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TAYLOR CONSTRUCTION PTY LTD

Remediation Action Plan

11-13 Mannix Parade, Warwick Farm NSW

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Author	Technical Reviewer
	 
Andrew Ibrahim **Chemical / Environmental Engineer**	**WARWICK HAYES** **Environmental Scientist** **EIANZ CEnvP No. 1401**

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1. Introduction

1.1 Background

Taylor Construction Group Pty Ltd engaged EI Australia Pty Ltd (EI) to prepare a remediation action plan (RAP) for 11-13 Mannix Parade, Warwick Farm NSW ('the site').

Located 26km west of the Sydney central business district, within the Local Government Area of Liverpool City Council (**Figure A.1, Appendix A)**, the site covers a total area of 1,283.6m^2 (**Figure A.2, Appendix A**). At the time of drafting this RAP it was comprised of two residential properties.

Site investigations were completed as part of an environmental due diligence process, in accordance with *State Environmental Planning Policy No.55 - Remediation of Land* (SEPP 55), supporting an application to Liverpool City Council to redevelop the land for medium to high density residential use. Asbestos-impacted soils were identified within the site, as well as saline soils, which subsequently required remediation during the proposed development.

1.2 Proposed Development

Based on the supplied survey and development plans (**Appendix B**), the proposed development involved demolition of the existing site structures, followed by the construction of a multi-storey, residential (apartment) building, overlying a single level basement. Construction of the basement required bulk excavation of soils across most of the available area, to depths of approximately 3m below ground level (BGL). Retained (deep) soil zones would occur along each of the site boundaries, for landscaping purposes.

EI considered the proposed development represented a generic *residential with minimal soil access* land use scenario, with ecological considerations relevant for the retained soil (landscaping) areas.

1.3 Remediation Objectives

The main objective of this RAP is to detail methods that will make the site suitable for the proposed land use. Secondary objectives include:

- Setting of remediation goals that are consistent with relevant guidelines and legislation;
- Propose actions to reduce the risk posed to future users of the site and surroundings, resulting from the presence of unacceptable asbestos contamination identified in site soils;
- Review the available options for site remediation, with consideration of the principles of ecologically sustainable development in line with Section 9 of the *Contaminated Land Management Act 1997*, including the minimisation of waste under the *Waste Avoidance and Resource Recovery Act 2001*;
- Confirm that the preferred remediation strategy is economically viable, as well as effective in reducing the contamination; and
- Ensure that site management plans and contingencies consider work health and safety (WHS) and environmental procedures relevant to the management of the identified contaminant.

1.4 Scope of Work

To achieve these objectives, the scope of the plan includes:

- An evaluation of the data collected during previous site investigations, to identify contamination risks to human health and/or the environment, as well as providing an understanding of the contamination status of the site;
- Identifying the remediation legislation, policies and guidelines and define the extent of remediation required;
- Assessment of the remediation options for the identified contamination and identification of the preferred remediation strategy;
- Setting remediation criteria that ensure the remediated site will be suitable for its current and/or proposed land use and which will not result in unacceptable risk to human health or the environment;
- Detailing the procedures and plans to be implemented at the site for the management and remediation of the land, including mitigation measures and safeguards for any potentially adverse environmental effects;
- Identification of the necessary regulatory approvals and/or licences required for the remediation work;
- Describing the validation strategy to confirm the remediation was effective in rendering the site suitable for the proposed use;
- Description of the procedures to carry out classification, handling and tracking requirements for all wastes;
- Provision of an unexpected find protocol; and
- Identifying the need for any long-term management or monitoring, following the completion of remediation.

1.5 Legislative Framework

This RAP has been prepared with consideration of the documents listed in **Table 1-1**.

Table 1-1 Legislative Framework

Legislative Document	Summary of Scope / Requirements
Contaminated Land Management Act 1997	Promotes the effective management of contaminated land in NSW by setting out the roles and responsibilities of the EPA.
Protection of the Environment Operations Act 1997, including: ▪ POEO (Waste) Regulation 2014 ▪ POEO (UPSS) Regulation 2019	The objective of the POEO Act 1997 is to achieve the protection, restoration and enhancement of the quality of the environment. The POEO act gives rise to the POEO (Waste) and Underground Petroleum Storage Systems (UPSS) regulations, which outlines the requirements for all offsite disposals of waste, and removal of any underground storage tanks.
Environmental Planning and Assessment Act 1979	The EP&A Act 1979 determines the category of development, and gives rise to state environmental planning policies (SEPP) developed to assist regulators with the protection of human and environmental health.
State Environmental Planning Policy 55 - Remediation of Land	SEPP 55 requires that works related to contaminated land are conducted in accordance with the *Contaminated Land Planning Guidelines* (DUAP,1998) and any guidelines specified by the CLM Act 1997.

Legislative Document	Summary of Scope / Requirements
Work Health and Safety Act 2011 including ▪ WHS Regulations 2017	Primary legislation for management and regulation of work health and safety, which gives rise to the NSW Government *Work Health and Safety Regulation 2017*, as well as: ▪ NSW WorkCover (2014) Managing Asbestos In or On Soil; and ▪ SafeWork NSW (2019) *Code of Practice How to Safely Remove Asbestos*
Water Management Act 200) and Water Act 1912	Protects the health of rivers, streams and groundwater systems and gives rise to Water Sharing Plans and quality objectives for catchments within the state of NSW.
National Protection (Assessment of Site Contamination) Measure 1999 / Amendment Measure 2013	Outlines methodology for contaminated land assessment and provides risk-based criteria for ecological and human health receptors of site contamination. The site will be assessed in accordance with criteria specified by this document.
Standards Australia	All activities should adhere to Australian Standards (AS) relevant to the activities, including: ▪ AS4482.1:2005 *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil. Part 1: Non-volatile and Semi-volatile Compounds*; ▪ AS1726 :2017 *Geotechnical Site Investigations* (for logging of soil); ▪ AS2601: 2001 *The Demolition of Structures*.
Local Council Plans	Liverpool Local Environmental Plan 2008 Liverpool Development Control Plan 2008
Relevant Guidelines included (but not limited to)	ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination* EPA (1995) *Sampling Design Guidelines* EPA (2014a) *Waste Classification Guidelines*; EPA (2014b) *Technical Note : Investigation of Service Station Sites*; EPA (2015) *Guidelines on the Duty to Report Contamination Under the Contaminated Land Management Act 1997* EPA (2020) *Consultants Reporting on Contaminated Land*

2. Site Setting

2.1 Site Identification, Location and Physical Setting

The site identification details and associated information are presented in Error! Reference source not found.. The site locality and investigation area are illustrated in **Figures 1** and **2** (**Appendix A**).

Table 2-1 Site Identification, Location and Zoning

Attribute	Description
Street Address	11-13 Mannix Parade, Warwick Farm NSW
Local Government Area and Surrounds	The site was located within the Local Government Area of Liverpool City Council. McGirr Parade lined the northern boundary and Mannix Parade lined the eastern boundary. Land use activities of the site and surrounds were predominantly residential.
Geographical Coordinates	Geographic co-ordinates for north-eastern corner of site (GDA2020-MGA56): ▪ Easting: 308776.526 ▪ Northing: 6245619.639 (Ref: http://maps.six.nsw.gov.au)
Site Area	1,283.6m^2 (Ref: site survey plan in **Appendix B**)
Site Owner	Taylor Construction Group Pty Ltd
Lot and Deposited Plan (DP)	The site will result in the amalgamation of land legally identified as: ▪ Part of Lot 8 and Lot 26 in DP 36641 (11 Mannix Parade) ▪ Part of Lot 9 and Lot 27 in DP 36641 (13 Mannix Parade).
State Survey Marks	One state survey mark was situated on the corner of Mannix and McGirr Parades, being SS37185 (Ref: http://maps.six.nsw.gov.au).
Current Zoning	R4 – High Density Residential (*Liverpool Local Environmental Plan 2008*)
Current Land Use	Low density residential

2.2 Regional Setting

The topography, geology and landscape information is summarised in Error! Reference source not found..

Table 2-2 Regional Setting Information

Attribute	Description
Topography	The site surface was gently sloping to the north / north-east, with a surface elevation of 12.04 meters Australian Height Datum (AHD) in the north eastern corner, increasing to 13.27mAHD in the south western corner (site survey in **Appendix B**).
Site Drainage	Consistent with the general slope of the site, surface water is assumed to flow north-west, towards Brickmakers Creek. This creek drains to Cabramatta Creek, which ultimately discharges into the Georges River.
Regional Geology	The site was underlain by geological formations of the Wianamatta Group (Rwb), consisting of shale, carbonaceous claystone, laminite, fine to medium-grained lithic sandstone, rare coal and tuff (DMR, 1991).
Soil Landscape	The site overlies a Blacktown (*bt*) resdidual soil landscape, characterised by gently undulating rises on Wianamatta Group shales. Typical landforms include local relief to 30m and slopes of <5%, and broad rounded crests and ridges with gently

Attribute	Description
	inclined slopes. Typical landscapes include cleared eucalypt woodland and tall open (wet sclerophyll) forests (Bannerman and Hazelton, 1990)
Acid Sulfate Soil (ASS) Risk	According to the *Liverpool 1:25,000 Scale Acid Sulfate Soil Risk Map* (Murphy, 1997) and *Liverpool Local Environmental Plan 2008 1:20,000 Scale Acid Sulfate Soils Planning Map (Sheet ASS_010)*, the site lies within area where ASS are not known to occur. Therefore, no management of ASS was warranted.
Hydrogeology	Groundwater is present within the porous, fractured shale bedrock and expected to be of low to moderate productivity. A number of registered groundwater bores are identified within a 500m radius of the site, with the majority of these registered for monitoring purposes. The nearest registered bore was approximately 360m south-east of site; however, the use of this bore was unknown. No bores were registered for domestic or irrigation use, and drillers log information from the closest registered bores typically identified clay soil or silty sand to depths of 18.3-19.0m, underlain by siltstone (shale) bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low. There is a reticulated water supply in the area and consumption of groundwater is not expected to occur. Use of groundwater is not proposed as part of the current development.
Nearest Surface Water Feature	Brickmakers Creek, located approximately 225m north-west of the site.

3. Previous Investigations

Investigations of the site were included in the following previous reports:

- JK Environments Pty Ltd (JK, 2020) *Preliminary Site Investigation; 11-13 Mannix Parade, Warwick Farm NSW*, *for Taylor Construction Group* (JK Report E33075BDrpt, dated 9 April 2020); and
- EI (2021) *Additional Site Investigation; 11-13 Mannix Parade, Warwick Farm NSW* (EI Australia Report E25074.E03.Rev1, dated 20 April 2021).

A summary of the key findings from each report is provided in Error! Reference source not found.. Plans showing the sampling locations are presented as **Figures A.2** and **A.3**, **Appendix A**. Tabulated analytical results are presented in **Appendix C**.

Table 3-1 Summary of Previous Investigations

Stage	Project Tasks and Findings
JK (2020) Preliminary Site Investigation	
Objective	The main objective was to determine the potential for site contamination, by means of reviewing site history (potentially contaminating activities) and soil sampling / testing. The investigation included assessment of the potential for soil salinity and waste classification for off-site disposal.
Scope of Works	The scope of the PSI included: ▪ Review of site information and history from a Lotsearch report; ▪ Preparation of a conceptual site model (CSM); ▪ Design and implementation of a sampling, analytical and quality plan (SAQP); ▪ The drilling of seven boreholes (BH1-BH7) to a maximum depth of 1.7m BGL; ▪ Collection and analysis of representative soil samples; ▪ Assessing the analytical results against the adopted criteria; ▪ Data quality assessment; and ▪ Reporting the findings, providing recommendations for data gap closure.
Site History and Potentially Contaminating Activities	The site history review indicated the land was used for agricultural (grazing) purposes up until 1930s, after which it formed part of an operational airfield. Development of the current residential properties occurred in the 1940-50s. Potentially contaminating activities identified for the site included: ▪ The importation of fill from unknown sources, for site levelling; ▪ The historic use of the site as an airfield; ▪ The historic use and storage of pesticides (termiticides) and herbicides; and ▪ The weathering / damage of hazardous building materials present within former and current structures on the site.
Council Records	No records pertaining the site were available.
Field Works	No evidence of above-ground or underground storage tanks (ASTs / USTs) was observed. Suspected asbestos containing material (ACM), in the form of fibre cement sheeting (FCS) fragments, was observed across the surface of the site. Fragments of FCS were also identified within some of the drilled boreholes (spoil). No evidence of significant storage of industrial chemicals or waste was observed. Discarded electrical and gas appliances (hot water systems) were observed in the rear of 13 Mannix Parade, associated with recent strip-out of the building. Soils from the seven test bores were analysed for the COPC, being heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), TRH, BTEX, PAH, OCP, OPP, PCB and asbestos. The concentrations for all COPC were below the adopted acceptance criteria applicable to residential sites with accessible soils, with the exception of asbestos - visible ACM was within the initial 100mm of soil encountered in BH1 and BH6, while friable asbestos was found to exceed criteria at BH6 (0-0.1mBGL). The soils (<1.6m BGL) were classed as non-saline, sodic to highly sodic and non-

Stage	Project Tasks and Findings
	aggressive towards buried steel, though mildly aggressive to buried concrete.
Conclusion	JK concluded that remediation was necessary to render the site suitable for the proposed (residential) development.
Recommendations (Data Gap Closure)	JK recommended completion of certain tasks, to close identified data gaps. ▪ The site was historically used as an airfield during the 1930s and 1940s, suggesting there was a potential for dangerous goods to have been stored on the premises. A review of SafeWork records for the storage of dangerous goods would address this data gap. ▪ Further investigations were required to determine the extent of the asbestos impacts across the site and enable the development of a remediation action plan (RAP). The sampling density for asbestos was to be twice the minimum EPA (1995) requirement, as recommended by WADOH (2009) for site characterisation. The additional investigation also needed to consider the salinity conditions of soil and groundwater at depth (>1.6m BGL, to 3m BGL), as well as contamination. ▪ Preparation of a Salinity Management Plan (SMP), for the management of saline soils. ▪ Preparation of a validation report, to document any remediation works and confirm the suitability of the site for the intended land use.
EI (2021) Additional Site Investigation	
Objective	The main objective of the ASI was to further assess the degree of soil and groundwater contamination and salinity identified by the stage 1 (preliminary) site investigation, through closure of the existing data gaps.
Scope of Works	The scope of the PSI included: ▪ A review of relevant hydrogeological and soil landscape maps for the project area; ▪ A search of SafeWork NSW records, for information relating to the storage of dangerous goods, in particular underground tank approvals and locations; ▪ Review of the previous investigation report relating to the site; ▪ Construction of test pits at 7 locations, distributed in accessible areas of the site and complementing the previous (PSI) sampling plan, to enable multi-level soil sampling within fill and natural soils; ▪ Construction of 3 groundwater monitoring wells, positioned at up and down gradient locations on the site, followed by the completion of a single groundwater monitoring event (GME) to assess local groundwater quality; ▪ Laboratory analysis of selected soil and groundwater samples for the contaminants of potential concern (COPC), as well as salinity parameters; and ▪ Data interpretation and reporting
Key Findings	The site was used for agricultural purposes up to the 1930s, then formed part of an airfield (1930s-1940s), before redevelopment into the current residential setting. SafeWork NSW did not hold any records pertaining to the subject site. Asbestos was identified in three fill soil samples (TP2_2-0.3, TP4_0.1-0.2 and TP6_0.2-0.3). In combination with the JK (2020) preliminary investigation results, the asbestos impact was widespread across the southern portion of the site, although limited to the upper fill soil layers (≤0.5m BGL). The asbestos was identified in the form of fragments bonded ACM, as well as friable asbestos. Based on the available salinity, aggressivity and sodicity data: ➢ the clay loams of the site were non-saline; however, the sandy clays from 3m BGL onwards were of a saline nature, the strength of salinity increasing with depth; ➢ all site soils (i.e. to 4m BGL) were classed as non-aggressive towards buried steel, but mildly aggressive to buried concrete; and ➢ all site soils (i.e. to 4m BGL) were classified as highly sodic and thus prone to erosion. Elevated concentrations of heavy metals (copper, nickel and zinc) were identified in the local groundwater, which is also acidic (pH: 5.03 - 5.10) and saline (electrical conductivity (EC): 20,290 - 31,380 µS/cm).
Conclusion	EI concluded that the site could be made suitable for the proposed development, subject to addressing certain recommendations.

Stage	Project Tasks and Findings
Recommendations	EI made the following recommendations in relation to the proposed development: ▪ Preparation and implementation of a RAP, to address the fill soil (asbestos) contamination, incorporating measures that prevent exposure of site personnel to airborne asbestos fibres. ▪ The preparation and implementation of a SMP. ▪ Completion of at least one GME during the site remediation phase, to provide heavy metal monitoring information prior to, or as part of, site validation. ▪ Preparation of a final site validation report by a qualified environmental consultant, certifying site suitability for the proposed development.

Summary of Site Characterisation

In accordance with NEPM (2013) *Schedule B2 – Guideline on Site Characterisation*, EI developed a conceptual site model (CSM), based on the information collated during the site investigation phase. The CSM established the following environmental (contamination) issues relating to the site:

- Asbestos-impacted filling (≤0.5m BGL) across the southern portion of the site. The asbestos was identified in the form of fragments bonded ACM, as well as friable asbestos.
- The natural, sandy clays from 3m BGL onwards were saline, the strength of salinity increasing with depth. All site soils (i.e. to 4m BGL) were classed as non-aggressive towards buried steel, but mildly aggressive to buried concrete, and highly sodic (thus prone to erosion).
- Elevated concentrations of heavy metals (copper, nickel and zinc) in the local groundwater, which is also acidic (pH: 5.03 - 5.10) and saline (EC: 20,290 - 31,380 µS/cm).

Additional groundwater investigation, by way of further GME(s), shall form part of the site validation program. A salinity management plan for the site has been drafted by EI (Reference E25074.E99.Rev0, dated 20 April 2021), which should be cross referenced with this RAP during future excavation works.

4. Remediation Options Assessment

4.1 Extent of Remediation Required

Based on the site investigation phase, fill soils across the southern portion of the site (≤0.5m BGL) pose unacceptable risk to human health dur to ACM contamination, requiring remediation and/or appropriate risk management. The estimated extent of impacted fill is highlighted on **Figure A.2**.

4.2 Remediation Technology Review

When deciding which remediation option to choose, the sustainability (environmental, economic and social) of each should be considered, and the suitability of each method examined, with respect to the effects on any surrounding properties, the geological and hydrogeological limitations of the locality, priorities, timing and requirements of the development and the regulatory compliance of the method. The EPA (2017) *Guidelines for the NSW Auditor Scheme* provides the preferred hierarchy for site remediation and/or management when assessing soil contamination. These include:

1. On-site treatment of the contaminated soil, so that its associated risk is reduced to an acceptable level;
2. Off-site treatment of excavated soil, so that the its associated risk is reduced to an acceptable level, after which soil is returned to the site; or, if the above are not practicable
3. Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material; or
4. Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy using consolidation and/or isolation by containment with a properly designed barrier.

A summary of remediation options to eliminate the exposure route for the identified impacts is presented in **Table 4-1**. Given the unacceptable risks identified as a result of the impacted material, the “no action” approach was not suitable and no consideration was given to this option.

Table 4-1 Review of Remediation Options

Option	Methodology	Advantages	Disadvantages	Suitability
On-site ex-situ treatment and re-use	Soils are excavated and asbestos is removed soils through a systematic process including: ▪ Soils are excavated and placed across a tarp covered or sacrificial designated area in a 10 cm lift; ▪ The 10 cm lift is raked and emu-picked by a licensed contractor multiple times until all visible asbestos is removed; ▪ The 10 cm lift is inspected and sampled at double regulatory density by the environmental consultant to verify that asbestos has been removed; ▪ Soils are re-used on-site by supervised placement into designated site areas and carefully inspected during placement by the environmental consultant.	Removes risk to human health by eliminating the contaminant. Cost effective - no disposal costs and no need to import backfill material as material is retained on-site.	The timeframe is lengthy if only small staging areas are available. Temporary stockpiling of asbestos impacted soils requires environmental controls. Requires long term, legally enforceable environmental management; Must be listed on title as contamination is retained onsite.	Not suitable for friable asbestos.
Consolidation, cap and contain	Contaminated soils are retained and isolated by a clean-cap and marker layer within inaccessible areas of site. A designated area is excavated to a depth to accommodate the volume of contaminated soil and any utilities/services. The contaminated soil is buried in the designated area. A marker layer is placed on top of the contaminated soil. A capping layer is placed above the marker layer. The capping layer must be of a minimum prescribed thickness verified by survey. The capping layer material must be made of approved soils or hardstand materials. Potential leachable contaminants must not be buried without additional engineered protective measures.	Removes risk to human health by eliminating the exposure pathway. Retains materials on site and minimises use of landfill space for disposal. No off-site disposal cost. Sustainable, cost effective remediation method.	Subject to agreement with Site Auditor. Will require a long term and legally enforceable environmental management plan (LT-EMP), and registration on Certificate of Title. The LT-EMP may have reporting conditions. Requires design of a capping layer over buried contaminated materials. Assessment of natural soils is required to determine if they are a viable capping material. Requires careful soil management planning, design and excavations with strict construction validation requirements.	This method is considered viable subject to the construction schedule due to the additional time required during the excavation and earthworks phase.

Option	Methodology	Advantages	Disadvantages	Suitability
Excavation and off-site disposal	The extent of contaminated soils is confirmed and a Waste Classification report is prepared for the volume of soil. The contaminated soils are excavated by backhoe/excavator into licensed waste disposal trucks and taken to a licensed waste facility that can accept the waste. The excavated area is validated by visual inspection, double density sampling and analyses.	Removes risk to human health by eliminating the contaminant. This is considered the quickest method of removing the contaminated soil.	Increased costs associated with the disposal of waste soils at a licensed premises and the assessment of, purchase, excavation, transport, and placement (importation) of approved backfill. Requires waste classification prior to disposal, management and retention of waste records, waste tracking and reporting. Requires validation that all contaminated soils have been removed from the site. Requires environmental controls during soil excavations.	Given the excavation of soil required for construction of the basement, this option would be preferred for the impacted fill material.

4.3 Preferred Remediation Technology

The proposed development will require bulk excavation across most of the available area (to depths of up to 3m BGL). Therefore, EI considers the preferred option to be excavation and off-site disposal of impacted soils.

4.4 Category of Works

In accordance with SEPP 55, the category of the remediation defines whether consent is required for the works. Under SEPP 55, works where there is the potential for significant environmental impact are classed as Category 1 works and require development consent. Category 2 works pose a low potential for environmental impact and do not therefore require prior consent. The determination for the subject site is provided in **Table 4-2**.

Table 4-2 Category Determination for Remediation

Significant Environment Impact	Yes/No	Category
Designated Development or State Significant Development	No	2
Have significant impact on threatened ecological communities or habitats?	No	2
In area identified environmental significance such as scenic areas, wetlands (see list*)	No	2
Comply with a policy made under the land planning guidelines by council.	Yes	2
Is work ancillary to designated development	No	2

Notes: * Environmental significance list -coastal protection, conservation or heritage conservation, habitat area, habitat protection area, habitat or wildlife corridor, environment protection, escarpment, escarpment protection or escarpment preservation, floodway, littoral rainforest, nature reserve, scenic area or scenic protection, or wetland.

Based on the above assessment, the remediation works for the site are considered Category 2 and will not require development consent. Category 2 works require notification to the consent authority; therefore, Council should be notified 30 days before their commencement. The 30-day limit does not prevent Council intervention after that time for a breach of the CLM Act 1997 or non-compliance with SEPP 55. The notification also serves as the basis for updating Council records on properties in the local government area and must:

- Be in writing;
- Provide contact details for the notice;
- Briefly describe the remediation work;
- Show why the work is considered Category 2 remediation work;
- Specify the property description and street address on which the remediation work is to be carried out;
- Provide a location map; and
- Provide estimates for commencement and completion dates of the work.

Provision of this RAP, as well as an indication of commencement and completion dates of the works in writing, is usually sufficient to meet the requirements of this notification.

4.4.1 Development Consent and Control Plans

All works should be in accordance with the Liverpool LEP 2008, Liverpool DCP 2008 and any relevant conditions issued under the consent for the development.

4.4.2 Other Licence Requirements

The appointed site contractor should prepare health and safety plans, such as an asbestos management plan (AMP), as well as any other plans required by the Council DA and DCP.

The contractor must be appropriately licensed to perform the removal and/or disturbance activities (*Class A* in this case, due to presence of friable asbestos).

4.5 Timing of the Work

Timing of the works is dependent on the finalised construction schedule of the development and critical benchmark points of the remediation. Prior to commencement of any work, timing should be confirmed in consultation with the:

- Client;
- Site Developer;
- Remediation Contractor; and
- Environmental Consultant.

5. Remediation Criteria

The Remediation Acceptance Criteria (RAC) are based on screening levels from Australian Federal and NSW guidelines that were made or approved by the EPA in accordance with the *Contaminated Land Management Act 1997*, with due consideration of the proposed land use. Where criteria are not available in guidelines made or approved by the EPA, alternative sources are used, with justification provided.

5.1 Soil Criteria

Health Screening Levels (HSLs)

HSLs for asbestos in soil are provided in Schedule B1 of NEPC (2013) and are adopted from the Western Australian Department of Health (WADOH, 2009) guidelines. The developed site represents a residential exposure setting with minimal soil access (HSL-B), with public / open space (HSL-C) applied to the landscaped areas.

Aesthetic

Aesthetic assessment requires balanced consideration of the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity. The following characteristics or presentations are examples of where site assessment may not have detected contamination above investigation or screening levels but where further assessment would be required:

- Highly malodorous soils or extracted groundwater (e.g. strong residual petroleum hydrocarbon odours, hydrogen sulphide etc);
- Hydrocarbon sheen on surface and/or ground water;
- Large monolithic deposits of otherwise low-risk material, e.g. gypsum as powder or plasterboard, cement kiln dust; and
- The presence of putrescible refuse including a deep-fill profile of green waste or large quantities of timber waste.

Details of the criteria applied for soil are presented in **Table 5-1** below.

Table 5-1 Remediation Acceptance Criteria for Soil

Guideline	Area of Site	Criteria
Human Health		
NEPC (2013) Schedule B1 Section 4, Table 7	Building footprint / basement	**For asbestos**: ▪ No visible asbestos for surface soils. ▪ HSL-B for bonded ACM; and ▪ 0.001% w/w for friable asbestos / asbestos fines in soil
	Landscaped area	**For asbestos**: ▪ No visible asbestos for surface soils. ▪ HSL-C for bonded ACM; and ▪ 0.001% w/w for friable asbestos / asbestos fines in soil

5.2 Waste Classification

Prior to being removed from the site, excavated soils must be classified in accordance with the EPA (2014) Waste Classification Guidelines. Under these guidelines, fill/soils may be classified into the following groups: *General Solid Waste*, *Restricted Solid Waste* or *Hazardous Waste*, subject to chemical assessment using NATA-registered laboratory methods for total and leachable contaminant levels, the latter derived using the Toxicity Characteristics Leaching

Procedure (TCLP; where required). Any soils containing asbestos would also be classified as *Special Waste - Asbestos Waste*.

In accordance with the EPA Waste Regulation, soils must only be disposed at a facility that is appropriately licenced to receive the incoming material. It is therefore recommended that confirmation is obtained from the waste facility prior the materials being removed from the site.

5.3 Groundwater Criteria

Aquatic Ecosystems: ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, defaulting to the ANZECC and ARMCANZ (2000) Water Quality Guidelines where necessary. Results were compared against criteria corresponding to 95% level of protection for marine water environments, except the 99% level of protection is considered to account for bio-accumulative metals (e.g. mercury).

Human Health (Non-Use Scenario): Where groundwater is contaminated with volatile contaminants, assessment for human health (non-use) was based on consideration of potential vapour intrusion impacting on indoor air quality. The NEPM (2013) groundwater health screening levels (HSL) for vapour intrusion (HSL-D) will be used.

Human Health (Recreational Use): The ANZG (2018) guidelines refer to the NHMRC (2008) *Guidelines for Managing Risks in Recreational Water 2008*. The NHMRC (2008) guideline recommends the derivation of recreational guideline values for health / aesthetic consideration, by multiplying the corresponding Australian drinking water guideline value by 10 for each contaminant assessed [Note: The current version of the NHMRC Version 3.5 August 2018]

6. Remediation Methodology

To achieve the remediation objectives (**Section 1.3**) and make the site suitable for the proposed development, the remediation sequence proposed will be:

- Site Preparation: Conduct a hazardous material survey of all building structures prior to demolition works, and install any environmental and/or WHS measures as required by the construction environmental management plan. This should include the designation of a stockpiling area within the site.
- Site Demolition: Remove any hazardous building materials identified, then complete mechanical demolitions of all above ground structures (including hardstand) and underground services.
- Asbestos Management Plan (AMP).
- Remediation (excavation) of asbestos-impacted fill, with off-site disposal, following waste classification.
- Site Validation, including the collation of all waste disposal documentation and reporting.

EI recommends regular and consistent consultation with the Environmental Consultant is undertaken during all stages of the remediation. Any amendments to the remediation works must be approved by either the Council or the appointed EPA accredited Site Auditor.

6.1 Site Preparation

The remediation is classified as Category 2 work. Notice must be given to Council at least 30 days prior to the commencement of remediation. A list of all required work permits and notifications will be obtained from Council and arrangements are to be made to obtain the necessary approvals from the relevant regulatory authorities including site fencing, sediment and erosion control, signage and staff facilities.

The site itself will be prepared in accordance with the requirements of the site management plan, the SMP and all designated environmental control measures. The plans are to be developed in accordance with the relevant guidelines and any conditions of consent to be issued for the site.

Prior to demolition, a hazardous material survey is required, in accordance with the WHS Regulations 2017. The survey will detail actions required to remove any hazardous materials identified, in accordance with the relevant codes, standards and legislation applicable to the works. Adherence to these methods will be required to ensure effective removal of the identified materials.

6.2 Site Demolition

Removal of on-site structures is required to access the underlying site surface. The asbestos works will require notification to SafeWork NSW, at least 5 calendar days before commencing any disturbance activities. All hazardous building materials will require removal in accordance with the HazMat survey, and the works will be completed by a suitably qualified hazardous materials removal contractor. Once all hazardous materials are effectively removed, site wide demolition may commence. Resulting surfaces should be cleared by the supervising contractor, and deemed to be ‘free of asbestos’.

Building demolition should be in accordance with Australian Standard AS2601-2001 and Council requirements. Wherever possible, waste should be segregated into metal, wood, brick and concrete. Hardstand will be removed, however the partial retention of hardstand within the designated stockpile / waste area is recommended, to limit the likelihood of cross-contamination to underlying soil.

6.3 Asbestos Management Plan

The preparation and implementation of an Asbestos Management Plan (AMP) is necessary, in order to outline control measures that will prevent exposure of site personnel to airborne asbestos fibres. The AMP for soil remediation (excavation) will be drafted by the Remediation Contractor (*Class A* licensed).

6.4 Soil Remediation and Waste Management

Fill across the southern portion of the site shall be remediated in the first instance, this representing the initial stage of the bulk excavation program. Ideally, excavated filling shall be loaded directly onto waste transport vehicles, then transported to the designated landfill facility (licensed to accept *Special Waste - Asbestos Waste*).

All material designated for off-site disposal must be pre-classified in accordance with the EPA (2014) *Waste Classification Guidelines*. *In situ* waste classification is therefore preferred (**Section 6.4.1**). The previous investigation results can be utilised for this purpose. It should be noted that no mechanised screening of the fill soils (which were identified across the entire site to a maximum depth of 0.5m BGL) should be carried out due to the presence of friable ACM.

6.4.1 *In Situ* Waste Classification Sampling

Using suitable machinery, test pit samples will be advanced at a rate of one location per 50m^2 (min of 3) up to 2500m^3. Fill soil shall be damp and a single sample will be collected from each location, for laboratory analysis. Where the total volume of fill to be removed exceeds 250m^3, a minimum of 10 samples is required and 95% UCL statistical calculations of contaminant concentrations will be compared to the waste criteria.

6.4.2 Stockpile Waste Classification Sampling

Stockpiled soils designated for waste classification will be sampled at a rate of one discrete per 25m^3 (minimum of 3) up to 250m^3. For spoil exceeding 250m^3 but less than 2,500m^3, a minimum of 10 samples is required and 95% UCL statistical calculations of contaminant concentrations will be compared to the waste criteria.

6.4.3 Waste Classification Procedure – All Material

1 Waste samples will be collected using one of the two methods above. The analytical suite for waste classification will include 8 priority metals *(arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc),* TRH, BTEX, PAH, OCP, OPP, PCB and asbestos, with TCLP analyses (as required), as well as any additional COPC that may be identified during site remediation.

2 Previously reported results (**Appendix C**) and any additional analysis for the waste material will be compared to the waste classification criteria set out in the EPA (2014) *Waste Classification Guidelines* and a waste classification report will be provided, to enable offsite disposal.

3 Ensuring that the waste fill/soil streams are kept separate, material will be loaded, transported and disposed offsite to waste landfill facilities that are appropriately licensed to receive the materials corresponding to the documented waste classifications.

4 In accordance with the *POEO (Waste) Regulation 2014*, waste movements will be tracked and disposal receipts (dockets) will be maintained by the site manager and copies must be provided to the client and EI for final site validation reporting purposes.

5 All fill and contaminated soil needing to be remediated must be removed from the site and a shallow validation assessment of freshly exposed natural soil must be completed prior to the commencement of construction.

6.5 Contingency Management

To deal with problems that could occur on-site during the course of the remediation, the contingency measures described in **Table 6-1** are to be applied, in conjunction with the unexpected finds protocol (**Appendix D**).

Table 6-1 Remediation Contingency Measures

Anticipated Problem	Corrective Actions
Chemical / Fuel Spill	Stop work, notify above site project manager. Use accessible soil or appropriate absorbent material on site to absorb the spill (if practicable). Stockpile the impacted material in a secure location, sample and determine the appropriate disposal/treatment option.
Excessive Dust	Use water sprays to suppress the dust or stop site activities generating the dust until it abates.
Excessive Noise	Identify the source, isolate the source if possible, modify the actions of the source or erect temporary noise barriers if required.
Excessive Odours / Vapours or dust	If excessive organic odours/vapours or dust are being generated, stop works and monitor ambient air for organic vapours with a photoionisation detector (PID) or visually (for dust). Implement control measures including respirators for on-site workers, use of odour suppressants, wetting down of excavated material. No nuisance odours shall be detected at any site boundary as part of the remedial works. Should odour emissions be detected at or beyond the site boundary, it is recommended, as part of the CEMP and community consultation procedure, that the Remediation Contractor and the Site Developer should: ▪ Notify the owners and occupiers of premises adjoining and across the road from the site regarding potential odour issues. Notification should be in writing. This is also required by the Council Contaminated Land Policy. ▪ In the notification, as well as on street signage, provide contact details of the site personnel for anyone who may be concerned by odour emission during the remediation. ▪ Temporarily halt site works to allow for excess odour to subside to a level acceptable by off-site receptors, should it be necessary, after implementation of the above-listed control measures. ▪ In regard to off-site impact from ACM impacts, boundary air monitoring should be completed during the duration of any soil disturbance of ACM impacted material, with a minimum of one monitoring point to be installed at each of the four site boundaries. ▪ Fill excavation works should not occur on days of high wind or dry conditions.
Excessive Rainfall	Ensure sediment and surface water controls are operating correctly. If possible divert surface water away from active work areas or excavations.
Water in Excavations	Collect samples and assess against relevant EPA (2014) *Waste Classification Guidelines*, to enable disposal options to be formulated.
Leaking Machinery or Equipment	Stop the identified leak (if possible). Clean up the spill with absorbent material. Stockpile the impacted material in a secure location, sample and determine the appropriate disposal/treatment option.
Failure or Sedimentation Control Measures	Stop work, repair failed control measure.
Unearthing Unexpected Materials, Fill or Waste	Stop activities, contact the site project manager. Follow the unexpected finds protocol as detailed in **Appendix D**. Prepare a management plan if required, to address the issue.
Identification of Cultural or Building Heritage Items	Stop work and notify site project manager. Follow the unexpected finds protocol as detailed in **Appendix D**. Prepare action or conservation plan as required.
Equipment Failures	Ensure that spare equipment is on hand at site, or that the failed equipment can be serviced by site personnel or a local contractor.

Anticipated Problem	Corrective Actions
Complaint Management	Notify Client, Project Managers and Environmental Consultant (if required) following complaint. Report complaint as per management procedures. Implement control measures to address reason of complaint (if possible). Notify complainant of results of remedial actions.

7. Environmental Management and Mitigation

7.1 Site Management

The responsibilities for the various parties involved with the remediation program are outlined in the table below.

Table 7-1 Site Management Responsibilities

Responsible Party	Details/Contacts	Responsibility
Property Owner	Tylor Construction Pty Ltd	Overall responsibility of site and key liaison for council. Appoint site contractors and all other members of the remediation.
Property Developer *This may include the Property Owner or the key ontractor for the redevelopment*	Tylor Construction Pty Ltd	Overall management of the site remedial activities, including ensuring all environmental protection measures are in place and functioning correctly during site remediation works. Implementation of and compliance with the RAP, including liaison between the appointed Environmental Consultant and Council, providing regular updates and informing of any problems encountered. Notification to contractors of the existence of a RAP and provision of copies of the RAP. Any notification of site conditions to the EPA required under the duty to report contamination under the *Contaminated Land Management Act* (1997). Ensuring site remediation works are carried out in an environmentally responsible manner and reporting any environmental issues to owner; and Preparation of any site specific management plans.
Environmental Consultant	EI Australia	Preparation of the RAP. On-site guidance of the remedial works. Completing validation sampling and monitoring as requested by the Remediation Contractor and dictated by the RAP. Liaison between remediation contractor and the client. Preparation and submission of a report confirming the site suitability for the use proposed. .
Earthworks or Remediation Contractor	Engaged by Tylor Construction Pty Ltd	Ensuring all operations are carried out as identified in the RAP (remediation), as directed by the PPM and EMC. Inducting all employees, subcontractors and authorised visitors on procedures with respect to site works, WHS and environmental management procedures. Maintaining site induction, site visitor and complaint registers. Ensuring that fugitive emissions and dust potentially leaving the confines of the site are suitably controlled and that noise and vibration levels at the site boundaries comply with the legislative requirements Ensuring that surface water leaving the site is minimised and is suitably controlled, and does not pollute the environment. Ensuring that vehicles are cleaned and secured so that no mud, soil or water is deposited on any public roadways or adjacent areas.

7.2 Hours of Operation

Remediation works shall only be permitted during the following hours, which may be subject to change based on the conditions prescribed in the consent:

- 7:00 am to 7:00 pm, Mondays to Fridays inclusive (during daylight savings period);
- 7:00 am to 6:00 pm, Mondays to Fridays inclusive (outside daylight savings period);
- 7:00 am to 4:00 pm on Saturdays; and
- No work shall be carried out on Sundays or Public Holidays.

The site owner/manager shall be responsible for the compliance of this condition by all sub-contractors, including demolishers. In addition, all work, including preparation, demolition, excavation and construction must comply with Australian Standard 2436 (2010) *Guide to Noise Control on Construction, Maintenance and Demolition Sites*.

7.3 Materials and Handling Management

Measures that should be implemented in respect of materials handling during excavation and remediation work for the remediation are presented below.

Table 7-2 Materials Handling and Management Requirements

Item	Description/ Requirements
Earthworks contractors	Excavation of fill materials should be completed by a suitably qualified contractor to ensure: All site staff are aware of the environmental and health and safety requirements to be adhered to; There is no discernible release of dust into the atmosphere as a consequence of the works; There is no discernible release of contaminated soil into any waterway as a consequence of the works; and There are no pollution incidents, health impacts or complaints.
Stockpiling of materials	All stockpiles will be maintained as follows: Stockpiles must be located on sealed surfaces such as sealed concrete, asphalt, or high density polyethylene. Should stockpiles be placed on bare soils, they should be so on yet to be remediated areas. Contaminated materials should only be stockpiled in locations that do not pose any environmental risk (e.g. hardstand areas). Excavated soils should be stored in an orderly and safe condition (≤2m height). Stockpiles should be battered with sloped angles to prevent collapse. Stockpiles should be covered after being lightly conditioned by sprinkler to prevent dust blow and control odours. Should the stockpile remain in situ for over 24 hours, silt fences or hay bales should be erected around each stockpile to prevent losses from surface erosion (runoff). Stockpiles will be strategically located to mitigate environmental impacts while facilitating material handling requirements.
Loading of material	Loading of stockpiles / materials will be as follows: Transport of contaminated material off the site is to be via a clearly distinguished haul route. Measures shall be implemented to ensure no contaminated material is spilled onto public roadways or tracked off-site on vehicle wheels. Such measures should include the use of a wheel washing/cleaning facility, placed before the egress point on the site, and should be able to handle all vehicles and plant operating on-site. Residue from the cleaning facility should be collected and either dewatered on site in a contained / bunded area, or disposed as a slurry to an approved facility. Such residue will be deemed contaminated unless proven otherwise.

Item	Description/ Requirements
Transport of materials	Prior to being assigned to an appropriate waste disposal facility, all waste fill/soils will be classified in accordance with the EPA (2014a) Waste Classification Guidelines. If prior immobilisation treatment of the waste soils is required, disposal consent will be obtained from the NSW EPA prior to spoil transport. All trucks transporting soils from the site are to be covered with tarpaulins (or equivalent). All haulage routes for trucks transporting soil, materials, equipment and machinery shall comply with all road traffic rules, minimise noise, vibration and odour to adjacent premises, utilise state roads and minimise use of local road. All deliveries of soil, materials equipment or machinery should be completed during the approved hours of remediation and exit the site in a forward direction. Removal of waste materials from the site shall only be carried out by a recognised contractor holding the appropriate EPA NSW licenses, consents and approvals. Unless hazardous, waste materials must be transported less than 150km from the source (POEO 1997, Waste 2014) and landfills are required to be licensed for the category of waste they are scheduled to receive.
Material tracking	Materials excavated from the site should be tracked from the time of their excavation until their disposal. Tracking of the excavated materials should be completed by recording the following: ▪ Origin of material; ▪ Material type; ▪ Approximate volume; and ▪ Truck registration number. Disposal locations will be determined by the remediation contractor. Disposal location, waste disposal documentation (weighbridge dockets) and the above listed information should be provided to the remediation consultant for reporting purposes.

7.4 Mitigation Measures

All work should be undertaken in a manner which minimises any adverse environmental effects and complies with the statutory environmental and safety requirements. The works must consider (but not be limited to):

- Conditions of consent (to be issued);
- Liverpool LEP 2008 and DCP 2008;
- Landcom (2004) Managing Urban Stormwater, Soils and Construction; and
- Salinity Management Plan.

Mitigation recommendations related to the remediation are presented in the table below.

Table 7-3 Mitigation Measures for Remediation

Category	Measure
Community Engagement	Community engagement should be carried out in accordance with Schedule B(8) of NEPC (2013). Prior to the commencement of any remediation works at the site, every owner and occupier of any land located either wholly or partly within 100m of the boundary of the premises should be notified at least 30 days in advance. The notice should include: ▪ Advice of demolition and excavation work to be carried out on the premises; ▪ State the time and date such work is to commence; ▪ Indicate that the works are being conducted to minimise any risk of site contamination impacting on off-site receptors; ▪ Provide appropriate site signage at an easily readable location on the site fencing, including site contact name and phone number to be contacted should any matter arise; and ▪ Provide contact information and procedure for registering any complaints.
Demolition (including Asbestos Management)	Appropriate measures shall be taken to ensure that demolition works are completed in accordance with SafeWork NSW Standards and Codes of Practice. Any asbestos identified within building materials should be managed in accordance with SafeWork NSW Codes of Practice and Australian Standards.
Site Stormwater Management and Control	Appropriate measures shall be taken to ensure that contaminated water does not leave the site. Such measures should include, but not be limited to: ▪ Diversion and isolation of any stormwater from any contaminated areas; ▪ Provision of sediment traps including geotextiles or hay bales; and ▪ Discharge of any water to drains and water bodies must meet the appropriate effluent discharge consent condition under the *Protection of the Environmental Operations Act 1997*.
Dust and Odour	Control of dust and any odour during the course of the remediation works shall be maintained by the contractor to ensure no nuisance dust or odours are received at the site boundary according to requirements of Council's DCP. Action levels and specific control measures would be described in the site specific management plans and may include (but not be limited to) the following: ▪ Site wide water spraying, as and when appropriate, to eliminate wind-blown dust; ▪ Use of mist sprays, and/or sprinklers on stockpiles, fill screening areas and loaded fill to lightly condition the material; ▪ Use of tarpaulin or tack-coat emulsion or sprays to prevent dust blow from stockpiles or from vehicle loads; ▪ Covering of stockpiles or loads with polythene or geotextile membranes; ▪ Restriction of stockpile heights to 2m above surrounding site level; ▪ Ceasing works during periods of inclement weather such as high winds or heavy rain; ▪ Use of vapour masks or respirators for works near VOC-impacted areas (if required); and ▪ Regular checking of the fugitive dust and odour issues to ensure compliance with the CEMP requirements, undertaking immediate remedial measures to rectify any cases of excessive dust or odour (e.g. use of misting sprays or odour masking agent). It is advised that all site workers use adequate dust masks during ACM soil excavation and that machine operators remain within an enclosed, air conditioned cabin.
Noise and Vibration	Noise and vibration will be restricted to reasonable levels. All plant and machinery used on site will be noise muffled to ensure emissions do not breach statutory levels as defined within Councils LEP.

Category	Measure
Incident Management and Community Relations	While various environmental management and occupational safety plans will be developed to protect human health and the environment, incidents may occur which pose a risk to the various stakeholders. To mitigate these risks and ensure that a suitable response is carried out quickly, a response plan to any incident that may occur on site should be prepared and various responsibilities assigned. The site health and safety plan and environmental management plan should document these procedures and responsibilities, and incident contact numbers should be maintained in an on-site register. All other relevant emergency contact numbers such as Police, Fire Brigade, and Hospital should be listed in the Health and Safety Plan and posted on-site for easy access.

7.5 Environmental Incidents

Refer to **Table 7-4** for a selection of potential environmental issues. The unexpected finds protocol (**Appendix D**) should also be followed should an incident occur.

Table 7-4 Management of Environmental Incidents

Problem	Corrective Actions
Chemical / Fuel Spill	Stop work, notify above site project manager. Use accessible soil or appropriate absorbent material on site to absorb the spill (if practicable). Stockpile the impacted material in a secure location, sample and determine the appropriate disposal/treatment option.
Leaking Machinery / Equipment	Stop work, repair or replace equipment, as required. Clean up spill with absorbent material.
Failure of Erosion / Sediment Control Measures	Stop activities, contact the site manager / remediation contractor. Follow the unexpected finds protocol (**Appendix D**). Prepare a management plan if required, to address the issue.
Excessive Rainfall / Water in Excavations	Collect samples and assess against relevant criteria from the EPA (2014) *Waste Classification Guidelines*, to enable disposal options to be formulated. Stop the identified leak (if from service). Clean up with absorbent material.
Equipment Failures	Ensure that spare equipment is on hand at site, or that the failed equipment can be serviced by site personnel or a local contractor.
Identification of Cultural or Building Heritage Item	Stop work and notify site manager and owner. Follow the unexpected finds protocol as detailed in **Appendix D** of this RAP. Prepare action or conservation plan as required.
Unearthing Unexpected Materials, Fill or Waste	Stop activities, contact the site manager. Follow the unexpected finds protocol as detailed in **Appendix D** of this RAP. Prepare a management plan if required, to address the issue.
Incident Management and Community Relations	Ensure that a suitable response is carried out quickly. A response plan to any incident that may occur on site should be prepared and various responsibilities assigned. The site WHSP and CEMP should specify how to document these procedures and responsibilities, and incident contact numbers should be maintained in an on-site register. All other relevant emergency contact numbers such as Police, Fire Brigade, and Hospital should be listed in the WHSP / CEMP and posted on-site for easy access.
Complaint Management	Notify the site manager, owner and environmental consultant (if required) following complaint. Report complaint as per management procedures. Implement control measures to address reason of complaint (if possible). Notify complainant of results of remedial actions.

8. Work Health and Safety

8.1 Work Health and Safety Plan

As required by the *NSW Work Health and Safety Act 2011* and associated regulations, a work health and safety plan (WHSP) should be prepared by the Remediation Contractor. The purpose of this plan is to manage the health and safety of site workers and nearby residents, and address such issues as site security, exclusion zones, excavation safety, vibration, noise, odour and dust levels. The plan should address the risks during the remediation works and cover site specific requirements associated with the contaminants present within the site.

The site officer responsible for implementing health and safety procedures should induct all site personnel so that they are aware of and comply with, the requirements of this document. It is the contractor's responsibility, with assistance from client/owner(s) of the site to ensure that all other permits, approvals, consents or licences are current. Hazards relevant to the remedial works were identified and mitigation measures determined for the remediation as presented in the table below. These should be considered for the preparation of any site specific management procedures.

