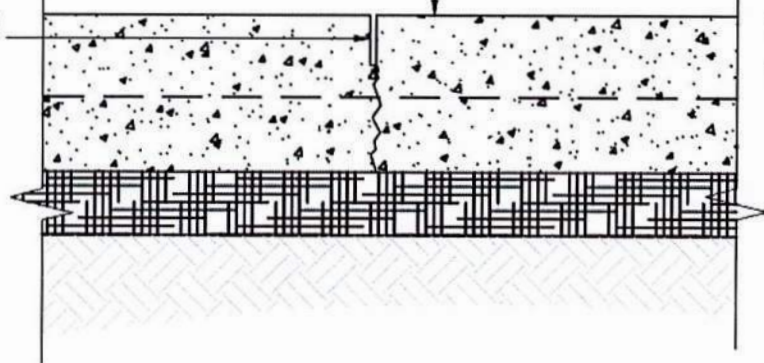


PV
3.3.1 GRANITE ISOLATION JOINT (IJ)
SCALE 1:5 AT A4

NOTES:
REFER JOINTING PLAN FOR SETOUT & JOINT TYPE / LOCATION.
ALL SURFACE JOINTS AS INDICATED ON FINISHES PLANS, SEEK
CLARIFICATION FROM COUNCIL'S LANDSCAPE ARCHITECT IF
REQUIRED

PAVEMENT TYPE: CONCRETE
REFER PV1,1

SAW CUT 3-5mm WIDE AND
MINIMUM 40mm DEEP



PV
3.4 CONCRETE CONTROL JOINT (CJ)
SCALE 1:5 AT A4

NOTES:
REFER JOINTING PLAN FOR SETOUT & JOINT TYPE / LOCATION.
SAW CUTS TO BE STRAIGHT AND CONTINUOUS

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Date..... 05/05/2020

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LDA 2018/0322

DESIGNED: A. RIVETT
DRAWN: A. PACIBEN
JOB MANAGER: A. RIVETT
VERIFIER: S. FRYER

REVISION	DESCRIPTION	ISSUED	VER D	APP D	DATE
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13.12.19
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16.12.19
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20.12.19
04	ISSUED FOR APPROVAL	AP	-	AR	31.03.20

CLIENT
macquarie
TELECOM GROUP

ARCHITECT
GREENBOX
ARCHITECTURE INTERIOR DESIGN URBAN DESIGN

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PROJECT
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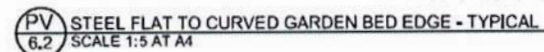
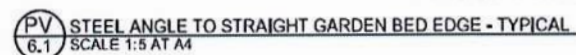
DRAWING TITLE
CIVIL ENGINEERING PACKAGE
DETAILS - SHEET 03

JOB NUMBER
170095
DRAWING NUMBER
C19.03
REVISION
04
DRAWING SHEET SIZE: A1



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Date: 31-03-20 12:39pm
Plotted By: A.Paciben



TYPICAL SIGN POST SUPPORT
Scale 1:20 @ A4

25 TYP.

MIN. 2000 CLEAR

MIN. 2500 CLEAR FOR SIGN OVERHANGING FOOTWAY OR SHARED PATH

75

MATCH FINISH SURFACE

FINISHED SURFACE

MIN. 600

25 MPa CONCRETE

V LOCK FIXING SYSTEM FOR HARD SURFACE ONLY AND IS NOT REQUIRED FOR SOFT SURFACE

Ø250

50

50 NOMINAL BORE GALVANISED POST

300 CLEAR

(SEE NOTE 10.)

PROVIDE GC STANDARD POST CAP TYP.

STREET NAME SIGN TO COUNCIL STANDARD 200 STREET BLADE TO SUIT

NO STOPPING

REFER TO RMS SIGN REGISTER FOR PARKING CONTROL SIGN DETAIL. (SEE ORIENTATION TYPICAL PARKING SIGN FOR DETAIL)

REFER TO RMS SIGN REGISTER FOR DETAIL

SIGN BRACKET FITTING TO SUIT NOMINATED SIGN

30° ± 10°

PARKING CONTROL SIGN

300 CLEAR

KERB AND GUTTER

DIRECTION OF TRAVEL

TYPICAL PARKING SIGN ORIENTATION

Scale N.T.S.

SIGN DIMENSION LIMIT FOR SINGLE POST	
SHAPE	DIMENSION LIMIT
RECTANGULAR	NOT EXCEEDING 900mm WIDTH AND 1200mm HEIGHT
TRIANGULAR	NOT EXCEEDING 1200mm HEIGHT
DIAMOND	NOT EXCEEDING 900mm x 900mm SQUARE
CIRCULAR	DIAMETER NOT EXCEEDING 900mm
OTHER	HEIGHT OR WIDTH NOT EXCEEDING 900mm

MIN. 2500 FOR STREET NAME SIGN

MIN. 2200 FOR PARKING CONTROL SIGN

NOTES:

1. POSITION AND ORIENTATION OF STREET NAME SIGNS SHALL BE IN ACCORDANCE WITH AS1742.5
2. POSITION AND ORIENTATION OF ROAD SIGNS SHALL BE IN ACCORDANCE WITH AS1742.13
2. POSITION AND ORIENTATION OF PARKING SIGNS SHALL BE IN ACCORDANCE WITH AS1742.11
3. THE POST SHALL BE HELD AND SECURED VERTICALLY WHILE THE CONCRETE IS BEING SET. SIGNS SHALL BE INSTALLED ONCE THE CONCRETE IS SET
4. INSTALLER SHALL CARRY OUT DBYD SEARCH AND VERIFY THE LOCATION OF UNDERGROUND SERVICES PRIOR TO EXCAVATION.
5. WHERE THE REQUIRED SUPPORT DEPTH CANNOT BE ACHIEVED, THE DIMENSION OF THE SUPPORT FOOTING SHALL BE ADJUSTED TO PROVIDE EQUIVALENT WEIGHT, APPROVAL TO BE OBTAINED FROM COUNCIL SUPERINTENDENT.
6. FIXING BRACKETS AND BOLTS SHALL BE ANTI-VANDAL.
7. CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 25MPa MINIMUM.
8. CONCRETE SHALL BE PLACED WITH A MAXIMUM SLUMP OF 80mm.
9. THIS STANDARD DOES NOT COVER LARGE MULTIPLE POST SIGNS, THE STRUCTURAL DESIGN OF POSTS, FOOTINGS AND STIFFENERS FOR LARGE MULTIPLE POST SIGNS SHALL BE CARRIED OUT BY QUALIFIED STRUCTURAL ENGINEER AND