Table 8-1 Remediation Hazards

Anticipated Problem	Corrective Actions
Chemical Hazards	Contaminated sites have chemical substances that may present a risk to human health and the environment. The site specific WHSP should set out controls to mitigate any potential risks.
Asbestos (ACM) Hazards	All works associated with the disturbance and removal of asbestos impacted fill at the site must be undertaken in accordance with SafeWork NSW guidelines. A licensed asbestos removalist must notify the regulator in writing at least five days before the licensed asbestos removal work commences and must also obtain a permit (SafeWork, 2016). Removal of asbestos-contaminated soil will require a *Class A* licensed asbestos removalist. The asbestos removalist must prepare an asbestos removal control plan for the proposed earthworks, which will document the management measures required to address risk associated with potential exposure to asbestos in accordance with NSW SafeWork requirements and must include: ▪ Work area isolation (barrier protection, buffer zone); ▪ Removal methods (friable/non-friable); ▪ Contamination control methods (decontamination procedures); and ▪ Health and safety procedures (respiratory protection). ▪ Asbestos related works at the site involving disturbance of soil must be managed strictly in accordance with this RAP and an asbestos management plan (AMP) should be prepared. All asbestos and any contaminated soil removed must be disposed of as asbestos waste according to the EPA and the requirements of the local licensed waste disposal facility. Under Clause 473 of the *NSW Work Health and Safety Regulation* (2017), a clearance inspection is required following the removal of ACM. A clearance inspection is to be carried out and a clearance certificate issued before the area can be re-occupied. The company undertaking the clearance inspection should be independent of the demolition and / or asbestos removal company.
Physical Hazards	The following hazards are associated with conditions that may be created during site works: ▪ Heat exposure; ▪ Buried services;

Anticipated Problem	Corrective Actions
	▪ Noise, vibration and dust; ▪ Release of asbestos fibres ▪ Electrical equipment; and ▪ The operation of heavy plant equipment. Good personal hygiene should also be practiced at all times and the following activities should be prohibited within the site where asbestos containing materials are encountered: ▪ Smoking. ▪ Eating or drinking or any other activity involving hand to mouth contact prior to personal decontamination. ▪ Persons with facial hair wearing respirators, as it interferes with proper respirator fit
Personal Protective Equipment and Monitoring	Personnel should, wherever possible, avoid direct contact with potentially contaminated material. Workers are to ensure that surface waters or groundwater is not ingested or swallowed and that direct skin contact with soil and water is avoided. Standard PPE with the addition of disposable P2 dust masks as specified for the contractor will be sufficient for the prescribed remedial works.

8.2 Personal Protective Equipment

During contaminated soil excavation and/or asbestos removal works, the following minimum personal protective equipment shall be worn.

a. Long trousers, long sleeved shirt.

b. Half face disposable or cartridge type particulate respirator capable of providing protection from asbestos (i.e. a P2 rated mask) will be selected used and maintained in accordance with AS/NZS 1715-2009 and meeting the requirements of AS/NZS 1716-2012.

c. Disposable overalls that are to a standard that prevent tearing and penetration of asbestos fibres (disposable coveralls rated Type 5, Category 3 (prEN ISO 13982–1) or equivalent).

d. Waterproof boots fitted with a steel toe meeting AS/NZS 2210:2000. Latex surgical gloves (low protein (powder free)) or Nitrile work gloves meeting AS/NZS 2161:2000 requirements. Standard work gloves may also be worn over the surgical gloves for convenience, and should be disposed of as asbestos waste with the disposable overalls.

e. Hard hats meeting AS/NZS 1800:1998 requirements shall be worn when working around machinery or as directed by the site operator or their representative.

f. Hearing protection meeting AS/NZS 1270:2002 requirements shall be worn when working around machinery if noise levels exceed 85dB(A).

g. Safety glasses meeting AS/NZS 1336:1997 (as determined by the site operator).

8.3 Asbestos Air Monitoring

Since asbestos-contaminated soils are to be excavated, air monitoring is required due to the identified type of asbestos in the site and thus there may be a risk for aerial dispersion of asbestos fibres. All asbestos fibre air monitoring must be conducted in accordance with the *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres* [NOHSC: 3003 (2005)] and analysed by a NATA-accredited laboratory. The criteria and actions that will apply to this project are summarised in **Table 8-2**.

Table 8-2 Criteria for Air Monitoring of Asbestos

Control Level (fibres/mL)	Control / Action
< 0.01	No Action. Continue with existing control measures.
≥0.01	Asbestos Consultant to notify Principal Contractor (PC) and Environmental Consultant (EC) of results as soon as practicable. PC to notify/engage a Licensed Asbestos Removal Contractor. Asbestos Consultant, EC and PC to review current control measures and improve, where applicable. This may include improved work practices, use of further control measures (e.g. plastic screening or wet wiping techniques) or changing the work methodology.
≥0.02	Asbestos Consultant to notify PC and EC of results as soon as practicable. Asbestos Consultant to advise Licensed Asbestos Removal Contractor to stop work immediately. Asbestos Consultant to conduct investigations to establish cause of problem. Asbestos Consultant to advise Licensed Asbestos Removal Contractor on necessary works to rectify problem. Asbestos air monitoring to be continued by Asbestos Consultant. Contractors will be allowed to return to works area after results are <0.01 fibres/mL.

8.4 Unexpected Finds Protocol

Should unexpected finds be encountered, the approach in **Appendix D** should be followed. A contingent asbestos assessment procedure is described below:

Asbestos Assessment Procedure (if required):

In addition to the above, should additional asbestos investigation be necessary, test pitting should be carried out prior to disturbance of site soils. The validation plan for the site is detailed in **Section 9** should be followed. The general assessment procedure is described below:

1. Follow the Unexpected Finds Protocol and notify the appointed Environmental Consultant.
2. The appointed consultant to design investigation program to delineate asbestos impacts in soil in accordance with relevant, EPA endorsed, asbestos assessment guidelines.
3. Areas impacted by asbestos should be segregated from the remainder of the site, and marked by prominent features that withstand weathering (e.g. star picket and danger tape).
4. Undertake separate waste classification assessments for areas impacted by asbestos and the remainder of the site.
5. Soils from asbestos-impacted areas will need to be excavated and disposed of separately from the remainder of the site, following the methodology previously described.
6. Validate underlying materials after complete removal of asbestos-impacted soils on-site in accordance with the validation plan in **Section 9**.
7. For waste classification purposes, asbestos in soils will be assessed for presence/absence in accordance with Australia Standard AS4964-2004. For soil to be retained on-site or for validation, asbestos will be assessed by the NEPC (2013) gravimetric protocol.

Site workers shall endeavour, wherever possible, to avoid direct contact with potentially contaminated material. Workers are to ensure that stormwater or groundwater is not ingested or swallowed and that direct skin contact with soil and water is avoided. All personnel on site will be required to wear the personal protective equipment outlined in this RAP.

9. Validation Strategy

The site remediation works must be validated to ensure that the objectives stated in the RAP have been achieved and confirm that the site is suitable for the proposed use. Indicative validation requirements are as follows:

- All requirements of the RAP are confirmed as completed;
- All concentrations of the contaminants of concern in samples collected from the material retained at the site are below the adopted validation criteria;
- When the 95% upper confidence limit (95% UCL) of the average concentration for each analyte in samples collected from the retained material is below the adopted RAC;
- Volumes of waste soils removed from the site are reconciled with tipping dockets confirming disposal at licensed facilities; and
- All material imported to site for landscaping and/or capping meet the importation criteria to ensure the material is fit for use, and does not pose an unacceptable risk to site users.

9.1 Validation Sampling Plan

Validation sampling and laboratory analyses will follow the removal of identified contaminated material to ensure that the vertical and lateral extent of the contamination has been defined. The specific requirements of sampling and analyses are detailed in **Table** 9-1 below.

Should residual contamination be identified, it would be “chased out” where appropriate until material exceeding the validation criteria has been removed. Where contamination remains at site boundary locations (i.e. confirming that it is present off-site), the boundary conditions will be temporarily secured and retained and discussion will be required with the client to determine course of action before further excavations continue.

Following removal of known contaminated soils from the site, a validation process must be undertaken to confirm these remaining soils as being suitable for the proposed land use. The validation sampling detailed plan is outlined in **Table** 9-1.

Additional GME

The validation program shall include at least one GME. It is thus important that the existing groundwater wells be retained during the demolition and remediation activities (**Figure A.3, Appendix A**). Where wells are removed or damaged beyond repair, additional costs will be incurred for the installation of replacement wells within the site.

The GME will involve:

1 Measurement of standing water levels (SWLs), inspection for light and dense non-aqueous phase liquids. A PID will be used to collect headspace readings from the top collar of each monitoring well. All results will be recorded on field data sheets.

2 Sequential sampling of the wells using low flow methods. Sampling equipment will be decontaminated between each location. Groundwater will initially be purged and field parameters (pH, temperature, EC, DO and Redox) measured. Sampling will take place after field parameters have stabilised, as defined by three consecutive readings with variations not exceeding pH ±0.1, EC ± 5%, Redox ±10mV and Temp ± 0.2°C.

3 Samples will be collected for the analysis of dissolved heavy metals, including copper, nickel and zinc. TRH and VOC (including BTEX and CVOC) will be considered. Industry-standard methods for sample collection, handling and transport will be adhered to. This includes field filtering water for dissolved heavy metal analysis, using a 0.45 µm pore-size membrane. Laboratory-supplied sample containers shall be used. QC samples will be collected, as specified in the SAQP (Section 9.2).

Table 9-1 Validation Sampling Plan

Area	Sampling Density	COPC
Site Wide	The validation sampling density will be subject to the requirements of WADOH (2009), Table 8. Given the residential land use proposed, double density sampling is required. Necessary field steps in determining the number of validations samples are as follows: ▪ Analyse for contaminants of concern, and chase any soils found to exceed the RAC.	Asbestos quantitative analysis as per NEPC (2013)
Imported material for use as backfill or in landscaping areas.	If material to reinstate the site is required to be sourced from off-site, it should be certified suitable for the intended use. Certification should be supplied to the Environmental Consultant for review and include, as a minimum, those items noted in the EPA Virgin Natural Excavated Material (VENM) certificate obtained from the EPA website. Imported materials must be either VENM, or materials meeting an EPA Resource Recovery Order (i.e. such as Excavated Natural Material (ENM)). If the source site cannot supply suitable certifying information as deemed by the Environmental Consultant, the Client may request the Environmental Consultant to conduct the necessary review of the site source. The Environmental Consultant will determine the number of samples necessary for acceptance of the source sites' material but as a minimum three representative samples of each material type should be sampled at the source site by the Environmental Consultant and analysed. First deliveries of imported material to the site should be undertaken while the Environmental Consultant is on-site to confirm the consistency of the material.	TRH BTEX PAHs Heavy metals OC/OP pesticides Phenols PCBs Asbestos (quantitative and qualitative)

9.2 Sampling, Analytical and Quality Plan

Soil assessment and sampling methodology should be in general conformance with the referenced regulatory and guidance documents within this RAP and as directed by the environmental consultant where unexpected finds occur. In addition, reference is made to the following documents for general guidance on soil sampling methodology:

- NEPC (2013) Schedule B2 *Guideline on Site Characterisation*;
- NEPC (2013) Schedule B3 *Laboratory Analysis of Potentially Contaminated Soils*;
- AS1141.3.1-2012 *Methods for Sampling and Testing Aggregates* (Method 3.1);
- WADOH (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*.

Validation sampling will be undertaken following the removal of contaminated material to ensure that the vertical and lateral extents of the impacts have been defined. Should residual contamination be identified, it would be "chased out" where appropriate until material exceeding the validation criteria has been removed.

The collection of validation samples will be based on screening of material visually for the presence of asbestos.

All samples will be transported to NATA-accredited laboratories, under strict 'chain of custody' (COC) conditions. More detailed (specific) methodology is described in **Table 9-2**.

Table 9-2 Validation Sample Collection and Handling Procedures

Action	Description
Sampling Method	Sampling is to be undertaken at the surface, utilising onsite machinery for test pits and grab samples.
Sample Collection	Soil validation sampling will be directly from the exposed surface of excavation. Sampling data shall be recorded to comply with routine chain of custody requirements. Soil sample collection using a dry grab method (unused, dedicated nitrile gloves) plastic zip-locked bags (for asbestos analysis). Representativeness will be achieved through the application of double density sample locations. Samples should be taken a minimum 200mm from the soil exposed surface. <u>For waste / stockpiles:</u> Sketch and measure the stockpile dimensions, location and immediate vicinity impediments and record this information on the Field Inspection Form. Collection of screening samples by opening the stockpile using mechanical means (i.e. backhoe) or penetrating the stockpile using hand auger or push tube. Examples of stockpile partitioning are shown in AS11413.1-2012. Sampling should penetrate the entire depth of the stockpile. Samples should be handled with appropriate personal protective equipment. Each sample should be collected using decontaminated equipment, to minimise the opportunity for cross-contamination between individual samples. Where volatile contaminants are present, collect a minimum of 10 field screening samples from the stockpile for visual, olfactory and/or PID measurement. The screening samples should be discrete and collected evenly throughout the stockpile via a systematic grid. The 10 field screening samples should be collected in a Ziplock LDPE bag for PID head-space screening measurement. Samples assigned for laboratory VOC analysis will be determined on the basis of the PID screening result, visual and olfactory observations.

Action	Description
Soil Logging / Field Descriptions	Soils are to be classified in the field with respect to lithological characteristics and evaluated on a qualitative basis for odour and visual signs of contamination. Soil classifications and descriptions were based on Australian Standards AS 4482.1-2005 and AS1726-2017 A summary of field observations is to be provided on borehole logs, test pit logs, or field notes.
Decontamination Procedures	*Drilling Equipment* – The drilling rods are to be decontaminated between sampling locations with potable water until the augers are free of all residual materials. *Sampling Equipment* – Dedicated gloves are to be used for each sample, and any trowel or shovel used is to be decontaminated between uses.
Sample Handling, Transport and Tracking	Direct transfer of the sample into laboratory supplied glass jars or plastic bags, with each sample container sealed to eliminate cross contamination during transportation to the laboratory. Label sample containers with individual and unique identification including project number, sample umber and depth, date and time of sampling. Place sample containers into a chilled, enclosed and secure container for transport to the laboratory. Provide chain of custody documentation to ensure that sample tracking and custody can be cross-checked at any point in the transfer of samples from the field to the environmental laboratory. After sampling, refrigerated sample chests are to be transported to the primary laboratory using Chain-of-Custody (COC) procedures. Inter-laboratory duplicate samples are to be forwarded to the secondary laboratory with COC documentation. A Sample Receipt Advice (SRA) is to be provided by each laboratory to document sample condition upon receipt.
Sample Containers and Holding Times	*Containers and Preservation:* ▪ Laboratory supplied containers and bags. ▪ All parameters except as noted below: 250 mL glass jar with Teflon lined lid; Preservation: chill to $4^{o}C$ ▪ Asbestos: minimum 500 mL collected in a resealable LDPE bag; Preservation: not required. *Holding Times:* ▪ Inorganics: generally 7-28 days ▪ Mercury and Hexavalent Chromium: 28 days ▪ VOC/SVOC: 7-14 days ▪ Other metals: 180 days ▪ Asbestos: indefinite holding time
Field QA/QC	Quality assurance (QA) and quality control (QC) procedures will be adopted throughout the field sampling programme to ensure sampling precision and accuracy, to be assessed by analysis of 5% field duplicate/replicate samples. Appropriate sampling procedures will be undertaken to prevent cross contamination, in accordance with EI's Standard Operating Procedures Manual. This will ensure: ▪ Standard operating procedures are followed; ▪ Site safety plans are developed prior to works commencement; ▪ Split duplicate field samples are collected and analysed; ▪ Samples are stored under secure, temperature controlled conditions; ▪ Chain of custody documentation is employed for the handling, transport and delivery of samples to the contracted environmental laboratory; and ▪ Contaminated soil originating from the site area is disposed in accordance with relevant regulatory guidelines. ▪ In total, field QA/QC will include one in 20 samples to be tested as blind field duplicates, one in 20 samples to be tested as inter-laboratory duplicates (ILD), as well as one VOC trip blank (intra-lab) sample and one equipment wash blank sample per sample batch. No QAQC samples will be collected for asbestos sampling

Action	Description
Laboratory QA/QC	The contract laboratory will conduct in-house QA/QC procedures involving the routine analysis of: ▪ Reagent blanks; ▪ Matrix spike recoveries; ▪ Laboratory duplicates; ▪ Calibration standards and blanks; ▪ Control standards and recovery plots; and ▪ QC statistical data.
Achievement of Data Quality Objectives	An assessment of the overall data quality will be presented in the final Site Validation Report, in accordance with the EPA (2017) *Guidelines for the NSW Site Auditor Scheme*.

Data Quality Objectives

In accordance with the US EPA (2006) *Data Quality Assessment* and the EPA (2017) *Guidelines for the NSW Site Auditor Scheme*, Data Quality Objectives (DQO) will be proposed to ensure an appropriate level of data quality and meet the specific requirements of the project. The DQO process to be applied for this remediation is documented in **Table 9-**.

Table 9-3 Summary of Project Data Quality Objectives

DQO Step	Details
1. State the Problem Summarise the contamination problem that will require new environmental data, and identify the resources available to resolve the problem; develop a conceptual site model.	The site is to be developed for residential purposes, with landscaped areas. Remediation is required to make the site suitable for the proposed use.
2. Identify the Goal of the Study (Identify the decisions) Identify the decisions that need to be made on the contamination problem and the new environmental data required to make them.	Based on the objectives outlined in **Section 1.3**, the following decisions are identified: Are the soils remaining on the site following remediation suitable for the proposed land use? Does the level of impact coupled with the fate and transport of identified contaminants represent an unacceptable risk to identified human and/or environmental receptors on- or off- site? Will site soils require further remediation and/or special management before the site can be made suitable for use?
3. Identify Information Inputs (Identify inputs to decision) Identify the information needed to support any decision and specify which inputs require new environmental measurements.	Inputs to the decision making process include: ▪ The proposed land use and development layout; ▪ Previous investigations performed at the site, summarised in **Section 3**; ▪ National and state guidelines made or approved by the EPA under Section 105 of the CLM Act 1997; ▪ Additional soil investigation and validation results for waste classification purposes; ▪ Laboratory analytical results of soil validation samples; and ▪ Assessment of analytical results in relation to the adopted criteria. At the end of the validation, a decision must be made regarding whether the environmental conditions are suitable for the proposed development, or if additional investigation and/or remedial works are required.

DQO Step	Details
4. Define the Boundaries of the Study Specify the spatial and temporal aspects of the environmental media that the data must represent to support decision.	Lateral – Cadastral boundaries of the site presented as **Figure 2**. Vertical – From the existing ground surface, fill and natural soil horizons, to the base of contaminated soil. Temporal – Results are valid on the day of data and sample collection, and remain valid as long as no changes occur on-site, or contamination (if present) does not migrate on-site or on to the site from off-site sources.
5. Develop the Analytic Approach (Decision rule) To define the parameter of interest, specify the action level, and integrate previous DQO outputs into a single statement that describes a logical basis for choosing from alternative actions.	Laboratory analytical results will be accepted if: ▪ All contracted laboratories are accredited by NATA for the analyses undertaken; ▪ All detection limits (or limits of reporting (LORs)) fall below the remediation criteria; ▪ RPDs for duplicate samples are within accepted limits; and ▪ Laboratory QA/QC protocols and results comply with NEPM (2013) requirements.
6. Specify Performance or Acceptance Criteria (Specify limits on decision errors) Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data.	Specific limits for this project are to be in accordance with National and NSW EPA guidance, and appropriate indicators of data quality and standard procedures for field sampling and handling. This includes the following points to quantify tolerable limits: ▪ The null hypothesis for the remediation of soils is that the 95% Upper Confidence Limits (UCLs) of the mean for contaminants of concern exceed the adopted remediation criteria across the site. ▪ The inspection of grid based surface locations and surface soil validation samples. ▪ The acceptance of the site as validated will be based on that: ▪ The 95% UCL of the mean of the data will satisfy the given site criterion. Therefore a limit on the decision error will be 5% that a conclusive statement may be incorrect; ▪ The standard deviation of the results is less than 50% of the relevant remediation acceptance criterion; and ▪ No single result exceeds the remediation acceptance criterion by 250% or more. ▪ Soil concentrations for the contaminants of concern that are below investigation/validation criteria made or approved by the NSW EPA will be treated as acceptable and indicative of suitability for the proposed land use.
7. Develop the Detailed Plan for Obtaining Data (Optimise the design for obtaining data) Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs.	Written instructions will be issued to guide field personnel in the required remedial and validation activities Soil remedial excavations are to be performed as per **Section 6**. Soil validation sampling is to be completed as per the methodology prescribed in **Section 9**. Validation sampling procedures will be implemented to optimise data collection for achieving the DQOs.

Data Quality Indicators

To verify (support) that the validation data are of an acceptable quality, they will be assessed against the DQI outlined in Error! Reference source not found..

Table 9-4 Data Quality Indicators

QA/QC Measure	Field Data Quality Indicator	Laboratory Data Quality Indicator
Completeness – A measure of the amount of useable data from a data collection activity	Field data completeness would be deemed acceptable if: All critical locations are sampled. All samples are collected from the proposed grid and depth. Standard Operating Procedures (SOP) used are appropriate and complied with. Experienced field personnel are used. Field documentation is complete and correct. All laboratory documentation are presented, reviewed and found to be properly completed prior to submitting samples.	Laboratory data completeness would be deemed acceptable if: All critical samples are analysed according to the SAQP. All analytes are analysed according to the SAQP. Were appropriate methods and Practical Quantitation Limits (PQL) used for analysis Sample documentation in the form of Chain of Custody and Sample Receipt Notification is accurate and complete. Holding times are met in accordance with NEPM Schedule B3.
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Field comparability is deemed acceptable if: SOP for sampling design and methodology are consistent between sampling events; Experienced field personnel are used. Seasonal variation is taken into consideration (i.e. temperature, rainfall, wind); and Sample types collected are consistent between sampling events where necessary.	Laboratory comparability is deemed acceptable if: Sample analytical methods are consistent between sampling events; Samples PQLs are consistent between sampling events; The same laboratory was used between sampling events; Analytical results are presented with the same units.
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present on site	Field representativeness is deemed acceptable if: Appropriate media are sampled according to the SAQP; All media identified in the SAQP are sampled.	Laboratory representativeness is deemed acceptable if: All samples were analysed according to the SAQP.
Precision – A quantitative measure of the variability (or reproducibility) of data	Field precision would be deemed acceptable if: SOPs are appropriate and complied with; Duplicate samples are collected and analysed at a rate of 5% (1 duplicate sample analysed per 20 primary samples collected); Laboratory-prepared volatile trip spike and trip blank are implemented at a rate of one per batch.	Laboratory data precision would be deemed acceptable if: Relative Percent Differences (RPDs) are found to be less than 30% between the inter-lab and the intra-laboratory duplicates. Trip spike laboratory analyses results show a recovery limit between 80 and 120%.
Accuracy – A quantitative measure of the closeness of reported data to the “true” value	Field data accuracy would be deemed acceptable if: SOPs are appropriate and complied with. Adequate calibration of field instruments against a known standard. Appropriate storage of primary and QA/QC samples in the field and during	Laboratory data accuracy would be deemed acceptable if: Rinsate blank results are below the PQL. Surrogates recoveries for soil are generally within 70-130%; Surrogates recoveries for water are generally within 40-130%;

QA/QC Measure	Field Data Quality Indicator	Laboratory Data Quality Indicator
	transport to the laboratory is implemented. Rinsate Blanks – 1 per batch where non-dedicated sampling equipment is used.	Method blank are evaluated against the Limit of Reporting (LOR) and analysed by the lab at a rate of 1 per 20 primary samples; Laboratory control are evaluated against accepted results with a general recovery between 60-140% with a rate of 1 sample per 20 primary samples; Matrix Spikes are evaluated against the recovery percentage of an expected results; and Calibration of laboratory instruments against known standards.

Note 1 LOR = limit of reporting (quantitative limit prescribed by the laboratory for the given analytical method)
Note 2 RPD = relative percentage difference

9.3 Validation Reporting

All fieldwork, chemical analyses, discussions, conclusions and recommendations will be documented in a site remediation and validation report. The report will be prepared in general accordance with requirements of the EPA (2020) *Guidelines for Consultants Reporting on Contaminated Land* and EPA (2017) *Guidelines for the NSW Site Auditor Scheme* and must confirm that the site has been remediated to a suitable standard for the proposed development, as defined by the RAC.

10. Conclusion

This RAP has been prepared to inform the remediation works at 11-13 Mannix Parade, Warwick Farm NSW.

The following environmental (contamination) issues relate to the site:

- Asbestos-impacted filling (≤0.5m BGL) across the southern portion of the site. The asbestos was identified in the form of fragments bonded ACM, as well as friable asbestos.
- The natural, sandy clays from 3m BGL onwards were saline, the strength of salinity increasing with depth. All site soils (i.e. to 4m BGL) were classed as non-aggressive towards buried steel, but mildly aggressive to buried concrete, and highly sodic (thus prone to erosion).
- Elevated concentrations of heavy metals (copper, nickel and zinc) in the local groundwater, which is also acidic (pH: 5.03 - 5.10) and saline (EC: 20,290 - 31,380 µS/cm).

The preferred remediation strategy involves excavation and off-site disposal of ACM-impacted soils. Excavations will be performed in accordance with appropriate site management plans, including the SMP, AMP and CEMP.

The sequence of the remediation works will be:

- Site Preparation;
- Site Demolition;
- Asbestos Management Plan;
- Soil Remediation (excavation of asbestos-impacted fill following waste classification; and
- Site Validation.

In addition to analysis of soil validation samples for asbestos content, the validation phase shall include at least one GME, with analysis of samples from the existing wells for dissolved heavy metals (copper, nickel and zinc).

In summary, EI considers that the site can be made suitable for the proposed residential land use, through the implementation of the works described in this RAP.

11. Statement of limitations

This plan has been prepared for the exclusive use of Taylor Construction Group Pty Ltd (the client), being the only intended beneficiary of EI's work. The scope of the plan is limited to that agreed with the client.

No other party should rely on the document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

In preparing this plan, EI has used a degree of care and skill ordinarily exercised by reputable members of the environmental industry in Australia, as at the date of this document. No other warranty, expressed or implied, is made or intended. Each section of this report must be read in conjunction with the whole of this report, including its appendices.

The methods and conclusions presented in this report are based on a limited investigation of conditions, with specific sampling locations chosen to be as representative as possible under the given circumstances.

EI's professional opinions are reasonable and based on its professional judgment, experience, training and results from analytical data. EI may also have relied upon information provided by the client and other third parties to prepare this document, some of which may not have been verified by EI.

EI's professional opinions contained in this document are subject to modification if additional information is obtained through further investigation, observations and/or validation testing during remedial activities. In some cases, further analysis may be required, which may result in a further report with different conclusions.

REFERENCES

Ahern CR, Stone Y and Blunden B (1998) *Acid Sulfate Soils Assessment Guidelines*, part of the ASS Manual, Acid Sulfate Soil Management Advisory Committee (ASSMAC), Wollongbar, NSW, Australia, 28 August 1998.

ANZECC/ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, October 2000.

ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Governments and Australian State and Territory Governments, Canberra ACT, Australia, August 2018.

Bannerman SM and Hazelton PA (1990) *Soil Landscapes of the Penrith 1:100,000 Sheet*, Soil Conservation Service of NSW, Sydney.

Chapman GA and Murphy CL (1989) *Soil Landscapes of the Sydney 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney, September 1989.

CRC CARE (2017) *Risk-Based Management and Remediation Guidance for Benzo(a)pyrene*, CRC CARE Technical Report No. 39, CRC for Contamination Assessment and Remediation of the Environment, Newcastle, Australia, January 2017.

DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*, New South Wales Department of Environment and Conservation, DEC 2007/144, June 2007.

DIPNR (2003) *Map of Salinity Potential in Western Sydney 2002*, Department of Infrastructure, Planning and Natural Resources (Local Government Salinity Initiative), March 2003.

DLWC (2002) *Site Investigations for Urban Salinity*, Department of Land and Water Conservation 2002.

DMR (1991) *Penrith 1:100,000 Geological Series Sheet 9030* (Edition 1). Geological Survey of New South Wales, Department of Mineral Resources.

DUAP/EPA (1998) *Managing Land Contamination. Planning Guidelines SEPP 55 - Remediation of Land*, New South Wales Department of Urban Affairs and Planning / Environment Protection Authority, August 1998.

EI (2021) *Additional Site Investigation; 11-13 Mannix Parade, Warwick Farm NSW*. EI Australia Report E25074.E03.Rev1, 20 April 2021.

EnRisk (2016) *Proposed Decision Tree for Prioritising Sites Potentially Contaminated with PFASs,* Environmental Risk Services Pty Ltd, Environment Protection Authority of New South Wales, 25 February 2016.

EPA (1995) *Sampling Design Guidelines*, Contaminated Sites Unit, Environment Protection Authority of New South Wales, EPA 95/59, September 1995.

EPA (2014) *Waste Classification Guidelines – Part 1: Classifying Waste*, Environment Protection Authority of New South Wales, EPA 2014/0796, November 2014.

EPA (2017) *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme* (3rd Edition), Environment Protection Authority of New South Wales, EPA 2017P0269, October 2017.

EPA (2020) *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines*, Environment Protection Authority of New South Wales, EPA 2020P2233, April 2020.

Hazelton PA and Murphy BW (2007) *What Do All the Numbers Mean ? A Guide to the Interpretation of Soil Test Results,* CSIRO Publishing, December 2007.

JK Environments Pty Ltd (2020) *Preliminary Site Investigation; 11-13 Mannix Parade, Warwick Farm NSW, Taylor Construction Group*, JK Reference E33075BDrpt, 9 April 2020.

Landcom (2004) *Managing Urban Stormwater: Soils and Construction*. Published by the New South Wales Government, Fourth Edition, March 2004.

McNally G (2004) *Shale, Salinity and Groundwater in Western Sydney*. Australian Geomechanics 39(3), 107–122, September 2004.

NEMP (2020) *PFAS National Environmental Management Plan*, National Chemicals Working Group of the Heads of the EPAs Australia and New Zealand (HEPA), January 2020.

NEPC (2013) *Schedule B1 Guideline on Investigation Levels for Soil and Groundwater*, *Schedule B2 Guideline on Site Characterisation* and *Schedule B4 Guideline on Site-Specific Health Risk Assessments*, from the *National Environment Protection (Assessment of Site Contamination) Amendment Measure*, National Environment Protection Council, April 2013.

NHMRC (2018) *Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy*, National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra. Version 3.5, August 2018.

NUDLC (2012) *Minimum Construction Requirements for Water Bores in Australia* (3rd Edition). National Uniform Drillers Licensing Committee 2011, February 2012.

SafeWork NSW (2019a) *Code of Practice: How to Safely Remove Asbestos*. SafeWork NSW Publication, Catalogue Number SW08286, August 2019.

SafeWork NSW (2019b) *Code of Practice: How to Manage and Control Asbestos in the Workplace*. SafeWork NSW Publication, ISBN 978-0-642-33381A-5, September 2016.

Standards Australia (2001) *Australian Standard AS 2601-2001 The Demolition of Structures.* Standards Australia, 2001.

Standards Australia (2005) *Table E1 - Minimum Sampling Points Required for Site Characterisation*, in *Australian Standard AS4482.1-2005 Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil - Part 1: Non-volatile and Semi-volatile Compounds*, Standards Australia 2005.

Standards Australia (2009) *Piling - Design and Installation*. Australian Standard AS 2159-2009, Standards Australia 2009.

Standards Australia (2011) *Residential Slabs and Footings*. Australian Standard AS 2870-2011, Standards Australia 2011.

Standards Australia (2017) *Geotechnical Site Investigations*. Australian Standard AS 1726-2017, Standards Australia 2017.

USEPA (2000a) *Guidance for the Data Quality Objectives Process - EPA QA/G-4*, United States Environmental Protection Agency, EPA/600/R-96/055, August 2000.

USEPA (2000b) *Data Quality Objectives Process for Hazardous Waste Site Investigations - EPA QA/G-4HW*, United States Environmental Protection Agency, EPA/600/R-00/007, January 2000.

USEPA (2006) *Data Quality Assessment: A Reviewers Guide - EPA QA/G-9R*, United States Environmental Protection Agency, Office of Environmental Information, EPA/240/B-06/002, February 2006.

Vic EPA (2000) *Groundwater Sampling Guidelines*, Environment Protection Authority for the State Government of Victoria, April 2000.

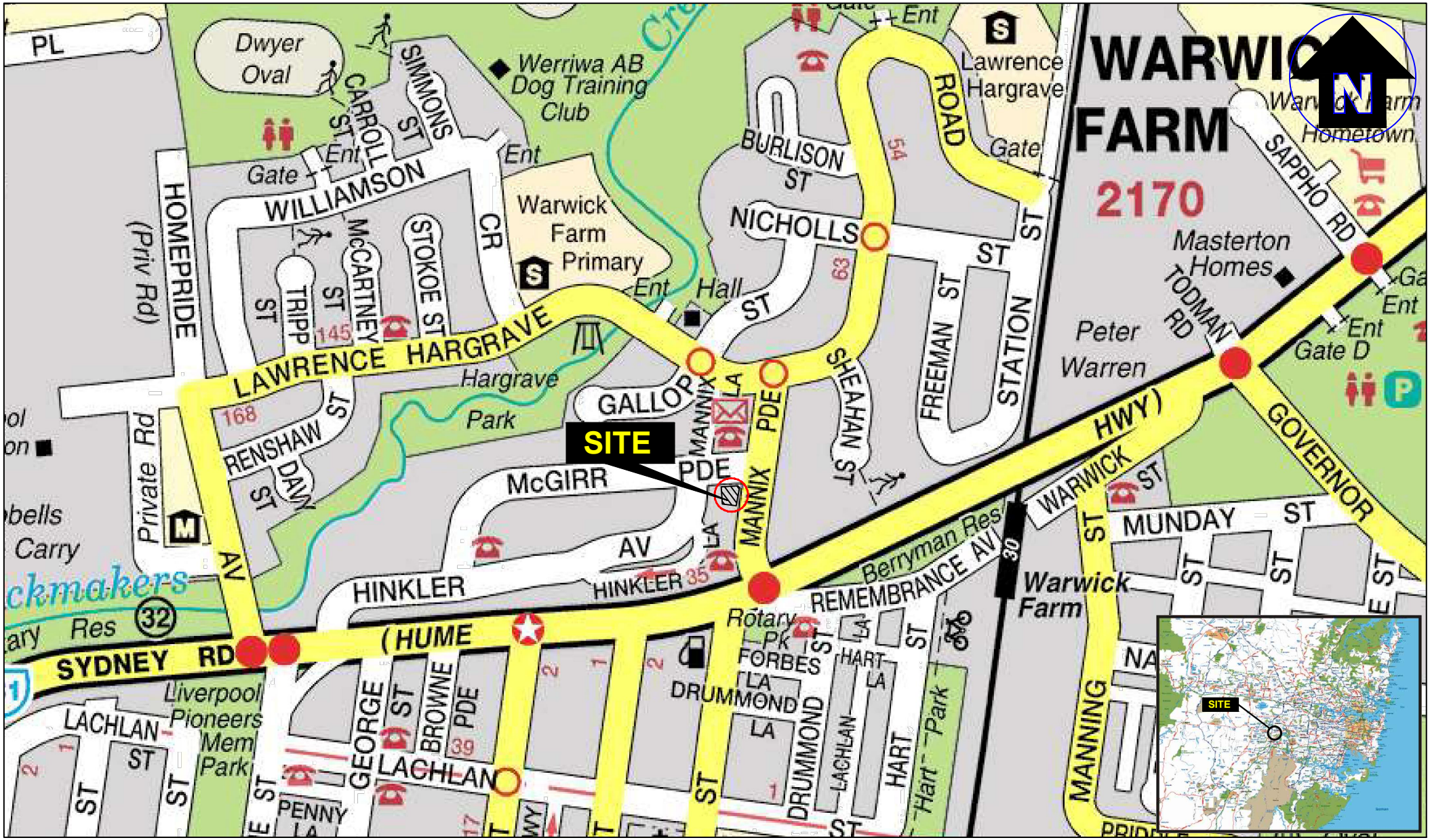
WADOH (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia,* Published by the Western Australian Department of Health, May 2009.

Abbreviations

ACM	Asbestos-Containing Materials
AF	Asbestos Fines
AHD	Australian Height Datum
AMP	Asbestos Management Plan
AS	Australian Standard
ASI	Additional Site Investigation
ASS	Acid Sulfate Soils
B(a)P	Benzo(a)Pyrene (a PAH compound), - B(a)P TEQ Toxicity Equivalent Quotient
BFD	Blind Field Duplicate (also known as intra-laboratory duplicate)
BGL	Below Ground Level
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CBD	Central Business District
CEC	Cation Exchange Capacity
CEMP	Construction Environmental Management Plan
CLM	Contaminated Land Management
COC	Chain of Custody
COPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compounds (a sub-set of the VOC analysis suite)
DA	Development Application
DBYD	Dial Before You Dig
DO	Dissolved Oxygen
DP	Deposited Plan
DQI	Data Quality Indicators
DQO	Data Quality Objectives
EC	Electrical Conductivity
EIL	Ecological Investigation Level
EMP	Environmental Management Plan
EPA	Environment Protection Authority of New South Wales
ESL	Ecological Screening Level
ESP	Exchangeable Sodium Percentage
F1	TRH C_6 – C_{10} less the sum of BTEX concentrations (Ref. NEPM 2013, Schedule B1)
F2	TRH >C_{10} – C_{16} less the concentration of naphthalene (Ref. NEPM 2013, Schedule B1)
FA	Friable Asbestos
FCS	Fibre Cement Sheeting
GIL	Groundwater Investigation Level
GME	Groundwater Monitoring Event
GMW	Groundwater Monitoring Event
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
ILD	Inter-Laboratory Duplicate (also known as split field duplicate)
km	Kilometres
L	Litres

LEP	Local Environmental Plan
LGA	Local Government Area
m	Metres
µg/L	Micrograms per Litre
mg/L	Milligrams per Litre
mV	Millivolts
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
NSW	New South Wales
OCP	Organochlorine Pesticides
OPP	Organophosphate Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
pH	Potential Hydrogen (a measure of the acidity or basicity of an aqueous solution)
PID	Photoionisation Detector
PM	Priority Metals
POEO	Protection of the Environment Operations
PQL	Practical Quantitation Limit (limit of detection for respective laboratory instruments)
QA/QC	Quality Assurance / Quality Control
RAC	Remediation Acceptance Criteria
RAP	Remediation Action Plan
RPD	Relative Percentage Difference
Redox	Reduction-Oxidation Potential
RL	Relative Level
SAQP	Sampling, Analytical and Quality Plan
SEPP	State Environment Planning Policy
SIL	Soil Investigation Level
SRA	Sample Receipt Advice (document confirming laboratory receipt of samples)
SWL	Standing Water Level
TDS	Total Dissolved Solids (a measure of water salinity)
TCLP	Toxicity Characteristics Leaching Procedure
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
UCL	Upper Confidence Limit (of the mean)
UPSS	Underground Petroleum Storage System
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compounds (specific organic compounds which are volatile)
VENM	Virgin Excavated Natural Material
VOC	Volatile Organic Compounds (specific organic compounds which are volatile)
WHSP	Work, Health and Safety PLan

Appendix A - Figures



eiaustralia Practical Solutions for Built Environments Suite 6.01, 55 Miller Street, PYRMONT 2009 Ph (02) 9516 0722 Fax (02) 9518 5088	Drawn:	TM/AM.H	**Taylor Construction Group Pty Ltd** Remediation Action Plan 11-13 Mannix Parade, Warwick Farm NSW Site Locality Plan
	Approved:	AI/SE	
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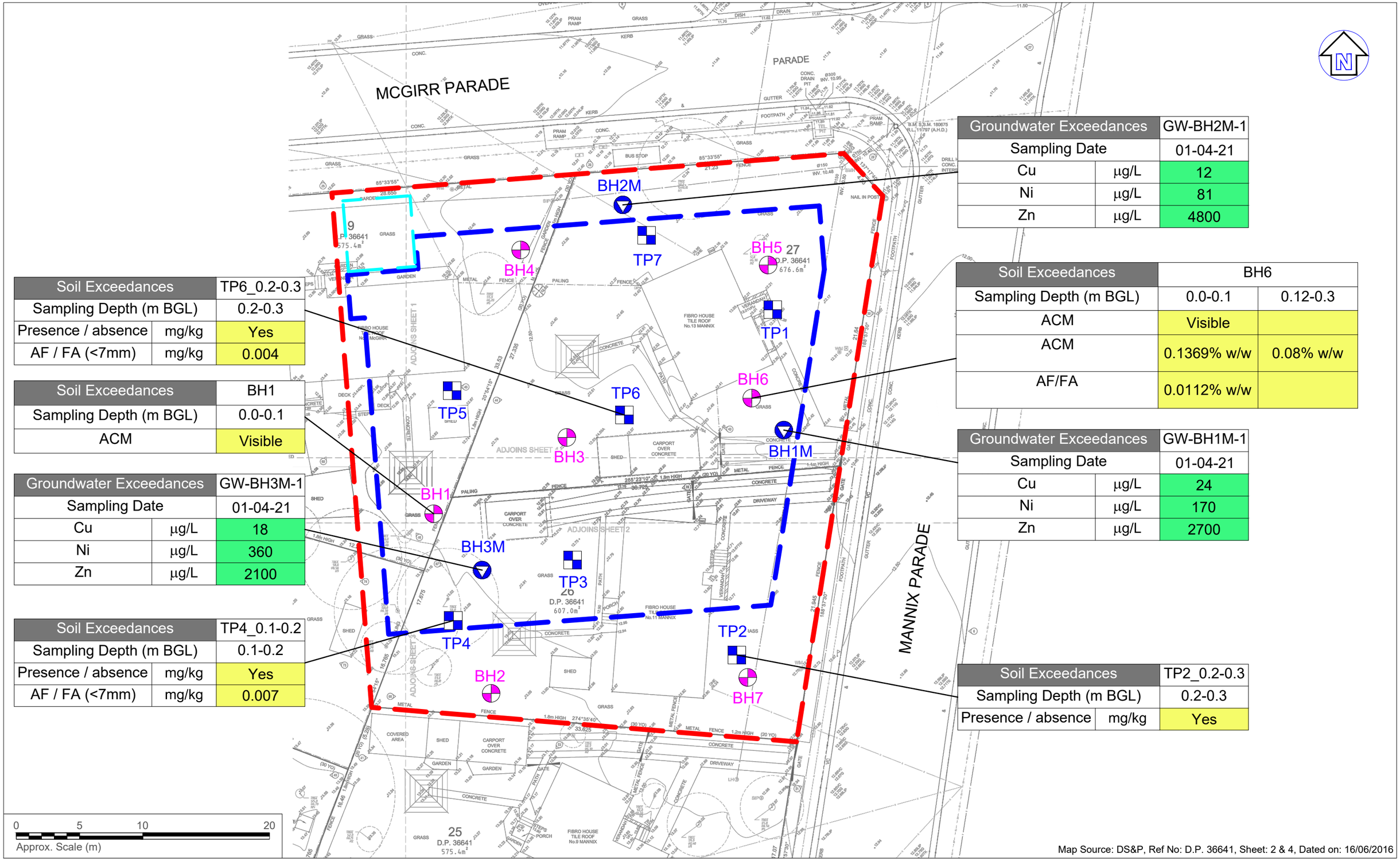


Soil Exceedances		TP6_0.2-0.3
Sampling Depth (m BGL)		0.2-0.3
Presence / absence	mg/kg	Yes
AF / FA (<7mm)	mg/kg	0.004

Soil Exceedances	BH1
Sampling Depth (m BGL)	0.0-0.1
ACM	Visible

Groundwater Exceedances		GW-BH3M-1
Sampling Date		01-04-21
Cu	µg/L	18
Ni	µg/L	360
Zn	µg/L	2100

Soil Exceedances		TP4_0.1-0.2
Sampling Depth (m BGL)		0.1-0.2
Presence / absence	mg/kg	Yes
AF / FA (<7mm)	mg/kg	0.007

Groundwater Exceedances		GW-BH2M-1
Sampling Date		01-04-21
Cu	µg/L	12
Ni	µg/L	81
Zn	µg/L	4800

Soil Exceedances	BH6	
Sampling Depth (m BGL)	0.0-0.1	0.12-0.3
ACM	Visible	
ACM	0.1369% w/w	0.08% w/w
AF/FA	0.0112% w/w	

Groundwater Exceedances		GW-BH1M-1
Sampling Date		01-04-21
Cu	µg/L	24
Ni	µg/L	170
Zn	µg/L	2700

Soil Exceedances		TP2_0.2-0.3
Sampling Depth (m BGL)		0.2-0.3
Presence / absence	mg/kg	Yes

Map Source: DS&P, Ref No: D.P. 36641, Sheet: 2 & 4, Dated on: 16/06/2016

LEGEND (Note: All locations are approximate)

- Site boundary
- Basement boundary
- OSD Tank location
- Test pit location
- Borehole/monitoring well location
- Previous borehole location (JK, 2020)

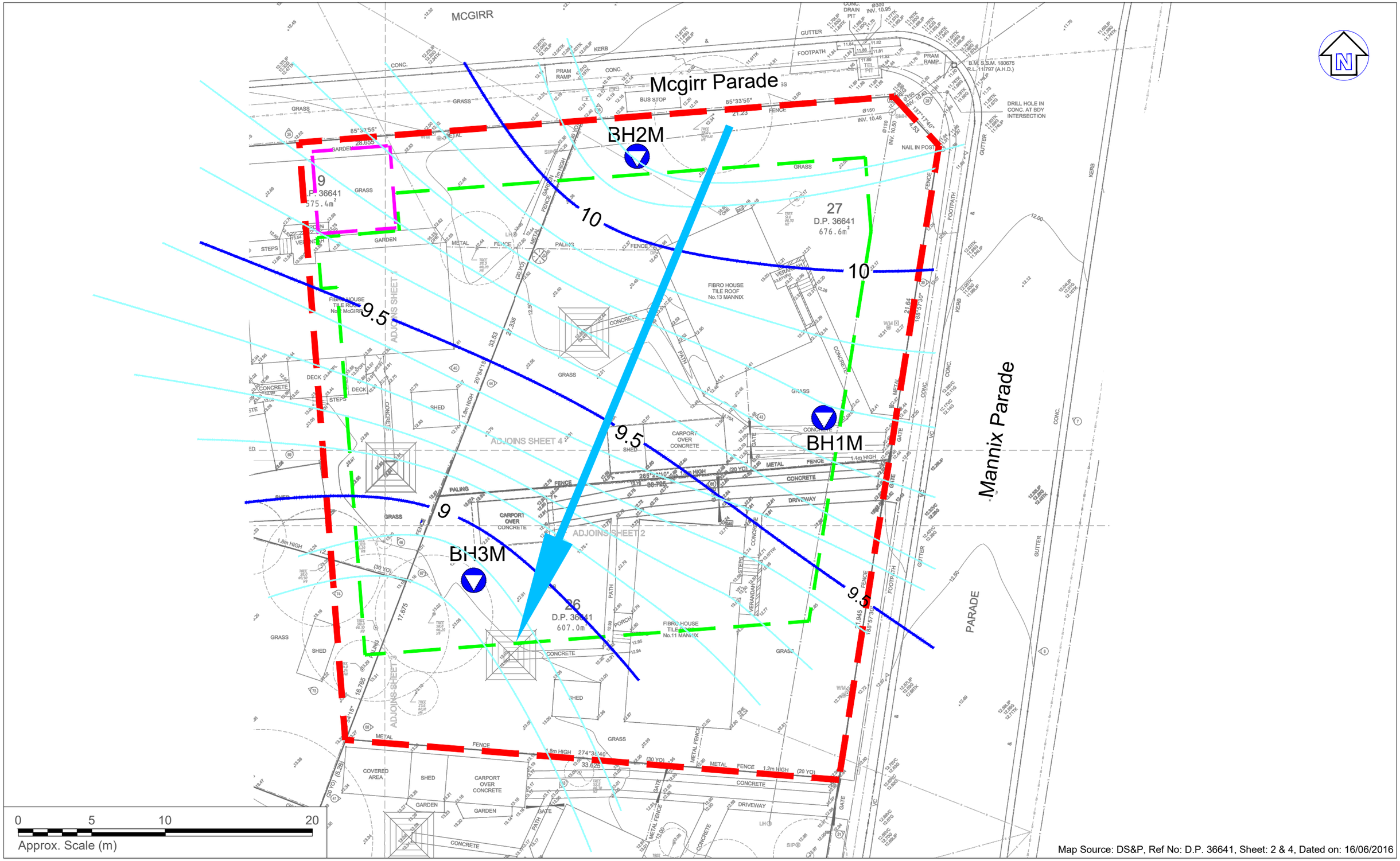
eiaustralia
Practical Solutions for Built Environments
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	AM.H.
Approved:	A.I.
Date:	15-04-21

Taylor Construction Group Pty Ltd
Remediation Action Plan
11-13 Mannix Parade, Warwick Farm NSW
Soil and Groundwater Exceedances Plan

Figure: 2

Project: E25074.E06



Map Source: DS&P, Ref No: D.P. 36641, Sheet: 2 & 4, Dated on: 16/06/2016

LEGEND (Note: All locations are approximate)

- Site boundary
- Basement boundary
- OSD Tank location
- Monitoring well location
- Inferrred groundwater flow direction

eiaustralia
Practical Solutions for Built Environments
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	L.C.
Approved:	A.I.
Date:	15-04-21

Taylor Construction Group Pty Ltd
Remediation Action Plan
11-13 Mannix Parade, Warwick Farm NSW
Groundwater Contour and flow direction Plan

Figure: 3

Project: E25074.E06

Appendix B – Proposed Development

LAHC WARWICK FARM

11-13 MANNIX PARADE, WARWICK FARM

A000 - GENERAL NOTES / SITE CONTEXT

A001	COVER SHEET / DRAWING LIST	5	12/02/2021

A1000 - GENERAL ARRANGEMENT PLANS

A1001	SITE PLAN	3	18/12/2020
A1002	SITE DEMOLITION WORKS	1	18/12/2020
A1003	BASEMENT LEVEL FLOOR PLAN	5	12/02/2021
A1004	GROUND LEVEL FLOOR PLAN	8	12/02/2021
A1005	LEVEL 1 FLOOR PLAN	8	12/02/2021
A1006	LEVEL 2 FLOOR PLAN	7	12/02/2021
A1007	LEVEL 3 FLOOR PLAN	7	12/02/2021
A1008	LEVEL 4 FLOOR PLAN	7	12/02/2021
A1009	LEVEL 5 FLOOR PLAN	7	12/02/2021
A1010	ROOF LEVEL PLAN	6	12/02/2021

A1100 - REFLECTED CEILING PLANS

A1101	BASEMENT LEVEL RCP	5	12/02/2021
A1102	GROUND LEVEL RCP	5	12/02/2021
A1103	LEVEL 1 RCP	5	12/02/2021
A1104	LEVEL 2 RCP	5	12/02/2021
A1105	LEVEL 3 RCP	5	12/02/2021
A1106	LEVEL 4 RCP	5	12/02/2021
A1107	LEVEL 5 RCP	5	12/02/2021

A1300 - CONCRETE SETOUT PLANS

A1301	BASEMENT LEVEL CONCRETE SETOUT PLAN	2	18/12/2020
A1302	GROUND LEVEL CONCRETE SETOUT PLAN	2	18/12/2020
A1303	LEVEL 1-3 CONCRETE SETOUT PLAN	2	18/12/2020
A1304	LEVEL 4 CONCRETE SETOUT PLAN	2	18/12/2020
A1305	LEVEL 5 CONCRETE SETOUT PLAN	2	18/12/2020
A1306	ROOF CONCRETE SETOUT PLAN	2	18/12/2020

A1400 - COMPARTMENT AND COMPLIAN PLANS

A1401	BASEMENT COMPARTMENT PLAN	2	12/02/2021
A1402	GROUND FLOOR COMPARTMENT PLAN	1	12/02/2021
A1403	LEVELS 1-3 (TYPICAL) COMPARMENT PLANS	1	12/02/2021
A1404	LEVELS 4-5 (TYPICAL) COMPARMENT PLANS	1	12/02/2021

A2000 - ELEVATIONS

A2001	NORTH & SOUTH ELEVATIONS	4	18/12/2020
A2002	EAST & WEST ELEVATIONS	4	18/12/2020

A3000 - SECTIONS

A3001	SECTIONS A & B	4	18/12/2020
A3002	SECTIONS C & D	4	18/12/2020

A3100 - SECTIONS

A3101	WALL SECTION AA	2	18/12/2020
A3102	WALL SECTION BB	2	18/12/2020
A3103	WALL SECTION DD	1	29/01/2021

A4000 - CONSTRUCTION DETAILS

A4001	BRICK CORBELLING & BALCONY DETAILS	2	18/12/2020
A4005	MAIL BOX DETAILS	2	18/12/2020

A5000 - VERTICAL CIRCULATION

A5001	FIRE STAIR	2	18/12/2020
A5003	BALUSTRADE, HANDRAIL & NOSING DETAILS	2	18/12/2020
A5004	ENTRY RAMP AND STAIR DETAILS	1	18/12/2020

A6000 - ROOM LAYOUT

A6001	BATHROOM LAYOUTS 01	2	18/12/2020
A6003	KITCHEN LAYOUTS 01	2	18/12/2020
A6004	JOINERY	2	12/02/2021
A6005	BICYCLE STORAGE, COMMS & SWITCHROOM	2	18/12/2020
A6006	WASTE / BULKY GOODS & GAS / WATER METER & BOOSTER	2	18/12/2020
A6011	TYPICAL UNIT TYPE 01, 02, 03, 04 & 05	2	18/12/2020
A6012	TYPICAL UNIT TYPE 06, 07 & 08	2	18/12/2020
A6013	TYPICAL UNIT TYPE 09, 10, 11 & 12	2	18/12/2020

A9000 - DOOR AND WINDOW SCHEDULE

A9001	WALL TYPES SCHEDULE 1	3	18/12/2020
A9001-1	WALL TYPES SCHEDULE 2	3	18/12/2020
A9001-2	WALL TYPES SCHEDULE 3	3	18/12/2020
A9002	DOOR TYPE ELEVATION	2	18/12/2020
A9004	WINDOW / LOUVRE TYPE ELEVATIONS & SCHEDULE	2	18/12/2020
A9007	SIGNAGE SCHEDULE	2	18/12/2020

HYDRAULIC LEGEND

NOTE: REFER TO HYDRAULIC & FIRE ENG. DOCUMENTATION FOR DETAILS.

DESCRIPTION:

- DOWNPIPE
- FLOOR WASTE
- OVERFLOW CHANNELS
- RAIN WATER OUTLET
- FIRE HYDRANT (FH)
- EXPOSED SPRINKLER
- SEMI RECESSED CEILING SPRINKLER

LOCATION PLAN

ELECTRICAL FITTINGS LEGEND

NOTE: REFER TO ELECTRICAL ENG. DOCUMENTATION FOR DETAILS.

DESCRIPTION:

- SURFACE MOUNTED LINEAR LIGHT
- SURFACE MOUNTED LINEAR LIGHT W/ EMERGENCY SPITFIRE
- CEILING LIGHT
- CEILING LIGHT
- RECESSED LED EMERGENCY LUMINAIRE
- MOTION DETECTOR
- EXIT SIGN (EXIT)
- CEILING MOUNTED FAN WITH BUILT IN LED LIGHT
- WALL MOUNTED LIGHT
- BLL - BOLLARD LIGHT

GENERAL ABBREVIATIONS:

A/C	A/C CONDENSER UNIT SPACE
BL	BOLLARD
CD	CLOTHES DRYING RACK
CP EX	CARPARK EXHAUST
CJ	CONTROL JOINT
DB	DISTRIBUTION BOARD
DP	DOWNPIPE
F	FRIDGE
FCU	FUTURE SPLIT UNIT
FEX	FIRE EXTINGUISHER
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FW	FLOOR WASTE
GD	GRATED DRAIN
K	KITCHEN
L/D	LIVING / DINING
MJ	MOVEMENT JOINT (WITH THERMAL BREAK FIXING TO SECTION J REQUIRMENTS)
MC	MIRROR CUPBOARD
NBN	NBN BOX
HWU	HOT WATER UNIT
O/F	OVERFLOW CHANNELS
RWO	RAIN WATER OUTLET
S	STORAGR
SWP	STORMWATER PIT

MECHANICAL FITTINGS LEGEND

NOTE: REFER TO ELECTRICAL ENG. DOCUMENTATION FOR DETAILS.

DESCRIPTION:

- EGGCRATE TYPE GRILLE WITH LIGHT
- ACCESS PANEL

CONTRACTOR'S NOTES

1. CONTRACTOR MUST ENSURE WORKS ARE UNDERTAKEN AND COMPLETED TO COMPLY WITH CLIENTS AND TENANTS DESIGN BRIEF/S, SPECIFICATIONS AND ALL AMENDMENTS.
2. ANY DISCREPANCY FOUND WITHIN REID CAMPBELL'S DOCUMENTATION, PLEASE BRING TO THE ATTENTION OF REID CAMPBELL BEFORE COMMENCEMENT OF ANY WORKS.
3. CONTRACTOR TO CONFIRM ALL REQUIRED CONSTRUCTION TOLERANCES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
4. ARCHITECTURAL SKETCHES (ASK) FORM PART OF THE ARCHITECTURAL DOCUMENTATION AND MUST BE READ IN CONJUNCTION WITH ALL OTHER ARCHITECTURAL DOCUMENTATION.
5. CLIENT TO REVIEW ARCHITECTURAL DOCUMENTATION PRIOR TO COMMENCEMENT OF WORKS.
6. CONTRACTOR IS TO ENSURE ALL WORKS ARE COMPLETED AS PER CURRENT CLIENT DESIGN AND CONSTRUCT BRIEF.
7. CONTRACTOR MUST TAKE ALL REASONABLE STEPS TO READ DOCUMENTATION PRIOR TO THE ISSUING OF RFIS.
8. CONTRACTOR MUST CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO WORKS, AND COORDINATE ALL NEW WORKS ACCORDINGLY.
9. CONTRACTOR TO ENSURE WORKS ARE COMPLETED TO COMPLY WITH THE RELEVANT AUSTRALIAN STANDARD, NATIONAL CONSTRUCTION CODE AND LEGISLATIVE COMPLIANCE.
10. ALL DRAWING ARE IN COLOUR AND MUST BE PRINTED IN COLOUR TO BE VIEWED CORRECTLY

Notes

-Contractor to verify all dimensions on site before commencing work.
-Report all discrepancies to project manager prior to construction.
-Figured dimensions to be taken in preference to scaled drawings.
-All work is to conform to relevant Australian Standards and other Codes as applicable, together with other Authorities' requirements and regulations.

NSW Registered Architect Mark David Roach, 10332

Issue	Description	Date
1	PRELIMINARY CONSULTANT ISSUE	05/11/2020
2	FINAL ARCHITECTURAL LAYOUTS	18/11/2020
3	TENDER ISSUE	27/11/2020
4	TENDER ISSUE	18/12/2020
5	TENDER ISSUE	12/02/2021

Issued For Tender

Project
LAHC WARWICK FARM
11-13 MANNIX PARADE, WARWICK FARM

Client
TAYLOR

REIDCAMPBELL
Architecture, Interiors, Planning
ACN 002 033 801 ABN 28 317 605 875
Level 15, 124 Walker Street
North Sydney NSW 2060 Australia
Tel: 61 02 9954 5011 Email: sydney@reidcampbell.com
Fax: 61 02 9954 4946 Web: www.reidcampbell.com

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North Point

Drawing Title
COVER SHEET / DRAWING LIST

Drawing Number A001
Issue 5

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NSW Registered Architect Mark David Roach, 10332
NSW Registered Architect James Webb, 10187

Issue	Description	Date
1	FINAL ARCHITECTURAL LAYOUTS	18/11/2020
2	TENDER ISSUE	27/11/2020
3	TENDER ISSUE	18/12/2020

Issued For Tender

0m 4m 8m 12m 16m 20m

SCALE BAR 1:200 @ A1

Project
LAHC WARWICK FARM
11-13 MANNIX PARADE, WARWICK FARM

Client
TAYLOR

REIDCAMPBELL
Architecture, Interiors, Planning
ACN 002 033 801 ABN 28 317 605 875
Level 15, 124 Walker Street
North Sydney NSW 2060 Australia
Tel: 61 02 9954 5011 Email: sydney@reidcampbell.com
Fax: 61 02 9954 4946 Web: www.reidcampbell.com

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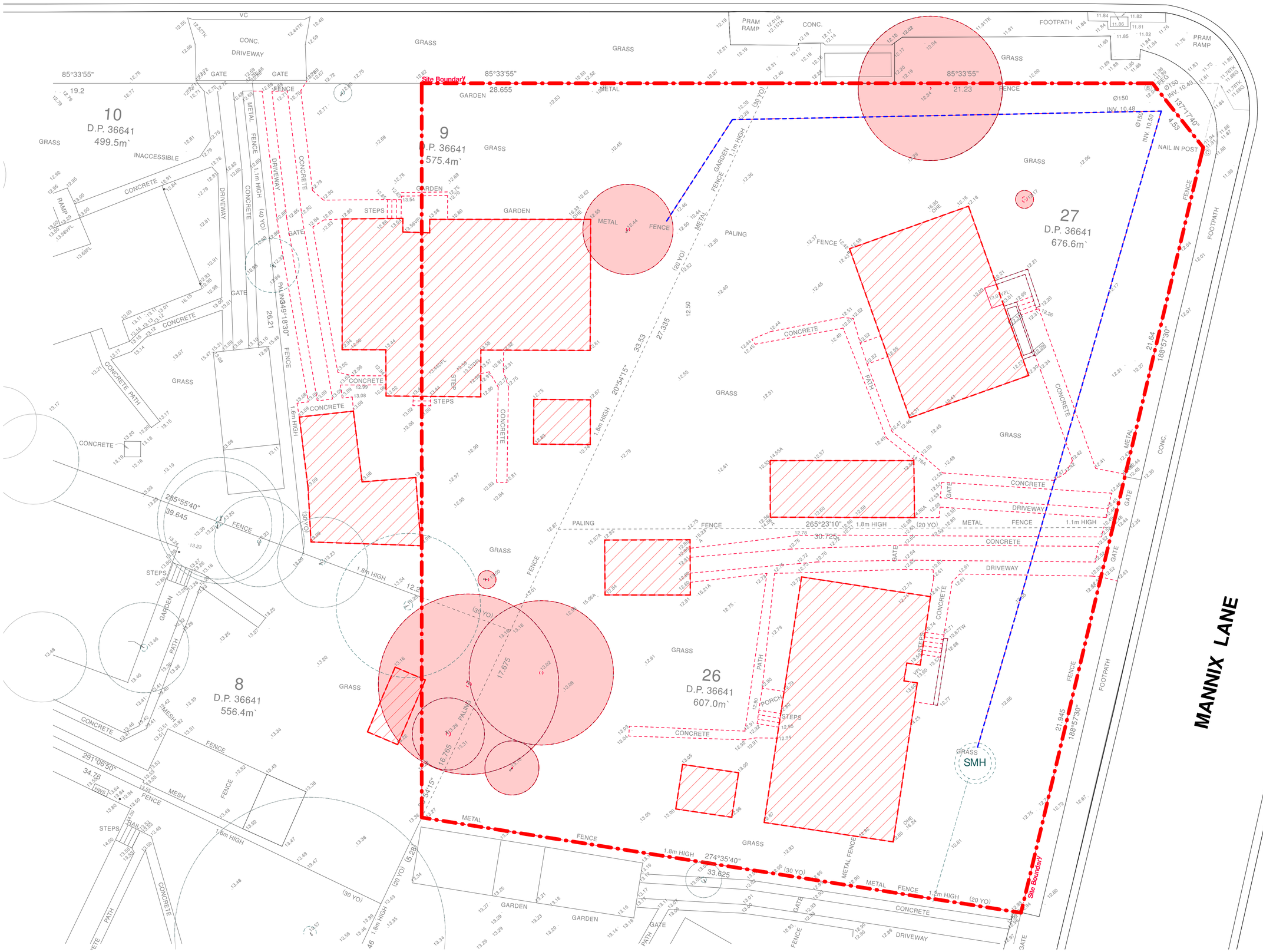
Drawing Title
SITE PLAN

Drawing Number A1001
Issue 3

MCGIRR PARADE



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NSW Registered Architect Mark David Roach, 10332
NSW Registered Architect James Webb, 10187

Issue	Description	Date
1	TENDER ISSUE	18/12/2020

- EXISTING BUILDING TO BE DEMOLISHED
- EXISTING TREE TO BE REMOVED
- EXISTING CONCRETE PATH / DRIVEWAY TO BE DEMOLISHED
- EXISTING SEWER MAIN TO BE RELOCATED

0m 2m 4m 6m 8m 10m

SCALE BAR 1:100 @ A1

Project
LAHC WARWICK FARM
11-13 MANNIX PARADE, WARWICK FARM

Client
TAYLOR

REIDCAMPBELL
Architecture, Interiors, Planning
ACN 002 053 801 ABN 28 317 605 875
Level 15, 124 Walker Street
North Sydney NSW 2060 Australia
Tel: 61 02 9954 5011 Email: sydney@reidcampbell.com
Fax: 61 02 9954 4946 Web: www.reidcampbell.com

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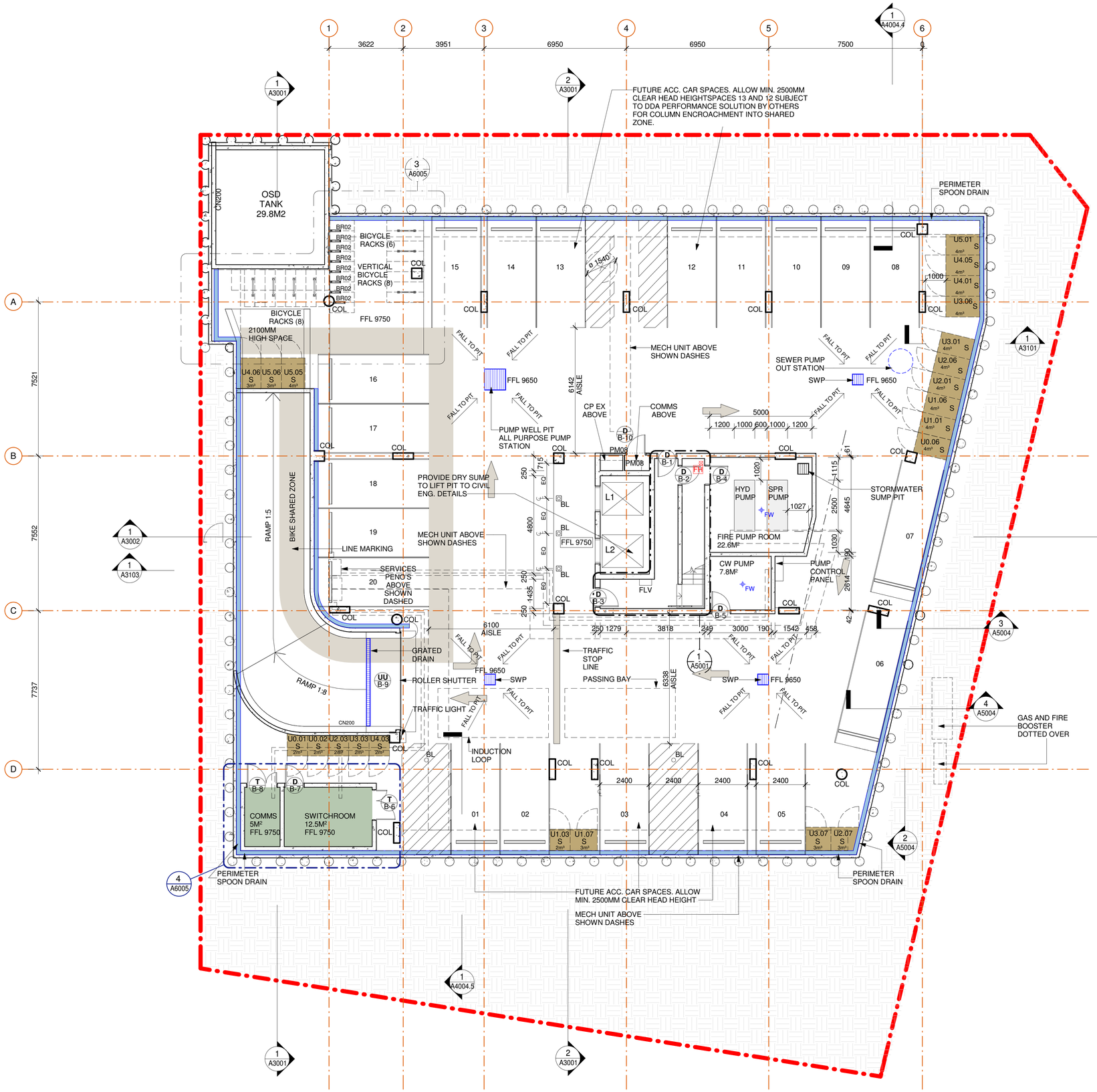
North Point

Drawing Title
SITE DEMOLITION WORKS

Drawing Number: A1002
Issue: 1



CALCULATIONS

TYPE:	TOTAL NUMBER
STANDARD CAR SPACE	15
DISABLE CAR SPACE	5
BIKE RACK	22

Notes

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NSW Registered Architect Mark David Roach, 10332

Issue	Description	Date
1	PRELIMINARY CONSULTANT ISSUE	05/11/2020
2	FINAL ARCHITECTURAL LAYOUTS	18/11/2020
3	TENDER ISSUE	27/11/2020
4	TENDER ISSUE	18/12/2020
5	TENDER ISSUE	12/02/2021

Issued For Tender

0m 2m 4m 6m 8m 10m

SCALE BAR 1:100 @ A1 ; 1: 200 @ A3

Project
LAHC WARWICK FARM
11-13 MANNIX PARADE, WARWICK FARM

Client
TAYLOR

REIDCAMPBELL
Architecture, Interiors, Planning
ACN 002 033 801 ABN 28 317 605 875
Level 15, 124 Walker Street
North Sydney NSW 2060 Australia
Tel: 61 02 9954 5011 Email: sydney@reidcampbell.com
Fax: 61 02 9954 4946 Web: www.reidcampbell.com

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Drawing Title
BASEMENT LEVEL FLOOR PLAN

Drawing Number
A1003

Issue
5

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-Figured dimensions to be taken in preference to scaled drawings.
-All work is to conform to relevant Australian Standards and other Codes as applicable, together with other Authorities' requirements and regulations.

NSW Registered Architect Mark David Roach, 10332

Issue	Description	Date
1	PRELIMINARY CONSULTANT ISSUE	05/11/2020
2	PRELIMINARY CONSULTANT ISSUE	13/11/2020
3	PRELIMINARY CONSULTANT ISSUE	16/11/2020
4	FINAL ARCHITECTURAL LAYOUTS	18/11/2020
5	GENERAL UPDATE	20/11/2020
6	TENDER ISSUE	27/11/2020
7	TENDER ISSUE	18/12/2020
8	TENDER ISSUE	12/02/2021

Issued For Tender

0m 2m 4m 6m 8m 10m

SCALE BAR 1:100 @ A1 ; 1: 200 @ A3

Project
LAHC WARWICK FARM
11-13 MANNIX PARADE, WARWICK FARM

Client
TAYLOR

REIDCAMPBELL
Architecture, Interiors, Planning
ACN 002 033 801 ABN 28 317 605 875
Level 15, 124 Walker Street
North Sydney NSW 2060 Australia
Tel: 61 02 9954 5011 Email: sydney@reidcampbell.com
Fax: 61 02 9954 4946 Web: www.reidcampbell.com

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Drawing Title
GROUND LEVEL FLOOR PLAN

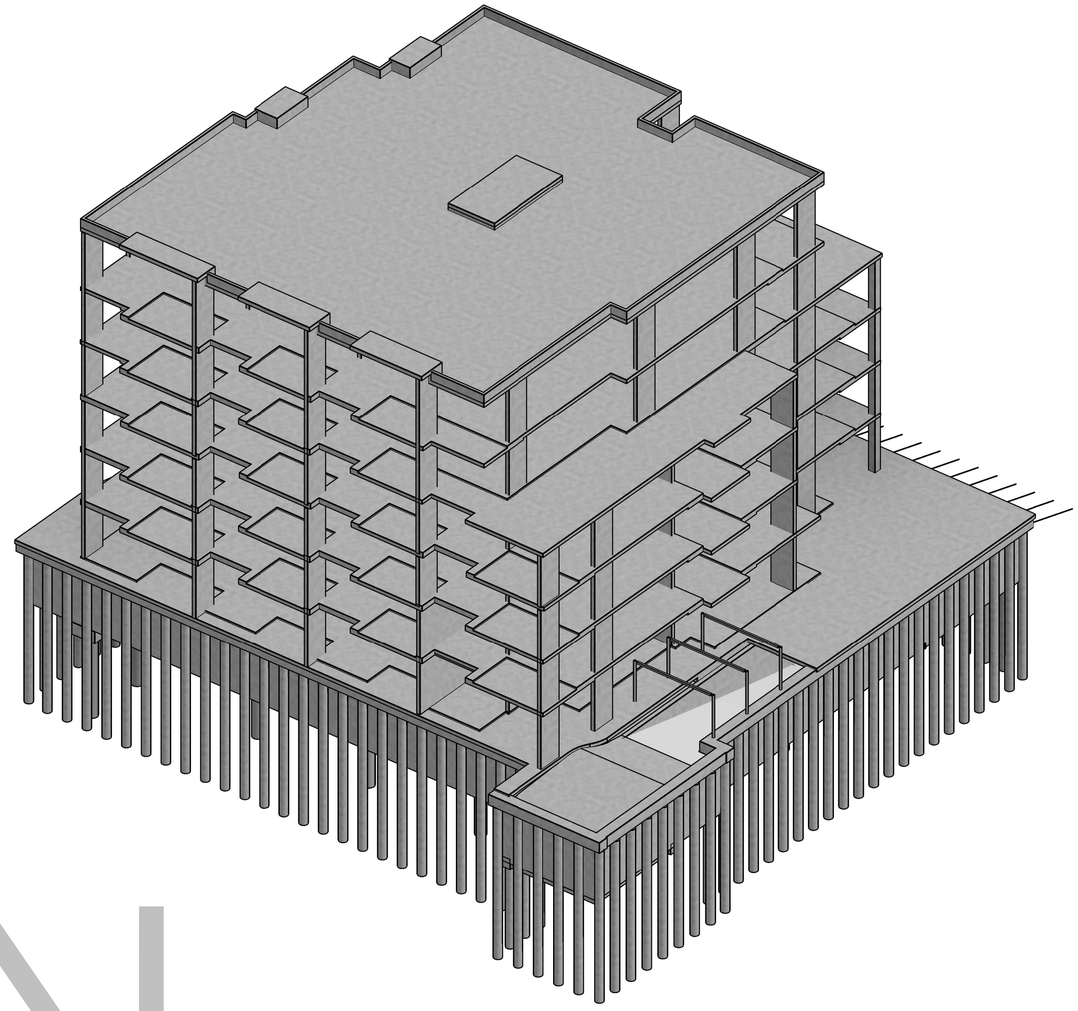
Drawing Number A1004
Issue 8

LAHC WARWICK FARM

11-13 MANNIX PARADE, WARWICK FARM, NSW 2170

20023 - STRUCTURAL DOCUMENTATION

DRG No.	DRAWING TITLE
000	COVER SHEET
001	GENERAL NOTES - SHEET 1
002	GENERAL NOTES - SHEET 2
010	RETENTION NOTES - SHEET 1
011	RETENTION & BULK EXCAVATION PLAN
015	RETENTION ELEVATIONS - SHEET 1
016	RETENTION ELEVATIONS - SHEET 2
020	RETENTION SECTIONS - SHEET 1
027	RETENTION DETAILS - SHEET 1
028	RETENTION DETAILS - SHEET 2
030	FOUNDATION PLAN
048	FOUNDATION TYPICAL DETAILS - SHEET 1
049	FOUNDATION TYPICAL DETAILS - SHEET 2
090	BASEMENT 1 - GENERAL ARRANGEMENT PLAN
091	BASEMENT 1 - RAMP PART PLAN
100	GROUND FLOOR - GENERAL ARRANGEMENT PLAN
106	GROUND FLOOR - TRANSFER LOADING PLAN
110	LEVEL 1 - GENERAL ARRANGEMENT PLAN
120	LEVEL 2 - GENERAL ARRANGEMENT PLAN
130	LEVEL 3 - GENERAL ARRANGEMENT PLAN
140	LEVEL 4 - GENERAL ARRANGEMENT PLAN
150	LEVEL 5 - GENERAL ARRANGEMENT PLAN
160	ROOF - GENERAL ARRANGEMENT PLAN
200	LOADING PLANS - SHEET 1
201	LOADING PLANS - SHEET 2
800	INSITU CONCRETE COLUMN TYPICAL DETAILS - SHEET 1
820	CORE KEY PLANS
825	STAIR AND LIFT CORE ELEVATIONS - SHEET 1
826	STAIR AND LIFT CORE ELEVATIONS - SHEET 2
850	IN-SITU WALL KEY PLANS & ELEVATION
877	IN-SITU WALL DETAILS - SHEET 1
878	IN-SITU WALL DETAILS - SHEET 2
879	IN-SITU WALL DETAILS - SHEET 3
950	TYPICAL SLAB ON GROUND DETAILS - SHEET 1
951	TYPICAL SLAB ON GROUND DETAILS - SHEET 2
960	TYPICAL SUSPENDED SLAB DETAILS - SHEET 1
961	TYPICAL SUSPENDED SLAB DETAILS - SHEET 2
962	TYPICAL SUSPENDED SLAB DETAILS - SHEET 3
965	TYPICAL POST TENSIONING DETAILS - SHEET 1
966	TYPICAL POST TENSIONING DETAILS - SHEET 2
970	R.C. STAIR DETAILS - SHEET 1
980	TYPICAL MASONRY DETAILS - SHEET 1
981	TYPICAL MASONRY DETAILS - SHEET 2



WEBBER DESIGN
STRUCTURAL ENGINEERING

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev	Description	Eng	Draft	Date
1	WORK IN PROGRESS ISSUE	MA	PAC	18.11.20
2	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING

MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155

SYDNEY OFFICE:
SUITE 303, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTER'S BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

COVER SHEET

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
	PAC	PW

JOB No.	DRAWING No.	REV.
20023	S-WEB-000	3

A1 0 1 2 3 4 5 6 7 8 9 10

PRINT TIME: 18/12/2020 11:17:27 AM C:\Users\Peter\Documents\W\20\20023 - LAHC Warwick Farm NSW - Central - STRUCTURAL_peter21UEEP.rvt

GENERAL

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS.

2. THESE ENGINEERING DRAWINGS HAVE BEEN PREPARED FROM INFORMATION AVAILABLE AT THE TIME, AS INFORMATION MAY BE SUBJECT TO CHANGE PRIOR TO OR DURING CONSTRUCTION, THE CONTRACTOR IS REQUESTED TO ADVISE THE ENGINEER WHERE DIFFERENCES OCCUR.

3. THESE DRAWINGS SHALL NOT BE USED FOR FINAL SET OUT OF THE PROJECT UNLESS SPECIFICALLY STATED.

4. ALL WORKS SHALL COMPLY WITH THE CURRENT, RELEVANT SAA CODES AND THE BUILDING CODE OF AUSTRALIA. THE FOLLOWING RELEVANT STANDARDS SHALL BE READ AS PART OF THESE GENERAL NOTES AND COPIES SHALL BE KEPT ON SITE WITH THE CONTRACTUAL DOCUMENTS:

   AS 1554 - SAA WELDING CODE (ALL PARTS)
   AS 1684 - SAA NATIONAL TIMBER FRAMING CODE (ALL PARTS)
   AS 1720 - SAA TIMBER CODE (ALL PARTS)
   AS 2870 - SAA RESIDENTIAL SLABS AND FOOTINGS
   AS 3600 - SAA CONCRETE STRUCTURES CODE
   AS 3610 - SAA FORMWORK FOR CONCRETE CODE
   AS 3700 - SAA MASONRY STRUCTURES CODE
   AS 3798 - SAA GUIDELINES FOR EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS
   AS 4100 - SAA STEEL STRUCTURES CODE
   AS 4600 - SAA COLD-FORMED STEEL STRUCTURE
   NCC 2019 - NATIONAL CONSTRUCTION CODE

5. ALL STRUCTURAL WORK SHOWN ON THESE DRAWINGS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER

6. PERIODICAL INSPECTIONS ARE REQUIRED TO BE PERFORMED BY A DULY APPOINTED INSPECTOR FROM "WEBBER DESIGN PTY. LTD.". THESE INSPECTIONS ARE REQUIRED TO BE PERFORMED IN ACCORDANCE WITH SCOPE OF INSPECTIONS IN SPECIFICATIONS PREPARED. THE INSPECTING ENGINEER IS RESPONSIBLE FOR PERFORMING MONITORING INSPECTIONS ONLY AND NOT SITE WORKS SUPERVISION, WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR TO PROVIDE A MINIMUM OF 24 HOURS NOTICE PRIOR TO INSPECTION.

7. SPECIFICATIONS OR INSTRUCTIONS ON DRAWINGS TAKE PRECEDENCE OVER THESE NOTES.

8. DO NOT SCALE FROM DRAWINGS.

9. DESIGN PARAMETERS ADOPTED FOR THIS PROJECT ARE AS FOLLOWS:

WIND LOADS

REGION	A2
TERRAIN CATEGORY	3
SHIELDING Ms	1
GUST WIND SPEED Vu	46m/s
TOPOGRAPHY Mt	1.0
IMPORTANCE MI	1.0

EARTHQUAKE LOADS (AS1170.2007)

SITE SUB CLASS	Ce
HAZARD FACTOR Z	0.08
BCA IMPORTANCE LEVEL	2.0
PROBABILITY FACTOR, Kp	1.0
EDC	II

SUPERIMPOSED DEAD LOADS (kPa)

RESIDENTIAL	1.0
NON-ACCESSIBLE ROOF	2.0
TERRACES	2.0
BALCONIES	1.5
CARPARK	0.5
BATHROOMS / WET AREAS	2.0
CORRIDOR / FIRE STAIR	0.5
COURTYARD / LANDSCAPE	2.0
SUBSTATION	TBC

LIVE LOADS (kPa)

RESIDENTIAL	1.5
NON-ACCESSIBLE ROOF	1.5
TERRACES	4.0
BALCONIES	2.0
CARPARK	2.5
BATHROOMS / WET AREAS	1.5
CORRIDOR / FIRE STAIR	4.0
COURTYARD / LANDSCAPE	4.0, OR 18.0 (PER METRE OF SOIL DEPTH - WHERE APPLICABLE)
SUBSTATION	TBC

FIRE RATING LIMIT (FRL) FOR STRUCTURAL ADEQUACY

RESIDENTIAL	90 MIN.
CARPARK	120 MIN.

EXPOSURE CLASSIFICATION

A2 INTERNAL
B2 EXTERNAL
B1 SURFACES IN CONTACT WITH THE GROUND

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE AND ADJACENT STRUCTURES IN A STABLE CONDITION. NO PART OF THESE STRUCTURES SHALL BE OVERSTRESSED UNDER CONSTRUCTION ACTIVITIES.

11. ALL PROPS AND FORMWORK FOR FLOOR BEAMS AND SLABS SHALL BE REMOVED BEFORE CONSTRUCTION OF ANY MASONRY WALLS OR PARTITIONS ON THE FLOOR.

12. ALL NON LOAD-BEARING WALLS SHALL BE KEPT 20mm CLEAR OF THE UNDERSIDE OF SLABS AND BEAMS UNLESS NOTED OTHERWISE.

13. CONTRACTOR SHALL RECORD ALL VARIATIONS TO THE DRAWINGS AND BE RESPONSIBLE FOR PRODUCING AS-BUILD DRAWINGS AT THE COMPLETION OF THE WORK AS REQUIRED.

14. NO PENETRATION, DRILLING OR CHASING IN STRUCTURAL ELEMENTS IS PERMITTED WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

15. ALL PROPRIETARY PRODUCTS SPECIFIED ON THESE DRAWINGS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. ALTERNATIVE EQUIVALENT PRODUCTS MAY ONLY BE USED WITH THE APPROVAL OF THE ENGINEER.

16. CONTRACTOR SHALL SUBMIT TO THIS OFFICE CONSTRUCTION METHODOLOGY, INCLUSIVE OF ALL TEMPORARY ERECTION STRUCTURE PRIOR TO THE COMMENCEMENT OF STEEL INSTALLATION.

17. IT IS A REQUIREMENT THAT ALL BUILDING MATERIALS USED AND INSTALLED ON THE PROJECT MUST BE COMPLIANT WITH THE NATIONAL CONSTRUCTION CODE, THE BUILDING CODE OF AUSTRALIA, THE AUSTRALIAN STANDARDS AND ANY OTHER APPLICABLE LAWS OR REGULATIONS.

BULK EXCAVATION:

1. ALL LEVELS, BATTERS, CONTOUR LINES AND LOCATIONS OF EXISTING SERVICES SHOWN ON PLAN ARE INDICATIVE ONLY AND SHALL BE VERIFIED ON SITE. REFER TO ARCHITECTURAL AND SURVEY PLANS FOR DETAILS.

2. THE CONTRACTOR IS TO NOTIFY ALL SERVICE AUTHORITIES AND ARRANGE FOR DISCONTINUANCE OF SERVICES OR SUPPLY AS APPLICABLE AND CARRY OUT ALL DISCONNECTION OR SEALING OFF OF SERVICES AND DRAINS AS REQUIRED. SERVICES OR SUPPLY LINES THAT ARE TO BE RETAINED SHALL REMAIN UNDAMAGED AND GIVEN ALL NECESSARY PROTECTION AS REQUIRED.

3. THE CONTRACTOR SHALL PROVIDE EFFECTIVE DIVERSION OR REMOVAL OF ALL SURFACE WATER FROM THE PREPARED SUB-GRADE.

4. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED ENVIRONMENTAL TREATMENT OF RUNOFF FROM THE CONSTRUCTION SITE.

5. THE BULK EXCAVATION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE BULK EXCAVATION PLAN.

6. EXCESS EXCAVATIONS SHALL NOT BE PAID FOR AS EXTRA EXCAVATION UNLESS AUTHORISED BY THE SUPER INTENDENT OR THE ENGINEER. EXCESS EXCAVATION SHALL BE FILLED BY THE CONTRACTOR WITH 3% CEMENT STABILISED SAND.

7. BULK EXCAVATION BATTERS AROUND THE PERIMETER OF THE SITE ARE TO BE 1V:1.5.H UNLESS OTHERWISE NOTED.

FOUNDATIONS:

1. THE FOUNDATION IS DESIGNED BASED ON **FINAL** GEOTECHNICAL REPORT NUMBER **20/0955** BY **STS GEOTECHNIQUES** DATED **APRIL 2020**. **STS GEOTECHNIQUES** SHALL BE ENGAGED TO QUALIFY AND ASSESS THE SUITABILITY OF THE FOUNDATION MATERIAL PRIOR TO PLACING CONCRETE.

2. THE BUILDER TO STUDY AND IMPLEMENT ALL RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL REPORT AND OTHER RELEVANT RECOMMENDATIONS FROM BUILDING TECHNOLOGY FILE 18 (FORMERLY KNOWN AS CSIRO NOTE 10-9).

3. REFER GEOTECHNICAL REPORT FOR SITE CLASSIFICATION IN ACCORDANCE WITH AS 2870.

4. EXISTING ADJACENT FOOTINGS SHALL NOT BE UNDERMINED. NEW FOOTING FOUNDING DEPTH SHALL MATCH, BUT NOT EXCEED, ADJACENT FOOTING FOUNDING DEPTH. IN THE EVENT THAT UNDERPINNING IS REQUIRED PLEASE CONTACT THIS OFFICE.

5. ANY EXCAVATION WORKS FOR CONSTRUCTION OF FOOTINGS OR RETAINING WALLS SHALL NOT ENCROACH BEYOND 45° LINE OF INFLUENCE.

6. UNLESS NOTED OTHERWISE, WHEREVER A NEW FOOTING IS LOCATED CLOSE TO AN EXCAVATION, BATTER, EXISTING FOOTING, EXISTING SERVICE OR NEW SERVICE WHICH IS DEEPER THAN THE NEW FOOTING; THE EXCAVATION FOR THE NEW FOOTING SHALL BE DEEPENED AND BACKFILLED WITH BLINDING CONCRETE AS SPECIFIED. THE ENGINEER SHALL BE NOTIFIED IF IN DOUBT.

7. THE STRUCTURAL DESIGN HAS BEEN UNDERTAKEN BASED ON THE FOOTING ALLOWABLE BEARING PRESSURES RECOMMENDED BY THE GEOTECHNICAL REPORT.

8. THE SITE SHALL BE STRIPPED, TRIMMED AND GENERALLY PREPARED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. IN ALL CASES THE SITE SHALL BE STRIPPED OF ALL VEGETATION IN BUILDING AREAS. NO VEGETATION OR ORGANIC MATTER SHALL EXIST IN THE SOIL STRATA BELOW FOOTINGS OR GROUND LEVEL.

9. THE CONTRACTOR IS TO ALLOW FOR ANY ADDITIONAL INVESTIGATIONS AND MATERIAL TESTING DEEMED NECESSARY TO FURTHER ESTABLISH SITE CONDITIONS TO ACHIEVE THE REQUIRED FOUNDATION PARAMETERS.

10. ALL FOUNDATION MATERIALS SHALL BE VERIFIED BY TESTING AT THE EXPENSE OF THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO THE PLACEMENT OF MEMBRANE, REINFORCEMENT OR CONCRETE.

11. UNLESS OTHERWISE NOTED, THE SITE SHALL BE FILLED WITH APPROVED WELL GRADED SAND.

12. NO EXCAVATED MATERIAL FROM SITE SHALL BE SUITABLE FOR BACKFILL WITHOUT PRIOR GEOTECHNICAL ENGINEERS APPROVAL.

13. COMPACT FOUNDATION MATERIAL AND BACKFILL IN LAYERS NOT EXCEEDING 300mm INTERMEDIATE LAYERS TO 95% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289. PROVIDE COMPACTION TEST RESULTS PRIOR TO PROCEEDING.

14. COMPACTION METHODOLOGY SHALL BE VERIFIED BY THE CONTRACTOR TO CAUSE NO DAMAGE TO ADJACENT STRUCTURES.

15. LOWEST LEVEL FOOTINGS SHALL BE POURED FIRST. NO HEIGHT EXCEEDING HALF THE CLEAR DISTANCE BETWEEN FOOTINGS WITH DIFFERENT LEVEL IS PERMITTED.

16. ALL FOOTINGS TO BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS UNLESS OTHERWISE NOTED.

17. BLINDING CONCRETE OF 15MPa SHALL BE PROVIDED TO BACKFILL IN ANY NECESSARY OVER EXCAVATION TO ACHIEVE THE REQUIRED BEARING CAPACITY.

18. PRIOR TO PLACING CONCRETE, ALL FOUNDATIONS ARE TO BE FREE OF WATER OR LOOSE DELETERIOUS MATERIAL.

19. FOOTINGS ARE TO BE FOUNDED 100mm INTO THE NOMINATED MATERIAL UNLESS OTHERWISE NOTED AND PROVIDED WITH A 50mm BLINDING LAYER OF 15MPa CONCRETE.

20. RAFT SLABS AND SLABS ON GROUND SHALL BE UNDERLAIN BY HEAVY DUTY SEALED POLYTHENE VAPOUR BARRIER.

21. BORED PIERS AND PILES ARE TO BE CONSTRUCTED TO WITHIN 75mm OF THE DESIGNATED PLAN LOCATION. TRUE VERTICALITY OF PILES SHALL BE 1/100 OF THE TOTAL LENGTH OF THE PILE. THE CONTRACTOR SHALL ALLOW FOR AND PROVIDE TEMPORARY LINERS AS REQUIRED TO AVOID COLLAPSE IN THE BORED HOLE.

22. ALL GROUND SLABS ARE TO BE UNDERLAIN BY A 50mm MINIMUM DEPTH LEVELLING SAND BED ON ADEQUATE SUBGRADE MATERIAL (50mm CRUSHED ROCK OR TO GEOTECHNICAL ENGINEERS RECOMMENDATIONS.

PILING

1. ALL PILES SHALL BE DESIGNED IN INSTALLED IN ACCORDANCE WITH CURRENT SAA CODES AS 1170, AS 2159 AND AS 3600.

2. THE PILING CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL PILES ARE INSTALLED TO THE REQUIREMENTS OF;

   - STRUCTURAL DRAWINGS
   - PILING SPECIFICATION
   - AUSTRALIAN STANDARDS: AS 1170 (SAA LOADING CODE), AS 2159 (SAA PILING CODE), AS 3600 (SAA CONCRETE STRUCTURES CODE) AND AS 4100 (SAA STEEL STRUCTURES)
   - GEOTECHNICAL INVESTIGATION REPORT.

3. ALL PILES SHALL BE DESIGNED TO ACCOMMODATE A LOAD ECCENTRICITY OF 75mm DUE TO INSTALLATION TOLERANCES ON SITE.

4. THE PILING CONTRACTOR SHALL SUBMIT ALL PILING AND RETENTION DETAILS AND DESIGN CALCULATION TO THE ENGINEER FOR REVIEW. ALLOW MINIMUM OF 5 WORKING DAYS FOR REVIEW PRIOR TO SITE COMMENCEMENT.

5. PILES SHALL BE TESTED IN ACCORDANCE WITH THE SPECIFICATION. PILE TESTS TO BE CARRIED OUT AS FOLLOWS:
   - DYNAMIC TESTING 5%
   - CAPWAP 2%

6. THE PILING CONTRACTOR IS RESPONSIBLE FOR SETTING OUT PILE LOCATIONS.

7. ALL PILE DESIGNS MUST INCORPORATE AN ALLOWANCE FOR ANY DOWN-DRAG DUE TO SOFT SOIL CONSOLIDATION WHERE APPLICABLE.

8. PILES ARE TO BE MONITORED FOR UPWARD HEAVE MOVEMENTS WHERE APPLICABLE. PILES WITH SIGNIFICANT MOVEMENT MAY REQUIRE TO BE RE-DRIVEN.

9. THE DESIGN OF PROPRIETARY BOUNDARY RETENTION SYSTEMS SHALL ENSURE THE SAFETY AND STABILITY OF THE SITE AND ADJACENT STRUCTURES AT ALL TIMES.

10. PILING CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE PRESENCE OF ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF ANY WORKS.

FORMWORK:

1. DESIGN OF FORMWORK AND SUPPORTING STRUCTURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IN ACCORDANCE WITH AS 3610.

2. REFER OTHER CONSULTANTS DOCUMENTATION FOR ADDITIONAL FIXING REQUIREMENTS.

3. MINIMUM STRIPPING TIMES:
   WALLS AND COLUMNS 7 DAYS
   GENERAL FLOOR 14 DAYS

4. FORMWORK SHALL BE DESIGNED, ERECTED, SUPPORTED, BRACED AND MAINTAINED TO SAFELY SUPPORT ALL VERTICAL AND LATERAL LOADS THAT WILL BE APPLIED UNTIL SUCH LOADS CAN BE SUPPORTED BY THE CONCRETE STRUCTURE.

5. BACK PROP SLABS AND BEAMS TO ENGINEERS APPROVAL FOR A MINIMUM OF 28 DAYS AFTER CASTING.

6. STRIPPING AND BACK PROPPING TIMES MAY BE REDUCED UPON RECEIPT OF STRENGTH TEST RESULTS AT THE DISCRETION OF THE ENGINEER.

7. PRE-CAMBER ALL FORMWORK:
   SLABS AND BEAMS SPAN / 600
   CANTILEVERS SPAN / 200

8. ENSURE DECK IS CLEANED OF ALL DEBRIS PRIOR TO CONCRETING.

9. CONTRACTOR SHALL PROVIDE SOLEBOARDS TO ALL SUPPORT SYSTEM LEGS BEARING ON GROUND OR SUSPENDED FLOOR AND ENSURE THAT THE GROUND OR SUSPENDED FLOOR IS CAPABLE OF SUPPORTING THE MAXIMUM DESIGN LEG LOAD.

10. CONTRACTOR SHALL MONITOR FORMWORK DURING CONCRETE PLACEMENT AND ADJUST FORMWORK IF REQUIRED.

11. CONTRACTOR TO VERIFY THAT ALL PROPRIETARY MANUFACTURED FORMWORK (PROPS, FRAMES, JACKS AND BRACING ETC.) TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

CONCRETE:

1. CONTRACTOR IS TO ENSURE THAT ALL CONCRETE ELEMENTS ARE CONSTRUCTED TO THE MINIMUM SIZE SHOWN ON DRAWINGS.

2. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE APPLIED FINISHES.

3. APPROVED INTERNAL VIBRATORS SHALL BE USED TO COMPACT CONCRETE. CAVITY FILL SHALL BE RODDED.

4. ALL CONCRETE IS TO BE CURED FOR 14 DAYS MINIMUM AFTER POURING OR APPROVED PROPRIETARY SYSTEM. UNLESS OTHERWISE NOTED. SLABS SHALL BE THOROUGHLY WETTED, THEN COVERED FOR A MINIMUM OF 7 DAYS WITH 0.2MM THICK POLYTHENE SHEETING, WHICH SHALL BE SECURELY FIXED AGAINST TRAFFIC AND WIND AND OVERLAPPED 300MM MINIMUM AT JOINTS.

5. CONCRETE SHALL BE READY MIXED BY AN APPROVED SUPPLIER AS BELOW (UNLESS NOTED OTHERWISE):

ELEMENT	SLUMP (mm)	MAX. COURSE AGGREGATE (mm)	MIN. f'c AT 28 DAYS (MPa)
PAD FOOTINGS	80	20	N50
STRIP FOOTINGS	80	20	N50
SLAB ON GROUND INTERNAL	80	20	N32
SLAB ON GROUND EXTERNAL	80	20	N32
CAVITY FILLS	100	10	N20
WALLS	80	20	(REFER SCHEDULE)
COLUMNS	80	20	(REFER SCHEDULE)
INT. SUSPENDED SLABS, BEAMS AND STAIRS	60	20	N40 FOR R.C (REFER SCHEDULE) S40 FOR P.T. (REFER SCHEDULE)
EXT. SUSPENDED SLABS, BEAMS AND STAIRS	60	20	N40

6. TYPE 'GP' PORTLAND CEMENT SHALL BE USED UNLESS OTHERWISE NOTED.

7. ADMIXTURES SHALL NOT ADVERSELY AFFECT THE SPECIFIED CONCRETE PROPERTIES. DO NOT USE ADMIXTURES UNLESS APPROVED BY THE ENGINEER. THE USE OF CALCIUM CHLORIDE, CHLORIDE ADMIXTURES AND SILICA FUME OR FLY ASH AS CEMENT SUBSTITUTES ARE NOT PERMITTED.

8. UNLESS NOTED OTHERWISE, CONCRETE STRENGTH SHALL BE GRADE N32 WITH:
   MINIMUM CEMENT CONTENT OF 320kg/m³
   MAXIMUM WATER CONTENT OF 165l/m³
   COARSE AGGREGATE SIZE OF 20mm, AND
   MAXIMUM SHRINKAGE AT 56 DAYS 600 MICROSTRAINS

9. FOR HIGH STRENGTH CONCRETE (fc EXCEEDING 40MPa), THE MIX DESIGN SHALL INCLUDE THE FOLLOWING:
   LOW WATER / CEMENT RATIO
   LOW CREEP
   LOW SHRINKAGE (i.e. 600 AVERAGE MICROSTRAINS AT 56 DAYS)
   LOW HEAT HYDRATION
   SUPER-PLASTICISERS ADDITIVES TO INCREASE SLUMP
   SUPPLEMENTARY CEMENTITIOUS MATERIALS SUCH AS SILICA FUME, FLY ASH AND GROUND GRANULATED BLAST FURNACE SLAG.