- NOTES:**
1. POSITION AND ORIENTATION OF STREET NAME SIGNS SHALL BE IN ACCORDANCE WITH AS1742.5
 2. POSITION AND ORIENTATION OF ROAD SIGNS SHALL BE IN ACCORDANCE WITH AS1742.13
 2. POSITION AND ORIENTATION OF PARKING SIGNS SHALL BE IN ACCORDANCE WITH AS1742.11
 3. THE POST SHALL BE HELD AND SECURED VERTICALLY WHILE THE CONCRETE IS BEING SET, SIGNS SHALL BE INSTALLED ONCE THE CONCRETE IS SET
 4. INSTALLER SHALL CARRY OUT DBYD SEARCH AND VERIFY THE LOCATION OF UNDERGROUND SERVICES PRIOR TO EXCAVATION.
 5. WHERE THE REQUIRED SUPPORT DEPTH CANNOT BE ACHIEVED, THE DIMENSION OF THE SUPPORT FOOTING SHALL BE ADJUSTED TO PROVIDE EQUIVALENT WEIGHT, APPROVAL TO BE OBTAINED FROM COUNCIL SUPERINTENDENT.
 6. FIXING BRACKETS AND BOLTS SHALL BE ANTI-VANDAL.
 7. CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 25MPa MINIMUM.
 8. CONCRETE SHALL BE PLACED WITH A MAXIMUM SLUMP OF 80mm.
 9. THIS STANDARD DOES NOT COVER LARGE MULTIPLE POST SIGNS, THE STRUCTURAL DESIGN OF POSTS, FOOTINGS AND STIFFENERS FOR LARGE MULTIPLE POST SIGNS SHALL BE CARRIED OUT BY QUALIFIED STRUCTURAL ENGINEER AND APPROVAL OBTAINED FROM COUNCIL.
 10. NOMINAL 300mm CLEAR FROM KERB FACE, 500 MIN. CLEAR FOR MOUNTABLE AND SEMI-MOUNTABLE KERBS, THESE CLEARANCES DOES NOT APPLY TO MEDIAN ISLAND.

SIGN DIMENSION LIMIT FOR SINGLE POST	
SHAPE	DIMENSION LIMIT
RECTANGULAR	NOT EXCEEDING 900mm WIDTH AND 1200mm HEIGHT
TRIANGULAR	NOT EXCEEDING 1200mm HEIGHT
DIAMOND	NOT EXCEEDING 900mm x 900mm SQUARE
CIRCULAR	DIAMETER NOT EXCEEDING 900mm
OTHER	HEIGHT OR WIDTH NOT EXCEEDING 900mm

CITY OF RYDE
APPROVED FOR CONSTRUCTION

Signed.....
Date..... 05/05/2020

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of Development Consent

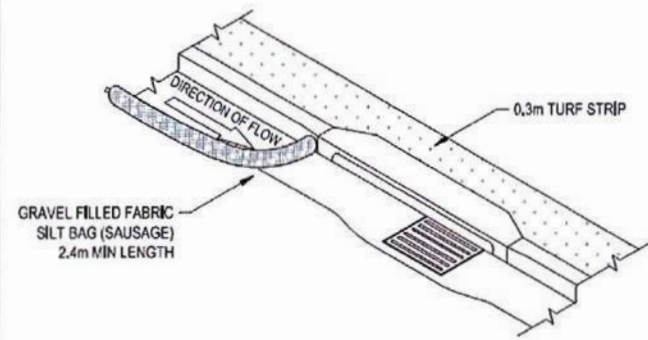
LDA 2018/0322



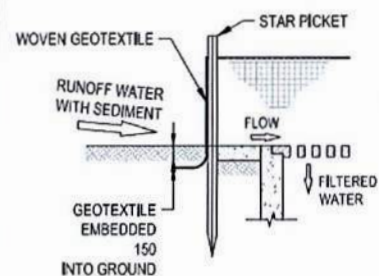
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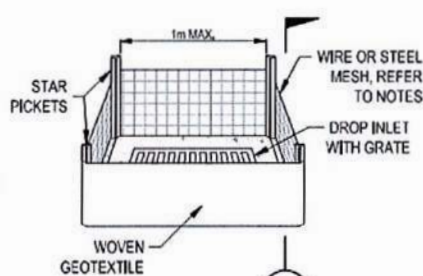
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01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13 12 19	 macquarie TELECOM GROUP	 GREENBOX ARCHITECTURE INTERIOR DESIGN URBAN DESIGN	 NORTHROP Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	17-23 TALAVERA ROAD MACQUARIE PARK IC3 PUBLIC DOMAIN WORKS LDA 2018/0322	CIVIL ENGINEERING PACKAGE DETAILS - SHEET 05	170095 C19.05 DRAWING SHEET SIZE : A1
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16 12 19						
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20 12 19						
04	ISSUED FOR APPROVAL	AP	-	AR	31 03 20						
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KERB INLET SEDIMENT TRAP
Scale: N.T.S.

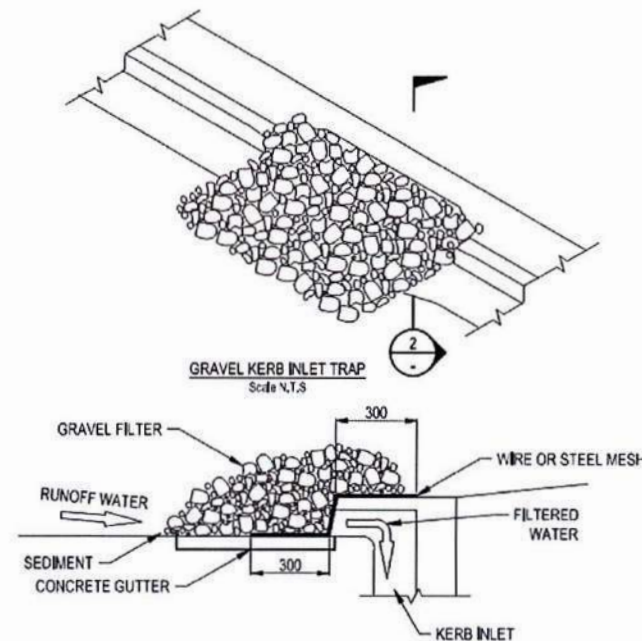


SECTION 1
SCALE: N.T.S.



GEOTEXTILE INLET FILTER
Scale: N.T.S.

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SECTION 2
SCALE: N.T.S.

NOTES:

1. WHERE GEOTEXTILE IS NOT SELF-SUPPORTING, PROVIDE WIRE OR STEEL MESH (14 GAUGE X 150mm OPENINGS) TIED TO POSTS AT 1m CENTERS. DO NOT COVER INLETS WITH GEOTEXTILE FABRIC.
2. FIT STAR PICKETS WITH YELLOW SAFETY CAPS AFTER INSTALLATION.
3. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE (U.N.O)

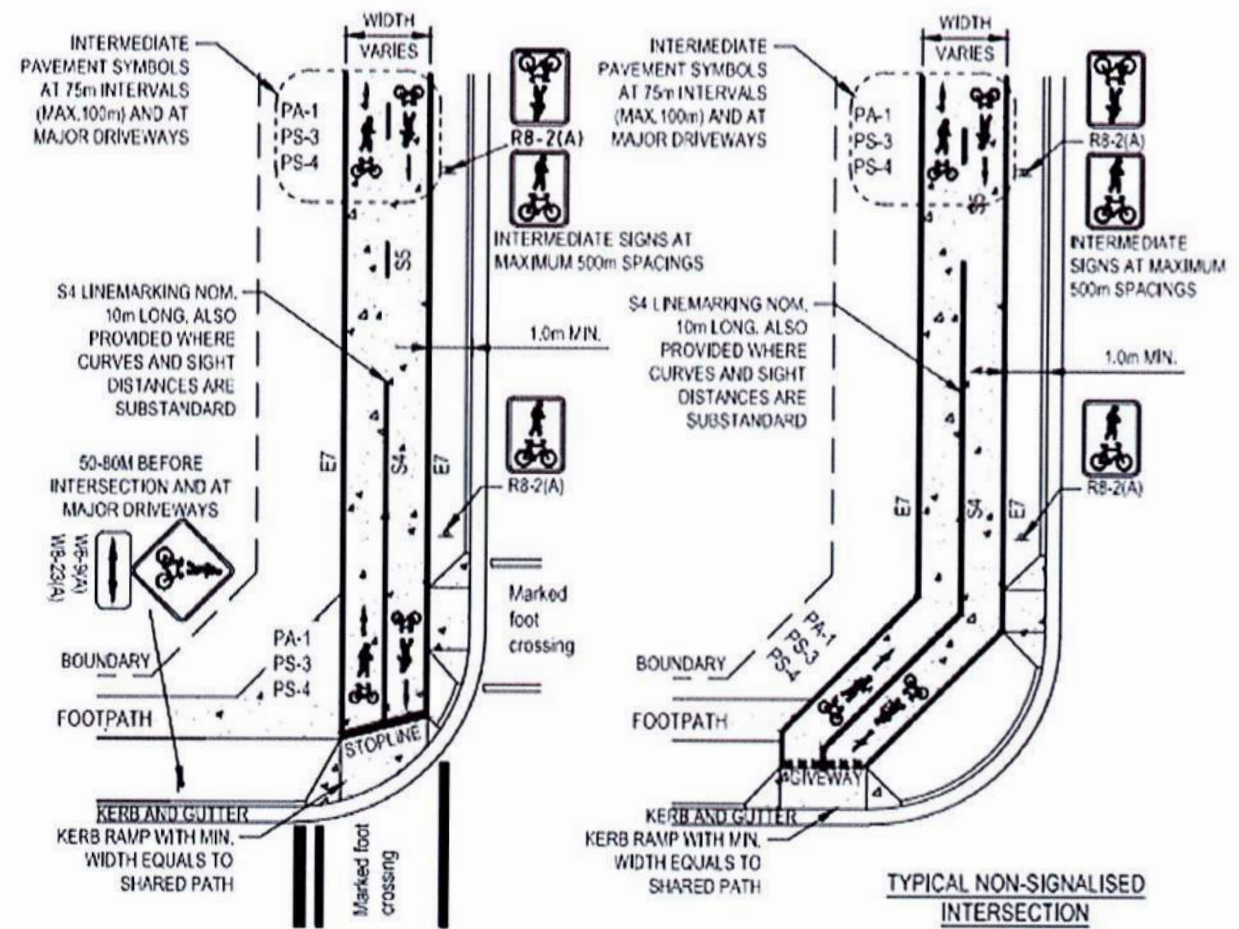
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of Development Consent

LDA 2018/0322



LEGEND OF SIGNS, LINEMARKING AND SYMBOLS
SCALE: N.T.S.

LINEMARKING

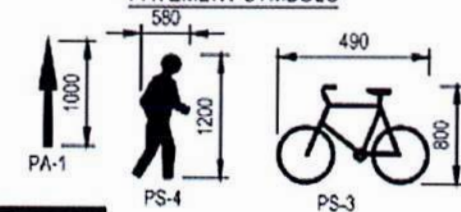
S4 CONTINUOUS SEPARATION LINE 80mm WIDE

S5 BROKEN SEPARATION LINE 80mm WIDE, 1000mm LONG WITH 3000mm GAP

E7 CONTINUOUS EDGE LINE LINE 80mm WIDE

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PAVEMENT SYMBOLS



SIGNAGE



LINEMARKING

STOP LINE 200mm WIDE

GIVE WAY LINE 200mm WIDE,
200mm LONG, 200mm GAP

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER D	APP D	DATE
01	ISSUED FOR CLIENT REVIEW	AP	-	AR	13 12 19
02	RE-ISSUED FOR CLIENT REVIEW	AP	-	AR	16 12 19
03	ISSUED FOR COUNCIL REVIEW	AP	-	AR	20 12 19
04	ISSUED FOR APPROVAL	AP	-	AR	31 03 20

CLIENT
macquarie
TELECOM GROUP

ARCHITECT
GREENBOX
ARCHITECTURE INTERIOR DESIGN URBAN DESIGN

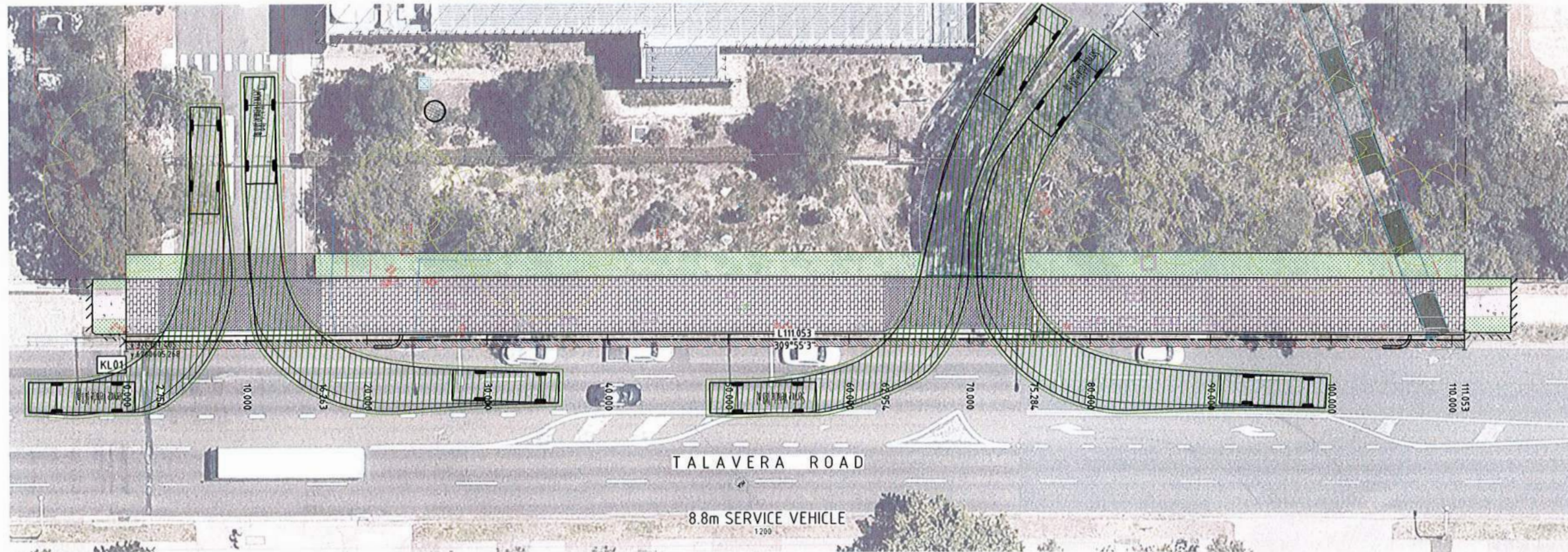
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PROJECT
17-23 TALAVERA ROAD
MACQUARIE PARK
IC3 PUBLIC DOMAIN WORKS
LDA 2018/0322