10. CURING IS ESSENTIAL TO PREVENT SELF DESICCATION IN EARLY AGE OF THE CONCRETE.

11. DETAILS OF ALL PROPOSED MIX DESIGNS SHALL BE FORWARDED TO THE ENGINEER PRIOR TO INCORPORATION IN THE WORKS.

12. CAST CONCRETE TO JOINTS SHOWN ON DRAWINGS OR OTHERWISE APPROVED BY THE ENGINEER IN A HIT / MISS PATTERN.

13. THE ENGINEER SHALL BE NOTIFIED WHENEVER THE CURRENT AMBIENT TEMPERATURE OR THE TEMPERATURE FORECAST FOR THE DAY OF THE CONCRETE POUR EXCEEDS 35 DEGREES. ENGINEER AT HIS / HER DISCRETION MAY OR MAY NOT PERMIT CONCRETE BE POURED DURING THAT DAY.

14. ALL COMPONENTS CAST INTO CONCRETE SHALL BE HOT DIP GALVANISED.

15. CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER 7 AND 28 DAY COMPRESSIVE STRENGTH TEST FOR EVERY 50m³ DELIVERED OR DELIVERY TO SITE. CONCRETE TESTING SHALL COMPLY WITH THE REQUIREMENTS OF AS 1379.

16. PROPOSED LOCATION OF CONSTRUCTION JOINT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

17. DURING PLACEMENT, CONCRETE FALL HEIGHT SHALL BE RESTRICTED TO
   GENERALLY - 1800mm
   FOR WALLS EQUAL TO OR GREATER THAN 200mm THICK - 2700mm

18. TOLERANCE CLASSES TO CONCRETE SURFACES SHALL BE DETERMINED BY A STRAIGHT EDGE PLACED ANYWHERE ON THE SURFACE IN ANY DIRECT AS FOLLOWS:
   CLASS A MAXIMUM DEVIATION FROM 3m STRAIGHT EDGE 3mm
   CLASS B MAXIMUM DEVIATION FROM 3m STRAIGHT EDGE 6mm
   CLASS C MAXIMUM DEVIATION FROM 6m STRAIGHT EDGE 6mm

19. CONCRETE WORKS REQUIRING WATERPROOFING SHALL INCLUDE WATERPROOF ADMIXTURE AS PER MANUFACTURERS RECOMMENDATIONS.

20. CONCRETE SURFACE SHALL BE FINISHED TO BE COMPLIANT WITH THE SPECIFIC REQUIREMENTS FOR ANY APPLIED SURFACE FINISHES INCLUDING CARPET TILES, VINYL FLOOR, TILES, ADHESIVES, OTHER SURFACE APPLICATION, ETC. REFER ARCHITECTURAL SPECIFICATION FOR EXTENT AND FINAL SLAB FINISH REQUIREMENTS.

REINFORCEMENT:

1. REINFORCEMENT IS TO BE MANUFACTURED IN ACCORDANCE WITH AS/NZS 4671 AND AS 1302 AND SHALL BE FIXED AS SHOWN ON REINFORCING PLAN.

2. MATERIAL IS INDICATED BY THE FOLLOWING SYMBOLS

R10	DENOTES 10mm DIAMETER HOT ROLLED PLAIN ROUND BAR
N12	DENOTES 12mm DIAMETER HOT ROLLED DEFORMED BAR
SL82	DENOTES SQUARE WELDED WIRE FABRIC
RL918	DENOTES RECTANGULAR WELDED WIRE FABRIC
4-L12TM	DENOTES 4 MAIN WIRES OF 12mm TRENCH MESH
N	DEFORMED BAR OF GRADE 500
R	ROUND BAR OF GRADE 250
L	LOW DUCTILITY BAR OF GRADE 500
SL	SQUARE WELDED WIRE OF GRADE 500
RL	RECTANGULAR WELDED WIRE MESH OF GRADE 500

3. THE BAR SIZE INDICATED BY A NUMBER AFTER THE ABOVE SYMBOL, WHICH INDICATES THE BAR DIAMETER IN MILLIMETERS. REFER TO NOTE 2 ABOVE FOR EXAMPLE.

4. GRADE 500 REINFORCEMENT TEST CERTIFICATES SHALL BE AVAILABLE FOR WEBBER DESIGN PTY. LTD. FOR APPROVAL PRIOR TO FIXING UPON REQUEST.

5. COVER TO REINFORCEMENT TO BE (UNLESS NOTED OTHERWISE):

TYPE	INTERNAL FACES	EXTERNAL FACES
FOOTINGS / PILE CAPS	-	50
COLUMNS	30	40
WALLS	30	40
RETAINING WALLS	50	50
BEAMS	35	40
SUSPENDED SLABS	25	40
SLABS ON GROUND	30	40
PRECAST	20	30

6. HOOKS AND COGS SHALL COMPLY WITH AS 3600 UNLESS OTHERWISE SHOWN. SLOPES OF CRANKS ARE NOT TO EXCEED 1 IN 6.

7. REINFORCE SLAB RE-ENTRANT CORNERS WITH 2N16 x 1500 BARS PLACED AT 45 DEGREES TIED TO THE INSIDE OF THE REINFORCEMENT.

8. MINIMUM LAPS FOR:
   MESH OVERLAP 2 OUTERMOST TRANSVERSE BARS
   N & R BARS 50 BAR DIAMETERS UNLESS NOTED OTHERWISE

9. REINFORCEMENT SHOWN DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION

10. ALL REINFORCEMENT SHALL BE SECURELY SUPPORTED IN ITS CORRECT POSITION DURING CONCRETING AT 800mm MAXIMUM WIDTH FOR BARS AND 600mm MAXIMUM WIDTHS FOR MESH. BAR CHAIRS IN REINFORCED CONCRETE ARE TO BE IN ACCORDANCE WITH AS / NZS 2425:2015

11. MOVE AFFECTED REINFORCEMENT TO EITHER SIDE OF HOLES IN SLAB UNLESS NOTED OTHERWISE.

12. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED WITHOUT THE PRIOR APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL ESTABLISH A WELDING PROCEDURE SUBMITTED TO THE ENGINEER FOR APPROVAL. ALL WELDING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH AS 1554 PART 3.

13. ALL WELDING TO BE CARRIED OUT BY A QUALIFIED AUSTRALIAN SUPERVISOR, WELDING QUALIFICATION TO BE PRESENTED UPON REQUEST. MAXIMUM WELD SIZE TO BE 4 CFW EACH PASS, WITH E48XX ELECTRODE. THE CONTRACTOR SHALL ENGAGE A WELDING INSPECTOR TO INSPECT THE PROCEDURE AND SITE WELDS.

14. REINFORCEMENT IS NOT PERMITTED TO BE HEATED ABOVE 400 DEGREES

15. NO WELDS PERMITTED WITHIN 50mm OF BAR BENDS.

16. ABBREVIATIONS USED IN DRAWINGS:

EW	EACH WAY
NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
CTR	CENTRAL
T	TOP
B	BOTTOM
LG	BAR LENGTH (NOT INCLUDING COG)
CTS	CENTRES
REINF.	REINFORCEMENT
SEC.	SECONDARY

17. SAFETY MESH TO BE SUPPLIED FOR DEPTHS GREATER THAN 350mm AND INSTALLED AS REQUIRED ONSITE.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

2

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC. AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW. AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

GENERAL NOTES - SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-001	2

WEBBER DESIGN

A1 0 1 2 3 4 5 6 7 8 9 10

TENDER NOTES:

1. ALL DRAWINGS ARE CURRENTLY BEING COORDINATED WITH ARCHITECT AND SERVICES ENGINEER. BUILDER SHALL MAKE ALLOWANCE WHERE NECESSARY OR RAISE QUERIES FOR CLARIFICATION.

2. SERVICES PENETRATIONS TO BE COORDINATED WITH SERVICES ENGINEER. WHERE RELOCATION IS NOT POSSIBLE, BUILDER SHALL MAKE ALLOWANCE FOR STRUCTURAL REDESIGN AS DEEMED NECESSARY. NO SETDOWN HAS BEEN ALLOWED FOR. IF REQUIRED, ADDITIONAL CONCRETE DEPTH, REINFORCEMENT AND CONCRETE STRENGTH MAY BE REQUIRED.

3. REFER TO ARCHITECT FOR ALL ARCHITECTURAL FACADE TREATMENT.

4. BUILDER SHALL MAKE ADDITIONAL ALLOWANCE FOR CONSTRUCTION SEQUENCE/JOINTS/POUR STRIPS, ADDITIONAL REINFORCEMENT AND ADDITIONAL LOADING CAPACITY. THESE DOCUMENTATIONS ARE FOR THE BASE BUILDING STRUCTURAL REQUIREMENTS ONLY. ANY CONSTRUCTION RELATED WORKS, REDESIGN AND COST ARE EXCLUDED. BUILDER TO MAKE NECESSARY ALLOWANCE AS REQUIRED.

5. ALTERNATIVE METAL DECK COMPOSITE FORMWORK SHALL BE IN EQUIVALENT TO DECK SPECIFICATION NOMINATED. CERTIFICATES OF COMPLIANCE SHALL BE PROVIDED PRIOR TO CONSTRUCTION.

6. ADDITIONAL BUILDING MAINTENANCE ACCESS SYSTEM FIXING AND LOADING REQUIREMENT SHALL BE REVIEWED AND ALLOWED FOR.

7. REFER ARCHITECTURAL FOR OTHER SECONDARY STRUCTURAL STEEL (NON-BASE BUILDING RELATED) SUCH AS HAMPER TRUSS, CEILING FRAME, BALUSTRADES, ARCHITECTURAL FEATURE WALL, FENCE. WHERE NOT DOCUMENTED, BUILDER SHALL MAKE ADEQUATE ALLOWANCE.

8. EDGE TREATMENTS (Eg. PRECAST, SLAB THICKENINGS, LIGHTWEIGHT FACADE, CAST-IN PFC EDGE, ETC.) TO ALL SUSPENDED RESIDENTIAL SLABS ARE CURRENTLY BEING REVIEWED ALONG WITH ITS CORRESPONDING CANTILEVER SPAN. THE EXTERNAL COLUMNS MAY NEED TO BE ADJUSTED TO SUIT SLAB THICKNESS NOMINATED ALTERNATIVELY, CANTILEVER SPAN WILL NEED TO BE THICKENED WITH REVISED SPECIFICATION. TRANSFER SLAB AND BEAM SHALL BE REVIEWED ACCORDINGLY.

9. ALL ARCHITECTURAL FACADES ARE BEING COORDINATED AND UNDER REVIEW FOR ADEQUATE STRUCTURAL CAPACITY, STRUCTURAL SUPPORT AND PANEL BREAK UPS. BUILDER TO MAKE ALLOWANCE AS NECESSARY FOR TRANSPORTATION AND REDESIGN.

10. THE CLIENT REQUIRES ALL ADDITIONAL DOCUMENTATION WHICH RELATES TO BULDERS ALTERNATIVE STRUCTURAL SOLUTION, NON BASE STRUCTURE RELATED SECONDARY STEELWORK SHALL BE CARRIED OUT BY WEBBER DESIGN AND ADDITIONAL CERTIFICATION COST BY OTHERS SHALL BE BORNE BY THE BUILDER.

POST TENSIONING:

1. THE POST TENSIONING CONTRACTOR / INSTALLER IS TO ENSURE ALL STRESSING EQUIPMENT SHALL POSSESS CURRENT CALIBRATION CERTIFICATES, AVAILABLE TO THE ENGINEER UPON REQUEST.

2. ALL POST TENSIONING AND PRE-STRESSED WORKS SHALL BE IN ACCORDANCE WITH AS 3600 AS A MINIMUM.

3. ALL CABLE DRAPES ARE SHOWN TO THE UNDERSIDE OF THE DUCT, DIMENSIONS TO LIVE AND DEAD ENDS ARE MEASURED TO THE CENTRE OF CONCRETE DEPTH.

   (a) TENDONS SHALL BE PROFILED AND LOCATED IN ACCORDANCE WITH THE DRAWING USING CHAIR SUPPORTS OR SIMILAR OF THE SPECIFIED HEIGHTS. TENDONS SUPPORTS SHALL BE SUPPLIED AND INSTALLED TO A VERTICAL TOLERANCE OF ± 2.0mm.

   (b) SUPPORT CHAIRS SHALL BE EVENLY SPACED BETWEEN HIGH POINTS AND AT A NOMINAL MAXIMUM SPACING OF 1200mm.

   (c) SPECIFIED PROFILE HEIGHTS ARE GIVEN FROM SOFFIT OF SLAB/BEAM TO:
   - UNDERSIDE OF DUCT ALONG TENDON LENGTH (U.N.O)
   - CENTRE LINE OF ANCHOR AT END ANCHORAGES (U.N.O.)

4. ALL BAND & EDGE TENDONS ARE TO HAVE ONIONED DEAD ENDS WITH THE FREE LENGTH OF THE STRAND TAPED AND GREASED TO ENSURE LOAD TRANSFER TO THE DEAD END ANCHORAGE.

5. ALL PRE-STRESSING CABLES TO CONSIST OF SUPER STRESS RELIEVED LOW RELAXATION STRANDS (TO AS1311) SHALL BE:

   12.7mm STRANDS
   - 184kN MINIMUM BREAKING LOAD
   - MAXIMUM JACKING LOAD = 85% OF BREAKING LOAD = 156 kN/STRAND
   - STRESS PER STRAND - JACKING FORCE:
     25% = 39kN (24 HOURS MAX. OR 7MPa)
     100% = 156 kN (7 DAYS OR 22MPa)

   15.2mm STRANDS
   - 250kN MINIMUM BREAKING LOADS
   - MAXIMUM JACKING LOAD 85% = OF BREAKING LOAD = 212kN / STRAND
   - STRESS PER STRAND - JACKING FORCE:
     25% = 53kN (24 HOURS MAX. OR 9MPa)
     100% = 212 kN (7 DAYS OR 25MPa)

6. STRESS ALL STRANDS 25% AT 24 HOURS AND THEN 100% WHEN CONCRETE STRENGTH REACHES 25MPa.

7. THE END OF ALL STRANDS SHALL BE SPRAY PAINTED (OR SIMILAR) 100mm FROM ANCHORAGE SO THAT THE EXTENSION CAN BE CLEARLY SEEN BY THE ENGINEER.

8. TENDON EXTENSIONS SHALL BE MEASURED TO THE ACCURACY OF 3mm. THE STRANDS SHALL NOT BE CUT AND DUCTS CONTAINING TENDONS GROUTED UNTIL THE ENGINEER APPROVES THE STRANDS EXTENSIONS. A MINIMUM OF 24 HOURS NOTICE IS REQUIRED PRIOR TO THE ENGINEERS APPROVAL.

9. THE SPECIALIST CONTRACTOR SHALL BE RESPONSIBLE FOR THE PERFORMANCE OF ANCHORAGES AND SUPPLY ANY ADDITIONAL ZONE REINFORCEMENT DEEMED NECESSARY.

10. THE STRESSING CONTRACTOR SHALL SUBMIT 2 COPIES OF THE SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL SETTING OUT:

    a. PROPOSED ORDER OF STRESSING
    b. DETAILS OF ALL INTERMEDIATE DRAPES
    c. DETAILS OF ALL ANCHORAGES

11. TENDON PROFILES GENERALLY SHALL BE PARABOLIC WITHIN SPANS U.N.O. SLAB TENDON PROFILES SHALL BE HORIZONTAL OVER BAND BEAMS. REFER TO PLANS FOR CHAIR HEIGHTS.

12. TENDON ANCHORAGE POSITIONS (IN PLAN) SHALL BE AS PER SETOUT ON DRAWINGS (TOLERANCE ±20mm). MINOR DEVIATIONS FROM SPECIFIED PLAN ALIGNMENT MAY BE ALLOWED BETWEEN ANCHORAGES (TOLERANCE ± 100mm), HOWEVER REFER ANY DISCREPANCIES AND/OR OBSTACLES TO BUILDER/DESIGN ENGINEER FOR DIRECTION PRIOR TO TENDON INSTALLATION.

13. TENDON PROFILE AND/OR ALIGNMENT SHALL HAVE PRIORITY OVER OTHER REINFORCEMENT OR CAST IN ITEMS (CONDUITS ETC)

14. TOTAL JACKING FORCE = 156 kN/STRAND (85% OF THE STRAND BREAKING LOAD)

15. DUCT TO BE 19mm FLAT DUCT FOR SLAB POST TENSIONING. 75mm OR 90mm WIDE DEPENDING ON NUMBER AND SIZE OF STANDS.

16. STRAND EXTENSIONS TO BE FORWARDED TO THIS OFFICE FOR APPROVAL WHERE DESIGNED BY WEBBER DESIGN.

17. RECORD AND REVIEW STRAND EXTENSIONS ON COMPLETION OF STRESSING. SUBMIT FINAL EXTENSIONS TO THIS OFFICE PRIOR TO PROCEEDING WITH FURTHER WORK.

18. TENDON GROUTING SHALL BE CONDUCTED WITHIN 14 DAYS OF APPROVAL OF FINAL EXTENSIONS.

19. CONCRETE SAMPLES FOR TRANSFER STRENGTH TESTS SHALL BE SITE CURED UNDER CONDITIONS CONSISTENT WITH THE CONCRETE POUR. (TYPICALLY AIR CURED).

20. WHERE DRAPE IS DEEMED CLASHING, ADJUST SLAB TENDONS LOCALLY TO ACHIEVE NOMINATED DRAPE. REFER WEBBER DESIGN FOR CLARIFICATION IF IN DOUBT.

21. IF IN DOUBT WITH THE QUALITY OF THE CONCRETE AT TIME OF STRESSING, REFER TO ENGINEER FOR DIRECTION AND ADVICE.

22. POST TENSION TO COMPLY WITH FOLLOWING CRACK CONTROL REQUIREMENTS (U.N.O. ON PLAN):

- INTERNAL AREAS	MODERATE
- EXTERNAL AREAS (BALCONIES, TERRACES, ROOF)	STRONG
- AREAS IN CONTACT WITH GROUND	STRONG

DESIGN AND CONSTRUCTION POST TENSIONING FLOOR SLAB AND BEAM DESIGN BRIEF:

1. THE SUSPENDED FLOOR SLABS ARE A DESIGN AND CONSTRUCT COMPONENT. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, CERTIFICATION, CONSTRUCTION AND PRICING ASPECTS OF THIS COMPONENT. ANY RATES SUPPLIED ARE INDICATIVE ONLY AND SHOULD BE VERIFIED BY THE CONTRACTOR BASED ON THEIR PREFERRED DESIGN.

2. THE CONTRACTOR IS RESPONSIBLE FOR ALL SUSPENDED FLOOR SLABS AND ROOF SLAB, EXCLUDING SLAB TO LIFT OVERRUN.

3. COMPUTATIONS SHALL BE SUBMITTED TO WEBBER DESIGN FOR REVIEW AND APPROVAL. COMPUTATIONS PROVIDED SHALL BE REFERENCED WITH PAGES AND IN ITS ENTIRETY. IF DESIGN INPUT AND OUTPUT IS LIMITED DUE TO LIMITATION OF DESIGN SOFTWARE, THE SOFTWARE FILE SHALL BE PROVIDED AS PART OF THE SUBMISSION.

4. SHOP DRAWINGS SHOWING COMPLETE TENDON PROFILES, POST TENSIONING DETAILS, ANCHOR DETAILS AND ADDITIONAL REINFORCEMENT REQUIRED FOR CONSTRUCTION MUST BE SUBMITTED WITH THE COMPUTATIONS FOR REVIEW AND APPROVAL BY WEBBER DESIGN.

5. THE CONCRETE PROFILE SHOWN HEREIN REPRESENTS A COORDINATED STRUCTURE. THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE HOWEVER THE SUPERINTENDENT IS NOT BOUND TO ANY ALTERNATIVE.

GENERAL DESIGN CRITERIA:

THE DESIGN SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS AND SPECIFIC PROJECT REQUIREMENTS.
IN ADDITIONAL THE DESIGN SHALL COMPLY WITH THE RELEVANT STRUCTURAL ITEMS NOTED BELOW:

1. THE POST TENSIONING CONTRACTOR SHALL ENSURE POTENTIAL INTERNAL FORCES AND CRACKS INDUCED BY PRESTRESSING, SHRINKAGE, AND/OR TEMPERATURE ARE CONTROLLED IN THE VICINITY OF RESTRAINING ELEMENTS AND MAKE PROVISION FOR MOVEMENT AND SHRINKAGE AS REQUIRED THROUGHOUT, INCLUDING MOVEMENT JOINTS, POUR STRIPS, LOW SHRINKAGE CONCRETE MIX ETC.

2. NO COLUMN STIFFNESS SHOULD BE USED IN THE SLAB AND BEAM DESIGN.

3. SLABS TO BE CHECKED FOR PUNCHING WITH MOMENT DERIVED WITH 100% COLUMN STIFFNESS. PT CONTRACTOR TO MAKE ALLOWANCE FOR SHEAR HEAD REINFORCEMENT (WHERE REQUIRED) TO SATISFY PUNCHING SHEAR REQUIREMENTS.

4. Ieff TO Igross MAX RATIO TO BE DETERMINED BY THE DESIGNER BUT IN NO INSTANCE SHALL BE GREATER THAN 0.7 FOR THE SLAB AND BEAM CALCULATIONS.

5. DEFLECTION CRITERIA SHALL GENERALLY BE IN ACCORDANCE WITH AS3600 SUBJECT TO THE FOLLOWING, MAXIMUM LONG TERM DEFLECTIONS SHALL GENERALLY BE LIMITED TO:
   - TYPICAL SLAB AND BEAMS -- SPAN/250 OR 20mm MAXIMUM, CANTILEVERS --SPAN/125 OR 15mm MAXIMUM.
   - SLABS AND BEAMS SUPPORTING BRITTLE ELEMENTS -- SPAN/500, CANTILEVER -- SPAN/250 INCREMENTAL.
   - TRANSFER SLABS AND BEAMS -- SPAN/1000 OR 10mm MAXIMUM.
   - DIFFERENTIAL DEFLECTION BETWEEN FLOORS TO BE LIMITED TO SPAN/500 OR 15mm AT FACADE LOCATIONS.

6. POST TENSIONING CONTRACTOR SHALL ALLOW FOR LIVE LOAD PATTERNING FOR CANTILEVERS AND AREAS WITH LOCALIZED OR HIGH LIVE LOADS (LOADING DOCK AND CAR PARK) IN ACCORDANCE WITH AS3600.

7. REFER LOADING DRAWINGS FOR ALL GENERAL IN-SERVICE APPLIED LOADS. ALL ADDITIONAL APPLIED LOADS (BLOCK WALLS, PRECAST PANELS ETC) SHALL BE ADDITIONAL AS PER THE ARCHITECTS DRAWINGS.

8. ALL SPECIFIC TRANSFER LOADS SHALL BE DETERMINED BY THE DESIGN ENGINEER AND SUBMITTED TO WEBBER DESIGN FOR REVIEW AND APPROVAL WITH THE COMPUTATIONS. ANY ADDITIONAL LATERAL LOAD SHALL BE ALLOWED FOR ACCORDINGLY. (REFER WEBBER DESIGN FOR CONFIRMATION)

9. POST TENSIONING CONTRACTOR SHALL COORDINATE ALL SLAB SERVICE PENETRATIONS FOR TENDON AND REINFORCEMENT LAYOUT.

10. ALL MOVEMENT JOINTS AND DETAILING SHALL BE BY THE DESIGN ENGINEER AND BE CO-ORDINATED WITH THE ARCHITECT WHERE APPLICABLE.

11. ALL POST TENSION SLABS AND BEAMS ARE TO BE EDGE STRESSED (ACCESSIBILITY, POUR SEQUENCE AND SITE CONDITIONS PENDING) SHOULD PAN STRESSING BE REQUIRED, BUILDER TO COORDINATE WITH POST-TENSION CONTRACTOR.

12. PT CONTRACTOR TO MAKE ALLOWANCE FOR STRUCTURAL INTEGRITY REINFORCEMENT IN ACCORDANCE WITH CL9.2.2 OF AS3600-2018 FOR ALL SLABS AND BEAMS

13. PT CONTRACTOR TO PROVIDE A MINIMUM P/A OF 1.4MPA (AFTER FINAL LOSSES) TO ALL INTERNAL CONCRETE SLABS AND BEAMS, AND 2.0 MPa (AFTER FINAL LOSSES) TO ALL EXTERNAL AREAS (BALCONIES, TERRACES, EXPOSED ROOFS, ETC.) PLUS SL82 TOP MESH U.N.O.

14. ALL EXPOSED SLABS/BEAMS CRACK WIDTH TO BE LIMITED TO 0.3MM MAX

15. REFER TO ARCHITECT'S DRAWINGS FOR ALL SETDOWN, STEPS, HOBS, KERBS DRIP GROOVES, FALLS AND RECESSES U.N.O. SLAB THICKNESSESS SHOWN ARE MINIMUM.

16. ALL HOBS ARE NON-STRUCTURAL. TYP. UNO.

17. BUILDER TO COORDINATE LOCATION OF CONSTRUCTION JOINT WITH APPOINTED SLAB DESIGNER.

18. SAFETY MESH IS TO BE SUPPLIED FOR DEPTHS GREATER THAN 350MM AND INSTALLED AS REQUIRED ONSITE. ENSURE ALLOWANCE IS MADE FOR SAFETY MESH.

19. PROVIDE WATERPROOF SHEET MEMBRANE TO ALL EXTERNAL SLABS TO ARCHITECT'S AND CONTRACTOR'S DETAILS U.N.O.

STRUCTURAL STEEL:

1. REFER TO ARCHITECTS DRAWINGS FOR ANY ADDITIONAL INCIDENTAL AND SECONDARY STEELWORK REQUIRED NOT SHOWN ON STRUCTURAL DRAWINGS.

2. UNLESS OTHERWISE NOTES ALL STRUCTURAL STEEL SHALL BE:
   - GRADE 300 PLUS FOR UB, UC, WB, WC, PFC, ANGLES, FLATS AND HOT ROLLED PLATES
   - GRADE 350 FOR RHS, CHS AND SHS

3. BOLTS SHALL BE
   - 8.8/S HIGH STRENGTH STRUCTURAL BOLTS OF STRESS GRADE 8.8 TO AS 1252 TIGHTENED TO A SNUG TIGHT CONDITION
   - 8.8/TB HIGH STRENGTH STRUCTURAL BOLTS OF STRESS GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 4100 AS A BEARING JOINT
   - 8.8/TF HIGH STRENGTH STRUCTURAL BOLTS OF STRESS GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 4100 AS A FRICTION JOINT
   - 4.6/S COMMERCIAL GRADE BOLTS TO STRESS GRADE 4.6 TO AS 1252 TIGHTENED TO A SNUG TIGHT CONDITION

4. ALL WELDS SHALL BE 6mm CONTINUOUS FILLET FROM E48XX ELECTRODES, ALL WELDS SHALL BE CATEGORY SP UNLESS NOTED OTHERWISE.

5. ALL CLEATS AND GUSSETS SHALL BE 10mm PLATE UNLESS NOTED OTHERWISE.

6. ALL EXPOSED STEELWORK SHALL BE HOT DIP GALVANISED UNLESS NOTED OTHERWISE.

7. ALL HOLLOW SECTIONS SHALL BE FULLY SEALED USING 5mm PLATES UNLESS NOTED OTHERWISE. PROVIDE BLOW HOLES TO ALL GALVANISED SECTIONS.

8. SHOP DRAWINGS TO BE SUBMITTED FOR DOCUMENTATION COMPLIANCE REVIEW PRIOR TO FABRICATION. ALL 5 WORKING DAYS FOR REVIEW. REVIEW DOES NOT INCLUDE CHECKING OF DIMENSIONS.

9. ALL PRE-CAMBERS TO BE NATURAL CAMBER WITH UNIFORM CURVE TO BE UPWARDS.

10. STEELWORK SHALL BE IN ONE LENGTH, UNLESS OTHERWISE APPROVED. REFER TO DRAWINGS FOR ALL SPLICE LOCATIONS.

11. ALL HOLES SHALL BE 2mm OVERSIZED IN CLEATS, 10mm OVERSIZED FOR H.D. BOLT DIAMETERS IN BASE PLATES WITH 50x50x6.0 MINIMUM WASHERS.

12. USE WASHERS UNDER ALL NUTS.

13. ALL BOLTS TO BE GRADE 8.8/S, SNUG TIGHTENED UNLESS NOTED OTHERWISE.

14. ALL MEMBERS SHALL BE ERECTED FREE FROM TWISTS AND DISTORTIONS.

15. ALL SEATING AND BASE PLATES SHALL BE FULLY GROUTED WITH NON-SHRINK GROUT WITH PROPRIETARY DRY PACK SYSTEM.

16. ALL COLD FORMED STEEL TO CONFORM WITH AS/NX 4600 AND MANUFACTURERS SPECIFICATIONS.

17. PURLIN & GIRT BOLTS AND CLEAT PLATES AS PER MANUFACTURERS RECOMMENDATIONS.

18. UNLESS NOTED OTHERWISE, FIX HANGING STRAPS, RODS, BRACES AND THE LIKE FOR DUCTWORK, CONDUITS, PIPES ETC. TO PURLIN WEBS ONLY.

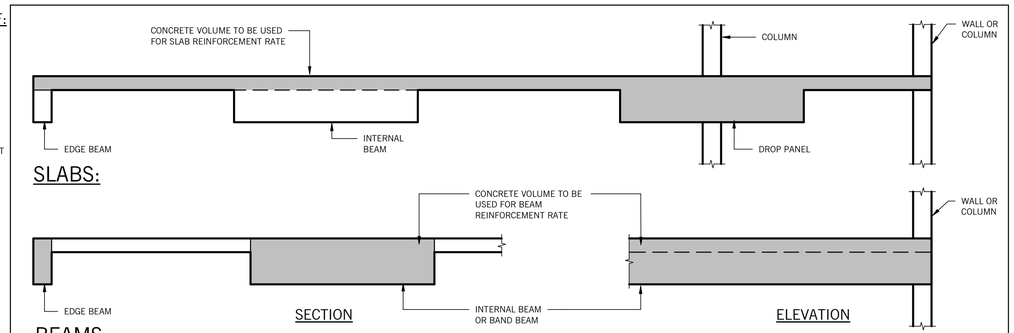
19. ARCHITECTURAL / OTHER SERVICES FIXINGS AND REQUIREMENTS ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS.

20. MINIMUM BRIDGING REQUIREMENTS FOR STEEL PURLINS SHALL BE 2 ROWS IN END SPANS AND 1 ROW IN INTERNAL SPANS FOR ANY SPANS MORE THAN 2500mm UNLESS NOTED OTHERWISE.

21. ALL ROOF BRACING TO BE HOOK BOLTED TO THE WEB OF THE PURLINS AND BRACED WITH 10mm DIAMETER HOOK BOLTS.

22. ALL WALL AND ROOF BRACING TO BE INSTALLED PRE-TENSIONED, FREE FROM DISTORTIONS AND DEVIATIONS. ALL RODS TO HAVE TURNBUCKLES OR SIMILAR DEVICE.

23. CONTRACTOR SHALL SUBMIT TO THIS OFFICE CONSTRUCTION METHODOLOGY, INCLUSIVE OF ALL TEMPORARY ERECTION STRUCTURE PRIOR TO THE COMMENCEMENT OF STEEL INSTALLATION.



WALLS, COLUMNS:

METHOD OF MEASURING REINFORCEMENT:

THE FOLLOWING CONCRETE VOLUMES ARE TO BE USED IN CONJUNCTION WITH OUR NOMINATED REINFORCEMENT RATES NOTED IN kg/m³ FOR PARTICULAR STRUCTURAL ELEMENTS TO CALCULATE REQUIRED STEEL TONNAGE OF BASIC REINFORCEMENT.

THE REINFORCEMENT RATE NOTES APPLY THROUGH INTERSECTING ELEMENTS. IN SIMPLE IT IS DESIGNED THAT WAY, DRAWN THAT WAY, CONSTRUCTED THAT WAY AND IS TO BE MEASURED THAT WAY.

THE RATES QUOTED IN OUR DOCUMENTATION DO NOT INCLUDE THE FOLLOWING ITEMS WHICH SHOULD BE ALLOWED FOR SEPARATELY BY THE CONTRACTOR AND/OR SUBCONTRACTOR.

- ROLLING MARGIN.
- PULL OUT BARS.
- REID BAR CONNECTORS OR SIMILAR.
- P.T. ANTI BURST REINFORCEMENT.
- P.T. ADDITIONAL REINFORCEMENT FOR PAN STRESSING IN LIEU OF EDGE STRESSING. AN ADDITIONAL ALLOWANCE OF 20 kg/PAN SHOULD BE ALLOWED.
- CAST IN FERRULES OR ASSOCIATED REINFORCING REQUIRED FOR ANY FACADE ELEMENTS.
- BAR CHAIRS.
- SAFETY MESH TO PENETRATIONS OR ANY ADDITIONAL WALK MESH.
- TRIMMERS TO SERVICES PENETRATION.
- CONSTRUCTION JOINT REINFORCEMENT. AN ALLOWANCE OF 20 kg/m OF ADDITIONAL REINFORCEMENT TO THE SLAB SHOULD BE USED WHERE THE JOINT IS LOCATED AT APPROXIMATELY QUARTER SPAN IN A LOW STRESS AREA. BEAM CONSTRUCTION JOINT REQUIREMENTS ARE ADDITIONAL AND SUBJECT TO FINAL DESIGN.
- BUILDERS EQUIPMENT REQUIREMENT SUCH AS LOADING BAYS, ALIMAK, BOOM PUMP, CRANE BASE, BINS ETC.
- THE CONTRACTOR SHALL ALLOW FOR ADDITIONAL REINFORCEMENT IF REQUIRED FOR ANY CONSTRUCTION JOINTS,
- TEMPORARY PENETRATIONS REQUIRED IN SLABS DURING CONSTRUCTION.

METHOD OF MEASURING POST TENSIONING

THE FULL SLAB AREA DEFINED BY THE BUILDING PERIMETER INCLUSIVE OF PENETRATIONS, LIFT CORES, ETC. IS TO BE USED IN CONJUNCTION WITH OUR NOMINATED P.T. RATES NOTED IN kg/m² TO CALCULATE REQUIRED P.T. TONNAGE.

FOR SPECIFIC BEAMS OR SLABS WHERE NOTED ACTUAL CABLE AND STRAND NUMBERS SHOULD BE USED AND ARE ADDITIONAL TO THE NOMINATED kg/m² RATES.

STEEL FRAMING TENDER NOTE:

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL DRAWINGS BY THE STEEL FABRICATOR TO ENSURE AN ACCURATE APPROACH TO ALL MAJOR AND SECONDARY STEEL ITEMS ARE PRICED. NOT ALL SECONDARY STEEL IS NOTED ON THE STRUCTURAL DRAWINGS.

MASONRY:

1. ALL WORKMANSHIP TO BE IN ACCORDANCE WITH AS 3700.

2. THE DESIGN OF UNCONFINED COMPRESSIVE STRENGTH OF MASONRY SHALL BE AS FOLLOWS WITH RESPECTIVE MORTAR MIX (CEMENT:LIME:SAND):

- INFILL BLOCK WALLS	15MPa	1:1:6
- LOAD-BEARING BLOCK WALLS	15MPa	1:0.25:3
- INFILL BRICK WALLS	40MPa	1:1:6
- LOAD-BEARING BRICK WALLS	40MPa	1:0.25:3

3. NO MORTAR ADMIXTURES ARE PERMITTED WITHOUT PRIOR APPROVAL BY THE ENGINEER.

4. NO CHASES ARE ALLOWED FOR LOAD-BEARING MASONRY WITHOUT PRIOR APPROVAL BY THE ENGINEER.

5. MORTAR JOINTS SHALL BE 10mm THICK WITH MAXIMUM TOOLED DEPTH OF 3mm UNLESS NOTED OTHERWISE.

6. CLEAN-OUT HOLES SHALL BE PROVIDED AT THE BASE OF ALL CORES OR CAVITIES WHICH ARE TO BE GROUTED OR FILLED.

7. REINFORCING STEEL SHALL BE SECURELY FIXED IN POSITION BEFORE GROUTING.

8. ALL MORTAR OBSTRUCTIONS SHALL BE REMOVED FROM CORE AND CAVITIES WALL PRIOR TO GROUTING.

9. GROUT SHALL BE THOROUGHLY COMPACTED USING A PLAIN BAR.

10. ALL GROUT FOR INFILL (BOND BEAMS, CORE FILLING, CAVITY FILLING, ETC) SHALL BE
    - fc=20MPa MINIMUM
    - MORTAR MIX (CEMENT:LIME:SAND) OF 1:0.25:3
    - 10mm AGGREGATE
    - MINIMUM CEMENT CONTENT OF 300kg/m³
    - MAXIMUM SLUMP TO BE 230mm
    - FILLED IN 1000mm MAXIMUM LIFTS.

11. CONTROL JOINTS SHALL BE PLACED IN ALL MASONRY WALLS AT 4000mm MAXIMUM VERTICALLY AND 8000mm MAXIMUM HORIZONTALLY AT LOCATIONS AS SHOWN ON THE ARCHITECTURAL DRAWING AND:
    - AT MAJOR CHANGES IN WALL HEIGHT
    - AT CHANGES IN WALL THICKNESS OTHER THAN FOR PIERS AND BUTTRESSES
    - AT CONTROL JOINTS IN FOOTING, FLOOR SLABS AND ROOF SLABS.
    - AT CHASES AND RECESSES FOR PIPES, COLUMNS, FIXTURES, ETC.
    - AT ONE OR BOTH SIDES OF WALL OPENING
    - NEAR WALL INTERSECTIONS
    - NEAR RETURN ANGLES IN "L", "T" AND "U" SHAPED STRUCTURES. THE BUILDER SHALL SUBMIT TO THE ENGINEER DRAWINGS OF PROPOSED CONTROL JOINT LOCATIONS AND LAYOUT FOR REVIEW AND COMMENT PRIOR TO THE START OF LAYING BLOCKS AND BRICKS.

12. WALL TIES SHALL BE PROVIDED AT 600mm MAXIMUM HORIZONTALLY AND VERTICALLY WITH 300mm MAXIMUM FROM EDGE OF WALL AND SHALL CONSIST OF 3.1mm DIAMETER, GALVANISED WIRE UNLESS NOTED OTHERWISE ON THE DRAWINGS.

13. ALL MASONRY IS TO BE FIXED TO ADJOINING CONCRETE AND/OR STEEL SUPPORTING MEMBERS BY MFA 3/3 MASONRY ANCHORS (OR EQUIVALENT) AT 600mm MAXIMUM VERTICALLY AND MFA 4/M MASONRY ANCHORS (OR EQUIVALENT) AT 1000mm MAXIMUM HORIZONTALLY UNLESS NOTED OTHERWISE.

14. MASONRY IS NOT TO BE ERECTED OFF SUSPENDED WORK UNTIL FORMWORK AND FALSEWORK SYSTEMS PROVIDING SUPPORT HAS BEEN REMOVED.

15. NO ATTACHMENTS (e.g. SIGNAGE, AWNINGS, FLAG POLES, BALUSTRADE) TO MASONRY WALL ARE PERMITTED WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.

16. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE DESIGN OF ALL BRACING, PROPPING AND NEEDLING REQUIRED FOR THE MASONRY WORKS.

17. REFER TO MANUFACTURERS SPECIFICATIONS FOR MASONRY ANCHOR INSTALLATION REQUIREMENTS.

18. THE OBSERVATION OF CONSTRUCTION OF NON LOAD-BEARING MASONRY WALLS / PARTITIONS AND OTHER NON LOAD-BEARING ELEMENTS IS NOT INCLUDED IN THE ENGINEERS SCOPE OF WORKS.

WATERPROOFING NOTE:-

CONCRETE IN WALLS, FLOOR SLABS EXPOSED TO EXTERNAL WEATHER AND BASE OF ALL PITS TO CONTAIN WATERPROOFING ADDITIVE, E.G. XYPEX ADMIX C-1000NF OR EQUIVALENT, TO MANUFACTURERS RECOMMENDATIONS. APPLY A SLURRY COAT OF WATERPROOFING ADDITIVES TO CONSTRUCTION JOINTS. ALSO REFER TO MANUFACTURERS RECOMMENDATIONS. ALL CONSTRUCTION JOINTS AND PIT WALL BASES TO CONTAIN A CONTINUOUS WATERSTOP TO BASE OF WALL, E.G. HYDROTITE WATERSTOP CJ0725-3K OR EQUIVALENT.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

2

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

GENERAL NOTES - SHEET 2

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-002	2

PRINT TIME: 18/12/2020 11:17:30 AM C:\Users\Peter\Documents\WI\20023 - LAHC Warwick Farm NSW - Central - STRUCTURAL_peter2(1)EP.rvt

WEBBER DESIGN

A1 0 1 2 3 4 5 6 7 8 9 10

SITE RETENTION SPECIFICATION:

GENERAL REQUIREMENTS:

PRELIMINARIES:-

SURVEY POINTS SHALL BE ESTABLISHED ON THE ADJACENT BUILDINGS WALLS AT FOUR (4) MIN. LOCATIONS. THE LOCATION AND LEVEL OF THESE POINTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER & MONITORED BY A LICENSED SURVEYOR AT MAXIMUM WEEK INTERVALS INITIALLY (MAY BE ADJUSTED AS PROJECT PROCEEDS). DATE AND RESULTS SHALL BE PROGRESSIVELY ADDED TO A SURVEY PLAN, AND COPIES FORWARDED TO THE ENGINEER AT EACH STAGE. THE TOP OF SOLDIERS SHALL BE LOCATED BY SURVEY UPON INSTALLATION, AND AT REGULAR INTERVALS DURING THE PROJECT. ANY MOVEMENT DETECTED SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER.

CONSTRUCTION SEQUENCE SOLDIER SHORING WALL:-

1. DRILL HOLES TO THE SETOUT AND DEPTHS SHOWN ON PLANS, ELEVATIONS AND SECTIONS. PLACE REINFORCEMENT CAGE AND POUR SOLDIERS. NOTE SOLDIERS MAY NEED TO BE CONSTRUCTED IN HIT 1 MISS 1 SEQUENCE DEPENDENT ON GEOTECHNICAL ADVICE.
2. CONSTRUCT CAPPING BEAMS
3. EXCAVATE WITHIN SITE TO A LEVEL 500mm BELOW TOP ANCHOR LOCATION.
4. DRILL, INSTALL AND STRESS ANCHORS (REFER GROUND ANCHORS NOTES).
5. EXCAVATE BETWEEN SOLDIERS TO THE BACK OF THE INFILL WALL, DRILL AND EPOXY TIE BARS. REFER DETAIL.
6. INSTALL STRIP DRAINS.
7. SPRAY INFILL WALL PANELS. (REFER SPECIFICATION FOR SPRAY MIX DETAILS, PROCEDURES ETC.) MAXIMUM HEIGHT UNRESTRAINED SHALL BE 1.5m.
8. REPEAT STEPS 3 THROUGH 7 AS REQUIRED
9. MINIMUM THREE MONTHS AFTER POURING BRACING FLOOR SLAB, CLEAN OUT REBATES AT SUSPENDED BASEMENTS AND GROUT AS SHOWN ON DETAIL. WHEN GROUT HAS ATTAINED STRENGTH OF (f'c) 40MPa, GROUND ANCHORS SHALL BE DE-STRESSED, ANCHOR HEADS REMOVED.

TOLERANCE FOR PIERS/SOLDIERS:-

1. PIERS SHALL BE CENTRED WITHIN 25mm OF THE "DESIGN CENTRE" AS INDICATED ON THE PLANS.MAXIMUM "OUT OF PLUMB" OF PIERS SHALL BE 25mm.
2. SOLDIERS SHALL BE SET OUT BY STRINGLINE SO THAT INTERNAL FACES ARE TRUE TOPOSITION AND LINE. MAXIMUM OUT OF POSITION "ALONG WALL" (AT INITIAL SURFACE LEVEL) SHALL BE 25mm.
3. PIERS SHALL BE CENTRED SUCH THAT THE EXTERIOR FACE OF THE SOLDIER/PANEL DOES NOT PROJECT OVER THE ADJOINING PROPERTY.

GROUND ANCHORS:-

1. CONTRACTOR IS TO CONFIRM LOCATION & DEPTH OF EXISTING BUILDING FOOTINGS, BASEMENTS & EXISTING SERVICES PRIOR TO COMMENCEMENT OF ANCHOR WORKS TYPICAL.
2. GROUND ANCHORS ARE EACH TO BE DESIGNED IN ACCORDANCE WITH AS. 1481 FOR A WORKING LOAD AS SHOWN IN THE SCHEDULE. THE DESIGN AND DETAILS ARE TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT ON SITE. REFER ALSO TO RECOMMENDATION PROVIDED BY SOIL INVESTIGATION REPORT.
3. ANCHORS SHALL CONSIST OF LOW RELAXATION STRESS RELIEVED SUPERGRADE STEEL STRAND TO AS. 1313 AND ANCHORAGES SHALL CONFORM TO AS. 1314.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY "ACTUAL" ANCHOR LENGTH BY TEST ANCHORS ETC., AND TO PROOF LOAD EACH ANCHOR AS PER NOTE BELOW.
5. PRIOR TO ANY DRILLING OPERATIONS, THE CONTRACTOR SHALL ACQUAINT HIMSELF WITH ALL ADJACENT UNDERGROUND SERVICES AND ENSURE THAT NONE OF THESE ARE DISRUPTED BY GROUND ANCHORS. ALL APPROPRIATE APPROVALS, PERMITS AND AGREEMENTS SHALL BE OBTAINED BEFORE COMMENCEMENT OF THE WORK.
6. ANCHORS SHALL BE STRESSED AT THE APPROPRIATE STAGES OF THE CONSTRUCTION SEQUENCE, PROVIDED THAT AT LEAST THREE DAYS HAVE ELAPSED AFTER GROUTING THE ANCHORAGE LENGTH. SUFFICIENT STRAND SHALL BE LEFT PROJECTING FROM THE ANCHORAGE TO ENABLE ANY SUBSEQUENT STRESSING.
7. EACH ANCHOR SHALL BE PROOF LOADED - IE. STRESSED TO 150% OF THE WORKING LOAD, HELD FOR FIVE MINUTES, AND SLOWLY EASED BACK. THE ANCHOR SHALL THEN BE STRESSED TO WORKING LOAD AND LOCKED OFF. ANY ANCHOR WHICH FAILS TO HOLD THE LOAD SHALL BE REMOVED AND REPLACE WITH ANOTHER ANCHOR. SUCH WORK SHALL BE CARRIED OUT IN THE PRESENCE OF THE ENGINEER. CONTRACTOR SHALL KEEP ON SITE AN ADEQUATE SUPPLY OF ANCHOR CABLES, GROUT ETC. FOR EMERGENCY USE.
8. THE CONTRACTOR SHALL KEEP ON SITE AN ADEQUATE SUPPLY OF ANCHOR CABLES, GROUT ETC. FOR EMERGENCY USE.
9. THE CONTRACTOR SHALL REGULARLY MONITOR THE STRESS IN THE ANCHORS TO ENSURE NO MAJOR LOSSES ARE OCCURRING. IF STRESS LOSSES ARE DETECTED THEY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
10. GROUT FOR GROUND ANCHORS SHALL BE NEAT PORTLAND CEMENT/WATER MIX WITH "METHOCELL" ADDED TO MANUFACTURERS SPECIFICATION. MAXIMUM WATER/CEMENT RATIO = 0.50. THE GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF S20MPa AT THREE (3) DAYS. GROUT CYLINDERS SHALL BE TAKEN ON THE BASIS OF ONE SAMPLE (TWO CYLINDERS) FOR EVERY TEN ANCHORS AND TESTED ON THE DAY OF STRESSING. THE GROUT SHALL BE MIXED IN A HIGH SPEED IMPELLER TYPE MACHINE.
11. SITE RECORDS (DATES AND DETAILS) SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE FOLLOWING STAGES:
    - ANCHOR INSTALLATION (NOTE FREE LENGTH/ANCHOR LENGTH PROVIDED)
    - ANCHOR GROUTING
    - STRESSING /PROOF LOADING AND CONFIRMATION OF ACCEPTABLE ANCHOR PERFORMANCE
    - MONITORING (NOTE ACTUAL ANCHOR LOADS)

BULK EXCAVATION:-

1. THE GEOTECHNICAL ENGINEER SHALL BE CONTACTED TO PROVIDE SUPERVISION OF EXCAVATIONS ADJACENT TO EXISTING BUILDINGS/PAVEMENTS TO PREVENT DAMAGE OR INSTABILITY.
2. THE BUILDER SHALL BE RESPONSIBLE FOR VIBRATION CONTROLS DURING EXCAVATION.
3. REFER TO THE GEOTECHNICAL ENGINEER TO CONFIRM THE REQUIREMENTS FOR EXCAVATION OF THE BASEMENT MATERIAL.
4. WHERE BASEMENT IS AT WATER TABLE LEVEL THE BUILDER IS TO PROVIDE MOVABLE SHIELDS FOR VERTICAL SIDED DRIVES THROUGH BATTERED AND BENCHED EXCAVATION LEVELS. STABILITY CHECKS ARE TO BE PROVIDED FOR EXCAVATIONS GREATER THAN 600mm. THE GEOTECHNICAL ENGINEER SHALL BE CONTACTED TO PROVIDE SUPERVISION AND FURTHER RECOMMENDATION AS REQUIRED.
5. THE BASE OF THE EXCAVATION SHALL BE GRADED / DRAINED TO SUMPS AND PUMPED AS REQUIRED TO MAINTAIN THE EXCAVATION FREE OF SURFACE WATER. THE SUMPS ARE TO BE FITTED WITH SILT TRAPS. DO NOT PUMP ANY MUD OR SLUDGE INTO COUNCIL DRAINS. THE INITIAL EXCAVATION MAY BE CARRIED OUT TO LEVELS SHOWN ON THE DRAWINGS WITH THE FINAL TRIMMING TO DESIGN LEVELS PRIOR TO POURING BASE SLABS.
6. REDUCED LEVELS NOTED ARE MINIMUM EXCAVATION LEVELS TO ACHIEVE THE NOMINATED FINISHED FLOOR LEVELS. CONSIDERATION SHOULD BE GIVEN TO FOUNDING CONDITIONS WHEN NOMINATING THE INITIAL BULK EXCAVATION LEVELS.