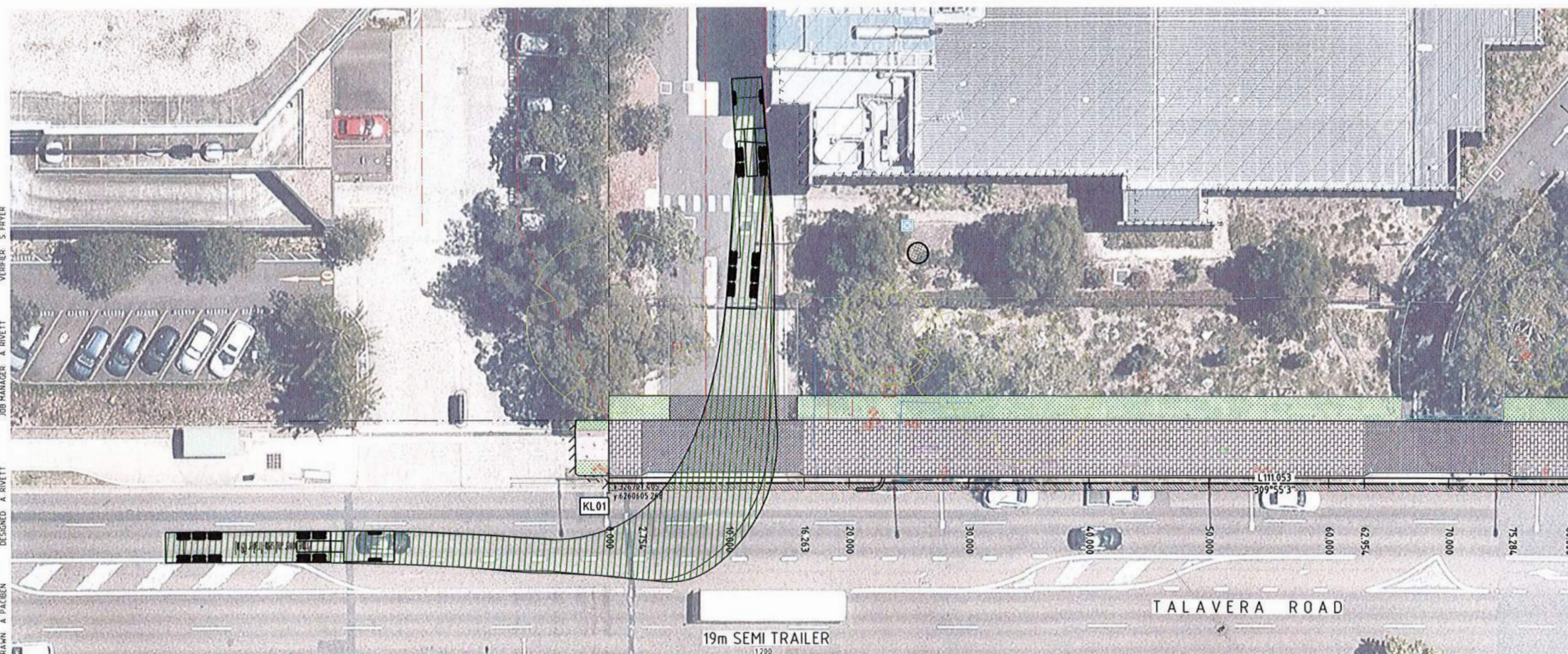
DRAWING TITLE
CIVIL ENGINEERING PACKAGE
DETAILS - SHEET 06

JOB NUMBER
170095
DRAWING NUMBER
C19.06
REVISION
04
DRAWING SHEET SIZE - A1



VEHICLE PROFILE	
SERVICE VEHICLE (8.8 m)	
OVERALL LENGTH	8.800m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.300m
MIN BODY GROUND CLEARANCE	0.427m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	4.00s
CURB TO CURB TURNING RADIUS	12.500m
TRAVELLING SPEED	15 km/h

VEHICLE PROFILE	
PRIME MOVER AND SEMI TRAILER (19m)	
OVERALL LENGTH	19.000m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.300m
MIN BODY GROUND CLEARANCE	0.540m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	6.00s
CURB TO CURB TURNING RADIUS	12.500m
TRAVELLING SPEED	15 km/h



CITY OF RYDE
APPROVED FOR CONSTRUCTION

Signed.....
 Date.....05/05/2020

Subject to the Conditions
 of Development Consent

LDA 2018/0322



NOT FOR CONSTRUCTION

DRAWN: A. PALCEN
 DESIGNED: A. RIVETT
 JOB MANAGER: A. RIVETT
 VERIFIED: S. FRYER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR APPROVAL	AP	-	AR	31/03/20

macquarie
 TELECOM GROUP

CLIENT

GREENBOX
 ARCHITECTURE INTERIOR DESIGN URBAN DESIGN

ARCHITECT

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SCALE 1200 @ A1
 SCALE 180 @ A1

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PROJECT
17-23 TALAVERA ROAD
MACQUARIE PARK
IC3 PUBLIC DOMAIN WORKS

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
VEHICLE SWEEP PATH SHEET

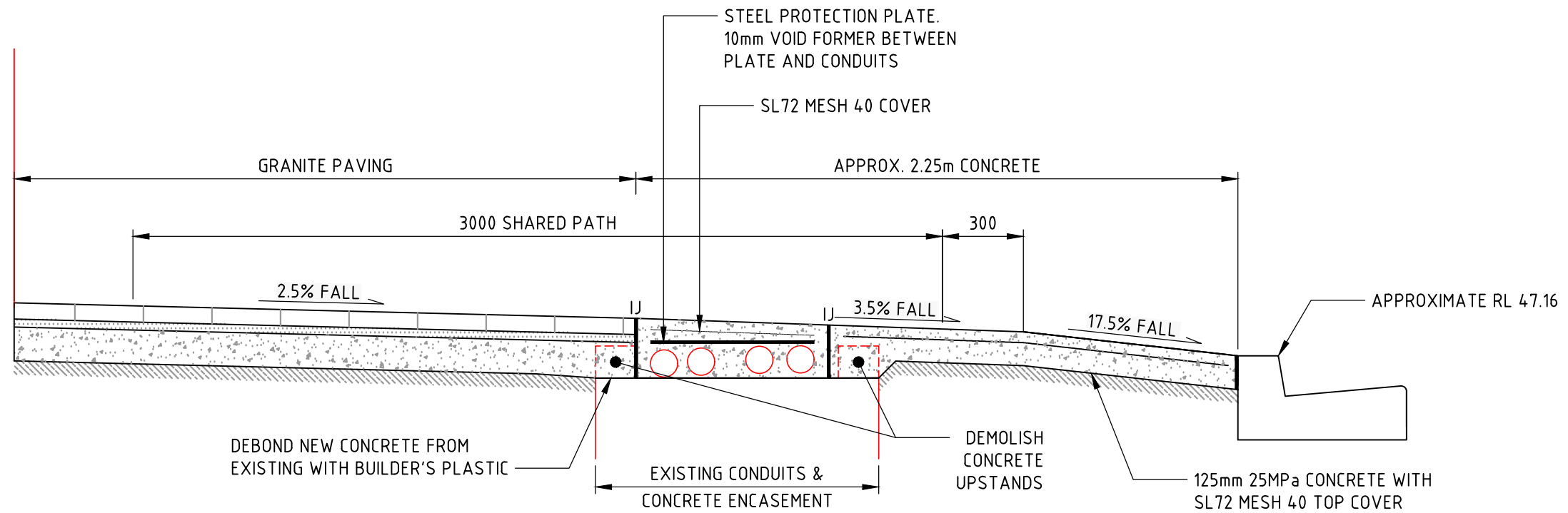
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170095

DRAWING NUMBER
19.81
C14.01

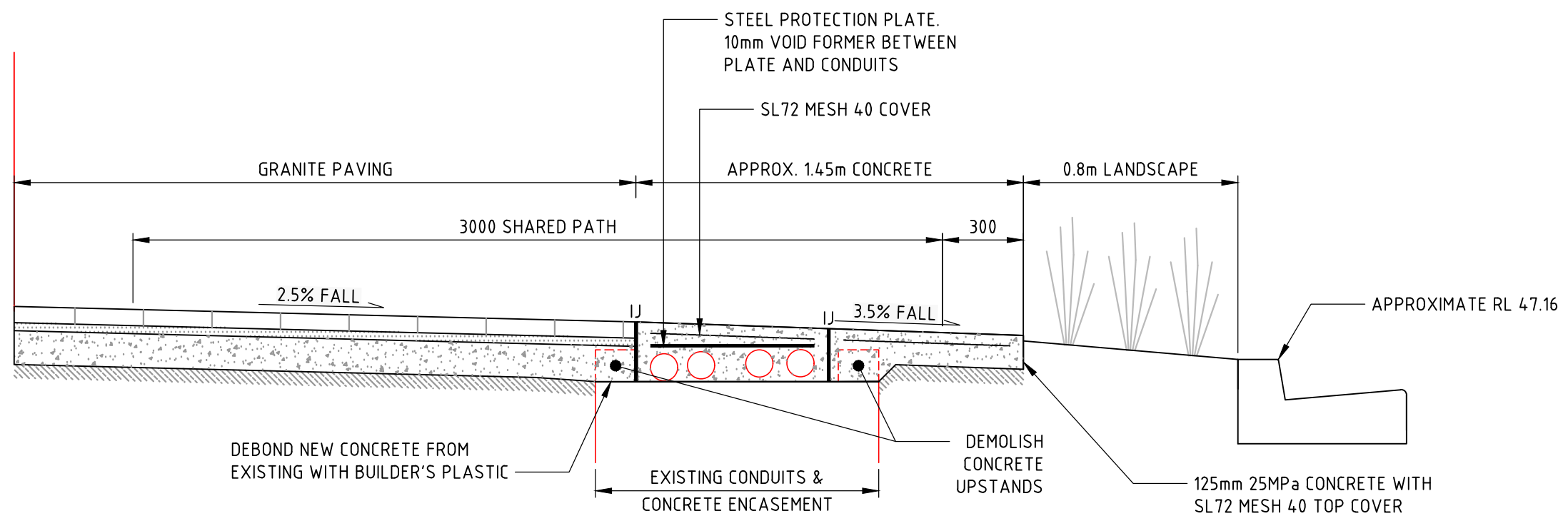
REVISION
01

DRAWING SHEET SIZE: A1

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OPTION 1 - STEEP CONCRETE BEYOND SHARED PATH

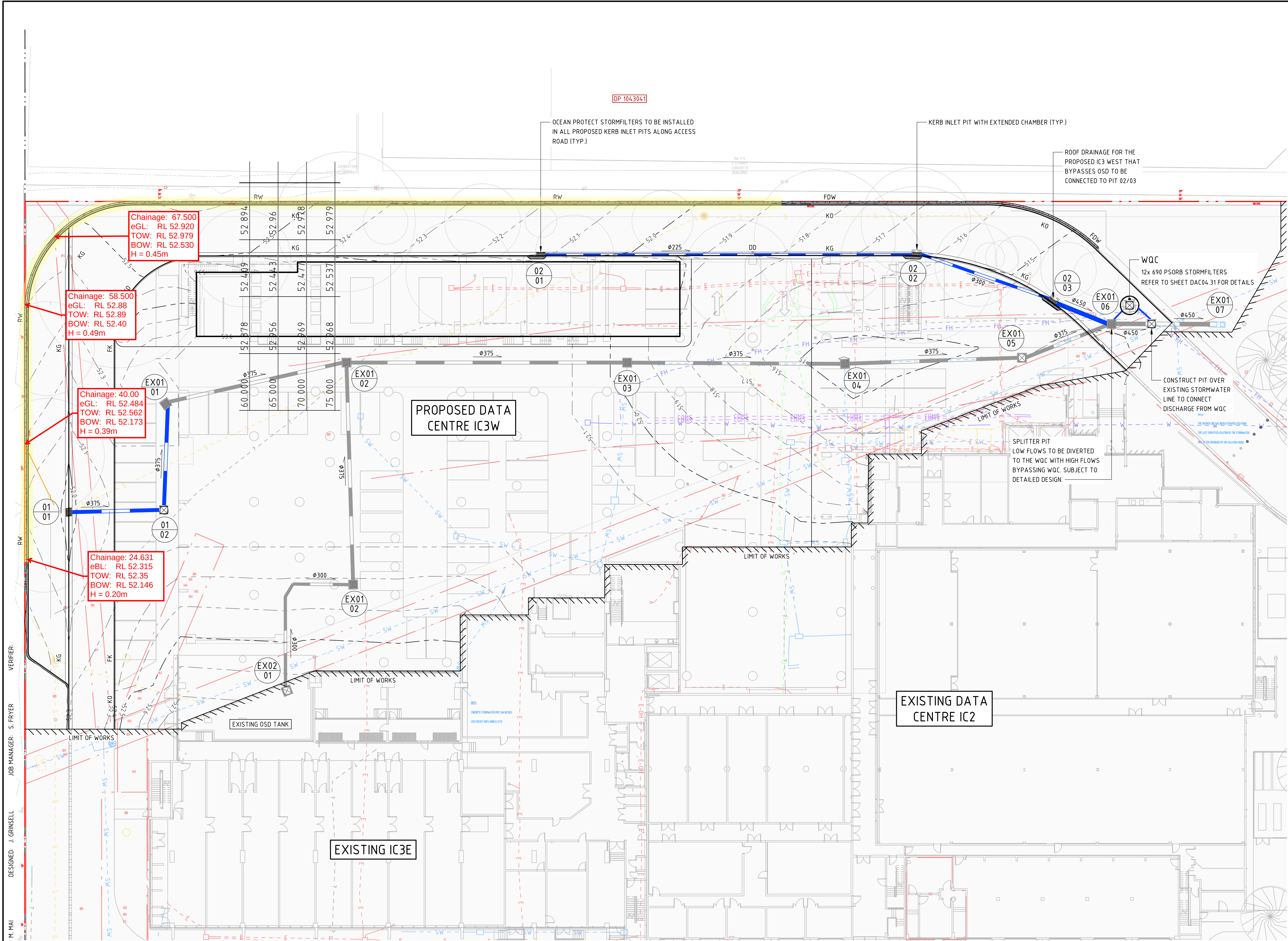


OPTION 2 - NARROW LANDSCAPE STRIP OVER STEEP SECTION

Date:	12.05.21	Project No:	170095
Project:	17-23 Talavera Road, Macquarie Park		
Title:	Public Domain Section Over Telstra Conduits		
Drawing No:	-	Revision:	1
Drawn:	AR	Scale:	
			

6. Appendix B

Retaining Wall Plans



LEGEND	
	SITE BOUNDARY
	ADJOINING BOUNDARY LINE
	EASEMENT LINE
	EXISTING ELECTRICITY
	EXISTING COMMUNICATIONS
	EXISTING GAS
	EXISTING SEWER
	EXISTING FIRE HYDRANT
	EXISTING STORMWATER
	EXISTING UNKNOWN SERVICE
	DESIGN LINEWORK
	KERB AND GUTTER
	KERB ONLY
	FLUSH KERB
	DISH DRAIN
	FLOOD DIVERSION WALL
	STORMWATER PIPE
	EXISTING STORMWATER PIPE
	GRATED INLET PIT (NEW / EXISTING)
	KERB INLET PIT (NEW / EXISTING)
	JUNCTION PIT (NEW / EXISTING)
	WATER QUALITY CHAMBER
	STORMWATER PIT TAG LINE ID / STRUCTURE No
	CONTOURS
	EXISTING CONTOURS
	BATTERS
	LIMIT OF WORKS