GEOTECHNICAL ENGINEER SUPERVISION NOTE:-

1. THE CONTRACTOR SHALL PAY ALL FEES REQUIRED FOR ADDITIONAL GEOTECHNICAL SERVICES.
2. ALL EXCAVATIONS ADJOINING AN EXISTING BUILDING ALONG A SITE BOUNDARY OR EXCAVATIONS WHICH MAY UNDERMINE AN ADJOINING BUILDING MUST BE CONDUCTED UNDER THE SUPERVISION OF A GEOTECHNICAL ENGINEER.
3. GEOTECHNICAL ENGINEER TO PROVIDE SUPERVISION OF EXCAVATION TO PREVENT DAMAGE TO EXISTING BUILDING ON ADJOINING SITE BOUNDARY.
4. THE BUILDER SHALL BE RESPONSIBLE FOR VIBRATION CONTROLS DURING EXCAVATION WORKS.
5. WHERE BASEMENT IS AT WATER TABLE LEVEL THE BUILDER IS TO PROVIDE MOVABLE SHIELDS FOR VERTICAL SIDED DRIVES THROUGH BATTERED AND BENCHED EXCAVATION LEVELS. STABILITY CHECK TO BE PROVIDED FOR EXCAVATION GREATER THAN 2000mm THE GEOTECHNICAL ENGINEER SHALL BE CONTACTED TO PROVIDE SUPERVISION AND FURTHER RECOMMENDATION AS REQUIRED.
6. AS EXCAVATION PROCEEDS FOR RETENTION SYSTEM ADJACENT TO THE EXISTING BUILDING OR ON ADJOINING BOUNDARY, THE GEOTECHNICAL ENGINEER SHALL PROVIDE SUPERVISION TO THE EXCAVATION. IF THERE IS A TENDENCY OF INSTABILITY DURING THE EXCAVATION WORKS. THE GEOTECHNICAL ENGINEER SHALL PROVIDE FURTHER SPECIFICATION AND RECOMMENDATION FOR THE EXCAVATION TO PROCEED.
7. REFER TO GEOTECHNICAL NOTES FROM S-WEB-001 FOR GEOTECHNICAL REPORT REFERENCE.

SHOTCRETE NOTES:

1. GENERAL
   THE CONCRETE IN THE PANELS OF THE RETAINING WALLS MAY BE PLACED BY THE SHOTCRETING PROCESS.
2. DEFINITIONS
   THE FOLLOWING DEFINITIONS EXPLAIN THE MEANING OF CERTAIN WORDS AND TERMS AS USED IN THIS SPECIFICATION:
   - SPRAYED CONCRETE - IS A MIXTURE OF CEMENT, AGGREGATE AND WATER PROJECTED AT HIGH VELOCITY FROM A NOZZLE INTO PLACE TO PRODUCE A DENSE HOMOGENEOUS MASS.
   - SHOTCRETE - IS A TERM USED FOR SPRAYED CONCRETE WHERE THE MAXIMUM AGGREGATE SIZE IS NOT MORE THAN 20mm.
   - REBOUND - IS A TERM USED FOR ALL MATERIAL HAVING PASSED THROUGH THE NOZZLE WHICH DOES NOT CONFORM TO THE DEFINITION OF SPRAYED CONCRETE.
   - NOZZLE - IS THE ATTACHMENT AT THE END OF THE HOSE FROM WHICH THE MATERIAL IS JETTED AT HIGH VELOCITY.
   - NOZZLEMAN - IS THE WORKMAN WHO MANIPULATES THE NOZZLE. THE NOZZLEMAN MAINTAINS CONSISTENCY, AND MAKES THE FINAL DISPOSITION OF THE MATERIAL.
3. MIX DESIGN
   MIX PROPORTIONS SHALL BE DESIGNED BY THE CONTRACTOR AND SHALL BE TO THE APPROVAL OF THE SUPERINTENDENT. ALL CONCRETE SHALL BE OBTAINED FROM AN APPROVED CONCRETE SUPPLIER AND SHALL BE PREMIXED AND DELIVERED TO SITE IN ACCORDANCE WITH AS 1379. WHERE ADMIXTURES ARE APPROVED BY THE SUPERINTENDENT FOR ADDITION TO THE MIX TO ALTER THE SETTING RATE OF THE CEMENT, THE FOLLOWING SETTING TIMES AND STRENGTHS SHALL APPLY UNLESS OTHERWISE STATED.

   (a) INITIAL SET OF CEMENT/ADMIXTURE PASTE - 3 MINS.
   FINAL SET OF CEMENT/ADMIXTURE PASTE - 12 MINS.

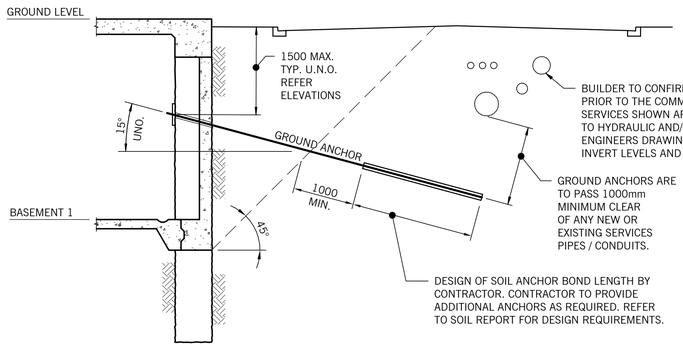
   (b) 8 HOUR STRENGTH OF CONCRETE - 3 MPa
   24 HOUR STRENGTH OF CONCRETE - 10 MPa

   ALL CONSTITUENTS SHALL BE UNIFORMLY DISPERSED THROUGHOUT THE MIX.

4. QUALIFICATIONS OF OPERATORS
   ALL OPERATORS SHALL BE TO THE APPROVAL OF THE ENGINEER. PRIOR TO COMMENCEMENT OF SPRAYING, THE CONTRACTOR SHALL CERTIFY TO THE ENGINEER THAT THE FOREMAN, NOZZLEMAN AND DELIVERY EQUIPMENT OPERATIVES HAVE COMPLETED SATISFACTORY WORK IN SIMILAR CAPACITIES ELSEWHERE. WHERE REQUIRED BY THE ENGINEER THE OPERATOR SHALL SPRAY PRE-CONSTRUCTION PANELS WHICH SHALL BE APPROVED BY THE ENGINEER BEFORE THE OPERATORS ARE EMPLOYED ON THE WORKS. SUCH PANELS MAY ALSO BE USED BY THE ENGINEER TO ASSESS THE COMPETENCE OF OPERATORS OR TRAINEES FOR WHOM SUCH CERTIFICATION IS NOT AVAILABLE.
5. PLANT
   THE CONTRACTOR SHALL STATE THE NUMBERS AND TYPE OF PLANT WHICH HE PROPOSES TO USE FOR THE CONSTRUCTION OF THE WORKS.
6. SUBSTRATE PREPARATION
   THE SURFACE SHALL BE COMPACT, TRIMMED AND GRADED AS REQUIRED AND DAMP BEFORE THE APPLICATION OF SPRAYED CONCRETE. NATURAL SURFACES MUST BE SUFFICIENTLY COHESIVE TO PREVENT EROSION WHEN THE SPRAYED CONCRETE IS APPLIED.
7. SPRAYING PROCEDURE
   NO CONCRETE SHALL BE SPRAYED IN AIR TEMPERATURES LESS THAN 5 DEGREES CELSIUS. FRESHLY SPRAYED CONCRETE SHALL BE PROTECTED FROM RAIN OR WATER TILL THE SURFACE IS OF SUFFICIENT HARDNESS TO PREVENT DAMAGE. SPRAYING SHALL BE DISCONTINUED IF WIND OR AIR CURRENTS CAUSE SEPARATION OF THE NOZZLE STREAM DURING PLACEMENT. DURING STARTING OR STOPPING OF THE SPRAYING OPERATION OR WHENEVER SPRAYING IS IRREGULAR, THE NOZZLE SHALL BE DIRECTED AWAY FROM THE WORKS. ALL CORNERS AND ANY AREAS WHERE REBOUND CANNOT ESCAPE OR BE BLOWN FREE, SHALL BE FILLED PRIOR TO GENERAL SPRAYING, REBOUND SHALL NOT BE WORKED INTO THE CONSTRUCTION OR RE-USED IN THE WORKS. GUIDES SHALL BE SET UP TO ESTABLISH FINISHED SURFACES. THESE GUIDES SHALL BE TO THE APPROVAL OF THE ENGINEER PRIOR TO SPRAYING. SPRAYED CONCRETE SHALL BE APPLIED SO THAT IT NEITHER SAGS NOR SLUMPS. SPRAYED CONCRETE SHALL BE TROWELLED TO A SMOOTH SURFACE. MAXIMUM DEVIATION FROM A 1m STRAIGHT EDGE SHALL BE 10mm. FULL RECORDS OF ALL MATERIALS DELIVERED TO THE SPRAYED CONCRETE MIXER SHALL BE KEPT AND MADE AVAILABLE TO THE CONSTRUCTION MANAGER,
8. JOINTS
   THE POSITION AND TYPE OF ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY THE ENGINEER.
9. QUALITY CONTROL
   TESTING OF SHOTCRETE SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPRAYED CONCRETE MANUAL "RECOMMENDED PRACTICE SPRAYED CONCRETE" CLAUSE A12 OF THE REFERENCE SPECIFICATION PREPARED BY THE CONCRETE INSTITUTE OF AUSTRALIA.

INTERFACE BETWEEN NEW AND EXISTING ADJACENT STRUCTURES:

1. THE PILING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN APPROVED BOND BREAKER OR MEMBRANE BETWEEN EXISTING & PROPOSED FOOTINGS.



TYPICAL GROUND ANCHOR SECTION AT EXISTING SERVICES LOCATION

NOT TO SCALE

NOTE: REFER TO RETENTION ELEVATIONS FOR NUMBER OF ANCHORS AND LOCATIONS. ALSO REFER TO RETENTION DETAILS AND SECTIONS FOR ANCHOR REQUIREMENTS.

NOTES

1. REFER TO GEOTECH FOR ANCHOR DESIGN AND PARAMETERS.
2. ALL ANCHORS TO BE PROOF TESTED TO 1.5 TIMES THE WORKING LOAD.

REFERENCE NOTE:

REFER TO RETENTION DRAWING FOR SHOTCRETE WALL TYPES AND MAXIMUM VERTICAL DRIVES REFER RETENTION ELEVATIONS FOR NUMBER OF ANCHORS AND LOCATIONS. ALSO REFER TO RETENTION DETAILS & SECTION FOR ANCHOR REQUIREMENTS.

EXISTING SERVICES NOTES:

LOCATION AND LEVELS OF EXISTING SERVICES SHOWN INDICATIVELY ONLY. EXACT LOCATIONS AND INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORK. REFER ALSO TO ALL SERVICES (IE. HYDRAULIC, CIVIL) FOR FURTHER DETAILS TYPICAL.

ENSURE FIRST GROUND ANCHOR IS MINIMUM 1000mm BELOW INVERT LEVEL OF LOWEST ADJACENT SERVICE.

PRIOR TO COMMENCEMENT OF TEMPORARY SOIL ANCHOR INSTALLATION SUBCONTRACTOR TO CONFIRM LOCATION & EXTENT OF EXISTING SERVICES SO AS TO ENSURE TEMPORARY SOIL ANCHORS FALL BELOW ANY EXISTING SERVICES WHEN INSTALLED.

WATERPROOFING NOTE:

CONCRETE IN WALLS, FLOOR SLABS EXPOSED TO EXTERNAL WEATHER AND BASE OF ALL PITS TO CONTAIN WATERPROOFING ADDITIVE TO MANUFACTURERS RECOMMENDATIONS. APPLY A SLURRY COAT OF WATERPROOFING ADDITIVES TO CONSTRUCTION JOINTS. ALSO REFER TO MANUFACTURERS RECOMMENDATIONS. ALL CONSTRUCTION JOINTS AND PIT WALL BASES TO CONTAIN A CONTINUOUS WATERSTOP TO BASE OF WALL.

WATER DRAINAGE NOTE:

BASE EXCAVATION SHALL BE GRADED / DRAINED TO SUMPS AND PUMPED AS REQUIRED TO MAINTAIN THE EXCAVATION FREE OF SURFACE WATER. BULK EXCAVATION TO BE SUITABLY DRAINED INTO SUMPS FITTED WITH SILT TRAPS. DO NOT PUMP ANY MUD OR SLUDGE INTO COUNCIL DRAINS. INITIAL EXCAVATION MAY BE CARRIED OUT TO LEVELS SHOWN ON THIS DRAWINGS WITH THE FINAL TRIMMING TO DESIGN LEVELS PRIOR TO POURING BASE SLAB.

CONSTRUCTION MANAGEMENT NOTE:

CONSTRUCTION MANAGEMENT PLAN IS TO BE PROVIDED TO THE LOCAL COUNCIL FOR APPROVAL BY THE BUILDER/CONTRACTOR. THIS PLAN IS TO COVER TRAFFIC MOVEMENTS TO AND FROM SITE, PEDESTRIAN SAFETY, NUISANCE MANAGEMENT AND NOISE / DUST CONTROL. REFER TO COUNCIL FOR REQUIREMENTS.

BOND BREAKER NOTE:

THE PILING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN APPROVED BOND BREAKER OR MEMBRANE BETWEEN EXISTING & PROPOSED FOOTINGS.

EXISTING FOOTINGS NOTE:

CONTRACTOR IS TO CONFIRM LOCATION & DEPTH OF EXISTING BUILDING FOOTINGS, BASEMENTS & EXISTING SERVICES PRIOR TO COMMENCEMENT OF ANCHOR WORKS TYPICAL.

DEWATERING:

THE CONTRACTOR SHALL PROVIDE ALL PUMPS, SPEARS, SUMPS ETC. AS NECESSARY TO EFFECTIVELY DEWATER THE SITE BELOW THE LOWEST EXCAVATION LEVEL TO PERMIT CONSTRUCTION. ALL DEWATERING WORKS, PERMITS AND DISCHARGE SHALL BE BY THE CONTRACTOR IN ACCORDANCE WITH THE RELEVANT STANDARDS, GEOTECHNICAL AND HYDROLOGICAL CONSULTANTS AND LOCAL AUTHORITIES REQUIREMENTS. DEWATERING SHALL CONTINUE UNTIL ALL STORMWATER PITS, SUMPS AND PUMPS HAVE BEEN COMMISSIONED AND WRITTEN APPROVAL OF THIS OFFICE. MONITORING OF ADJACENT PROPERTIES SHOULD COMMENCE BEFORE DEWATERING COMMENCES. THE CONTRACTOR SHALL ENGAGE THE GEOTECHNICAL AND HYDROLOGICAL CONSULTANTS AS REQUIRED FOR FURTHER ADVICE IF REQUIRED.

SURVEY MONITORING NOTE:

BUILDER TO PROVIDE SURVEY MONITORING POINTS ALONG RETENTION WALLS. THESE ARE TO BE MONITORED AND CHECKED FORTNIGHTLY. A RECORD OF THE FINDINGS/READINGS ARE TO BE KEPT ON SITE FOR VIEWING BY COUNCIL AS REQUIRED.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

2

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

RETENTION NOTES - SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-010	2

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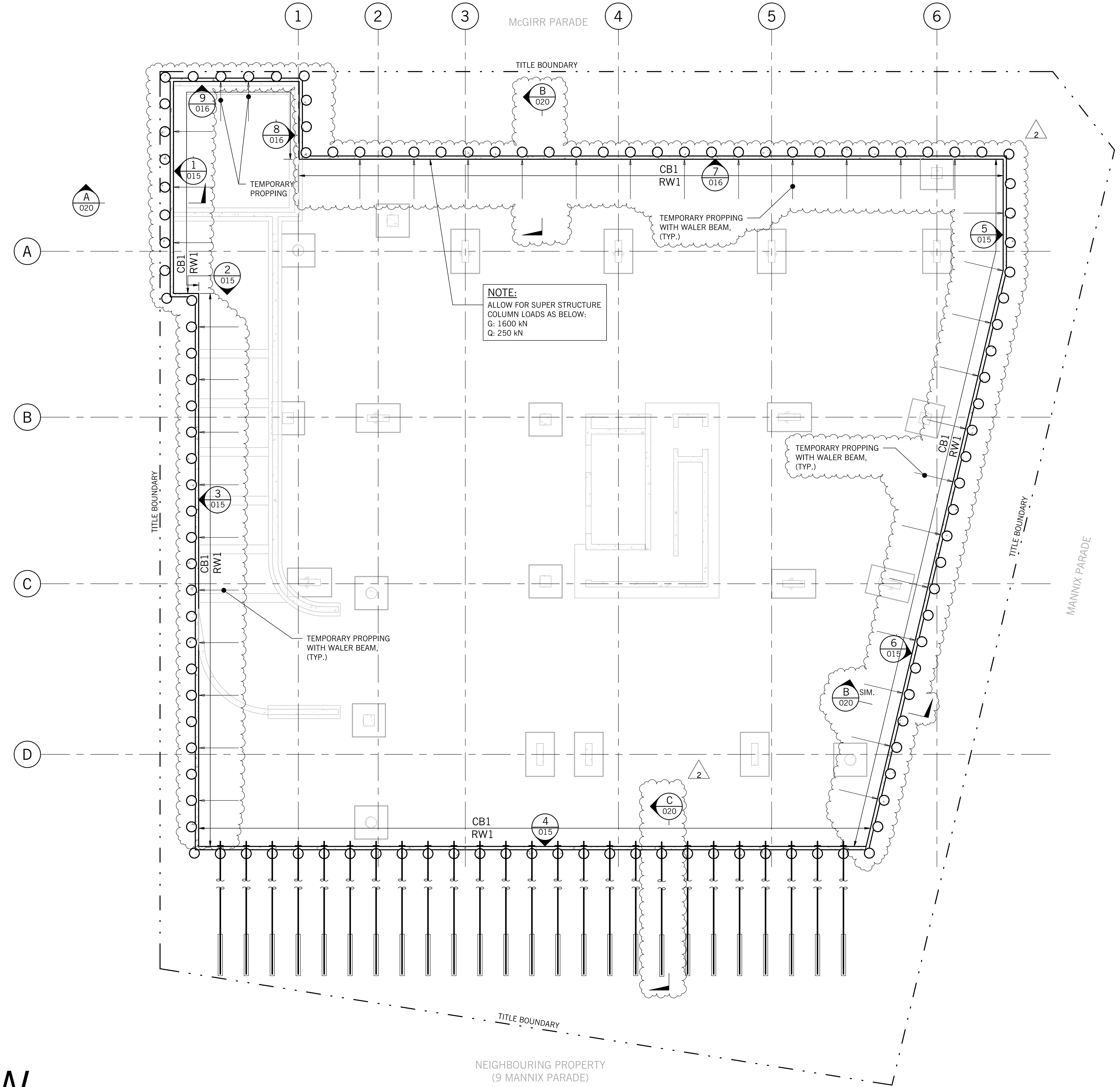

RETENTION & BULK EXCAVATION PLAN

SCALE: 1 : 100

CAPPING BEAM SCHEDULE				
MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
CB1	600d x 600w	40	200	CAPPING BEAM TO WIDEN TO SUIT AS-BUILT PILES. REFER TO ELEVATIONS FOR CAPPING BEAM TYPE AND EXTENTS.

NOTE:
INTERMEDIATE ANCHORS COULD BE REMOVED USING A WALER BEAM. D&C CONTRACTOR TO CONFIRM PREFERRED METHOD.

DESIGN CRITERIA

1. REFER TO STS GEOTECHNICS (APRIL 2020) GEOTECHNICAL REPORT FOR GEOTECHNICAL DESIGN PARAMETERS.
2. DESIGN SURCHARGE TO BE 20 kPa MIN. OR TO SUIT ADJOINING BUILDINGS SURCHARGE.
3. RETENTION WALL HORIZONTAL DEFLECTION TO BE ≤20mm (SHORT / LONG TERM)
4. D & C PILE DESIGN TO INCORPORATE ADDITIONAL ECCENTRIC LOAD IMPOSED AS A RESULT OF PILING OFFSET.

NOTE:

1. REFER TO SECTIONS ON DRG S-WEB-020 FOR ANCHOR DETAILS AND DRG S-WEB-028 FOR TYPICAL DETAILS AND SPECIFICATIONS.
2. GROUND ANCHORS TO BOUNDARIES AS SHOWN ON PLAN.
3. ALL RETENTION PILES TO BE SOCKETED BELOW BASEMENT EXCAVATION/LINE OF INFLUENCE AS PER GEOTECHNICAL RECOMMENDATIONS.
4. QUALIFIED GEOTECHNICAL ENGINEER TO INSPECT AND CONFIRM SOCKET FOUNDING MATERIAL PRIOR TO CONCRETING.
5. INTERNAL TEMPORARY PROPPING TO BE DESIGNED BY D&C CONTRACTOR.

BASEMENT CONSTRUCTION PHILISOPHY:

AS PER THE LATEST GEOTECHNICAL REPORT(STS GEOTECHNICS, APRIL 2020), THE BASEMENT SLAB AND LOWER RETENTION WALLS ARE STRUCTURALLY DESIGNED WITH AN EFFECTIVE DRAINAGE SYSTEM (DESIGNED BY OTHERS) WITH NO RESULTANT HYDROSTATIC PRESSURE BOTH DURING CONSTRUCTION AND THE LIFETIME OF THE STRUCTURE.
THEY HAVE NOT BEEN DESIGN AS A LIQUID RETAINING STRUCTURE AND AS SUCH RELIES ON A WATERPROOF MEDIUM (MEMBRANE, WATERPROOF ADDITIVES OR SIMILAR) TO STOP WATER PERMEATING THROUGH THE CONCRETE OR POTENTIAL CRACKS IN THE STRUCTURE. A WATERPROOFING CONSULTANT SHOULD BE ENGAGED TO ADVISE ON ALL WATERPROOFING REQUIREMENTS INCLUDING POTENTIAL MEMBRANES, CONCRETE ADDITIVES AND DETAILING OF ALL COLD JOINTS TO PILES, SHOTCRETE WALLS, SLABS, FOUNDATIONS AND WALLS.

- ALL DETAILING OF MEMBRANES, WATER STOPS, ETC MADE HEREIN ARE INDICATIVE ONLY AND PENDING TO FURTHER SPECIALIST ADVICE.
- ALLOWANCE FOR POTENTIAL 50mm BLINDING LAYER TO BASEMENT SLAB SHOULD BE MADE PENDING CONFIRMATION OF THE WATERPROOFING SYSTEM ADOPTED AND SPECIFIC REQUIREMENTS.
- ALLOW FOR WATERPROOF ADMIXTURE IN CONCRETE BELOW THE WATERTABLE.
- POUR STRIP AND POUR SIZE TO BE CONSIDERED IN CONJUNCTION WITH WATERPROOFING STRATEGY ALONG WITH ADDITIONAL REINFORCEMENT TO CONTROL CRACK WIDTH.

TEMPORARY SHORING NOTE

BUILDER TO PROVIDE TEMPORARY SHORING FOR EXCAVATION AND CONCRETING AS NECESSARY WITH TEMPORARY WORKS REMOVED AND FOOTPATH REINSTATED ON COMPLETION TO AUTHORITY APPROVAL.

NOTE:

1. ALL BORED PIER EMBEDMENT DEPTH TO CONTRACTORS DESIGN TO ACHIEVE WORKING CAPACITY NOMINATED IN SCHEDULE. REFER SOIL REPORT FOR DESIGN PARAMETERS.
2. RETENTION PIER SOCKETS ADJOINING COLUMNS / WALLS FOOTINGS TO BE INCREASED BY EXCAVATION DEPTH OF PROPOSED ADJOINING FOOTINGS.

IMPORTANT GROUND ANCHOR NOTE:

PRIOR TO COMMENCEMENT OF TEMPORARY SOIL ANCHOR INSTALLATION BUILDER TO CONFIRM LOCATION AND EXTENT OF EXISTING SERVICES TO ENSURE TEMPORARY SOIL ANCHORS FALL BELOW ANY EXISTING SERVICES WHEN INSTALLED.

RETENTION WALL AND PILE SCHEDULE (T.B.C. BY D&C CONTRACTOR)	
TYPE	RW1
PILE SIZE	450mm DIA.
PILE REINFORCEMENT	200 kg/m³
PILE CENTRE	1200mm MAX.
PILE CONCRETE GRADE	N50
SHOTCRETE WALL THICKNESS	150mm MIN.
SHOTCRETE WALL REINFORCEMENT	65 kg/m³
SHOTCRETE WALL CONCRETE GRADE	N40
PILE EMBEDMENT	REFER GEOTECHNICAL REPORT

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Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

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MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

BULK EARTHWORKS & RETENTION LEGEND

- x SFL 10.62 — STRUCTURAL / CONCRETE LEVEL
- x BE 10.62 — BULK EARTHWORKS LEVEL
- x NSL 10.62 — NATURAL SURFACE LEVEL
- x EX P 10.62 — EXISTING PAVEMENT LEVEL
- x EX IL 10.62 — EXISTING INVERT LEVEL OF SERVICE PIPE.
- PROPOSED BATTER FOR BULK EXCAVATION.
- SM — PROPOSED SURVEY MONITORING POINT ADJACENT TO EXISTING CONDITIONS.
- GROUND ANCHOR THROUGH RETENTION. REFER TO DETAILS.
- TP — DENOTES TEST PIT LOCATION
- BHx — DENOTES BORE HOLE LOCATION

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE: LEVEL 2, 31 QUEEN STREET MELBOURNE, VIC, AUSTRALIA 3000 T: +61 3 9614 7155
SYDNEY OFFICE: SUITE 301, LEVEL 3, 19A BOUNDARY STREET RUSHCUTTERS BAY, NSW, AUSTRALIA 2011 T: +61 2 9690 2488

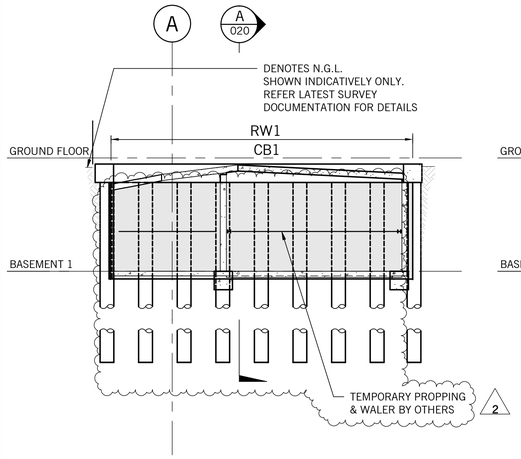
CLIENT
TAYLOR

PROJECT
LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

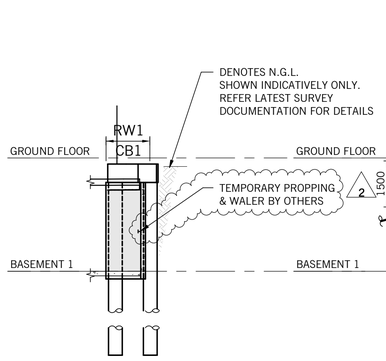
TITLE
RETENTION & BULK EXCAVATION PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW

JOB No.	DRAWING No.	REV.
20023	S-WEB-011	2



ELEVATION 1 / 011
SCALE: 1 : 100



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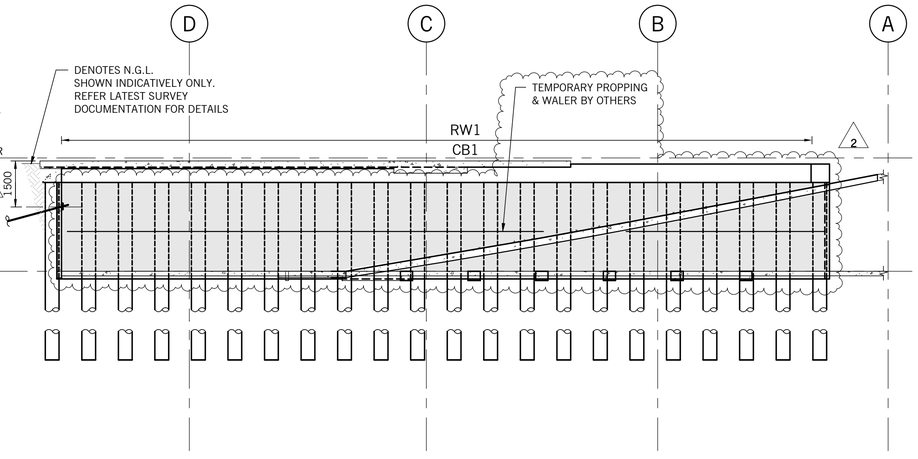

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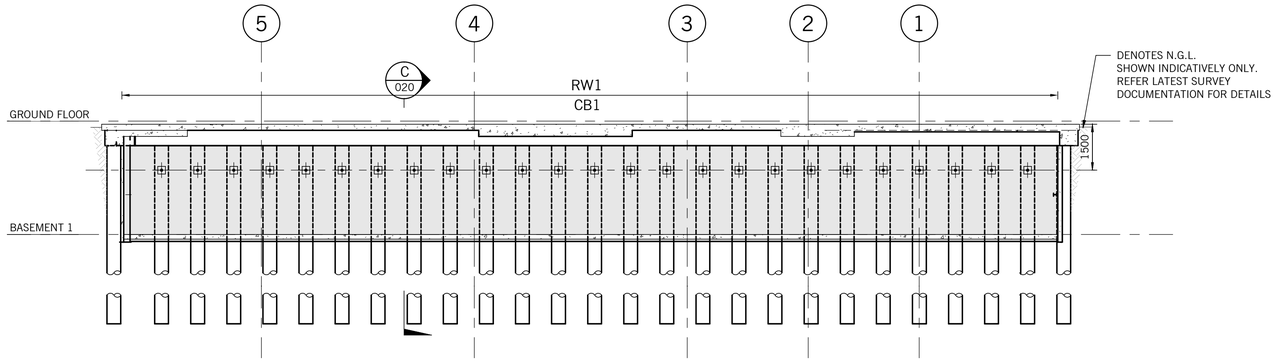

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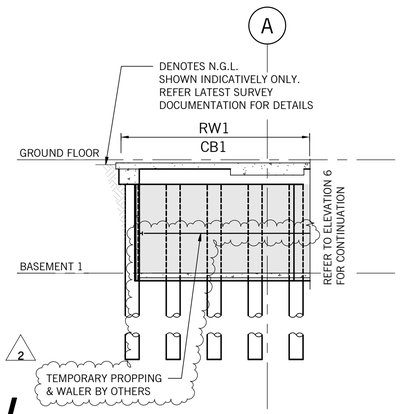

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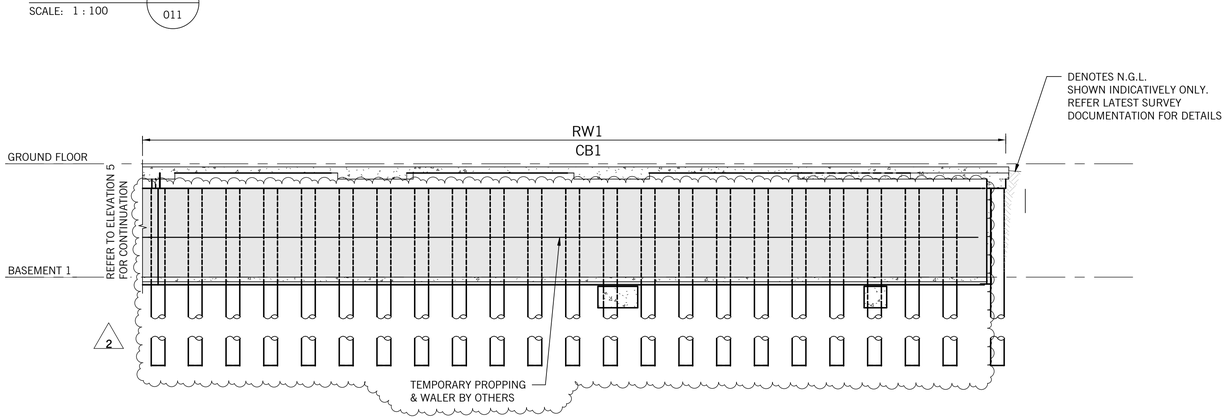

ELEVATION 6 / 011
SCALE: 1 : 100

GROUND / SOIL ANCHORAGE LOADS		
MARK	ANCHORAGE CAPACITY	REMARKS
GA	BY D & C CONTRACTOR	GROUND ANCHOR (BORED PILES)

NOTE:
1. 2 No. SOIL ANCHORS, MAXIMUM 750 mm APART MAY BE USED TO ACHIEVE NOMINATED SOIL ANCHOR WORKING LOADS.
2. ALLOWANCE IS TO BE MADE FOR THE INSTALLATION OF A SECOND TOP GROUND ANCHOR IN THE EVENT THAT ONE GROUND ANCHOR CANNOT RESIST THE WORKING LOAD. CONTINGENCY OF SECOND ANCHOR TO BE TENDERED FOR.
3. PILING CONTRACTOR TO CONFIRM No. OF TOP ANCHORS WHEN ON SITE.
4. THE GROUND / SOIL ANCHOR LOADS NOMINATED ARE SAFE WORKING LOADS AT 15 DEGREES INCLINATION AND THAT ANCHOR CONTRACTOR TO ACCOUNT FOR ANY INCREASE IN ANCHOR LOADS DUE TO VARYING INCLINATION OR SKEWING OF ANCHORS AS REQUIRED BY SITE CONTOURS.

RETENTION NOTES:-
1. THE FIRST ROW OF ANCHORS ARE TO BE 1500mm BELOW FOOTPATH SURFACE IN ACCORDANCE WITH COUNCIL REQUIREMENTS U.N.O.
2. ANCHOR FREE LENGTHS ARE TO BE GROUTED UPON COMPLETION OF RETENTION SYSTEM GROUND AND MEZZANINE SLABS CONSTRUCTION. ALL ANCHORS ARE TO BE DE-STRESSED AFTER FLOORS ARE BUILT, IN ACCORDANCE WITH RETENTION PROCEDURE NOTES ON DRAWING S-WEB-005
3. REDUCED LEVELS (R.L.'S) OF GROUND ANCHORS ARE TO BE CONFIRMED BY THE BUILDER ON SITE.
4. INTERNAL TEMPORARY PROPPING TO BE DESIGNED BY D&C CONTRACTOR. REFER S-WEB-011 FOR INDICATIVE LOCATIONS.
5. PILE EMBEDMENTS SHOWN INDICATIVE ONLY. ALL EMBEDMENTS TO BE CONFIRMED BY D&C CONTRACTOR.

NOTES:-
1. ANCHOR SETOUT SHOWN ARE INDICATIVE ONLY.
2. EXISTING ADJACENT BUILDING FOUNDATION TO BE CONFIRMED AND REPORTED TO WEBBER DESIGN PRIOR TO CONSTRUCTION
3. BUILDER TO CONFIRM UNDERGROUND SERVICES BEFORE COMMENCEMENT OF WORKS.
4. SERVICES SHOWN ARE INDICATIVE ONLY.
5. REFER TO EXISTING SURVEY, HYDRAULIC AND/OR CIVIL AND ALL SERVICE ENGINEERS DRAWINGS FOR EXISTING SERVICE INVERT LEVELS AND EXTENTS.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
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SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT
TAYLOR

PROJECT
LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE
RETENTION ELEVATIONS - SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-015	2

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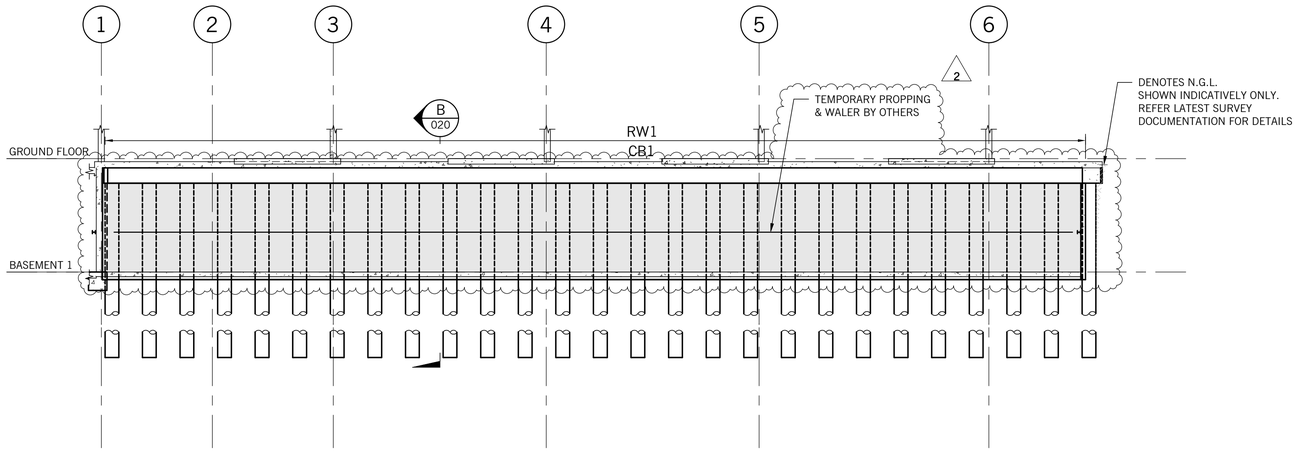

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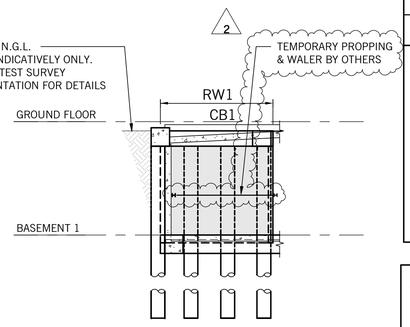

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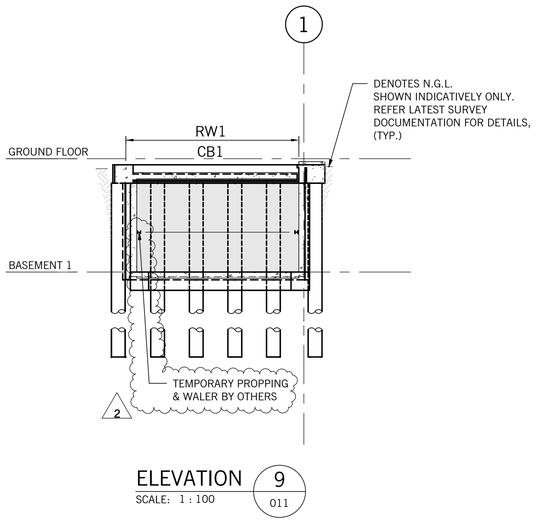

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GROUND / SOIL ANCHORAGE LOADS		
MARK	ANCHORAGE CAPACITY	REMARKS
GA	BY D & C CONTRACTOR	GROUND ANCHOR (BORED PILES)

NOTE:
1. 2 No. SOIL ANCHORS, MAXIMUM 750 mm APART MAY BE USED TO ACHIEVE NOMINATED SOIL ANCHOR WORKING LOADS.
2. ALLOWANCE IS TO BE MADE FOR THE INSTALLATION OF A SECOND TOP GROUND ANCHOR IN THE EVENT THAT ONE GROUND ANCHOR CANNOT RESIST THE WORKING LOAD. CONTINGENCY OF SECOND ANCHOR TO BE TENDERED FOR.
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MASONRY DETAILS	S-WEB-980-981
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STRUCTURAL ENGINEERING
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SYDNEY OFFICE:
SUITE 303, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT
TAYLOR

PROJECT
LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE
RETENTION ELEVATIONS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-016	2

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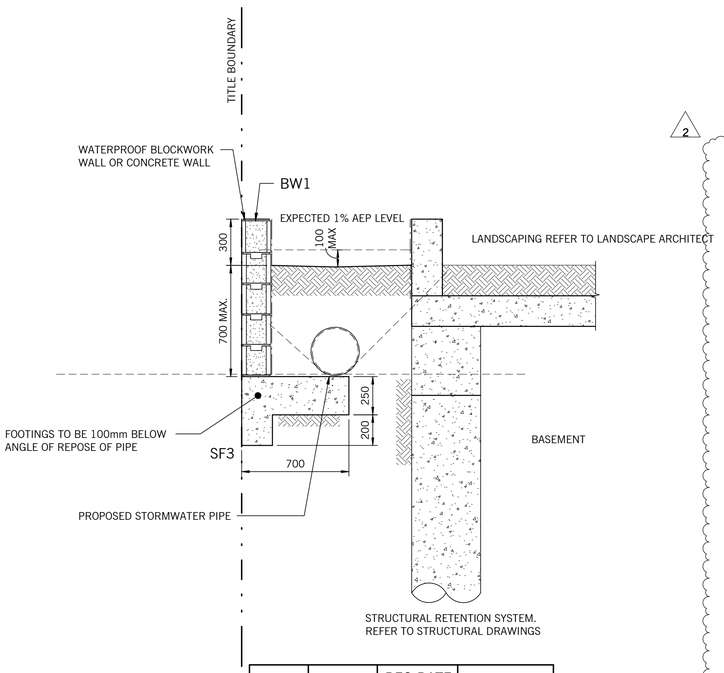
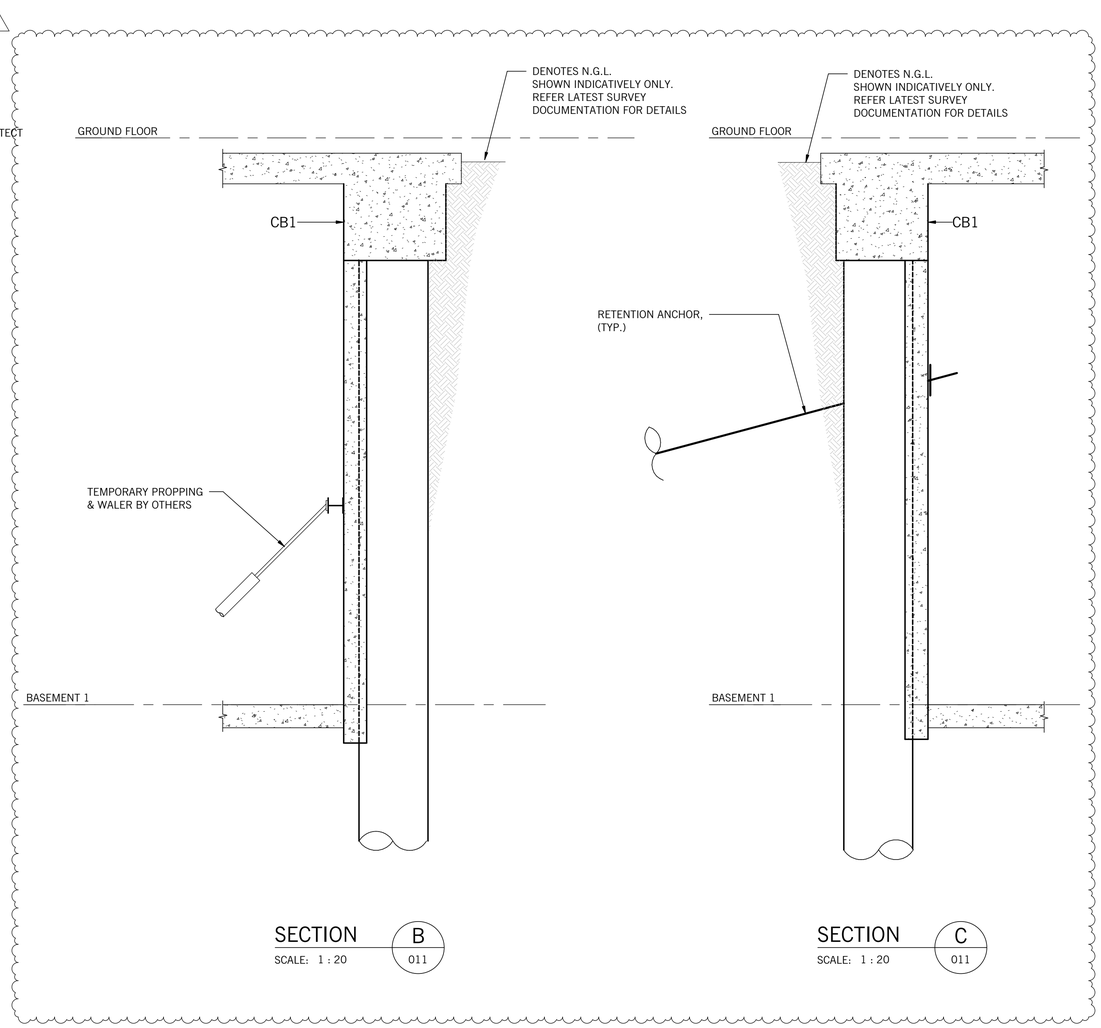


MARK	f'c (MPa)	REO RATE (kg/m^3)	REMARKS
SF3	32	50	STRIP FOOTING

SECTION A
SCALE: 1 : 20
011



SECTION B
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SECTION C
SCALE: 1 : 20
011

GROUND / SOIL ANCHORAGE LOADS		
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GA	BY D & C CONTRACTOR	GROUND ANCHOR (BORED PILES)

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R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

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MELBOURNE, VIC, AUSTRALIA 3000
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T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

RETENTION SECTIONS - SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	PAC	PW

JOB No.	DRAWING No.	REV.
20023	S-WEB-020	2

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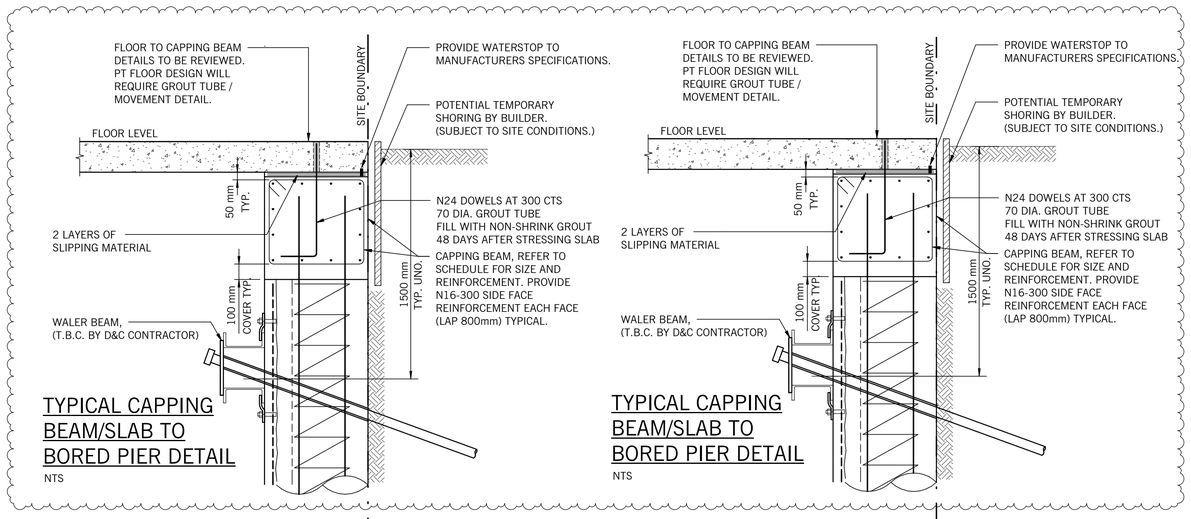

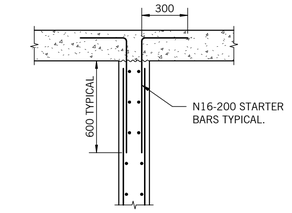

R.C. WALL TO RETENTION WALL DETAIL
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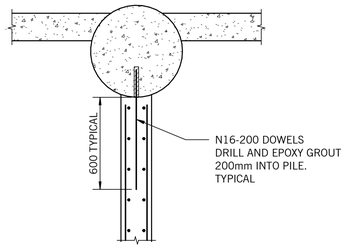

R.C. WALL TO RETENTION WALL DETAIL
SCALE 1:20

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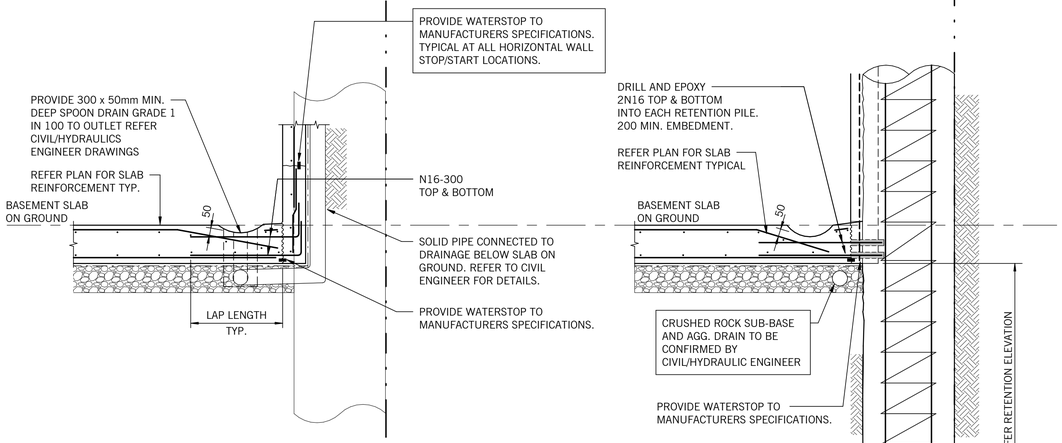
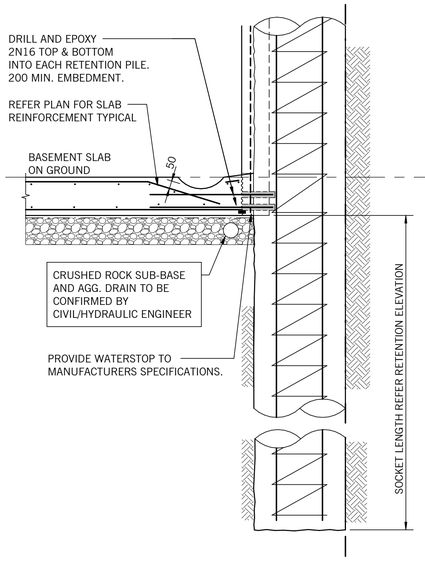


TYPICAL SHOTCRETE WALL SECTION
NTS



TYPICAL BORED PILE SECTION
NTS

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R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

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STRUCTURAL DRAWING

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STRUCTURAL ENGINEERING
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MELBOURNE, VIC, AUSTRALIA 3000
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CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

RETENTION DETAILS - SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-027	2

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WEBBER DESIGN

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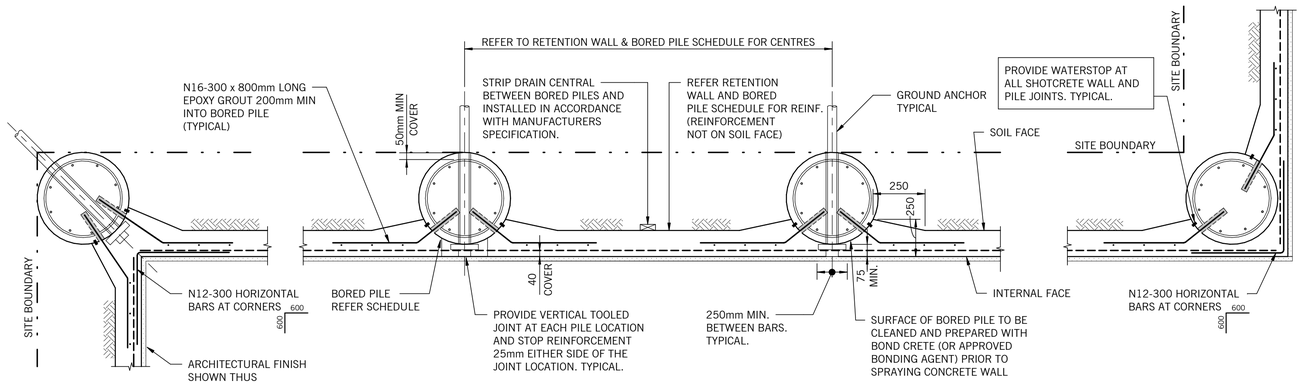


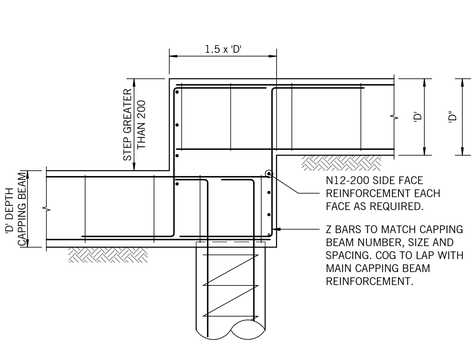
SHOTCRETE WALL - 1200mm MAXIMUM VERTICAL DRIVES

NTS

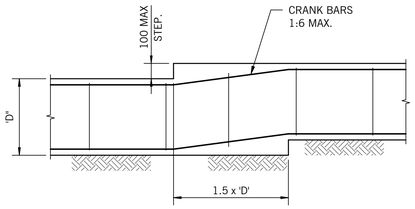
TYPICAL SOLDIER PILE WALL PLAN DETAILS

NOTE

1. REFER SCHEDULE FOR PILE DIAMETER AND REINFORCEMENT.
2. PROVIDE WATERPROOF ADDITIVE TO SHOTCRETE WALLS. APPLICATION TO MANUFACTURERS SPECIFICATIONS.
3. BUNDLE PILE REINFORCEMENT AS REQUIRED TO ACHIEVE ANCHOR PENETRATION
4. THE PILING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN APPROVED BOND BREAKER OR MEMBRANE BETWEEN EXISTING FOOTINGS AND RETENTION SYSTEM.
5. THE CONTRACTOR IS TO HAVE APPROVAL FROM THE GEOTECHNICAL ENGINEER ON THE MAXIMUM VERTICAL DRIVES PRIOR TO COMMENCING RETENTION WORK.
6. THE CONTRACTOR SHALL INSTALL "ABELFLEX" BETWEEN BORED PILES AND CONCRETE SLAB OR BEAM INTERFACE. (STARTER BARS NOT REQUIRED BETWEEN BORED PILES AND CONCRETE SLAB OR BEAM INTERFACE U.N.O.)
7. REFER TO GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION REGARDING BULK EXCAVATION , BATTERS , ETC.

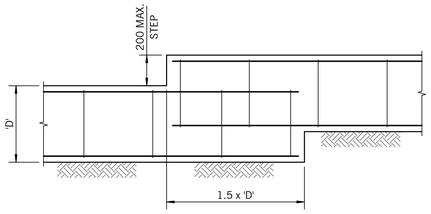


STEP GREATER THAN 200mm



SECTION

STEP 100mm MAXIMUM

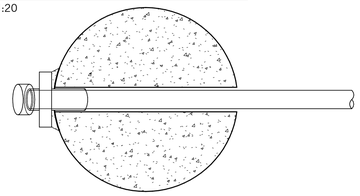


SECTION

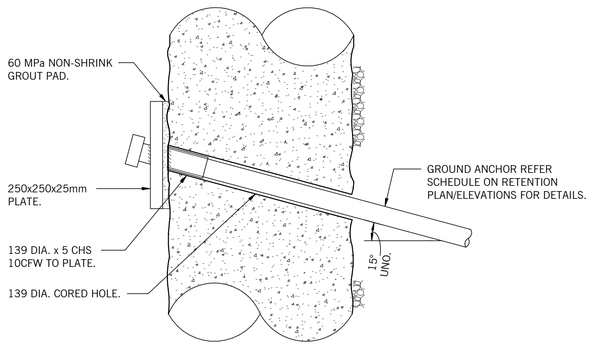
STEP LESS THAN 200mm

TYPICAL CAPPING BEAM STEP

SCALE 1:20



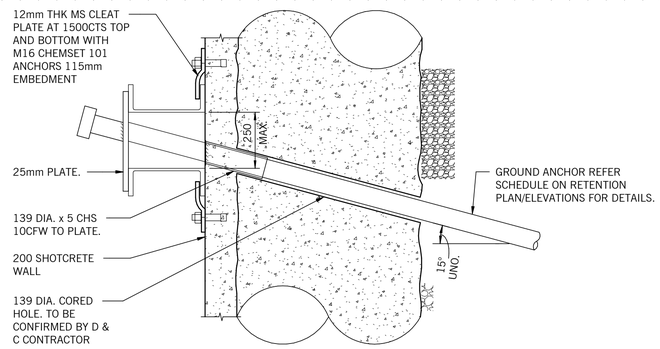
PLAN VIEW



SECTIONAL VIEW

TYPICAL ANCHORAGE DETAIL WITHOUT WALER BEAM AT EACH PILE

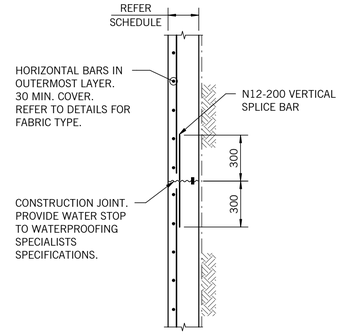
NTS (BORED PILE)



SECTIONAL VIEW

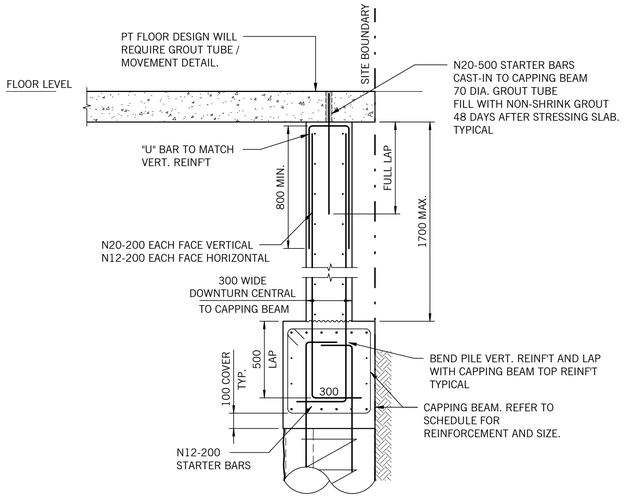
TYPICAL ANCHORAGE DETAIL WITH WALER BEAM

NTS (BORED PILE)



TYPICAL SHOTCRETE WALL SPLICING DETAIL

SCALE 1:20



TYPICAL SLAB TO CAPPING BEAM DOWNTURN/FOLD

NTS

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SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

RETENTION DETAILS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-028	2

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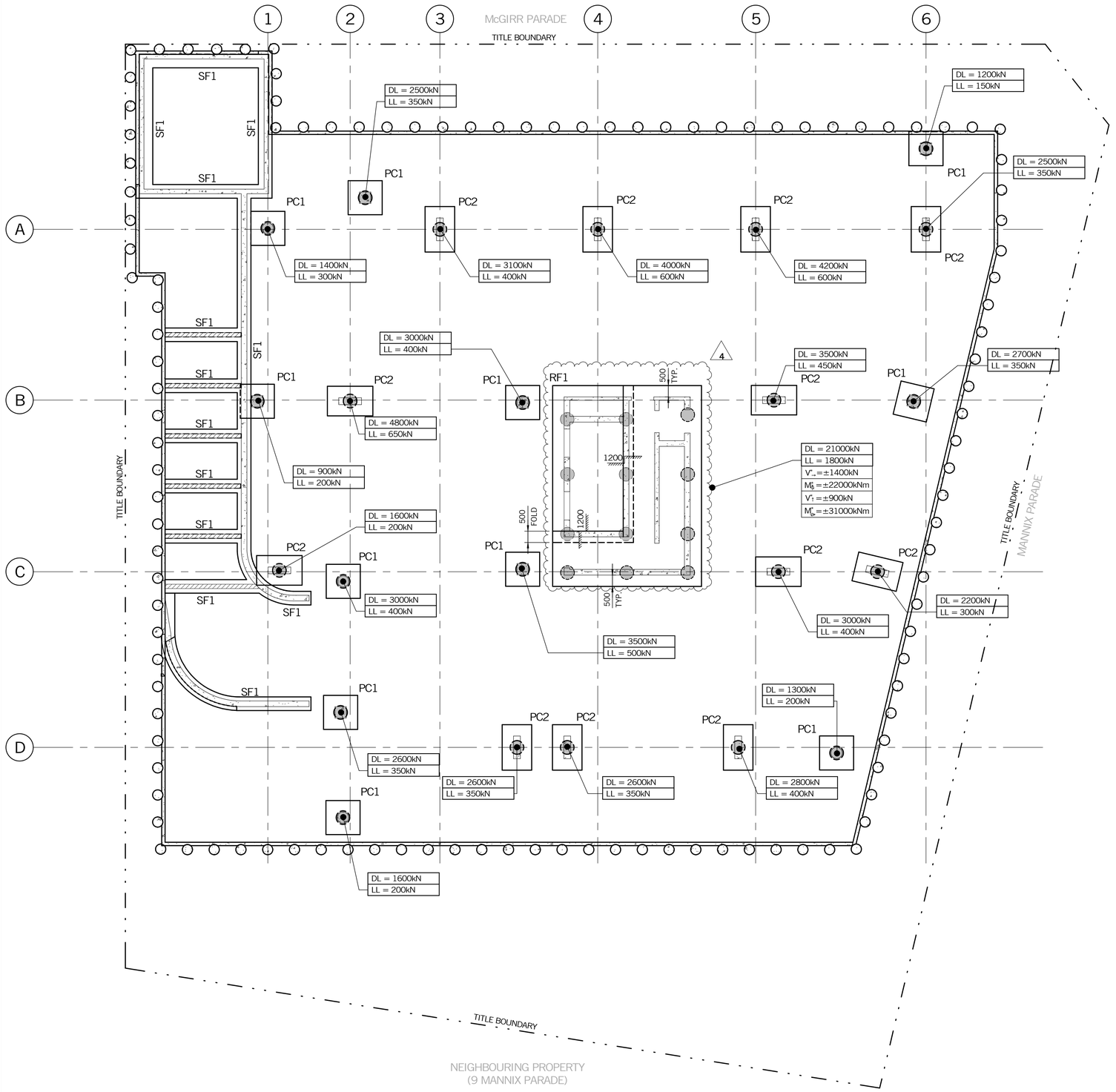

FOUNDATION PLAN
SCALE: 1 : 100

FOUNDATION SCHEDULE				
MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
PC1	700d x 1500 x 1500	50	160	PILE CAP WITH BP1
PC2	700d x 2000 x 1300	50	160	PILE CAP WITH BP1
RF1	800d x AS NOTED ON PLAN	50	130	CORE RAFT
SF1	600d x 600w	40	110	STRIP FOOTING

BORED PIER SCHEDULE				
MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
BP1	750 DIA.	50	N/A	PILE BY D&C CONTRACTOR

NOTES:

1. ALL BORED PIERS TO BE FOUNDED INTO UNDERLYING BEDROCK AS PER GEOTECHNICAL REPORT RECOMMENDATIONS. BORED PIERS D&C BY OTHERS.
2. ALL BORED PIER EMBEDMENT DEPTH TO CONTRACTOR'S DESIGN TO ACHIEVE WORKING CAPACITY NOMINATED IN DESIGN PARAMETERS IN LATEST GEOTECHNICAL REPORT.
3. ALL COLUMNS TO BE CONCENTRIC TO THE PAD FOOTING U.N.O.
4. GEOTECHNICAL ENGINEER TO INSPECT FOOTING EXCAVATIONS AND / OR BORED PIER HOLE DRILLING TO CONFIRM THAT THE FOOTINGS AND PIERS ARE FOUNDED OR SOCKETED ADEQUATELY INTO THE FOUNDING MATERIALS THAT SATISFY THE DESIGN ALLOWABLE BEARING PRESSURES.
5. REFER TO DRAWING S-WEB-030 FOR FOUNDATION LOADS.

BASEMENT CONSTRUCTION PHILISOPHY:

AS PER THE LATEST GEOTECHNICAL REPORT(STS GEOTECHNICS, APRIL 2020), THE BASEMENT SLAB AND LOWER RETENTION WALLS ARE STRUCTURALLY DESIGNED WITH AN EFFECTIVE DRAINAGE SYSTEM (DESIGNED BY OTHERS) WITH NO RESULTANT HYDROSTATIC PRESSURE BOTH DURING CONSTRUCTION AND THE LIFETIME OF THE STRUCTURE.
THEY HAVE NOT BEEN DESIGN AS A LIQUID RETAINING STRUCTURE AND AS SUCH RELIES ON A WATERPROOF MEDIUM (MEMBRANE, WATERPROOF ADDITIVES OR SIMILAR) TO STOP WATER PERMEATING THROUGH THE CONCRETE OR POTENTIAL CRACKS IN THE STRUCTURE. A WATERPROOFING CONSULTANT SHOULD BE ENGAGED TO ADVISE ON ALL WATERPROOFING REQUIREMENTS INCLUDING POTENTIAL MEMBRANES, CONCRETE ADDITIVES AND DETAILING OF ALL COLD JOINTS TO PILES, SHOTCRETE WALLS, SLABS, FOUNDATIONS AND WALLS.

- ALL DETAILING OF MEMBRANES, WATER STOPS, ETC MADE HEREIN ARE INDICATIVE ONLY AND PENDING TO FURTHER SPECIALIST ADVICE.
- ALLOWANCE FOR POTENTIAL 50mm BLINDING LAYER TO BASEMENT SLAB SHOULD BE MADE PENDING CONFIRMATION OF THE WATERPROOFING SYSTEM ADOPTED AND SPECIFIC REQUIREMENTS.
- ALLOW FOR WATERPROOF ADMIXTURE IN CONCRETE BELOW THE WATERTABLE.
- POUR STRIP AND POUR SIZE TO BE CONSIDERED IN CONJUNCTION WITH WATERPROOFING STRATEGY ALONG WITH ADDITIONAL REINFORCEMENT TO CONTROL CRACK WIDTH.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	WORK IN PROGRESS ISSUE	MA	PAC	18.11.20
2	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
4	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	05.02.21

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
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RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

FOUNDATION PLAN

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SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-030	4

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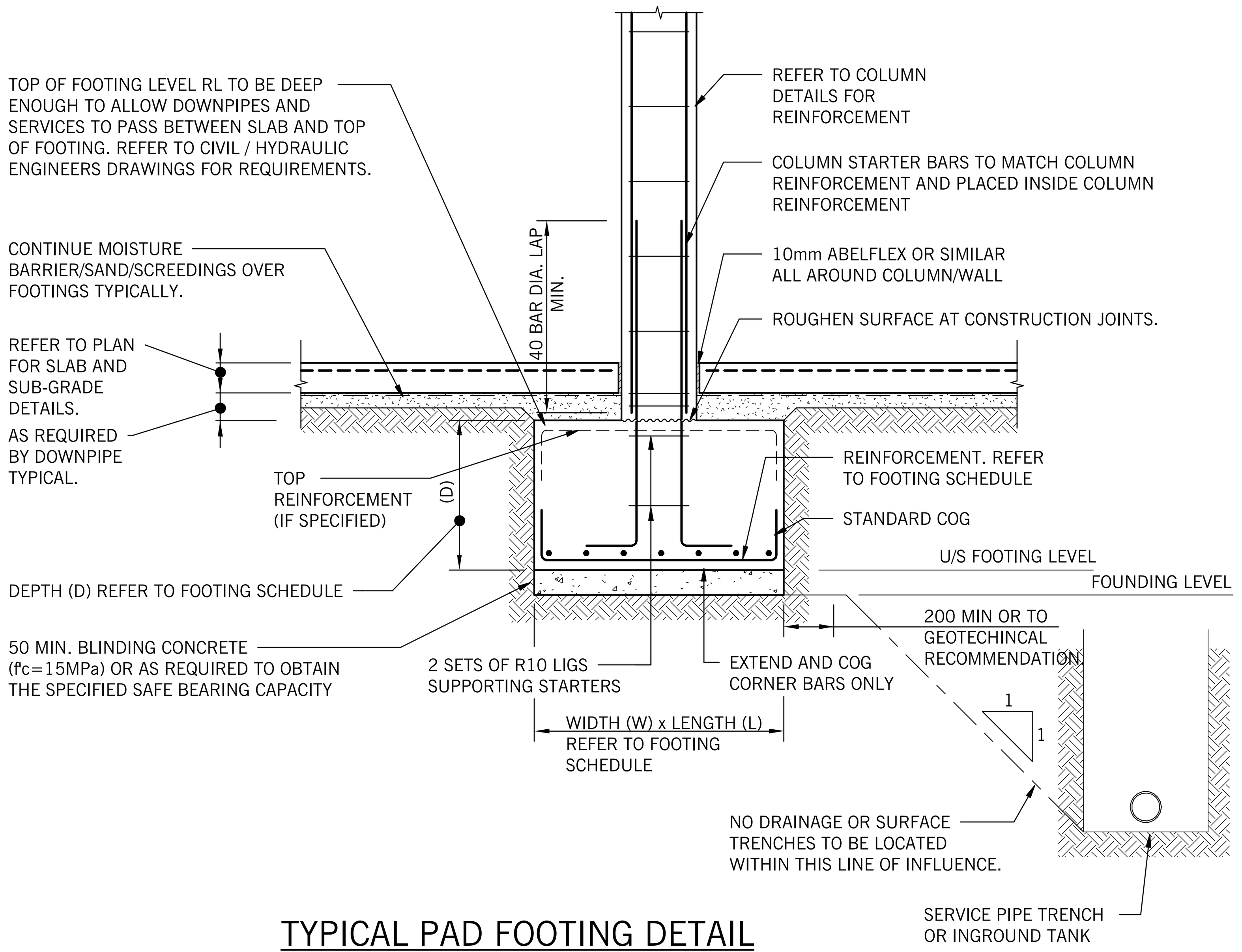
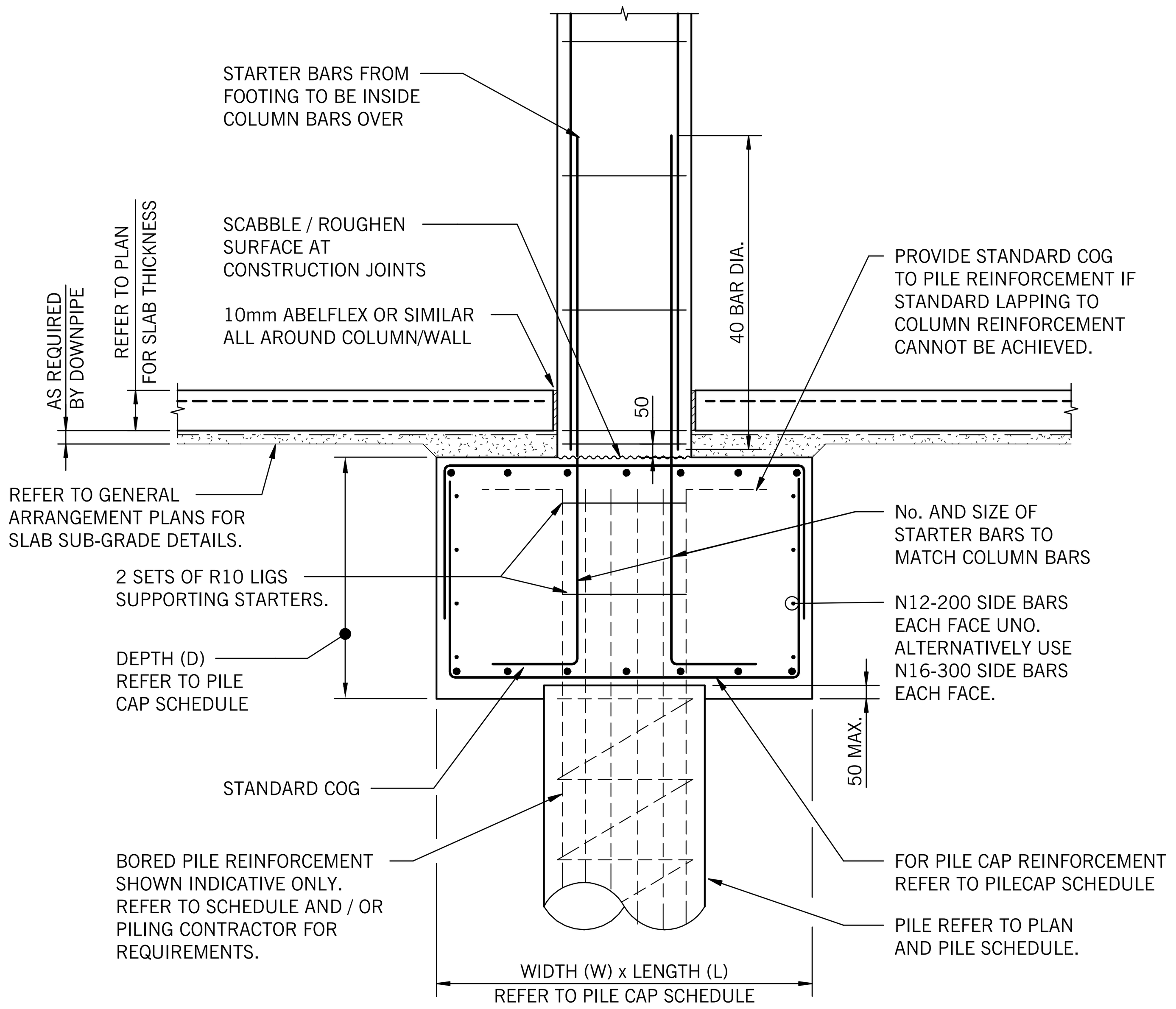


TYPICAL PAD FOOTING DETAIL
NOT TO SCALE



TYPICAL PILE CAP DETAIL
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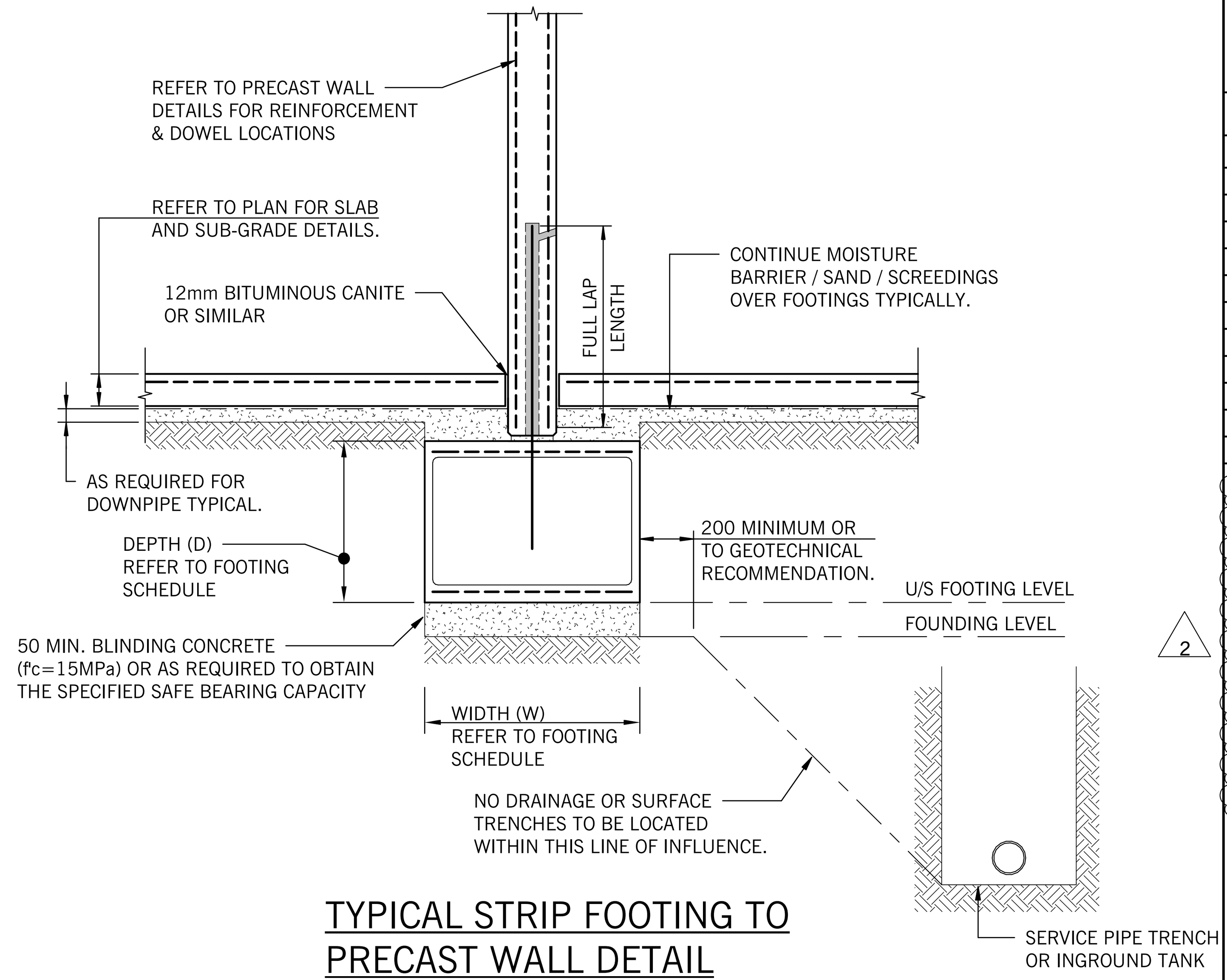
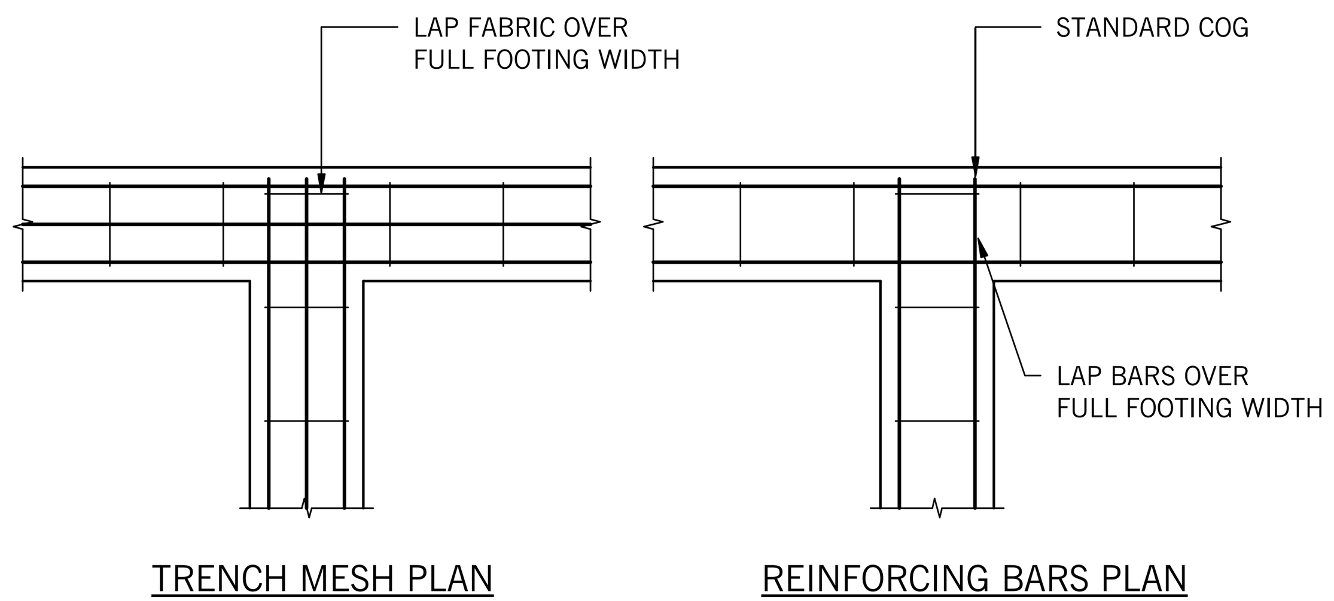


TYPICAL STRIP FOOTING TO PRECAST WALL DETAIL
NOT TO SCALE

NOTES:

1: FOR REINFORCEMENT, DIMENSIONS ETC. REFER TO FOOTING SCHEDULE.
2: FOR LEVEL TO UNDERSIDE OF FOOTINGS, REFER TO FOOTING PLAN OR FOOTING SCHEDULE.
3: OVERBREAK BELOW FOOTINGS TO BE FILLED WITH BLINDING CONCRETE TO UNDERSIDE OF FOOTING.
4: OVERBREAK AROUND FOOTINGS TO BE FILLED WITH CONCRETE OF THE SAME GRADE AS FOOTINGS.
5: DETAILS ABOVE APPLY UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
6: REFER ALSO TO STANDARD NOTES ON DRAWING S-WEB-001. 2



TYPICAL STRIP FOOTING / CAPPING BEAM INTERSECTION DETAIL
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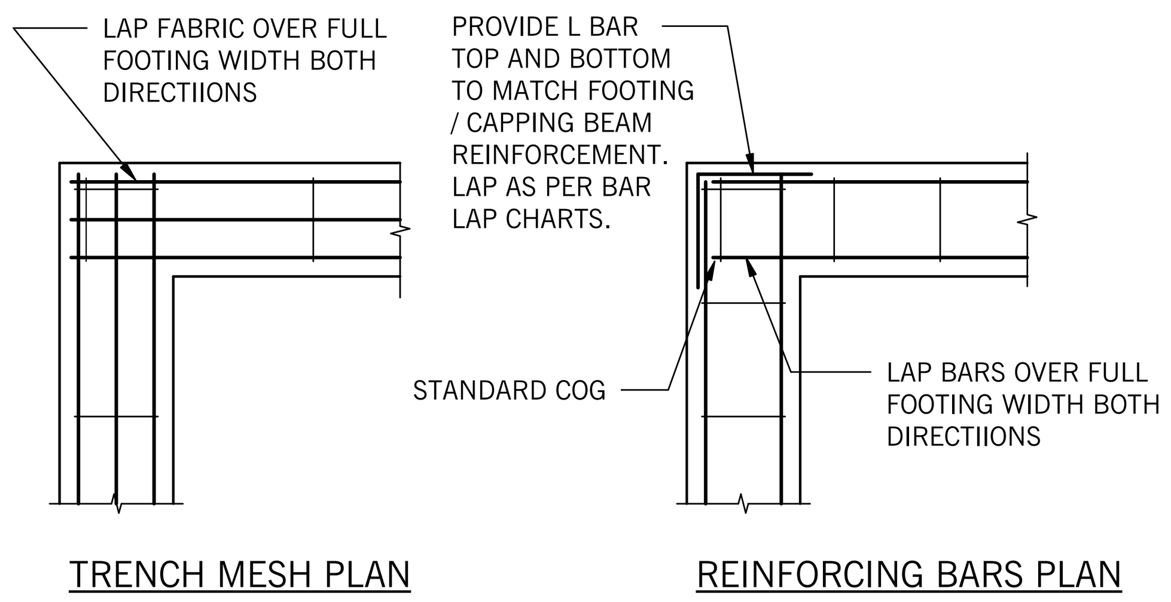
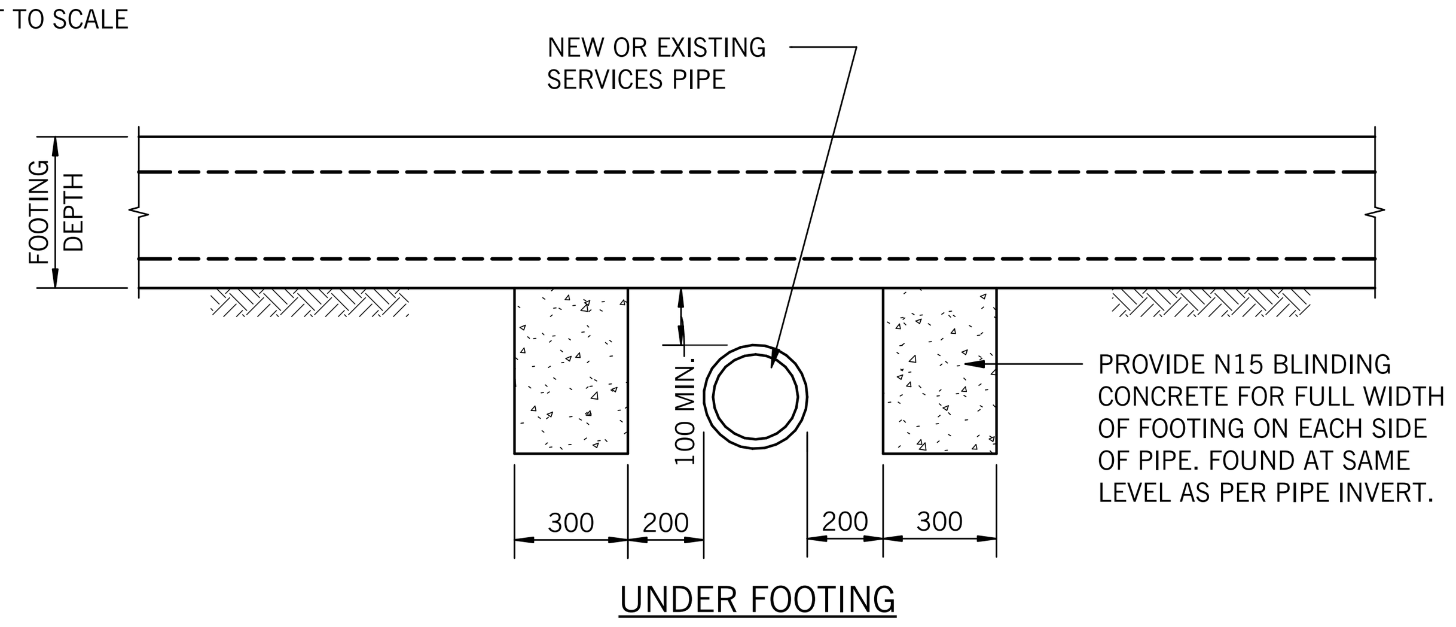
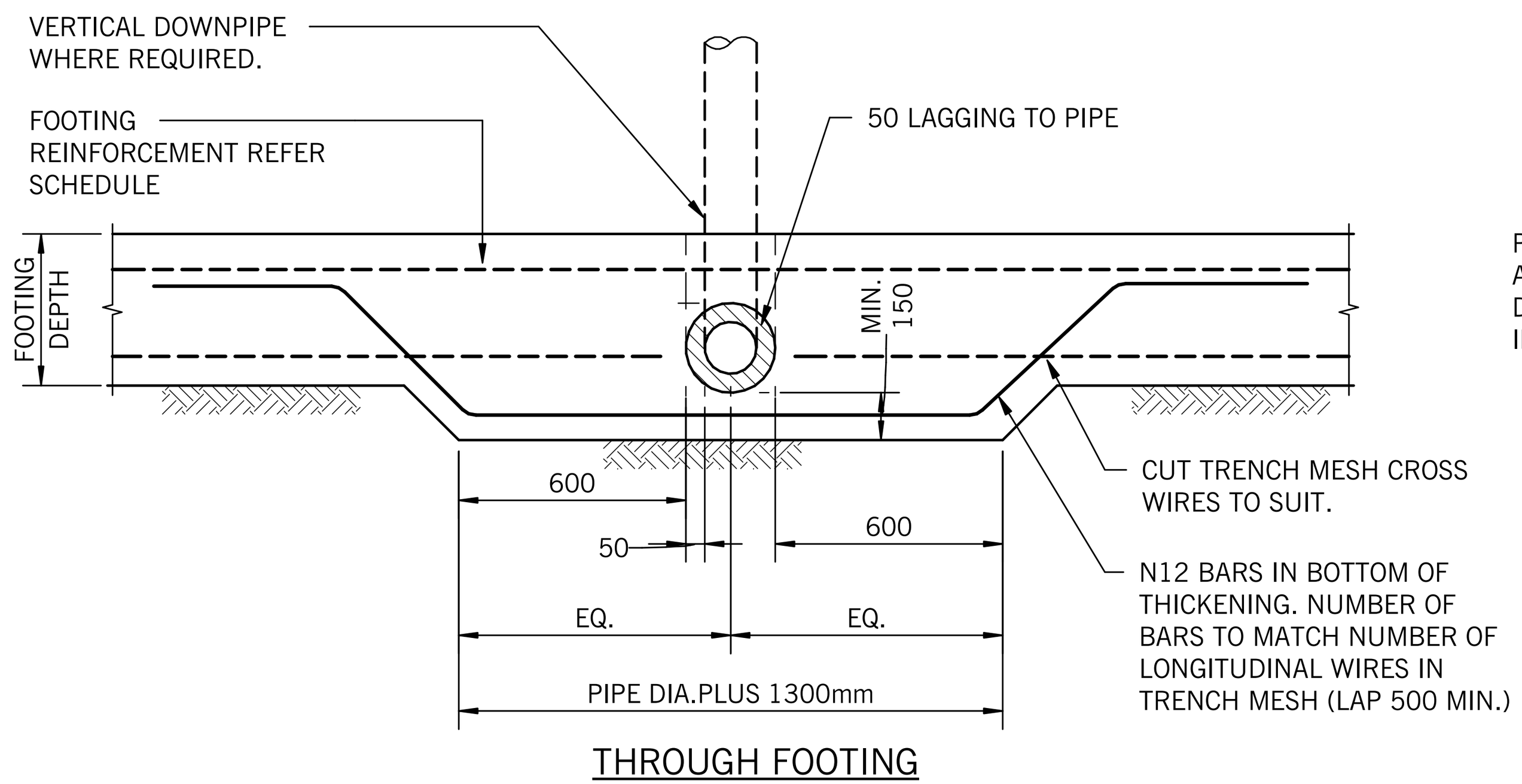


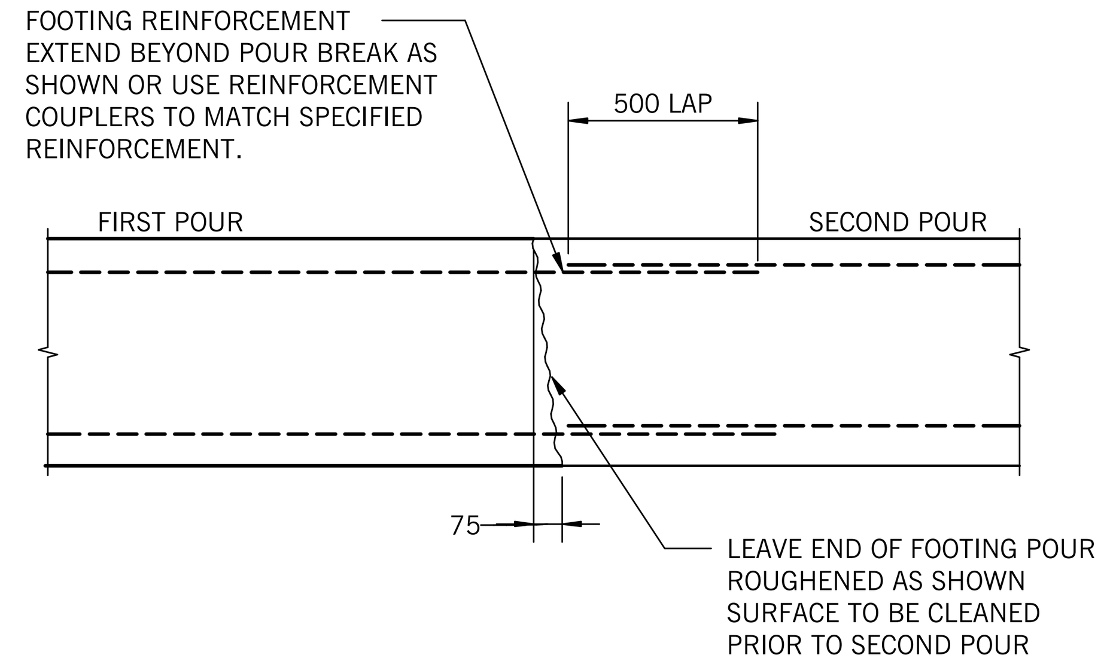
TYPICAL STRIP FOOTING / CAPPING BEAM CORNER DETAIL
NOT TO SCALE





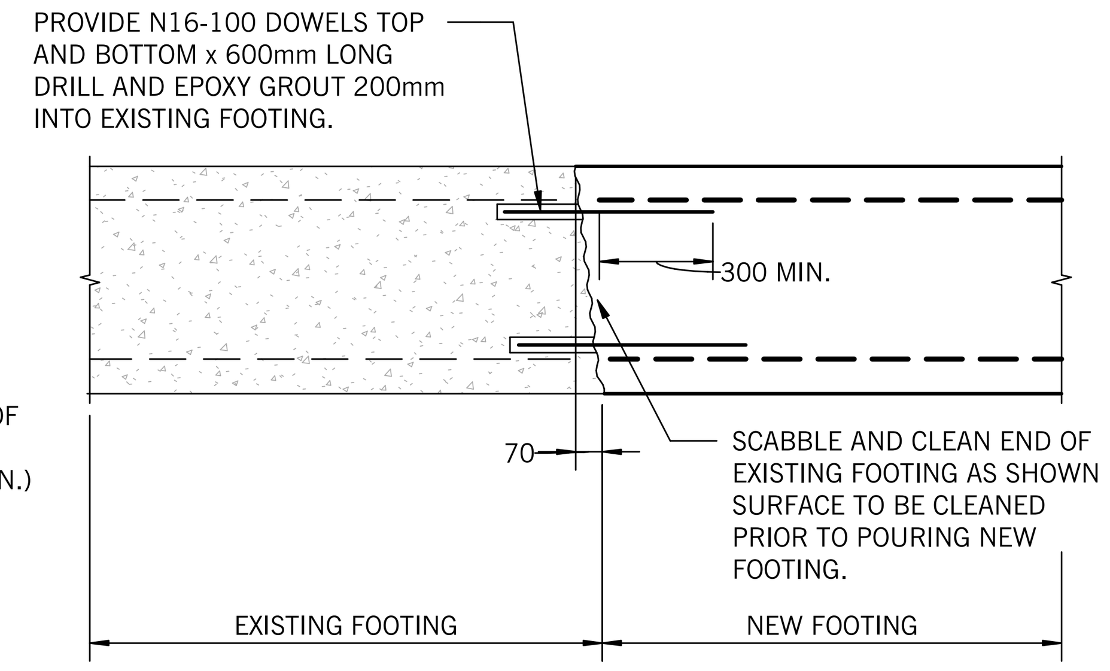
SERVICES PENETRATION
NTS

X / 048 Sim



STRIP FOOTING / CAPPING BEAM CONSTRUCTION JOINT DETAIL
NTS

ENG TO CONFIRM



NEW TO EXISTING FOOTING DETAIL
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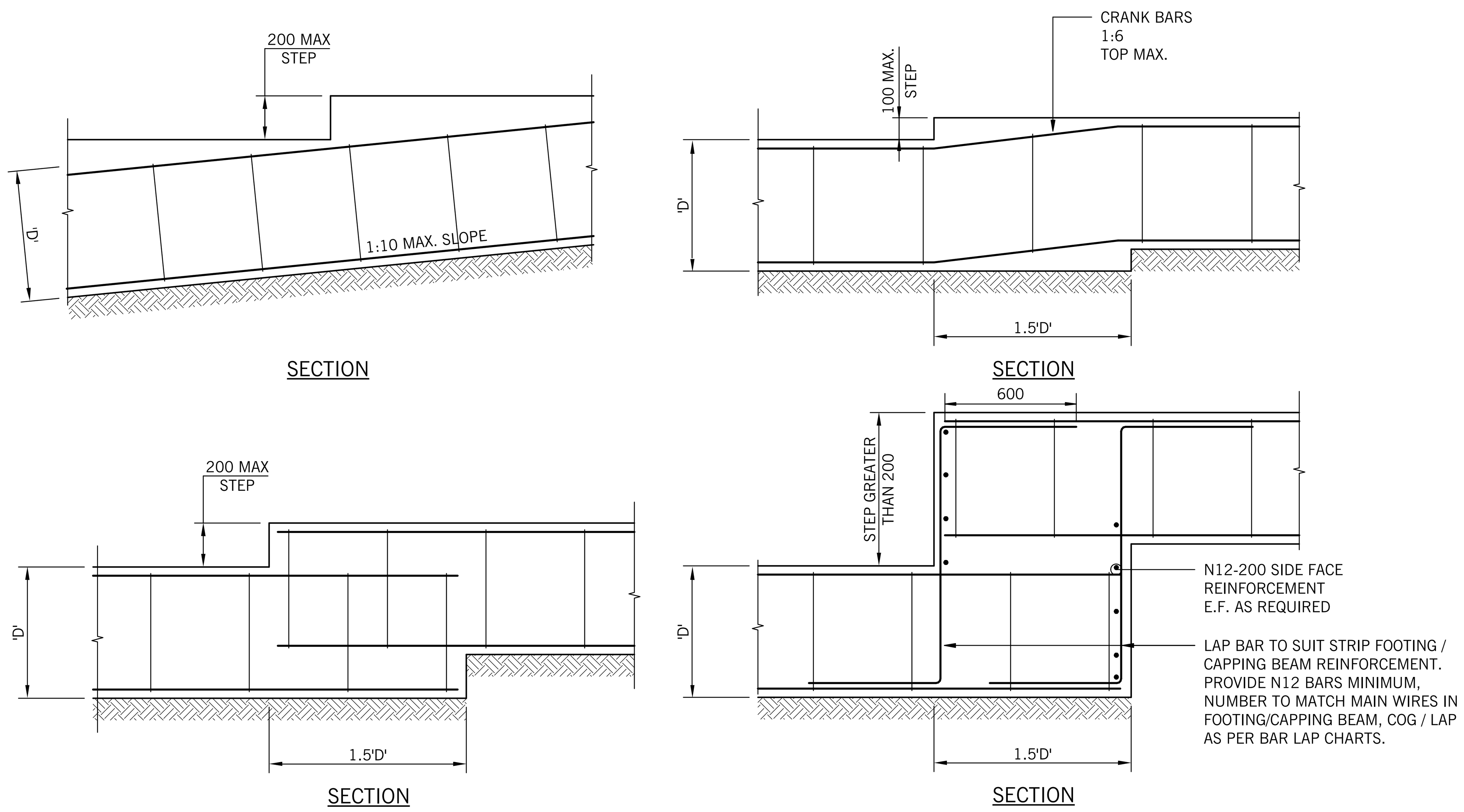

TYPICAL STEP IN STRIP FOOTING / CAPPING BEAM DETAILS
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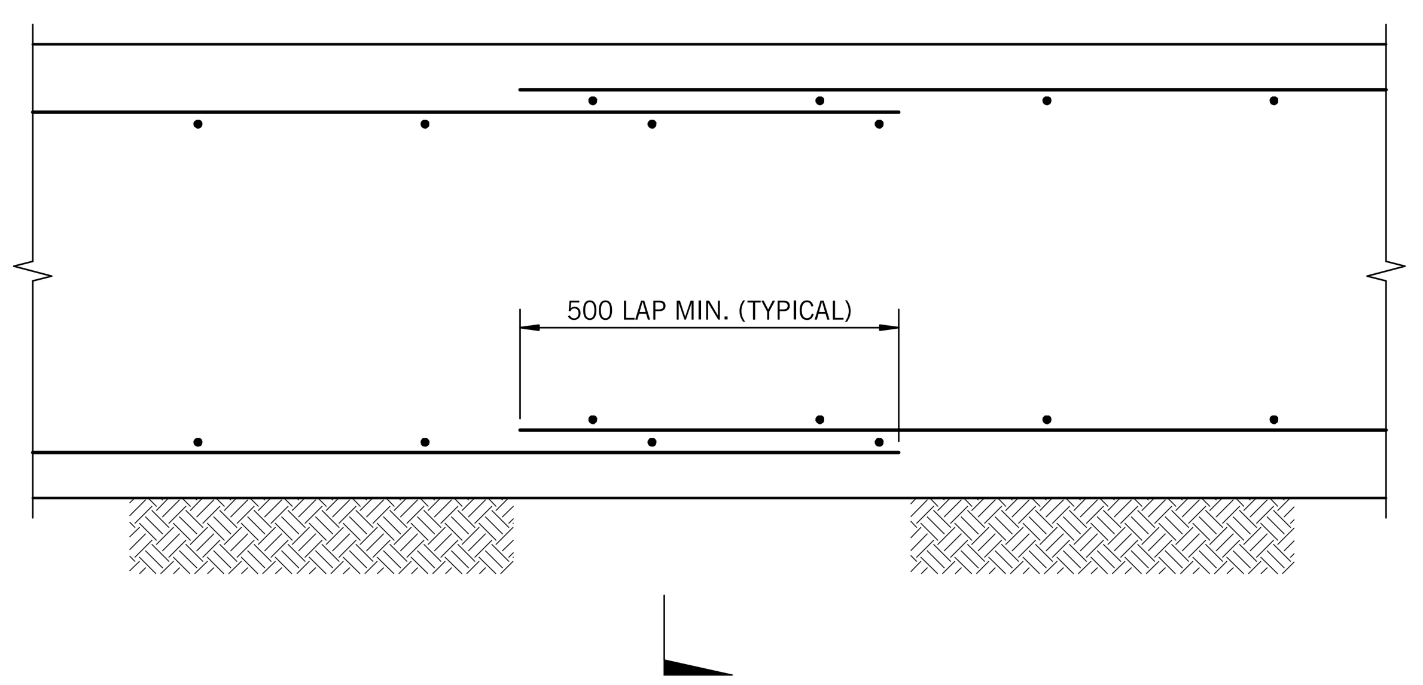
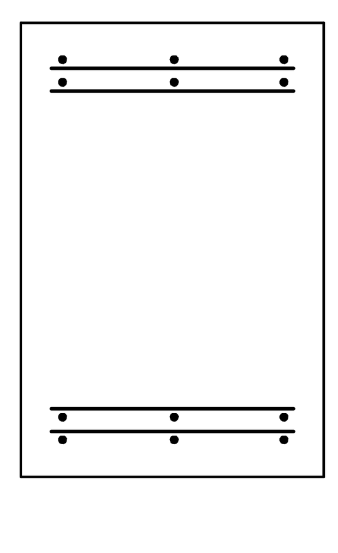


TYPICAL FABRIC REINFORCEMENT SPLICE DETAIL FOR STRIP FOOTING
N.T.S

NOTE:
BOTTOM REINFORCEMENT SHOWN, TOP REINFORCEMENT SIMILAR



SECTION X / 048
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DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
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R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING

MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155

SYDNEY OFFICE:
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T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

FOUNDATION TYPICAL DETAILS - SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:10, 1:20	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-048	2

WEBBER DESIGN

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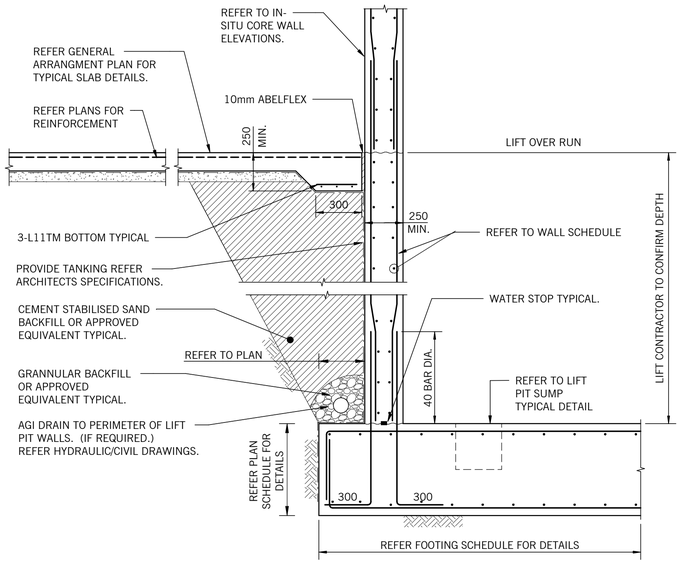
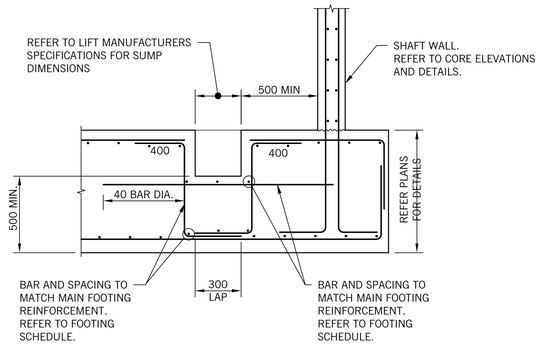




LIFT SUMP DETAIL

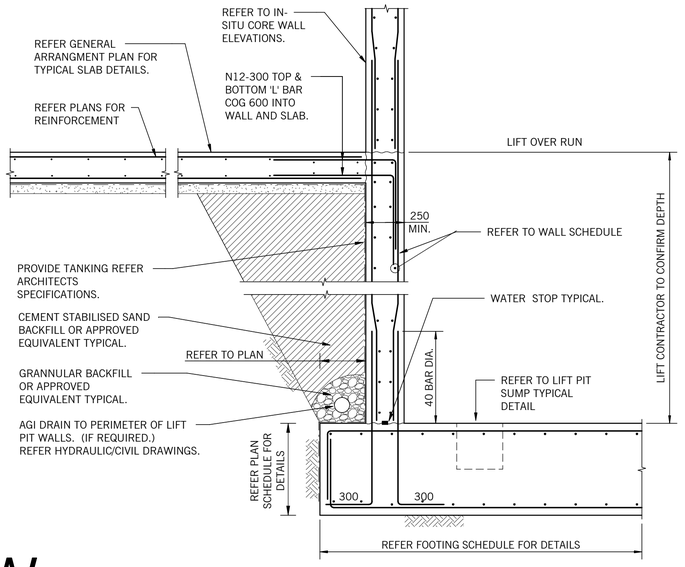
SCALE 1:20

LIFT PIT NOTES:

1. ALL LIFT PIT ELEMENTS ie..CONCRETE WALLS, PILE CAPS,CAPPING BEAM AND BASE OF ALL PITS (AS APPLICABLE) TO CONTAIN WATERPROOFING ADDITIVE TO MANUFACTURERS RECOMMENDATIONS.
2. ALL PIT WALL BASES TO CONTAIN A CONTINUOUS WATERSTOP TO BASE OF WALL.
3. PROVIDE BLINDING CONCRETE TO FULL EXTENT OF EXCAVATED PIT (AS REQUIRED.)