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR DEVELOPMENT APPLICATION	MM		JRG	22.09.21
02	ISSUED FOR INFORMATION	CP		JRG	07.10.21

CLIENT

macquarie
DATA CENTRES

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ARCHITECT

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PROJECT

IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE

CIVIL ENGINEERING PACKAGE

**SITEWORKS AND STORMWATER
MANAGEMENT PLAN**

JOB NUMBER

170095-02

DRAWING NUMBER

DAC04.01

REVISION

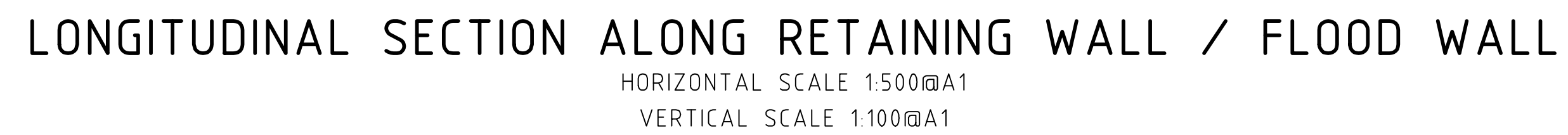
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DRAWING SHEET SIZE = A1

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Printed By: CARLTON PASKIE
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REV	DESCRIPTION					ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	 NORTHROP Sydney Level 11, 345 George St, Sydney NSW 2000 T (02) 9241 4188 P.O. Box H171 Australia Square, NSW 1215 sydney@northrop.com.au ABN 81 094 433 100	PROJECT	IC3 SUPER WEST 17-23 TALAVERA RD MACQUARIE PARK	DRAWING TITLE	JOB NUMBER	
1	XX	XX	XX	XX	MACQUARIE DATA	HDR	DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED		THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD	ALL SETOUT TO ARCHITECT'S DRAWINGS, DIMENSIONS TO BE VERIFIED WITH ARCHITECT AND BUILDER BEFORE COMMENCING SHOP DRAWINGS OR SITE WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. 	RETAINING WALL ELEVATION		170095-02				
														DRAWING NUMBER C4.02	REVISION 1		
														DRAWING SHEET SIZE = A1			

7. Appendix C

City of Ryde Letter of Concerns

Patrick Copas
Senior Environmental Assessment Officer
Department of Planning, Industry and Environment
Email: patrick.copas@planning.nsw.gov.au

10 August 2021

Our Ref: COR2021/10

Dear Patrick

**Response to SEARs – 17-23 Talavera Rd MACQUARIE PARK
DATA CENTRE – SSD-24299707**

Thank you for providing the opportunity to comment on the Secretary's Environmental Assessment Requirements for the proposed development at 17-23 Talavera Rd MACQUARIE PARK.

A list of requirements from Council are included in the attached submission. However, Council wishes to raise its concern with respect to the proposed building over the drainage easement and the removal of all remaining trees from the site. The concerns are consistent with those raised in the meeting of 2 August 2021 at Council office between the Applicants representatives, Council and the DPIE staff.

Also note that this submission is made in absence of any draft SEARs provided to Council despite a request for it. Council is not made aware as to what other standard requirements will apply. Only the critical matters have been included. Council hopes that the requirements as outlined in the attached response is included in the SEARs.

If you require any additional information regarding this matter, please contact me on 9952 8187 or email to sanjur@ryde.nsw.gov.au

Yours sincerely



Sanju Reddy
Senior Coordinator – Building and Development Advisory Services.

RESPONSE TO SEARs REQUEST - CITY of RYDE
Project: SSD-24299707 – DATA CENTRE
Location: 17-23 Talavera Road, Macquarie Park
Applicant: Macquarie Data Centres

Project (SSD-24299707) – Council Reference COR2021/10

City of Ryde provides the following comments:

1. COUNCIL CONCERNS

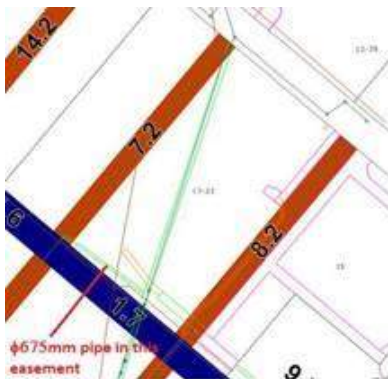
While the environmental assessment requirements are listed in this submission, Council wishes to raise its concern with respect to some aspects of the proposal. This is consistent with the concerns raised in the meeting of 2 August 2021 at Council office between the Applicants representatives, Council and the DPIE staff.

The proposed development, as outlined in the Request for SEARs presents various concern for Council including the following:

- 1.1. The site benefits from an existing Development Consent which addresses and overcame a number of issues with respect to impact on trees and on Council's drainage infrastructure. The Consent requires retention and protection of 67 trees (Conditions No.21 & 22 of LDA2018/322) and also to ensure that the building and structures are clear of the drainage easement, the easement was realigned for future relocation of the trunk drainage (Condition A2). It seems now that the proponent is using the SSD pathway to get rid of the constraints imposed by the L&E Court issued Development Consent. The same problems that were overcome through the previous assessment process are now being brought back. It is highly unlikely that Council will support the building over the relocated easement and the removal of trees.
- 1.2. The development seeks to construct over a public drainage easement. It would be required to confirm if the Department of Planning has the authority to consent to such works, without owners consent from Council.
- 1.3. Despite the applicants insistence that the development will maintain clearance from the services, the concept plans depict a new column in the existing easement.
- 1.4. The proposed construction over the agreed realignment of the easement associated with the Stage 1 development presents considerable implications

in terms of construction logistics and additional costs associated with the exercise, which Council are burdened with following development. This issue led to the realignment of the easement, the proposal simply reintroduces the issue.

- 1.5. The applicants proposed flood and overland flow strategy nominates floodwaters to disperse over and through the parking area in the undercroft so as to reduce the concentration of flow through the site. This does not comply with Council's DCP Part 8.2 (Stormwater and Floodplain Management) Section 4.4.2 which stipulates open parking areas are to be no less than the 100yr ARI event. Notably vehicles are able to float in floodwaters of some 200mm and allowing flow through a carpark would present a significant concern in relation to not only private property damage but potential flood debris (floating vehicles) blocking the flowpath downstream.
- 1.6. The additional constraints through SSD expansion to the future stormwater pipe are considered unacceptable and the replacement of the future stormwater pipe within these restrictions will present real practical challenges which will then increase in cost, time and a significant safety risks.
- 1.7. The proposed expansion is considered to conflict with a number of requirements of the DCP and Council's Technical Manual.
- 1.8. In order to remove the future constraints and improve the life of the building operations and structures, the best approach is to divert the existing 1.8m stormwater away from the existing and future buildings at no cost to Council.
- 1.9. There is a 2.0m wide stormwater easement traversing the rear of the site which contains an active 675mm pipeline. This pipeline comes from the rear property. No new future building footprints should be encroached into this easement or the proposed drainage easement.



- 1.10.** The existing pipeline reduces the diameter from 1800mm to 1200mm. It is expected that the new development will possibly divert flows to adjacent properties and increase the flood levels and runoff as well. The existing pipeline in Talavera Road may not have the capacity to convey additional flows. The subject property is located in the 1 in100 year overland flowpath therefore the detailed flood study must assess the pipe system and overland flowpath for the existing and post-developed situations. The developer must consider providing on site underground flood storage and release a little volume of water into the trunk drainage system.