TYPICAL SLAB ON GROUND LIFT PIT DETAIL - IN-SITU WALLS OVER

SCALE 1:20



LIFT PIT NOTES:

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2. ALL PIT WALL BASES TO CONTAIN A CONTINUOUS WATERSTOP TO BASE OF WALL.
3. PROVIDE BLINDING CONCRETE TO FULL EXTENT OF EXCAVATED PIT (AS REQUIRED.)

TYPICAL SUSPENDED SLAB LIFT PIT DETAIL - IN-SITU WALLS OVER

SCALE 1:20

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Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
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DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
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R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

2

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
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SYDNEY OFFICE:
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CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

FOUNDATION TYPICAL DETAILS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	PAC	PW

JOB No.	DRAWING No.	REV.
20023	S-WEB-049	2

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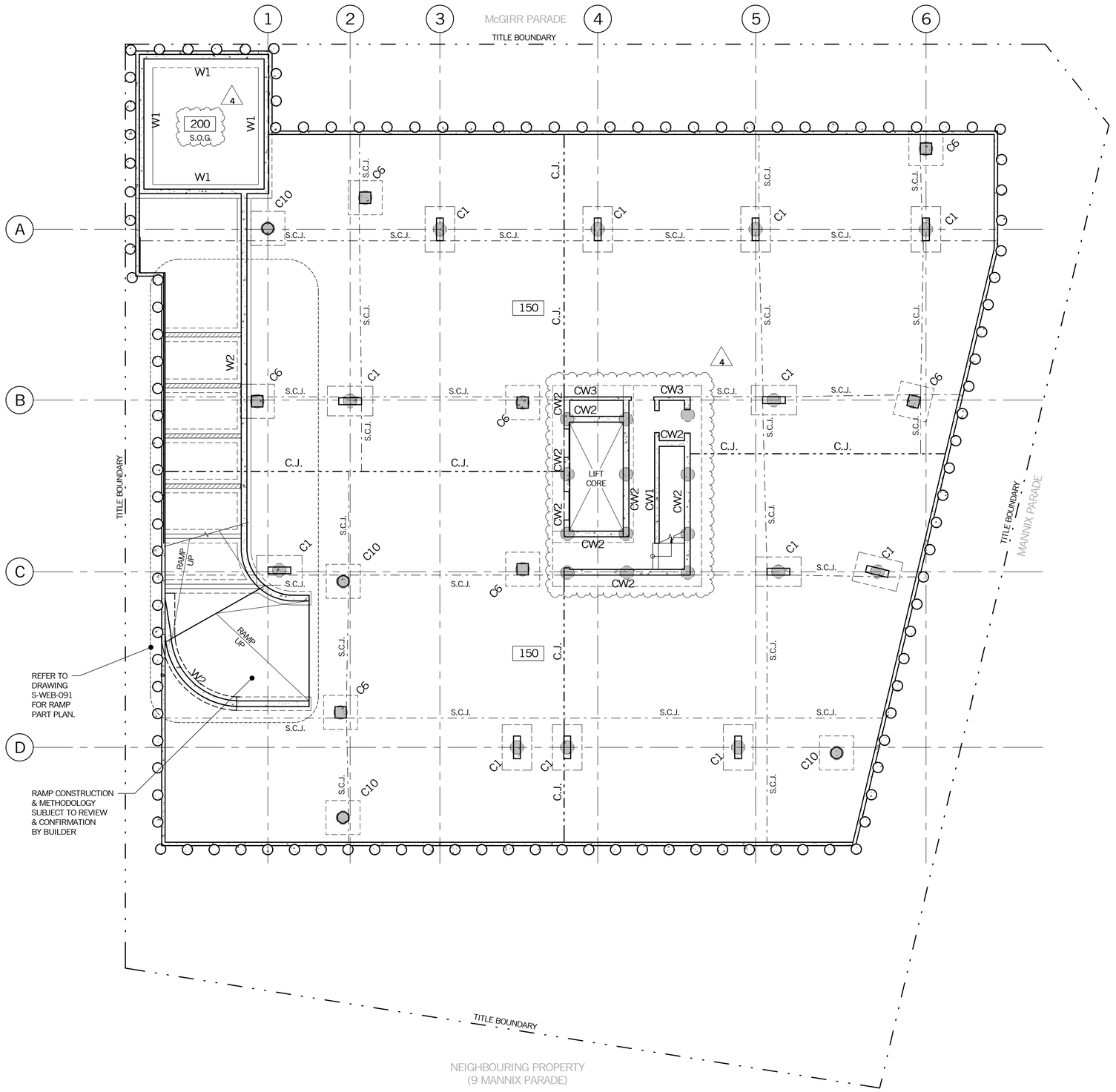

BASEMENT 1 - GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100

BASEMENT 1 - SLAB SCHEDULE				
THICKNESS	f'c (MPa)	REINF. RATE (kg/m³)	P.T. RATE (kg/m²)	REMARKS
150	40	40	N/A	SLAB ON GROUND
200*	40	40	N/A	R.C. RAMP SLAB
200	40	110	N/A	BONDEK SLAB

BASEMENT 1- CONCRETE COLUMN SCHEDULE				
MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
C1	300 x 1000	65	190	INSITU CONCRETE COLUMN
C6	500 x 500	65	150	INSITU CONCRETE COLUMN
C10	500 DIA.	65	170	INSITU CONCRETE COLUMN

BASEMENT 1 - WALL SCHEDULE				
MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
BW1	190	20	60	CORE FILLED BLOCKWORK
CW1	200	50	220	INSITU CONCRETE CORE WALL
CW2	250	50	180	INSITU CONCRETE CORE WALL
CW3	150	50	180	INSITU CONCRETE CORE WALL
W1	200	40	220	INSITU CONCRETE WALL
W2	250	40	180	INSITU CONCRETE WALL

NOTES:

1. ALL PENETRATIONS TO BE REVIEWED AND RESOLVED.
2. ALL SERVICES PENETRATIONS TO BE CO-ORDINATED AND APPROVED BY WEBBER DESIGN.
3. REBATES AND CAST IN PLATES FOR STRUCTURAL STEEL WORK AND FACADE TO BE CO-ORDINATED WITH ARCHITECT.
4. CONTRACTOR SHALL ALLOW FOR CONSTRUCTION JOINTS AS REQUIRED.
5. REFER TO ARCHITECT'S DRAWINGS FOR CAR CRASH BARRIER REQUIREMENTS.

BASEMENT CONSTRUCTION PHILISOPHY:

AS PER THE LATEST GEOTECHNICAL REPORT(STS GEOTECHNICS, APRIL 2020), THE BASEMENT SLAB AND LOWER RETENTION WALLS ARE STRUCTURALLY DESIGNED WITH AN EFFECTIVE DRAINAGE SYSTEM (DESIGNED BY OTHERS) WITH NO RESULTANT HYDROSTATIC PRESSURE BOTH DURING CONSTRUCTION AND THE LIFETIME OF THE STRUCTURE.
THEY HAVE NOT BEEN DESIGN AS A LIQUID RETAINING STRUCTURE AND AS SUCH RELIES ON A WATERPROOF MEDIUM (MEMBRANE, WATERPROOF ADDITIVES OR SIMILAR) TO STOP WATER PERMEATING THROUGH THE CONCRETE OR POTENTIAL CRACKS IN THE STRUCTURE. A WATERPROOFING CONSULTANT SHOULD BE ENGAGED TO ADVISE ON ALL WATERPROOFING REQUIREMENTS INCLUDING POTENTIAL MEMBRANES, CONCRETE ADDITIVES AND DETAILING OF ALL COLD JOINTS TO PILES, SHOTCRETE WALLS, SLABS, FOUNDATIONS AND WALLS.

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- ALLOW FOR WATERPROOF ADMIXTURE IN CONCRETE BELOW THE WATERTABLE.
- POUR STRIP AND POUR SIZE TO BE CONSIDERED IN CONJUNCTION WITH WATERPROOFING STRATEGY ALONG WITH ADDITIONAL REINFORCEMENT TO CONTROL CRACK WIDTH.

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MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

GENERAL ARRANGEMENT LEGEND

- xx* -DENOTES SLAB/BAND BEAM THICKNESS
- C1 (C) -DENOTES COLUMN OVER
- -DENOTES WALL OVER
- -DENOTES LOAD BEARING ELEMENT UNDER
- -DENOTES LOAD BEARING ELEMENT UNDER & OVER
- -DENOTES BLOCK WALL OVER
- S.C.J. -DENOTES SAWCUT JOINT
- C.J. -DENOTES CONSTRUCTION JOINT
- STEP -DENOTES SLAB SETDOWN. REFER TO ARCH. DETAILS FOR ALL LEVELS.

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
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SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
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T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

BASEMENT 1 - GENERAL ARRANGEMENT PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-090	4

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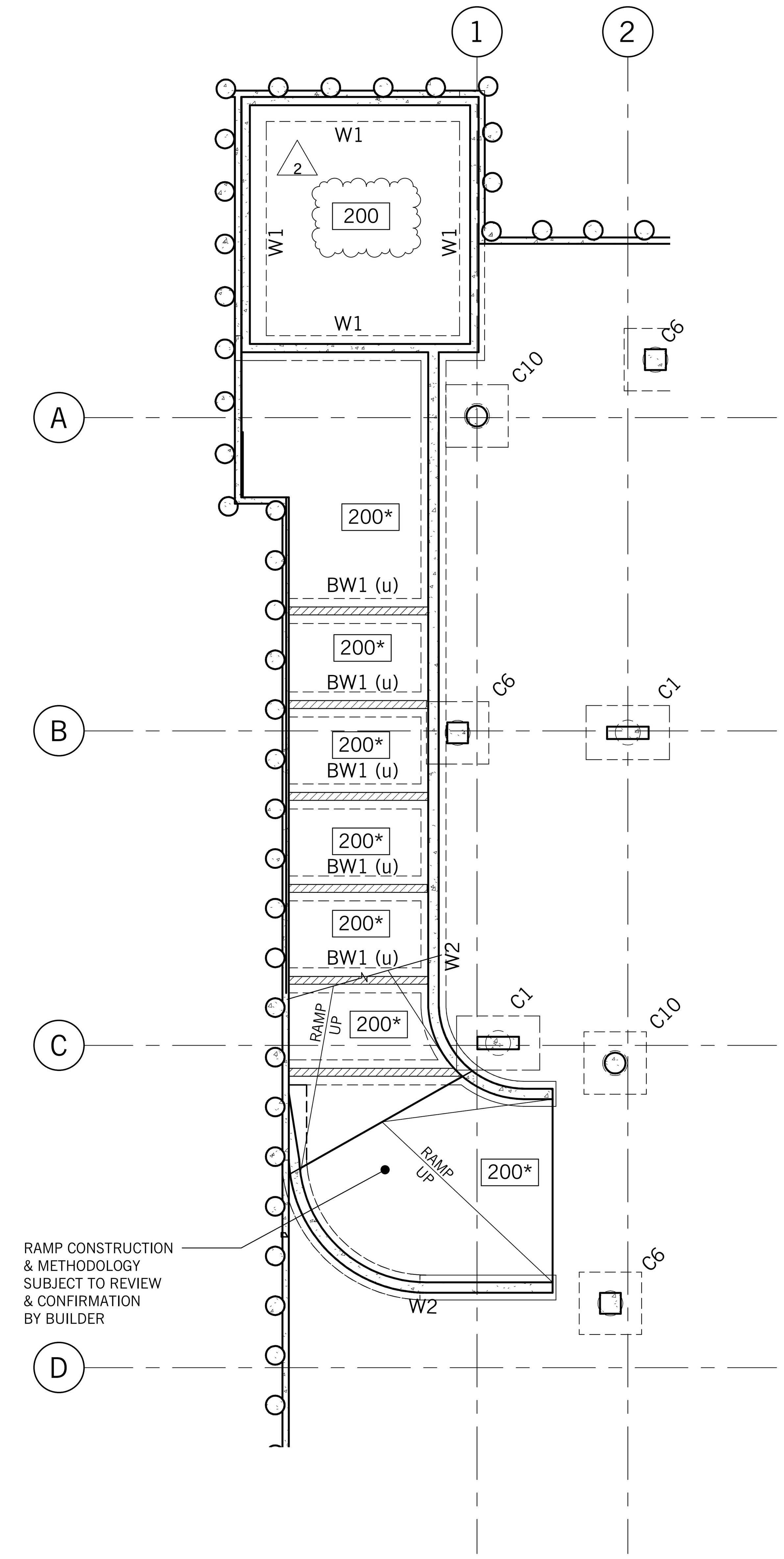

BASEMENT 1 - RAMP PART PLAN

SCALE: 1 : 100

BASEMENT 1 RAMP - SLAB SCHEDULE				
THICKNESS	f'c (MPa)	REINF. RATE (kg/m^3)	P.T. RATE (kg/m^2)	REMARKS
200*	40	40	N/A	R.C. RAMP SLAB
200	40	110	N/A	BONDEK SLAB

BASEMENT 1 - WALL SCHEDULE				
MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m^3)	REMARKS
BW1	190	20	60	CORE FILLED BLOCKWORK
CW1	200	50	220	INSITU CONCRETE CORE WALL
CW2	250	50	180	INSITU CONCRETE CORE WALL
CW3	150	50	180	INSITU CONCRETE CORE WALL
W1	200	40	220	INSITU CONCRETE WALL
W2	250	40	180	INSITU CONCRETE WALL

NOTES:

1. ALL PENETRATIONS TO BE REVIEWED AND RESOLVED.
2. ALL SERVICES PENETRATIONS TO BE CO-ORDINATED AND APPROVED BY WEBBER DESIGN.
3. REBATES AND CAST IN PLATES FOR STRUCTURAL STEEL WORK AND FACADE TO BE CO-ORDINATED WITH ARCHITECT.
4. CONTRACTOR SHALL ALLOW FOR CONSTRUCTION JOINTS AS REQUIRED.
5. REFER TO ARCHITECT'S DRAWINGS FOR CAR CRASH BARRIER REQUIREMENTS.

BASEMENT CONSTRUCTION PHILISOPHY:

AS PER THE LATEST GEOTECHNICAL REPORT(STS GEOTECHNICS, APRIL 2020), THE BASEMENT SLAB AND LOWER RETENTION WALLS ARE STRUCTURALLY DESIGNED WITH AN EFFECTIVE DRAINAGE SYSTEM (DESIGNED BY OTHERS) WITH NO RESULTANT HYDROSTATIC PRESSURE BOTH DURING CONSTRUCTION AND THE LIFETIME OF THE STRUCTURE.
THEY HAVE NOT BEEN DESIGN AS A LIQUID RETAINING STRUCTURE AND AS SUCH RELIES ON A WATERPROOF MEDIUM (MEMBRANE, WATERPROOF ADDITIVES OR SIMILAR) TO STOP WATER PERMEATING THROUGH THE CONCRETE OR POTENTIAL CRACKS IN THE STRUCTURE. A WATERPROOFING CONSULTANT SHOULD BE ENGAGED TO ADVISE ON ALL WATERPROOFING REQUIREMENTS INCLUDING POTENTIAL MEMBRANES, CONCRETE ADDITIVES AND DETAILING OF ALL COLD JOINTS TO PILES, SHOTCRETE WALLS, SLABS, FOUNDATIONS AND WALLS.

- ALL DETAILING OF MEMBRANES, WATER STOPS, ETC MADE HEREIN ARE INDICATIVE ONLY AND PENDING TO FURTHER SPECIALIST ADVICE.
- ALLOWANCE FOR POTENTIAL 50mm BLINDING LAYER TO BASEMENT SLAB SHOULD BE MADE PENDING CONFIRMATION OF THE WATERPROOFING SYSTEM ADOPTED AND SPECIFIC REQUIREMENTS.
- ALLOW FOR WATERPROOF ADMIXTURE IN CONCRETE BELOW THE WATERTABLE.
- POUR STRIP AND POUR SIZE TO BE CONSIDERED IN CONJUNCTION WITH WATERPROOFING STRATEGY ALONG WITH ADDITIONAL REINFORCEMENT TO CONTROL CRACK WIDTH.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

BASEMENT 1 - RAMP PART PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-091	2

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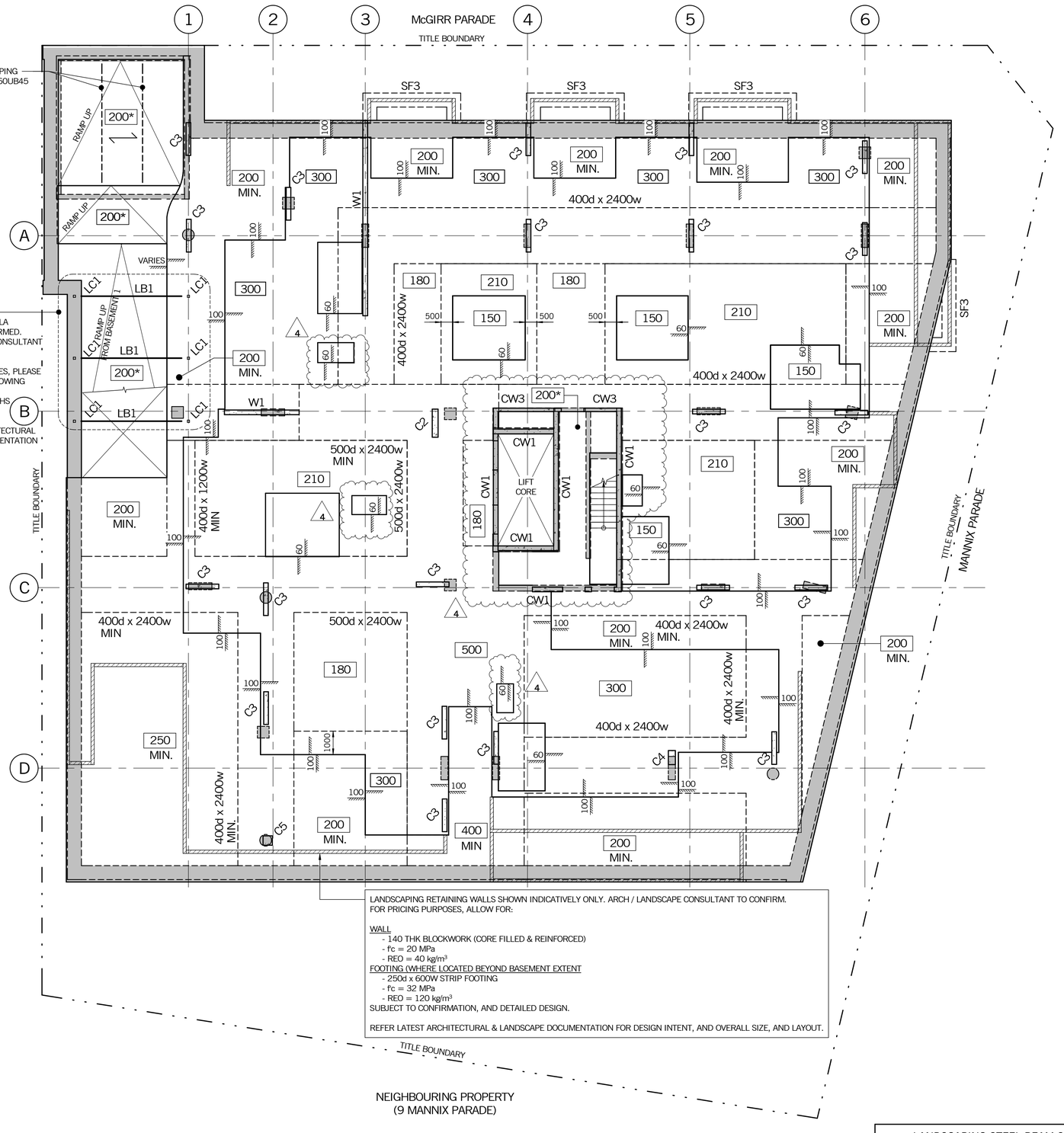

LANDSCAPING RETAINING WALLS SHOWN INDICATIVELY ONLY. ARCH / LANDSCAPE CONSULTANT TO CONFIRM.
FOR PRICING PURPOSES, ALLOW FOR:

WALL
- 140 THK BLOCKWORK (CORE FILLED & REINFORCED)
- f'c = 20 MPa
- REO = 40 kg/m³

FOOTING (WHERE LOCATED BEYOND BASEMENT EXTENT
- 250d x 600W STRIP FOOTING
- f'c = 32 MPa
- REO = 120 kg/m³

SUBJECT TO CONFIRMATION, AND DETAILED DESIGN.

REFER LATEST ARCHITECTURAL & LANDSCAPE DOCUMENTATION FOR DESIGN INTENT, AND OVERALL SIZE, AND LAYOUT.

GROUND FLOOR - GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100

LANDSCAPING STEEL BEAM SCHEDULE		
MARK	MEMBER SIZE	REMARKS
LB1	100 x 6 SHS	STEEL BEAM

LANDSCAPING STEEL COLUMN SCHEDULE		
MARK	MEMBER SIZE	REMARKS
LC1	100 x 6.0 SHS	STEEL COLUMN

GROUND FLOOR - LANDSCAPE FOOTING SCHEDULE			
MARK	f'c (MPa)	REINF. RATE (kg/m³)	REMARK
SF3	32	50	STRIP FOOTING

GROUND FLOOR SLAB SCHEDULE				
THICKNESS	f'c (MPa)	REINF. RATE (kg/m³)	P.T. RATE (kg/m²)	REMARKS
150	40	40	1.8	P.T. SLAB BY D&C CONTRACTOR
180	40	40	1.8	P.T. SLAB BY D&C CONTRACTOR
200	40	60 + SL82 MESH TOP THROUGHOUT	5.0	P.T. SLAB BY D&C CONTRACTOR
200*	40	130	N/A	BONDEK SLAB
200*	40	130	N/A	R.C. RAMP SLAB
210	40	40	2.5	P.T. SLAB BY D&C CONTRACTOR
250	40	60 + SL82 MESH TOP THROUGHOUT	2.8	P.T. SLAB BY D&C CONTRACTOR
300	40	40	5.5	P.T. SLAB BY D&C CONTRACTOR

GROUND FLOOR - CONCRETE BEAM SCHEDULE				
SIZE	f'c (MPa)	REINF. RATE (kg/m³)	P.T. TENDONS (kg/m²)	REMARKS
400d x 2400w	40	40	7.0	P.T. BEAM BY D&C CONTRACTOR
500d x 2400w	40	65	10.5	P.T. BEAM BY D&C CONTRACTOR
400d x 1200w	40	40	8.5	P.T. BEAM BY D&C CONTRACTOR

GROUND FLOOR - CONCRETE COLUMN SCHEDULE				
MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
C2	250 x 1200	50	230	INSITU CONCRETE COLUMN
C3	200 x 1400	50	250	INSITU CONCRETE COLUMN
C4	300 x 600	50	210	INSITU CONCRETE COLUMN
C5	400 x 400	50	210	INSITU CONCRETE COLUMN

GROUND FLOOR - WALL SCHEDULE				
MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
CW1	200	50	220	INSITU CONCRETE CORE WALL
CW2	250	50	180	INSITU CONCRETE CORE WALL
CW3	150	50	180	INSITU CONCRETE CORE WALL
W1	200	50	220	INSITU CONCRETE WALL
W2	250	40	180	INSITU CONCRETE WALL

NOTES:

1. ALL PENETRATIONS TO BE REVIEWED AND RESOLVED.
2. ALL SERVICES PENETRATIONS TO BE CO-ORDINATED AND APPROVED BY WEBBER DESIGN.
3. REBATES AND CAST IN PLATES FOR STRUCTURAL STEEL WORK AND FACADE TO BE CO-ORDINATED WITH ARCHITECT.
4. CONTRACTOR SHALL ALLOW FOR CONSTRUCTION JOINTS AS REQUIRED.

POST TENSIONED SLAB NOTES:

THE SUSPENDED FLOOR SLABS ARE A DESIGN AND CONSTRUCT COMPONENT.
REFER TO DRAWING S-WEB-001 & S-WEB-002 FOR DESIGN AND CONSTRUCTION POST-TENSIONING FLOOR SLAB AND DESIGN BRIEF AND GENERAL DESIGN & LOADING CRITERIA

GENERAL NOTES:

- ALL CONCRETE SLABS AND BEAMS TO BE POST-TENSIONED U.N.O. PT AND REINFORCEMENT TO BE DESIGNED BY PT CONTRACTOR.
- THE POST TENSIONING CONTRACTOR SHALL ENSURE POTENTIAL INTERNAL FORCES AND CRACKS INDUCED BY PRESTRESSING, SHRINKAGE, AND/OR TEMPERATURE ARE CONTROLLED IN THE VICINITY OF RESTRAINING ELEMENTS AND MAKE PROVISION FOR MOVEMENT AND SHRINKAGE AS REQUIRED THROUGHOUT, INCLUDING MOVEMENT JOINTS, POUR STRIPS, LOW SHRINKAGE CONCRETE MIX ETC.
- NO COLUMN STIFFNESS SHOULD BE USED IN THE SLAB AND BEAM DESIGN.
- SLABS TO BE CHECKED FOR PUNCHING SHEAR WITH MOMENT DERIVED WITH 100% COLUMN STIFFNESS. PT CONTRACTOR TO MAKE ALLOWANCE FOR SHEAR HEAD REINFORCEMENT (WHERE REQUIRED) TO SATISFY PUNCHING SHEAR REINFORCEMENTS
- Ieff TO Igross MAX RATIO TO BE DETERMINED BY THE DESIGNER BUT IN NO INSTANCE SHALL BE GREATER THAN 0.7 FOR THE SLAB AND BEAM CALCULATIONS.
- PT CONTRACTOR TO MAKE ALLOWANCE FOR STRUCTURAL INTEGRITY REINFORCEMENT IN ACCORDANCE WITH CL9.2.2 OF AS3600-2018 FOR ALL SLABS AND BEAMS.
- PT CONTRACTOR TO PROVIDE A MINIMUM P/A OF 1.4MPA (AFTER FINAL LOSSES) TO ALL INTERNAL CONCRETE SLABS AND BEAMS, AND 2.0MPa (AFTER FINAL LOSSES) TO ALL EXTERNAL AREAS (BALCONIES, TERRACES, EXPOSED ROOFS, ETC.) PLUS SL82 TOP MESH U.N.O.
- ALL EXPOSED SLABS/BEAMS CRACK WIDTH TO BE LIMITED TO 0.3mm MAX.

EXPOSURE CLASSIFICATION
- A2 INTERNAL
- B1 EXTERNAL
- B1 SURFACES IN CONTACT WITH THE GROUND

FIRE RATING
- RESIDENTIAL -- 90 MINUTES FRL
- CARPARK -- 120 MINUTES FRL

SERVICEABILITY
- TOTAL LONG TERM DEFLECTION -- SPAN / 250 OR 25mm MAXIMUM, CANTILEVER -- SPAN / 125 OR 15mm MAXIMUM
- TRANSFER SLABS & BEAMS -- SPAN/1000 OR 10mm MAXIMUM
- INCREMENTAL DEFLECTION LIMITS FOR SLABS AND BEAMS SUPPORTING BRITTLE ELEMENTS -- SPAN/500, CANTILEVER -- SPAN/125
- DIFFERENTIAL DEFLECTION BETWEEN FLOORS TO BE LIMITED TO SPAN/500 OR 15mm MAXIMUM AT FACADE LOCATIONS

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	WORK IN PROGRESS ISSUE	MA	PAC	18.11.20
2	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
4	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	05.02.21

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
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R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

GENERAL ARRANGEMENT LEGEND

- xx* -DENOTES SLAB/BAND BEAM THICKNESS
- Cx (c) -DENOTES COLUMN OVER
- -DENOTES WALL OVER
- -DENOTES LOAD BEARING ELEMENT UNDER
- -DENOTES LOAD BEARING ELEMENT UNDER & OVER
- -DENOTES BLOCK WALL OVER
- S.C.J. -DENOTES SAWCUT JOINT
- C.J. -DENOTES CONSTRUCTION JOINT
- STEP -DENOTES SLAB SETDOWN. REFER TO ARCH. DETAILS FOR ALL LEVELS.

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

GROUND FLOOR - GENERAL ARRANGEMENT PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-100	4

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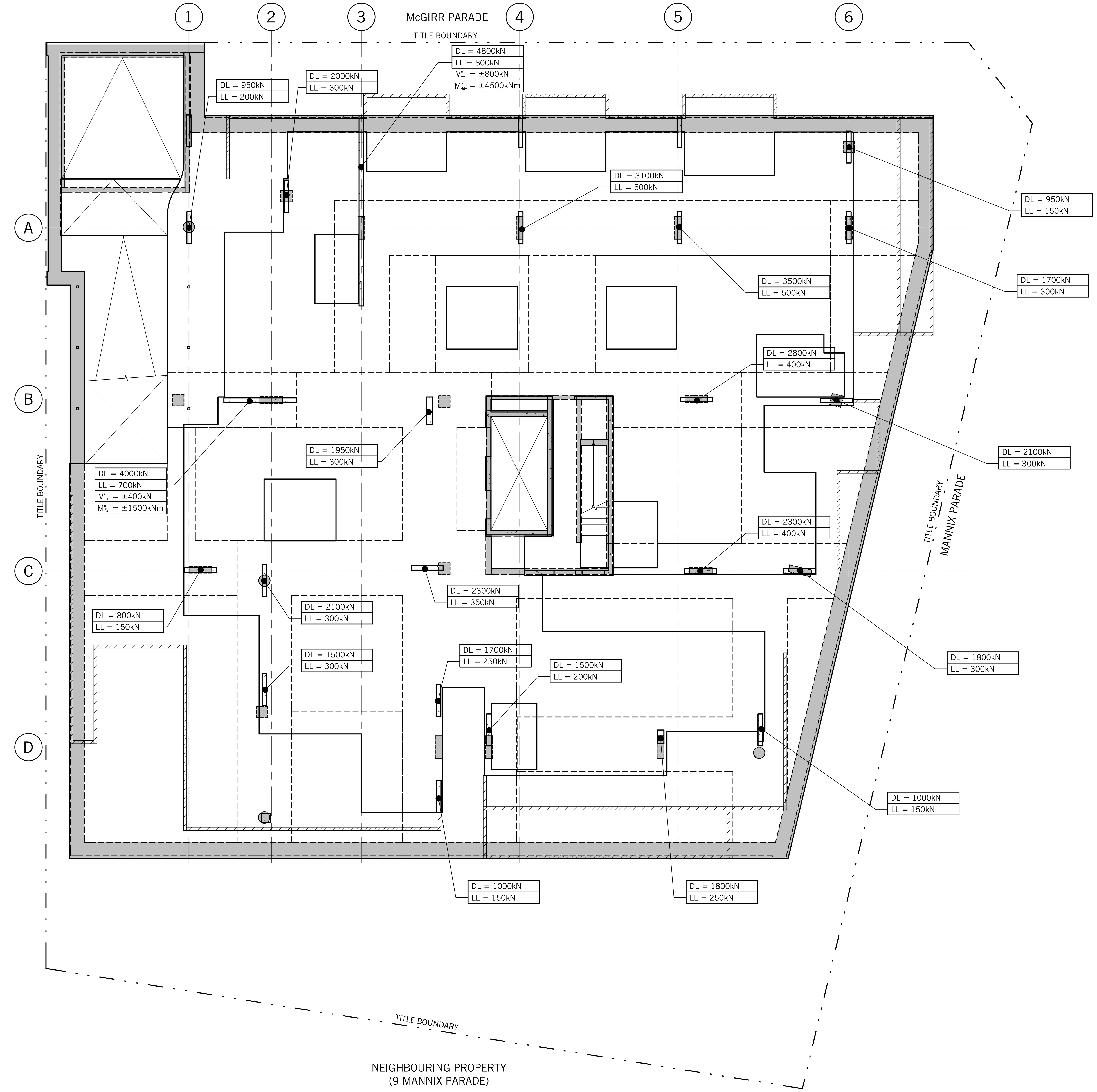

GROUND FLOOR - `TRANSFER LOADING PLAN

SCALE: 1 : 100

PRINT TIME: 18/12/2020 11:18:02 AM C:\Users\Peter\Documents\WD20023 - LAHC Warwick Farm NSW - Central - STRUCTURAL_peter2UEEP.rvt

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
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POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

2

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN

STRUCTURAL ENGINEERING

MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155

SYDNEY OFFICE:
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RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

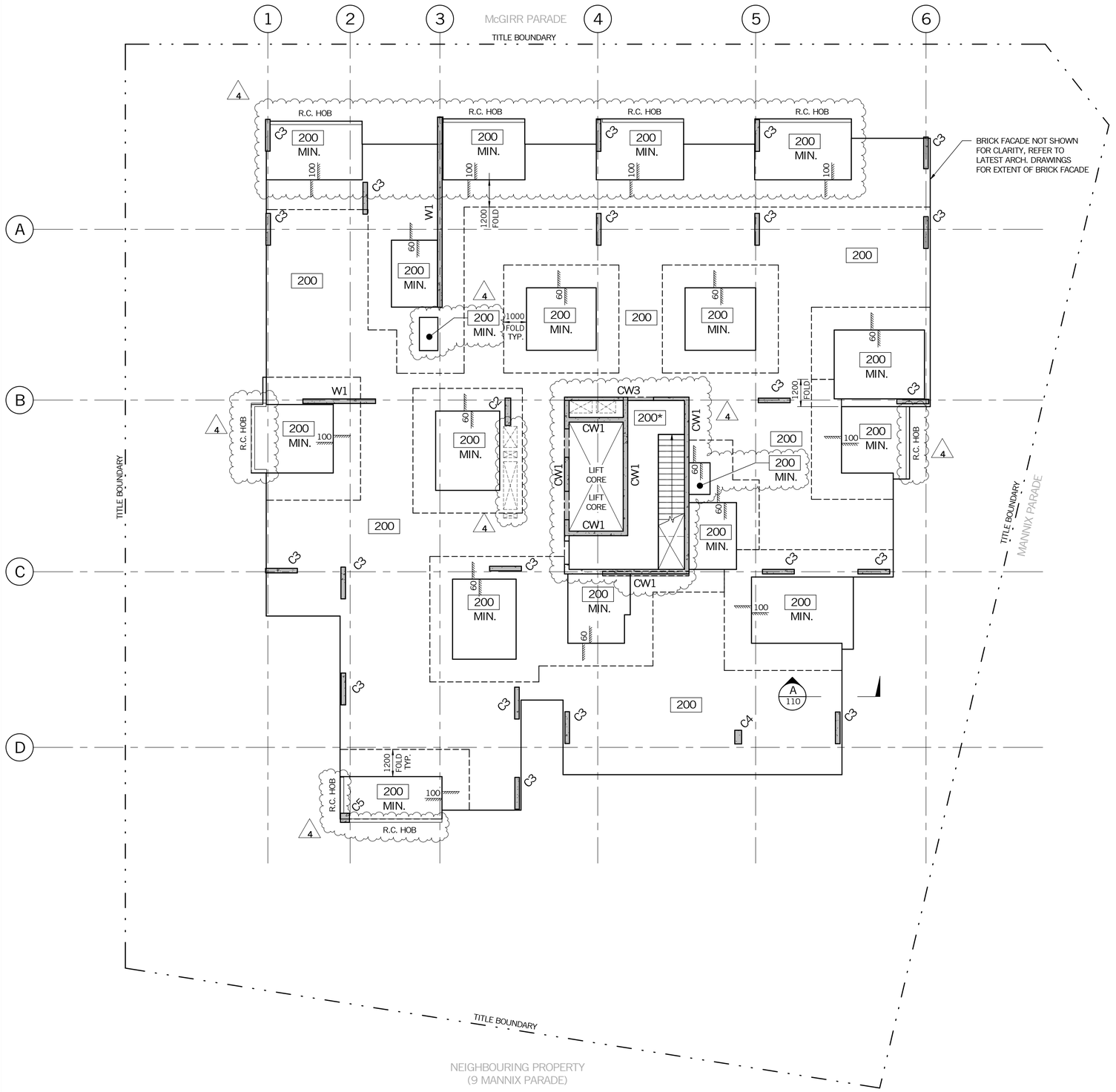
TITLE

GROUND FLOOR -
TRANSFER LOADING PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-106	2

WEBBER DESIGN

A1



LEVEL 1 - GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100

LEVEL 1 - SLAB SCHEDULE				
THICKNESS	f'c (MPa)	REINF. RATE (kg/m³)	P.T. RATE (kg/m²)	REMARKS
200	40	45	4.8	P.T. SLAB BY D&C CONTRACTOR, ADDITIONAL SL82 MESH TOP TO EXTERNAL AREAS
200*	40	130	N/A	R.C. CORE SLAB

LEVEL 1 - CONCRETE COLUMN SCHEDULE				
MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
C2	250 x 1200	50	230	INSITU CONCRETE COLUMN
C3	200 x 1400	50	250	INSITU CONCRETE COLUMN
C4	300 x 600	50	210	INSITU CONCRETE COLUMN
C5	400 x 400	50	210	INSITU CONCRETE COLUMN

LEVEL 1 - WALL SCHEDULE				
MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
CW1	200	50	220	INSITU CONCRETE CORE WALL
CW3	150	50	180	INSITU CONCRETE CORE WALL
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W2	250	40	180	INSITU CONCRETE WALL

NOTES:

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3. REBATES AND CAST IN PLATES FOR STRUCTURAL STEEL WORK AND FACADE TO BE CO-ORDINATED WITH ARCHITECT.
4. CONTRACTOR SHALL ALLOW FOR CONSTRUCTION JOINTS AS REQUIRED.

POST TENSIONED SLAB NOTES:

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REFER TO DRAWING S-WEB-001 & S-WEB-002 FOR DESIGN AND CONSTRUCTION POST-TENSIONING FLOOR SLAB AND DESIGN BRIEF AND GENERAL DESIGN & LOADING CRITERIA

GENERAL NOTES:

- ALL CONCRETE SLABS AND BEAMS TO BE POST-TENSIONED U.N.O.
  PT AND REINFORCEMENT TO BE DESIGNED BY PT CONTRACTOR.
- SLABS TO BE MINIMUM 200mm THICK, f'c = 40MPa AND
  POST- TENSION BY OTHERS U.N.O.
- THE POST TENSIONING CONTRACTOR SHALL ENSURE POTENTIAL INTERNAL FORCES AND CRACKS INDUCED BY PRESTRESSING, SHRINKAGE, AND/OR TEMPERATURE ARE CONTROLLED IN THE VICINITY OF RESTRAINING ELEMENTS AND MAKE PROVISION FOR MOVEMENT AND SHRINKAGE AS REQUIRED THROUGHOUT, INCLUDING MOVEMENT JOINTS, POUR STRIPS, LOW SHRINKAGE CONCRETE MIX ETC.
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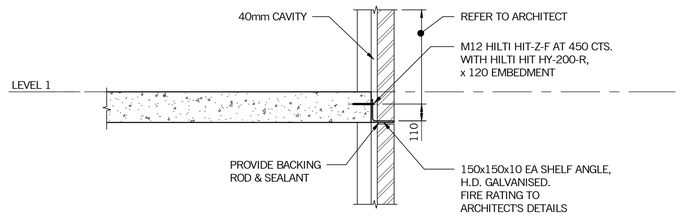
- A2 INTERNAL
- B1 EXTERNAL
- B1 SURFACES IN CONTACT WITH THE GROUND

FIRE RATING
- RESIDENTIAL -- 90 MINUTES FRL
- CARPARK -- 120 MINUTES FRL

SERVICEABILITY
- TOTAL LONG TERM DEFLECTION -- SPAN / 250 OR 25mm MAXIMUM, CANTILEVER -- SPAN / 125 OR 15mm MAXIMUM
- TRANSFER SLABS & BEAMS -- SPAN/1000 OR 10mm MAXIMUM
- INCREMENTAL DEFLECTION LIMITS FOR SLABS AND BEAMS SUPPORTING BRITTLE ELEMENTS -- SPAN/500, CANTILEVER -- SPAN/125
- DIFFERENTIAL DEFLECTION BETWEEN FLOORS TO BE LIMITED TO SPAN/500 OR 15mm MAXIMUM AT FACADE LOCATIONS



SECTION A 110

SCALE: 1 : 20

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	WORK IN PROGRESS ISSUE	MA	PAC	18.11.20
2	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
4	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	05.02.21

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
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R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

GENERAL ARRANGEMENT LEGEND

- xx* -DENOTES SLAB/BAND BEAM THICKNESS
- Cx (o) -DENOTES COLUMN OVER
- -DENOTES WALL OVER
- -DENOTES LOAD BEARING ELEMENT UNDER
- -DENOTES LOAD BEARING ELEMENT UNDER & OVER
- -DENOTES BLOCK WALL OVER
- S.C.J. -DENOTES SAWCUT JOINT
- C.J. -DENOTES CONSTRUCTION JOINT
- STEP -DENOTES SLAB SETDOWN. REFER TO ARCH. DETAILS FOR ALL LEVELS.