2. GENERAL REQUIREMENTS

- 2.1. Planning Compliance Report:** The development will be subject to the RLEP2-14 and the standards and requirements of the City of Ryde Development Control Plan DCP 2014 Part 4.5 Macquarie Park Corridor, Macquarie Park, and the Public Domain Technical Manual City of Ryde (PDTM) Section 6 - Macquarie Park.
- 2.2. Pavement Plan:** The pavements of the footway and driveway crossings are to be designed and constructed according to the requirements of the Public Domain Technical Manual (PDTM), Section 6 - Macquarie Park.
- 2.3. The Local Bicycle Network** is to be maintained along the frontage of the development site as per requirement of the DCP 2014 in the form of an Off-Road shared way and in accordance with the Macquarie Park Public Domain Technical Manual.
- 2.4. Design concept plan for Road 1:** A future Road 1 which will be on the southern side of the proposed development , there will be difference in the design levels between Road 1 and future internal driveway. As such, a design concept plan for Road 1 must be submitted to Council for further assessment and comments.
- 2.5. Retaining Wall details:** Due to possible future major excavation for the new Road 1, all the retaining wall on the southern side of this property must be designed to support the neighbouring properties, all the new retaining walls must be within the private land and the depth of these retaining walls must be designed as part of the concept plan for road number 1 layout.
- 2.6. Engineering Design Plans:** All new/existing Councils drainage components, stormwater pipes, kerb inlet pits, overland flow paths for the

new development and discharge points shall be shown on the engineering design plans.

The applicant is to provide suitably prepared engineering plans providing details that demonstrate the smooth connection of the proposed works with the remaining street scape. This will include relevant existing and design surface levels, drainage pit configurations, kerb returns and s-kerbs that would enable street sweepers to properly manoeuvre the indented section of the road pavement.

- 2.7. **Services and Utilities Report/Plan:** Any relocation/adjustment of all public utility services affected by the proposed works shall be clearly indicated in proposed design. All of the requirements of the Public Authority shall be complied with underground Utility Services: All telecommunication and utility services are to be adjusted to match the new finished footpath/nature strip levels.

All public utility services affected by the proposed development shall be clearly indicated in proposed design plans and all the existing/ future easements burdening the site must be show on the revised civil plans including the location of the services, depth, type and numbers.

- 2.8. **Road details:** The full reconstruction of half road width for the Talavera Road frontage of the development site will be required in accordance with the City of Ryde DCP 2014 Part 8.5 - Public Civil Works, Clause 1.1.4 – Constructing Half Road and the re-alignment and adjustments to Council's infrastructure, where required, in order to ensure a smooth transition is achieved between the new and existing infrastructure.

3. **FLOODING**

- 3.1. **New detailed flood study with data files:** The subject site is subject to flooding, therefore the applicant must submit a new detailed flood study as part of this planning proposal. The revised flood study shall be prepared in accordance with Council's stormwater and Floodplain Technical Manual, and shall demonstrate that the proposed works will not worsen the flooding situation in the area.

- 3.2. **Pipe Replacement Strategy:** For the SSD to be supported, that deviates from the approved DA, the existing 1800mm Council's Stormwater Pipe traversing the site diagonally will have to be replaced by a new pipe clear of the building /closer to the side boundaries within the property, in order to avoid any current and future obstructions. These works will have to occur prior to the construction of SSD and at no cost to Council. The preferred

location of the new pipe will have to be determined in agreement with Council upon the final civil design.

4. STORMWATER

- 4.1. **A Stormwater Management Plan** for the proposed works must be submitted. Plans design documentation must show the proposed finished surface levels, surface drainage system and drainage components – all of which are to demonstrate compliance with the DCP. In regards to the provision for OSD, the scale of development will warrant the system designed utilising DRAINS modelling software. These data input files should be provided for review.
- 4.2. **Flood Impact:** The site is noted to be impacted by flooding and over land flow and therefore will warrant a flood impact assessment to be provided . The flood impact statement must address the requirements in Section 4 of councils DCP part 8.2 (stormwater and floodplain management) and any modelling required by this study must be submitted for review.
- 4.3. **Service Investigation Report:** The proposed work seek to construct over councils drainage easement and public services. To guage the impact on this infrastructure, all plans must portray the exact location of councils of the public drainage service through the site and any details necessary to demonstrate that the propose works will not impose on this infrastructure or service.

5. TRAFFIC & PARKING

- 5.1. **Traffic Report & Swept Path Analysis:** The development proposes modification to parking and service areas on the lot. Accordingly a Traffic report will be required with the application to ensure the design of these areas are in accordance with the requirements of AS2890 and Council's DCP. Notably the report will need to perform a swept path analysis of the service area utilising the largest anticipated service vehicles so as to ensure they can safely access and exit the site.
- 5.2. **The traffic and parking impact assessment report** is to, at minimum, address the following:
- a) The additional traffic that is likely to be generated by the proposed development during peak hour periods. As the *Guide to Traffic Generating Developments* does not provide traffic generation rates specific to data centres, it is advised that the traffic generation rates adopted for the proposed development be estimated based

on traffic surveys of the existing data centre on site. In this regard, the following factors are to be considered in determining an appropriate traffic generation rate:

- Mode of transport adopted by staff and visitors; and
 - Maximum number of people that is expected to be on-site at any point in time
- b) The future 10-year (2031) traffic conditions along Talavera Road during peak hour periods and the impact of the development traffic on Talavera Road with respect to the mid-block capacity and the operational performance of nearby intersections.
- c) Provide appropriate recommendations on potential mitigation strategies/road/intersection/active transport (pedestrian and cyclist) infrastructure improvements to alleviate any adverse traffic impacts contributed by the proposed development on the adjoining public road network.
- d) The vehicular access, off-street parking and heavy vehicle servicing arrangements shall be designed to comply with the following:
- The Australian Standard for *Parking Facilities Part 1: Off-Street Parking* (AS 2890.1);
 - The Australian Standard for *Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities* (AS2890.2);
 - The Australian Standard for *Parking Facilities Part 3: Bicycle Parking Facilities* (AS2890.3);
 - The Australian Standard for *Parking Facilities Part 6: Off-Street Parking for People with Disabilities* (AS2890.6); and
 - Ryde City Council's *Development Control Plan*
- e) There should be effective separation between the loading dock areas and the off-street car parking areas to minimise conflict between passenger and heavy vehicle traffic within the site. Further, the applicant is to advise on the largest vehicle that is required to be serviced on site. A swept path assessment shall be undertaken to demonstrate that the largest/longest vehicle to be serviced on site is capable of entering, turning around and exiting the loading dock area in a safe and efficient manner.

6. **TREES & LANDSCAPING**

The proposed works are likely to result in major and unsustainable impacts to a significant number of protected trees on site as a result of a westward expansion of the existing built form, extension of the internal carpark/loop road and installation of new services infrastructure. The majority of those affected trees appear to be primarily located along the western boundary with a smaller number positioned adjacent to the southern boundary and within the front setback.

6.1. Arboricultural Impact Assessment. Given the proposed impact to existing protected trees, an Arboricultural Impact Assessment should be prepared by a suitably qualified AQF Level 5 Arborist. An Arboricultural Impact Assessment (AIA) is required of all trees on site, trees on adjoining sites where any part of the development will encroach into the Tree Protection Zone of those trees and any street trees. This Assessment is to be carried out as per the requirements of Australian Standard AS4970-2009 Protection of trees on development sites and in accordance with the City of Ryde Tree Management Technical Manual and is to provide an assessment of all trees within and adjoining the subject site which are likely to be impacted by the proposal. In the AIA must consider the impacts of the development including:

- Stormwater or drainage works.
- Cut and fill.
- Fence and or Retaining Walls that will be required.
- Car parking and driveway.
- Any encroachment on the Tree Protection Zone and Structural Root Zone of trees on site or on adjoining sites.

6.2. The Report must also include a tree protection plan (drawing) showing the TPZs for the trees as required by Australian Standard AS4970-2009. Protection of trees on development sites. It is best if this plan also shows the Structural Root Zones and is superimposed on the Site Plan showing the development and the assessed trees.

6.3. Impact to Existing Trees. Design changes should be undertaken to reduce the level of impact to existing protected trees to a sustainable level. This includes, but is not limited to; Trees 1, 1a, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 56, 81, 84, 89 & 94 within the subject site and Trees 14, 83 & 95 within the neighbouring allotments – each of which were prescribed for retention under Condition 21 of the

approval handed down by the Land and Environment Court of NSW ([2019] NSWLEC 1470).

6.4. A Landscape Plan is required prepared by a Landscape Architect.

6.5. A Biodiversity Development Assessment Report (BDAR) as required for the site under the proposed SSD.

7. VOLUNTARY PLANNING AGREEMENT (VPA)

Council advises that the proposed SSD cannot rely on the previous VPA applicable under the DA. The requirements of the existing VPA negotiated with the LDA approval has been completed. The VPA did not require any land or road dedication, works in kind or offsets. The contribution required under the VPA was paid on execution, hence the VPA was not registered on title. As the VPA's obligation has been met, it is considered concluded.

As such a new VPA will be required reflective of the proposed expansion and increase floor space as part of the proposed SSD. The applicant is advised to refer to Clause 6.9 of the RLEP2014.

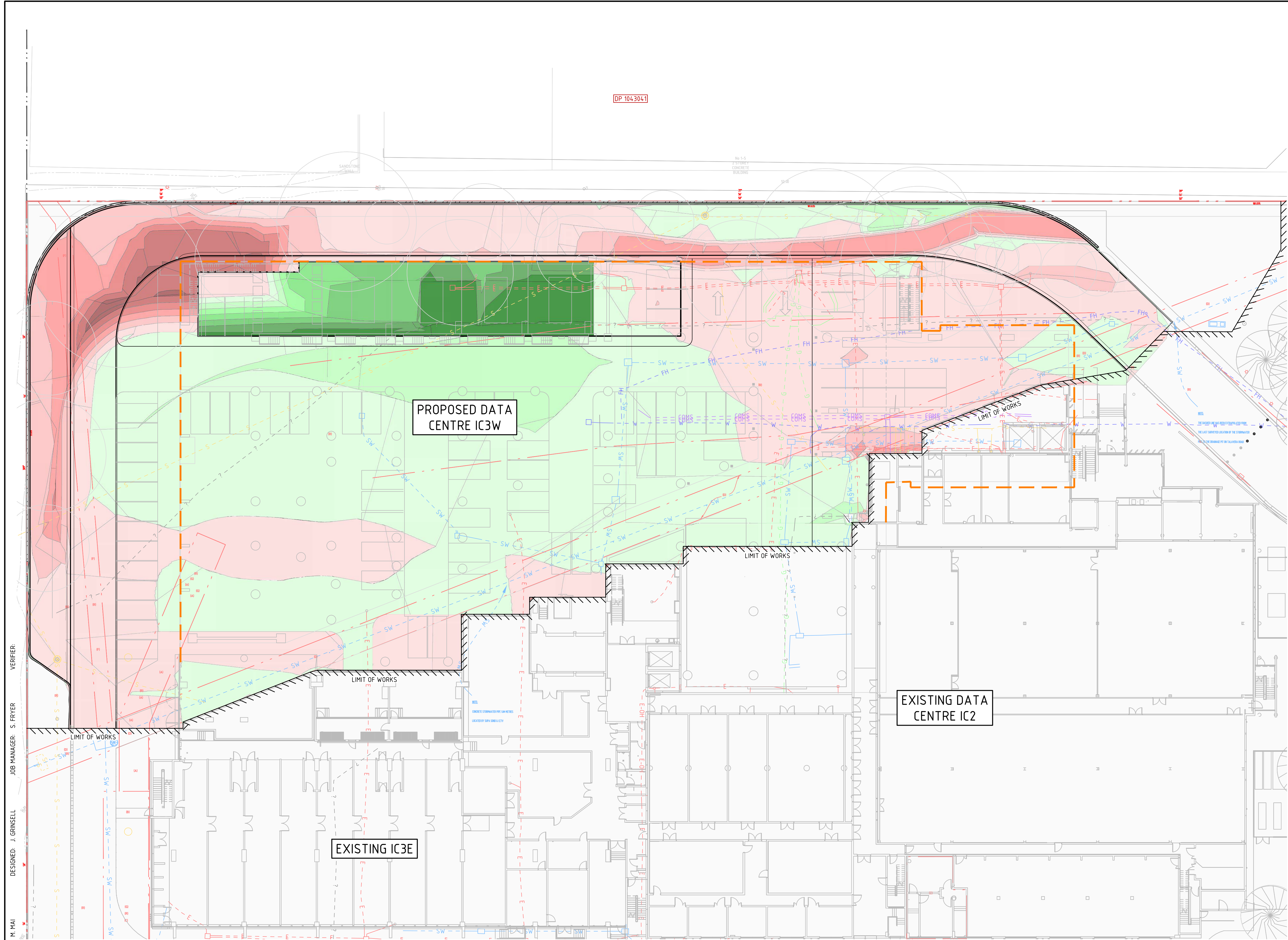
8. PLANNING REPORT

Planning report should indicate clear details of FSR and height and compliance with the relevant planning control.

END

8. Appendix D

Earthworks Plan



LEGEND

— · — · —

SITE BOUNDARY

— · — · —

ADJOINING BOUNDARY LINE

- - - E

EXISTING ELECTRICITY

- - - COMS

EXISTING COMMUNICATIONS

- - - G

EXISTING GAS

- - - S

EXISTING SEWER

- - - FH

EXISTING FIRE HYDRANT

- - - SW

EXISTING STORMWATER

- - - ?

EXISTING UNKNOWN SERVICE

DEPTH OF CUT

GREATER THAN -2.0m

-2.0m TO -1.5m

-1.5m TO -1.25m

-1.25m TO -1.0m

-1.0m TO -0.75m

-0.75m TO -0.5m

-0.5m TO -0.25m

-0.25m TO -0.0m

DEPTH OF FILL

0.0m TO 0.25m

0.25m TO 0.5m

0.5m TO 0.75m

0.75m TO 1.0m

1.0m TO 1.25m

1.25m TO 1.5m

1.5m TO 2.0m

GENERAL NOTES

APPROXIMATE CUT TO VALUES AS FOLLOWS;
1.1. CUT -799 cu.m
1.2. FILL 1019 cu.m
1.3. BALANCE 220 cu.m (IMPORT)

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21
02	ISSUED FOR SSDA	AF		SF	22.10.21

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PROJECT

IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE

CIVIL ENGINEERING PACKAGE

LEVEL DIFFERENCE PLAN

JOB NUMBER

170095-02

DRAWING NUMBER

DAC03.01

REVISION

02

DRAWING SHEET SIZE = A1

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