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

LEVEL 1 - GENERAL ARRANGEMENT PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20, 1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-110	4

PRINT TIME: 5/02/2021 3:59:48 PM
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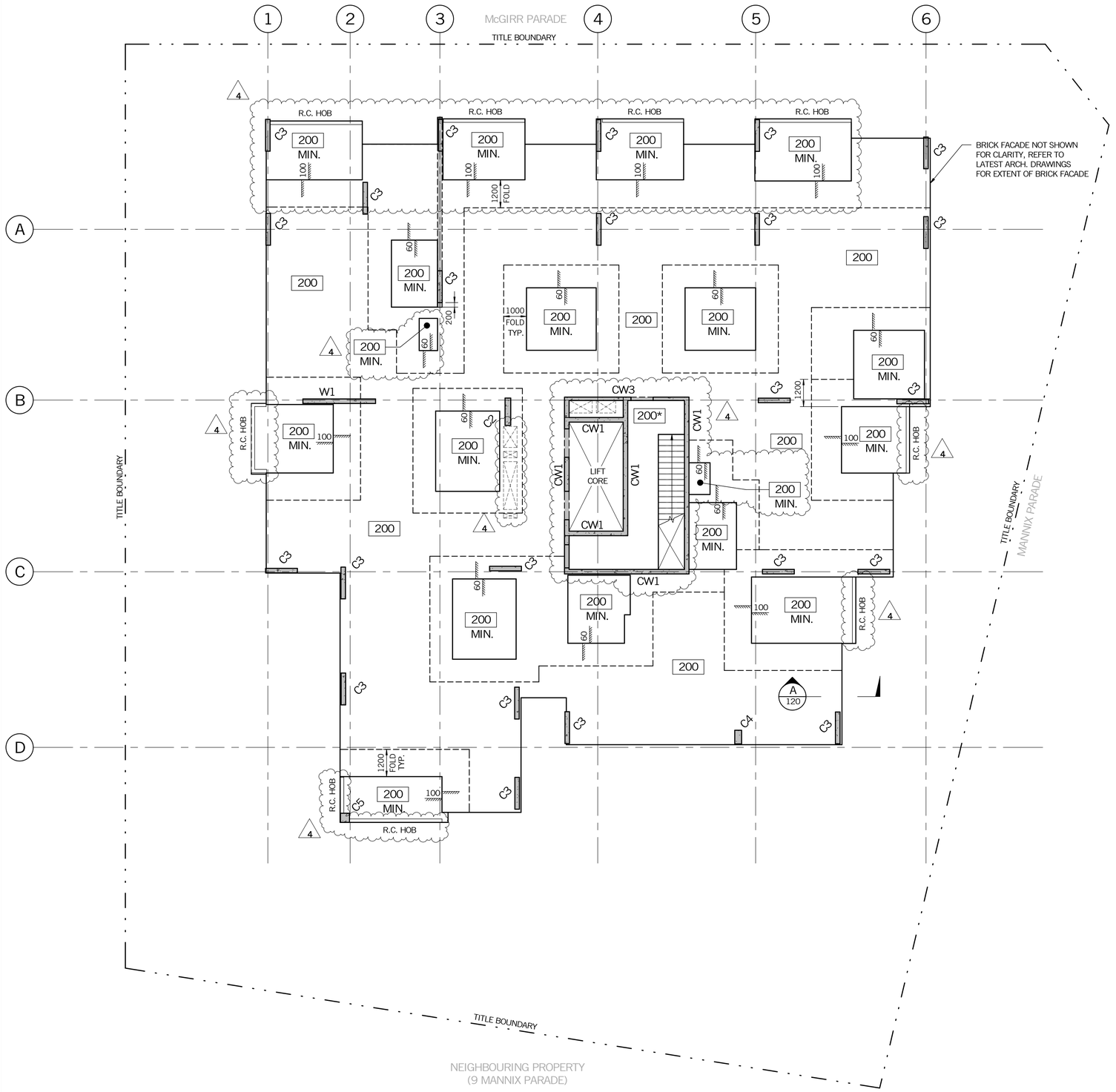

LEVEL 2 - GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100

LEVEL 2 - SLAB SCHEDULE				
THICKNESS	f'c (MPa)	REINF. RATE (kg/m³)	P.T. RATE (kg/m²)	REMARKS
200	40	45	4.8	P.T. SLAB BY D&C CONTRACTOR, ADDITIONAL SL82 MESH TOP TO EXTERNAL AREAS
200*	40	130	N/A	R.C. CORE SLAB

LEVEL 2 - CONCRETE COLUMN SCHEDULE				
MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
C2	250 x 1200	50	230	INSITU CONCRETE COLUMN
C3	200 x 1400	50	250	INSITU CONCRETE COLUMN
C4	300 x 600	50	210	INSITU CONCRETE COLUMN
C5	400 x 400	50	210	INSITU CONCRETE COLUMN

LEVEL 2 - WALL SCHEDULE				
MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
CW1	200	50	220	INSITU CONCRETE CORE WALL
CW3	150	50	180	INSITU CONCRETE CORE WALL
W1	200	50	220	INSITU CONCRETE WALL
W2	250	40	180	INSITU CONCRETE WALL

NOTES:

1. ALL PENETRATIONS TO BE REVIEWED AND RESOLVED.
2. ALL SERVICES PENETRATIONS TO BE CO-ORDINATED AND APPROVED BY WEBBER DESIGN.
3. REBATES AND CAST IN PLATES FOR STRUCTURAL STEEL WORK AND FACADE TO BE CO-ORDINATED WITH ARCHITECT.
4. CONTRACTOR SHALL ALLOW FOR CONSTRUCTION JOINTS AS REQUIRED.

POST TENSIONED SLAB NOTES:

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REFER TO DRAWING S-WEB-001 & S-WEB-002 FOR DESIGN AND CONSTRUCTION POST-TENSIONING FLOOR SLAB AND DESIGN BRIEF AND GENERAL DESIGN & LOADING CRITERIA

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- THE POST TENSIONING CONTRACTOR SHALL ENSURE POTENTIAL INTERNAL FORCES AND CRACKS INDUCED BY PRESTRESSING, SHRINKAGE, AND/OR TEMPERATURE ARE CONTROLLED IN THE VICINITY OF RESTRAINING ELEMENTS AND MAKE PROVISION FOR MOVEMENT AND SHRINKAGE AS REQUIRED THROUGHOUT, INCLUDING MOVEMENT JOINTS, POUR STRIPS, LOW SHRINKAGE CONCRETE MIX ETC.
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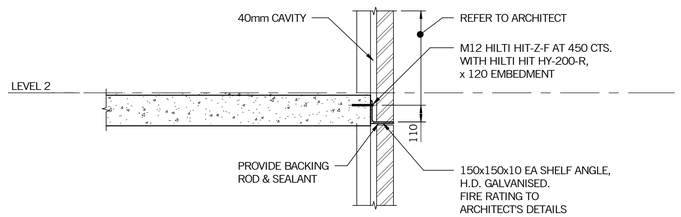
- ALL EXPOSED SLABS/BEAMS CRACK WIDTH TO BE LIMITED TO 0.3mm MAX.

EXPOSURE CLASSIFICATION
- A2 INTERNAL
- B1 EXTERNAL
- B1 SURFACES IN CONTACT WITH THE GROUND

FIRE RATING
- RESIDENTIAL -- 90 MINUTES FRL
- CARPARK -- 120 MINUTES FRL

SERVICEABILITY
- TOTAL LONG TERM DEFLECTION -- SPAN / 250 OR 25mm MAXIMUM, CANTILEVER -- SPAN / 125 OR 15mm MAXIMUM
- TRANSFER SLABS & BEAMS -- SPAN/1000 OR 10mm MAXIMUM
- INCREMENTAL DEFLECTION LIMITS FOR SLABS AND BEAMS SUPPORTING BRITTLE ELEMENTS -- SPAN/500, CANTILEVER -- SPAN/125
- DIFFERENTIAL DEFLECTION BETWEEN FLOORS TO BE LIMITED TO SPAN/500 OR 15mm MAXIMUM AT FACADE LOCATIONS



SECTION A

SCALE: 1 : 20 (A / 120)

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	WORK IN PROGRESS ISSUE	MA	PAC	18.11.20
2	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
4	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	05.02.21

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

GENERAL ARRANGEMENT LEGEND

- xx* -DENOTES SLAB/BAND BEAM THICKNESS
- C# (xx) -DENOTES COLUMN OVER
- -DENOTES WALL OVER
- -DENOTES LOAD BEARING ELEMENT UNDER
- -DENOTES LOAD BEARING ELEMENT UNDER & OVER
- -DENOTES BLOCK WALL OVER
- S.C.J. -DENOTES SAWCUT JOINT
- C.J. -DENOTES CONSTRUCTION JOINT
- STEP -DENOTES SLAB SETDOWN. REFER TO ARCH. DETAILS FOR ALL LEVELS.

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 302, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

LEVEL 2 - GENERAL ARRANGEMENT PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20, 1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-120	4

PRINT TIME: 5/02/2021 3:59:43 PM C:\Users\peter\Documents\W2020023 - LAHC Warwick Farm NSW - Central_STRUCTURAL_peter2UEEF.rvt

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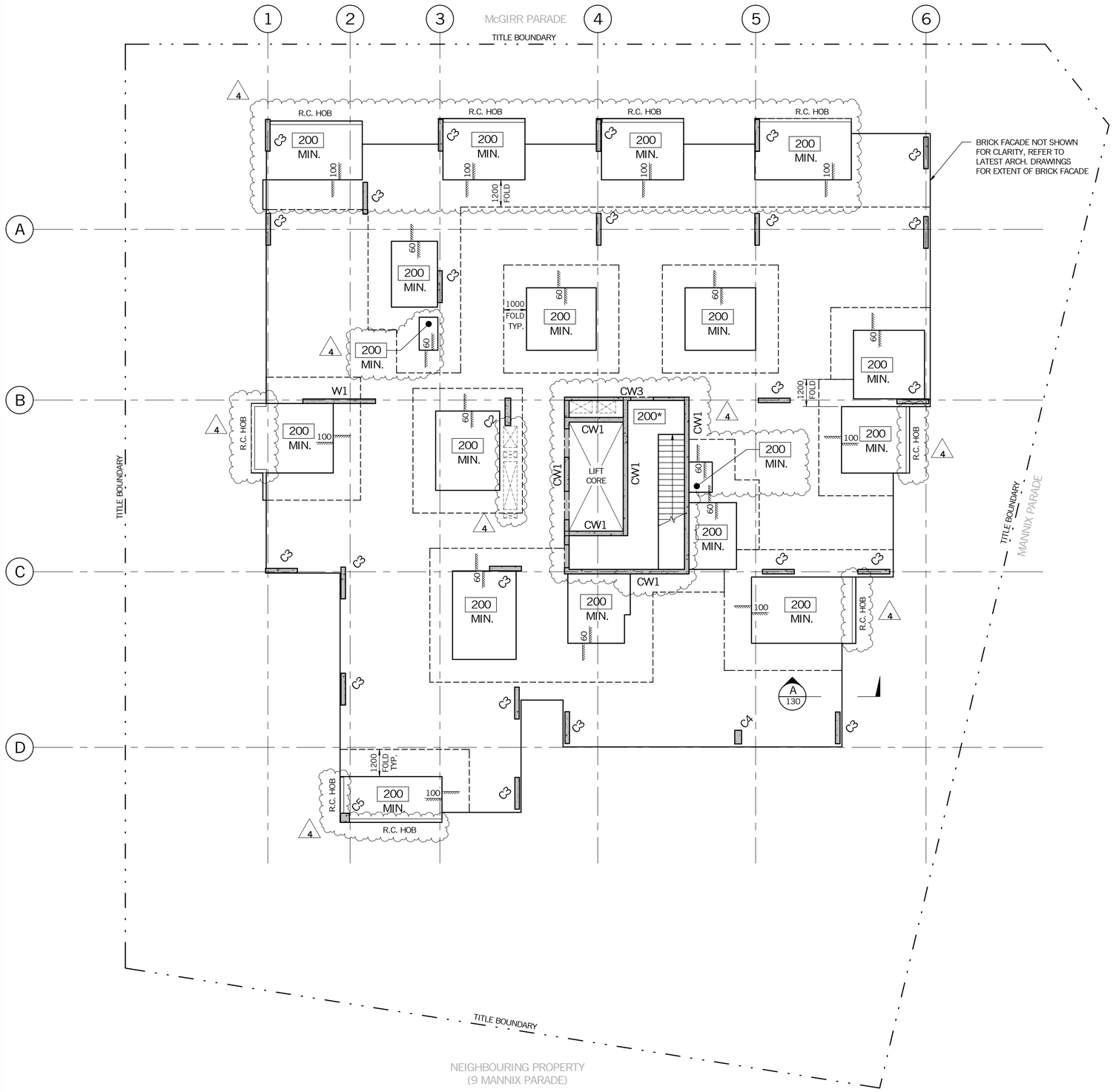

LEVEL 3 - GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100

LEVEL 3 - SLAB SCHEDULE

THICKNESS	f'c (MPa)	REINF. RATE (kg/m³)	P.T. RATE (kg/m²)	REMARKS
200	40	45	4.8	P.T. SLAB BY D&C CONTRACTOR, ADDITIONAL SL82 MESH TOP TO EXTERNAL AREAS
200*	40	130	N/A	R.C. CORE SLAB

LEVEL 3 - CONCRETE COLUMN SCHEDULE

MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
C2	250 x 1200	50	230	INSITU CONCRETE COLUMN
C3	200 x 1400	50	250	INSITU CONCRETE COLUMN
C4	300 x 600	50	210	INSITU CONCRETE COLUMN
C5	400 x 400	50	210	INSITU CONCRETE COLUMN

LEVEL 3 - WALL SCHEDULE

MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
CW1	200	50	220	INSITU CONCRETE CORE WALL
CW3	150	50	180	INSITU CONCRETE CORE WALL
W1	200	50	220	INSITU CONCRETE WALL
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- A2 INTERNAL
- B1 EXTERNAL
- B1 SURFACES IN CONTACT WITH THE GROUND

FIRE RATING
- RESIDENTIAL -- 90 MINUTES FRL
- CARPARK -- 120 MINUTES FRL

SERVICEABILITY
- TOTAL LONG TERM DEFLECTION -- SPAN / 250 OR 25mm MAXIMUM, CANTILEVER -- SPAN / 125 OR 15mm MAXIMUM
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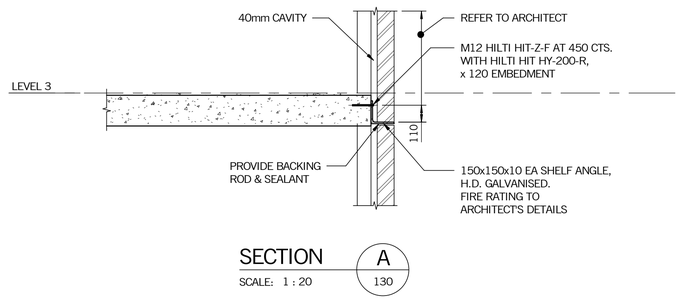

SECTION A 130

SCALE: 1 : 20

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	WORK IN PROGRESS ISSUE	MA	PAC	18.11.20
2	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
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DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
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MASONRY DETAILS	S-WEB-980-981
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- STEP -DENOTES SLAB SETDOWN. REFER TO ARCH. DETAILS FOR ALL LEVELS.

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

LEVEL 3 - GENERAL ARRANGEMENT PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20, 1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-130	4

PRINT TIME: 5/02/2021 3:59:37 PM
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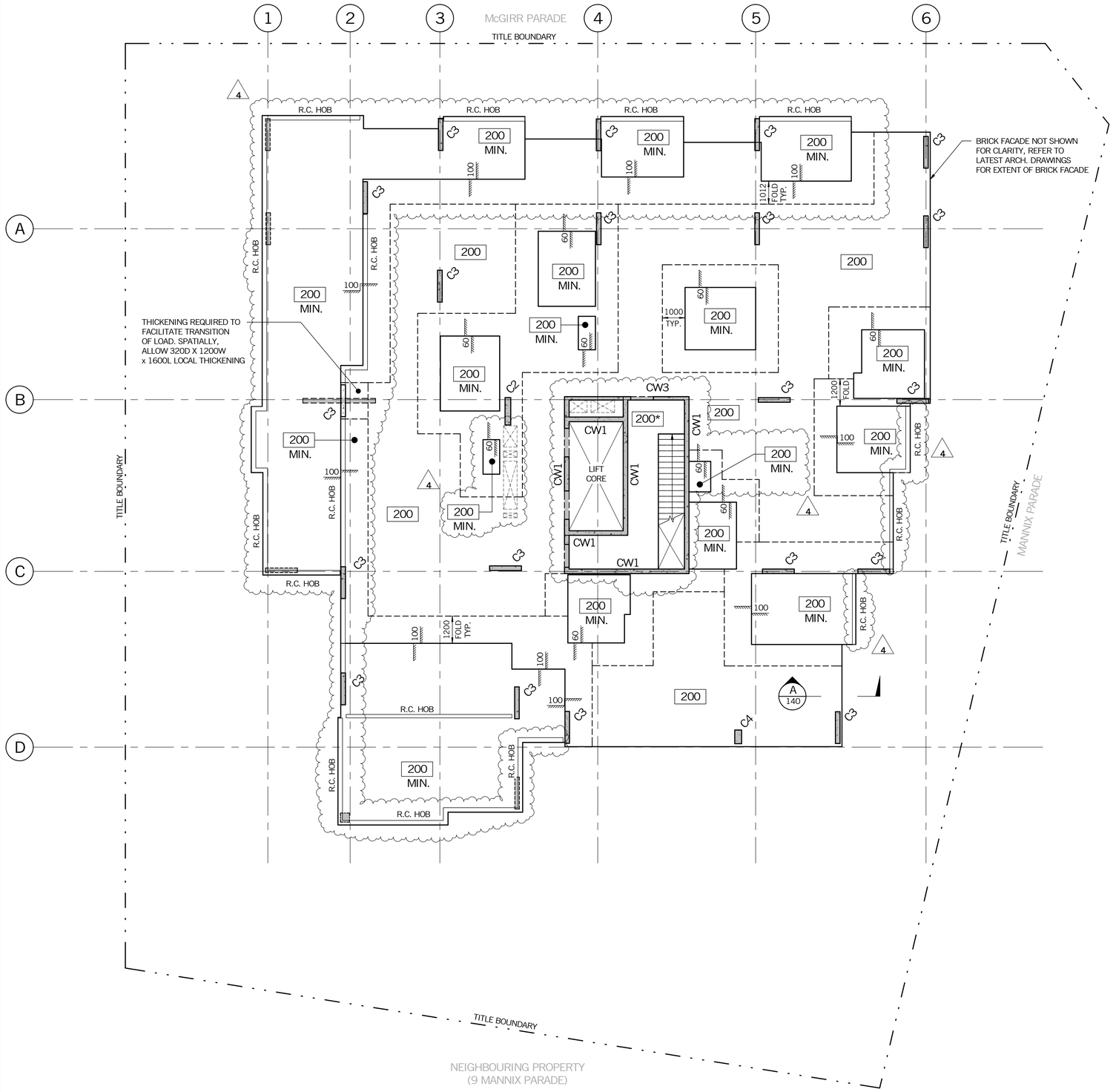

LEVEL 4 - GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100

LEVEL 4 - SLAB SCHEDULE				
THICKNESS	f'c (MPa)	REINF. RATE (kg/m³)	P.T. RATE (kg/m²)	REMARKS
200	40	45	4.8	P.T. SLAB BY D&C CONTRACTOR, ADDITIONAL SL82 MESH TOP TO EXTERNAL AREAS
200*	40	130	N/A	R.C. CORE SLAB

LEVEL 4 - CONCRETE COLUMN SCHEDULE				
MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
C2	250 x 1200	40	160	INSITU CONCRETE COLUMN
C3	200 x 1400	40	180	INSITU CONCRETE COLUMN
C4	300 x 600	40	160	INSITU CONCRETE COLUMN

LEVEL 4 - WALL SCHEDULE				
MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
CW1	200	40	180	INSITU CONCRETE CORE WALL
CW3	150	40	180	INSITU CONCRETE CORE WALL
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- B1 EXTERNAL
- B1 SURFACES IN CONTACT WITH THE GROUND

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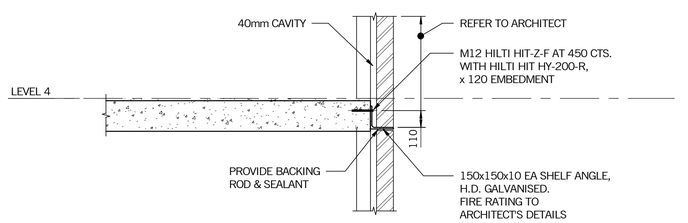

SECTION A/140

SCALE: 1 : 20

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	WORK IN PROGRESS ISSUE	MA	PAC	18.11.20
2	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
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R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
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GENERAL ARRANGEMENT LEGEND

- xx* -DENOTES SLAB/BAND BEAM THICKNESS
- CX (0) -DENOTES COLUMN OVER
- -DENOTES WALL OVER
- -DENOTES LOAD BEARING ELEMENT UNDER
- -DENOTES LOAD BEARING ELEMENT UNDER & OVER
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ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

LEVEL 4 - GENERAL ARRANGEMENT PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20, 1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-140	4

PRINT TIME: 5/02/2021 3:59:31 PM
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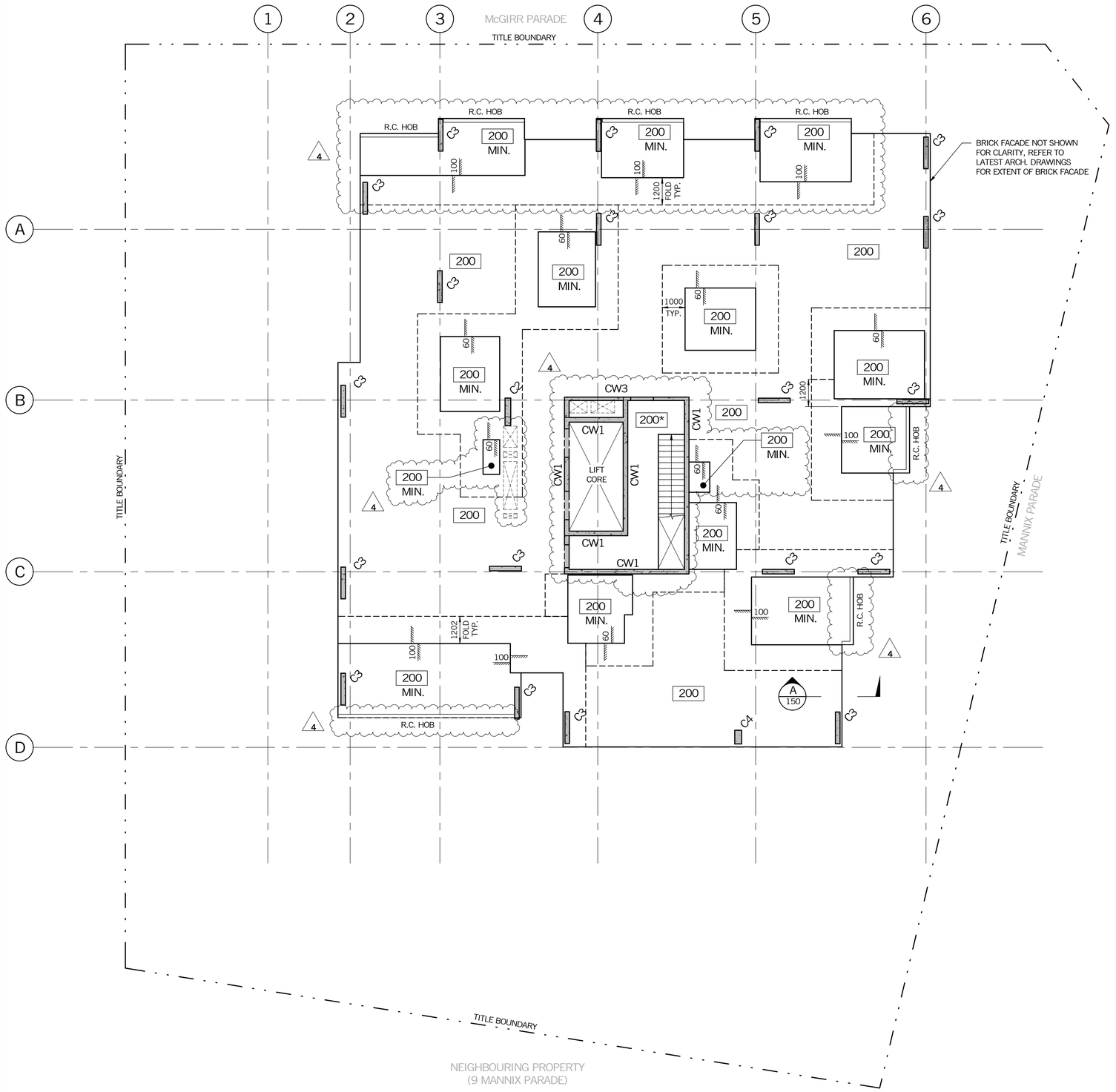

LEVEL 5 - GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100

LEVEL 5 - SLAB SCHEDULE				
THICKNESS	f'c (MPa)	REINF. RATE (kg/m³)	P.T. RATE (kg/m²)	REMARKS
200	40	95	4.8	P.T. SLAB BY D&C CONTRACTOR
200*	40	130	N/A	R.C. CORE SLAB

LEVEL 5 - CONCRETE COLUMN SCHEDULE				
MARK	SIZE	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
C2	250 x 1200	40	160	INSITU CONCRETE COLUMN
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MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
CW1	200	40	180	INSITU CONCRETE CORE WALL
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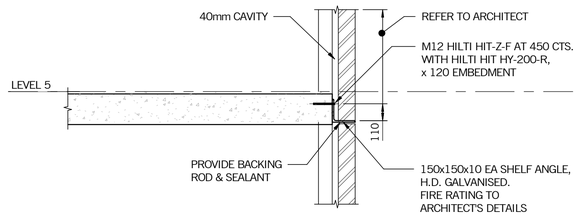
- SLABS TO BE CHECKED FOR PUNCHING SHEAR WITH MOMENT DERIVED WITH 100% COLUMN STIFFNESS. PT CONTRACTOR TO MAKE ALLOWANCE FOR SHEAR HEAD REINFORCEMENT (WHERE REQUIRED) TO SATISFY PUNCHING SHEAR REINFORCEMENTS
- Ieff TO Igross MAX RATIO TO BE DETERMINED BY THE DESIGNER BUT IN NO INSTANCE SHALL BE GREATER THAN 0.7 FOR THE SLAB AND BEAM CALCULATIONS.
- PT CONTRACTOR TO MAKE ALLOWANCE FOR STRUCTURAL INTEGRITY REINFORCEMENT IN ACCORDANCE WITH CL9.2.2 OF AS3600-2018 FOR ALL SLABS AND BEAMS.
- PT CONTRACTOR TO PROVIDE A MINIMUM P/A OF 1.4MPA (AFTER FINAL LOSSES) TO ALL INTERNAL CONCRETE SLABS AND BEAMS, AND 2.0MPa (AFTER FINAL LOSSES) TO ALL EXTERNAL AREAS (BALCONIES, TERRACES, EXPOSED ROOFS, ETC.) PLUS SL82 TOP MESH U.N.O.
- ALL EXPOSED SLABS/BEAMS CRACK WIDTH TO BE LIMITED TO 0.3mm MAX.

EXPOSURE CLASSIFICATION
- A2 INTERNAL
- B1 EXTERNAL
- B1 SURFACES IN CONTACT WITH THE GROUND

FIRE RATING
- RESIDENTIAL -- 90 MINUTES FRL
- CARPARK -- 120 MINUTES FRL

SERVICEABILITY
- TOTAL LONG TERM DEFLECTION -- SPAN / 250 OR 25mm MAXIMUM, CANTILEVER -- SPAN / 125 OR 15mm MAXIMUM
- TRANSFER SLABS & BEAMS -- SPAN/1000 OR 10mm MAXIMUM
- INCREMENTAL DEFLECTION LIMITS FOR SLABS AND BEAMS SUPPORTING BRITTLE ELEMENTS -- SPAN/500, CANTILEVER -- SPAN/125
- DIFFERENTIAL DEFLECTION BETWEEN FLOORS TO BE LIMITED TO SPAN/500 OR 15mm MAXIMUM AT FACADE LOCATIONS



SECTION A/150

SCALE: 1 : 20

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	WORK IN PROGRESS ISSUE	MA	PAC	18.11.20
2	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
4	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	05.02.21

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

GENERAL ARRANGEMENT LEGEND

- xx* -DENOTES SLAB/BAND BEAM THICKNESS
- C1 (01) -DENOTES COLUMN OVER
- -DENOTES WALL OVER
- -DENOTES LOAD BEARING ELEMENT UNDER
- -DENOTES LOAD BEARING ELEMENT UNDER & OVER
- -DENOTES BLOCK WALL OVER
- S.C.J. -DENOTES SAWCUT JOINT
- C.J. -DENOTES CONSTRUCTION JOINT
- STEP -DENOTES SLAB SETDOWN. REFER TO ARCH. DETAILS FOR ALL LEVELS.

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

LEVEL 5 - GENERAL ARRANGEMENT PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20, 1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-150	4

PRINT TIME: 5/02/2021 3:59:26 PM C:\Users\pac\Documents\WI220023 - LAHC Warwick Farm NSW - Central - STRUCTURAL_pac2UEEP.rvt

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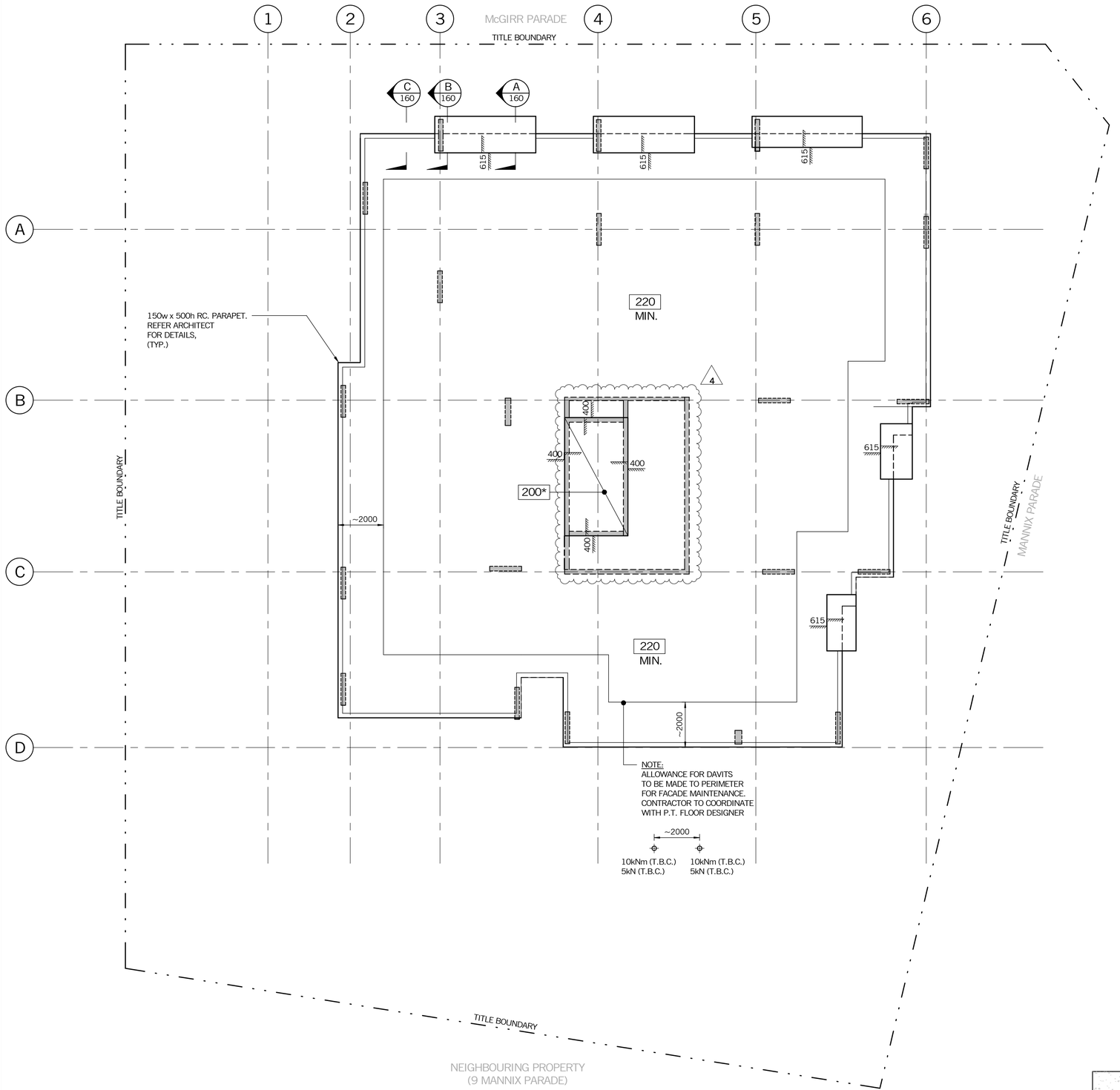

ROOF - GENERAL ARRANGEMENT PLAN
SCALE: 1 : 100

ROOF - SLAB SCHEDULE				
THICKNESS	f'c (MPa)	REINF. RATE (kg/m³)	P.T. RATE (kg/m²)	REMARKS
220	40	60 + SL82 MESH TOP THROUGHOUT	6.5	P.T. SLAB BY D&C CONTRACTOR
200*	40	120	N/A	R.C. LIFT LID

NOTES:
1. ALL PENETRATIONS TO BE REVIEWED AND RESOLVED.
2. ALL SERVICES PENETRATIONS TO BE CO-ORDINATED AND APPROVED BY WEBBER DESIGN.
3. REBATES AND CAST IN PLATES FOR STRUCTURAL STEEL WORK AND FACADE TO BE CO-ORDINATED WITH ARCHITECT.
4. CONTRACTOR SHALL ALLOW FOR CONSTRUCTION JOINTS AS REQUIRED.

POST TENSIONED SLAB NOTES:
THE SUSPENDED FLOOR SLABS ARE A DESIGN AND CONSTRUCT COMPONENT.
REFER TO DRAWING S-WEB-001 & S-WEB-002 FOR DESIGN AND CONSTRUCTION POST-TENSIONING FLOOR SLAB AND DESIGN BRIEF AND GENERAL DESIGN & LOADING CRITERIA

GENERAL NOTES:
- ALL CONCRETE SLABS AND BEAMS TO BE POST-TENSIONED U.N.O. PT AND REINFORCEMENT TO BE DESIGNED BY PT CONTRACTOR.
- SLABS TO BE MINIMUM 220mm THICK, f'c = 40MPa AND POST- TENSION BY OTHERS U.N.O.
- THE POST TENSIONING CONTRACTOR SHALL ENSURE POTENTIAL INTERNAL FORCES AND CRACKS INDUCED BY PRESTRESSING, SHRINKAGE, AND/OR TEMPERATURE ARE CONTROLLED IN THE VICINITY OF RESTRAINING ELEMENTS AND MAKE PROVISION FOR MOVEMENT AND SHRINKAGE AS REQUIRED THROUGHOUT, INCLUDING MOVEMENT JOINTS, POUR STRIPS, LOW SHRINKAGE CONCRETE MIX ETC.
- NO COLUMN STIFFNESS SHOULD BE USED IN THE SLAB AND BEAM DESIGN.
- SLABS TO BE CHECKED FOR PUNCHING SHEAR WITH MOMENT DERIVED WITH 100% COLUMN STIFFNESS. PT CONTRACTOR TO MAKE ALLOWANCE FOR SHEAR HEAD REINFORCEMENT (WHERE REQUIRED) TO SATISFY PUNCHING SHEAR REINFORCEMENTS
- Ieff TO Igross MAX RATIO TO BE DETERMINED BY THE DESIGNER BUT IN NO INSTANCE SHALL BE GREATER THAN 0.7 FOR THE SLAB AND BEAM CALCULATIONS.
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- PT CONTRACTOR TO PROVIDE A MINIMUM P/A OF 1.4MPA (AFTER FINAL LOSSES) TO ALL INTERNAL CONCRETE SLABS AND BEAMS, AND 2.0MPa (AFTER FINAL LOSSES) TO ALL EXTERNAL AREAS (BALCONIES, TERRACES, EXPOSED ROOFS, ETC.) PLUS SL82 TOP MESH U.N.O.
- ALL EXPOSED SLABS/BEAMS CRACK WIDTH TO BE LIMITED TO 0.3mm MAX.

EXPOSURE CLASSIFICATION
- A2 INTERNAL
- B1 EXTERNAL
- B1 SURFACES IN CONTACT WITH THE GROUND

FIRE RATING
- RESIDENTIAL -- 90 MINUTES FRL
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SERVICEABILITY
- TOTAL LONG TERM DEFLECTION -- SPAN / 250 OR 25mm MAXIMUM, CANTILEVER -- SPAN / 125 OR 15mm MAXIMUM
- TRANSFER SLABS & BEAMS -- SPAN/1000 OR 10mm MAXIMUM
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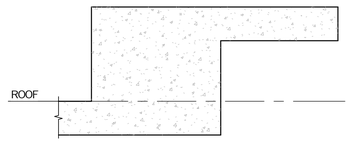
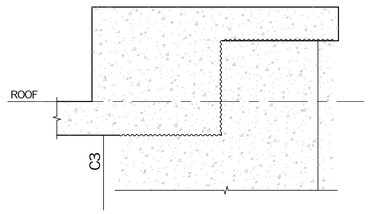
- DIFFERENTIAL DEFLECTION BETWEEN FLOORS TO BE LIMITED TO SPAN/500 OR 15mm MAXIMUM AT FACADE LOCATIONS



SECTION A 160
SCALE: 1 : 20



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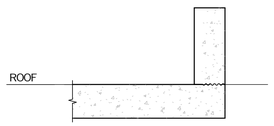

SECTION C 160
SCALE: 1 : 20

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Rev.	Description	Eng.	Draft.	Date
1	WORK IN PROGRESS ISSUE	MA	PAC	18.11.20
2	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
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R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

GENERAL ARRANGEMENT LEGEND
- xx* -DENOTES SLAB/BAND BEAM THICKNESS
- Cx (o) -DENOTES COLUMN OVER
- -DENOTES WALL OVER
- -DENOTES LOAD BEARING ELEMENT UNDER
- -DENOTES LOAD BEARING ELEMENT UNDER & OVER
- -DENOTES BLOCK WALL OVER
- S.C.J. -DENOTES SAWCUT JOINT
- C.J. -DENOTES CONSTRUCTION JOINT
- STEP -DENOTES SLAB SETDOWN. REFER TO ARCH. DETAILS FOR ALL LEVELS.

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

ROOF - GENERAL ARRANGEMENT PLAN

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20, 1:100	PAC	PW

JOB No.	DRAWING No.	REV.
20023	S-WEB-160	4

PRINT TIME: 5/02/2021 3:59:19 PM
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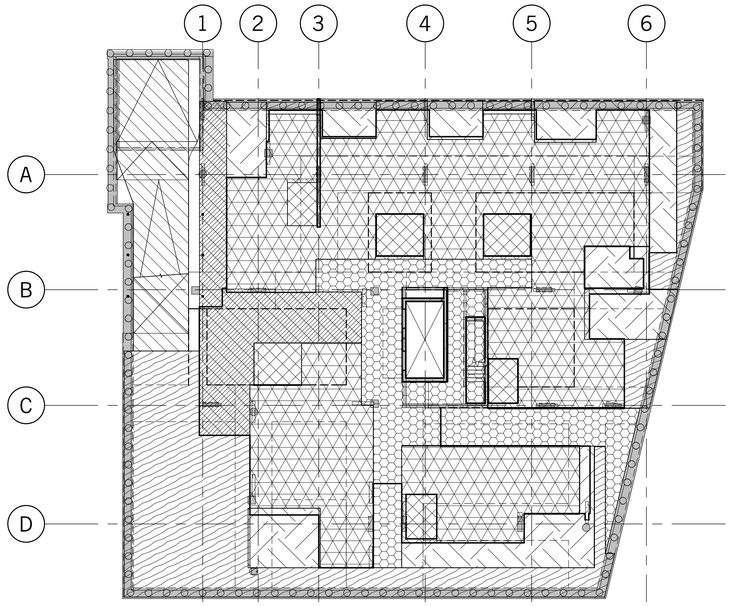
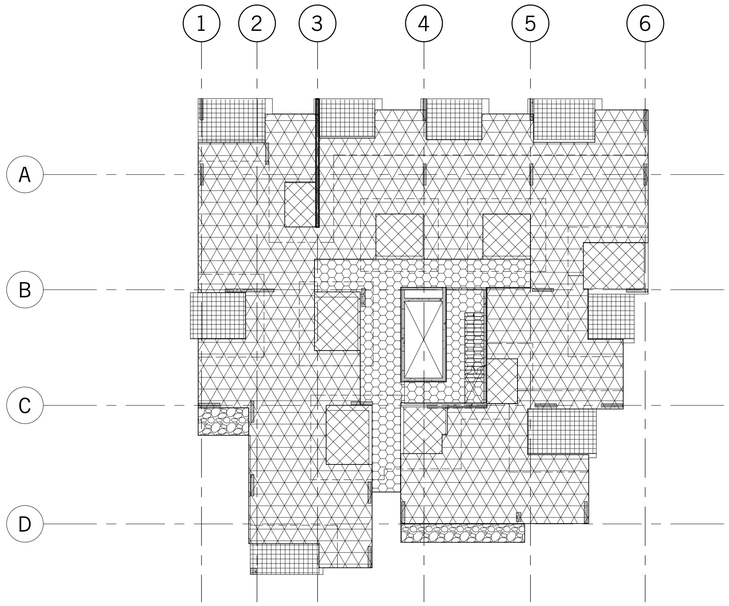


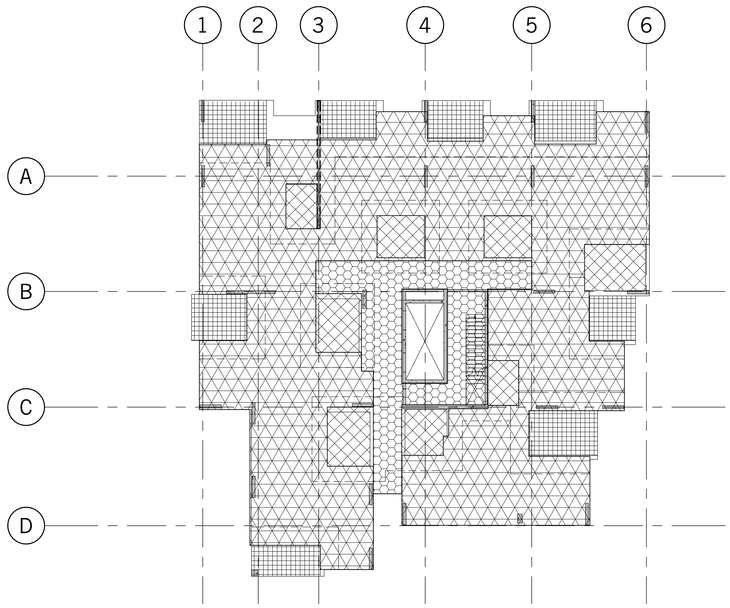
GROUND FLOOR - LOADING PLAN

SCALE: 1 : 200



LEVEL 1 - LOADING PLAN

SCALE: 1 : 200



LEVEL 2 - LOADING PLAN

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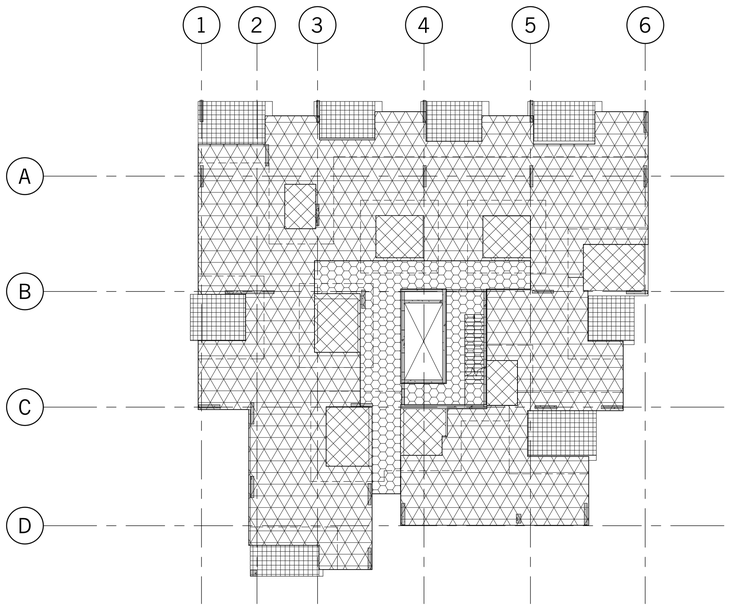

LEVEL 3 - LOADING PLAN

SCALE: 1 : 200

LOADING PLAN LEGEND

RESIDENTIAL
SIDL = 1.0 kPa
LL = 1.5 kPa

NON-ACCESSIBLE ROOF
SIDL = 2.0 kPa
LL = 1.5 kPa

TERRACES
SIDL = 2.0 kPa
LL = 4.0 kPa

BALCONIES
SIDL = 1.5 kPa
LL = 2.0 kPa

CARPARK
SIDL = 0.5 kPa
LL = 2.5 kPa

BATHROOM / WET AREAS
SIDL = 2.0 kPa
LL = 1.5 kPa

CORRIDOR / FIRE STAIR
SIDL = 1.5 kPa
LL = 4.0 kPa

COURTYARD / LANDSCAPE
SIDL = 2.0 kPa
LL = 4.0 kPa MIN. OR 18.0 kPa
(PER METRE OF SOIL DEPTH)

SUBSTATION
SIDL = TBC
LL = TBC

WASTE
SIDL = 0.5 kPa
LL = 3.0 kPa

LIGHT PLANT
SIDL = 2.0 kPa
LL = 5.0 kPa

NOTE
- FACADE LINE LOADS
  (ALLOW FOR 6.5kN/m FOR BRICK VENEER)
- LOADS FROM N.L.B. ELEMENTS ADDITIONAL,
  i.e. INTERNAL PARTITION WALLS /
  MASONRY WALLS / GLAZING .
  REFER LATEST ARCHITECTURAL GA's FOR DETAILS.
- ADDITIONAL LOADING RESULTING FROM
  TOWER BOOM / HOIST / CRANE SUBJECT
  TO FURTHER COORDINATION WITH BUILDER.
- REFER LIFT CONTRACTOR DETAILS FOR
  LIFT PIT / LID LOADING, AND LIFTING HOOK SET OUT.

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Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
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PRECAST WALLS	S-WEB-880-909
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SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

2

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

LOADING PLANS - SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:200	PAC	PW

JOB No.	DRAWING No.	REV.
20023	S-WEB-200	2

WEBBER DESIGN

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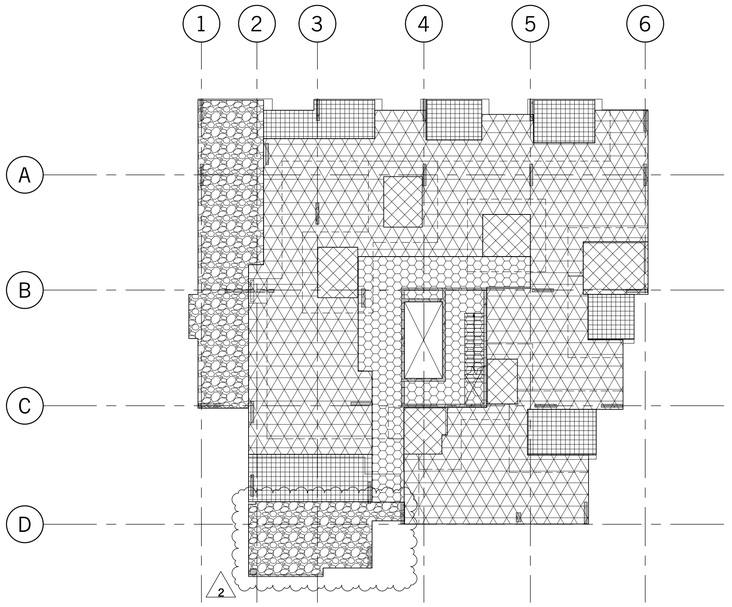
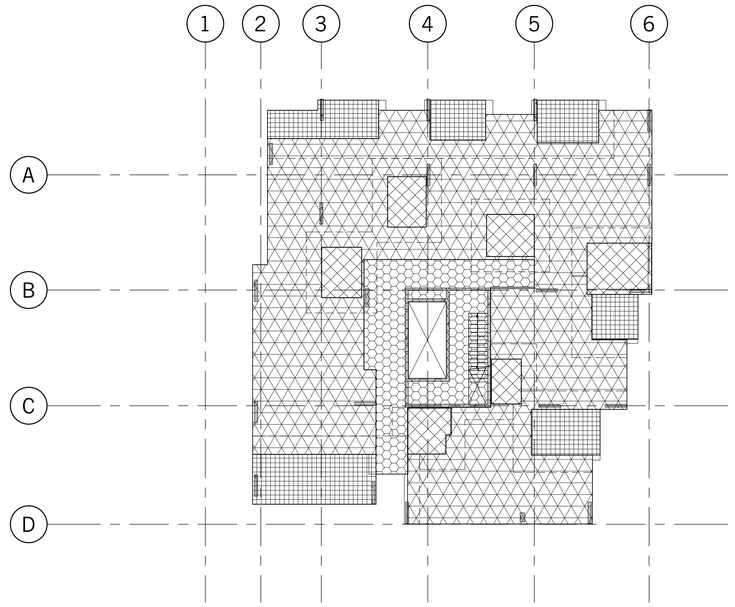
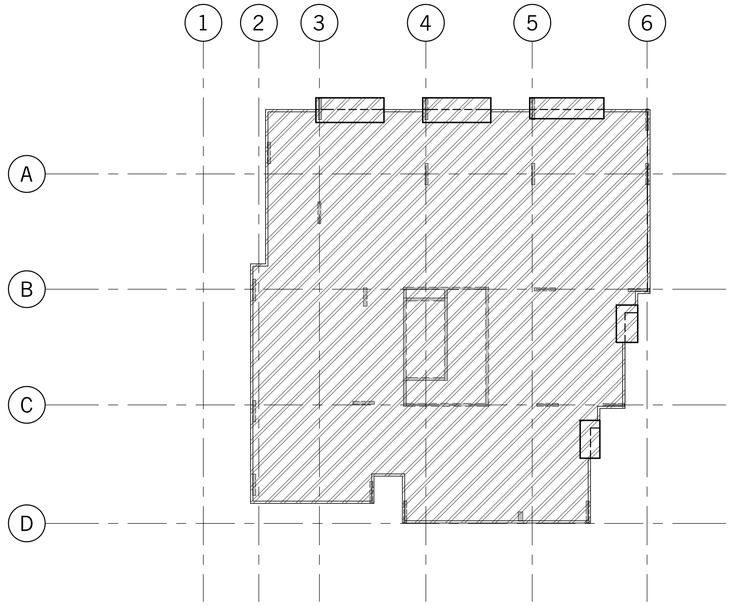


LEVEL 4 - LOADING PLAN
SCALE: 1 : 200



LEVEL 5 - LOADING PLAN
SCALE: 1 : 200



ROOF - LOADING PLAN
SCALE: 1 : 200

LOADING PLAN LEGEND

RESIDENTIAL
SIDL = 1.0 kPa
LL = 1.5 kPa

NON-ACCESSIBLE ROOF
SIDL = 2.0 kPa
LL = 1.5 kPa

TERRACES
SIDL = 2.0 kPa
LL = 4.0 kPa

BALCONIES
SIDL = 1.5 kPa
LL = 2.0 kPa

CARPARK
SIDL = 0.5 kPa
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BATHROOM / WET AREAS
SIDL = 2.0 kPa
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SIDL = 1.5 kPa
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SIDL = 2.0 kPa
LL = 4.0 kPa MIN. OR 18.0 kPa
(PER METRE OF SOIL DEPTH)

SUBSTATION
SIDL = TBC
LL = TBC

WASTE
SIDL = 0.5 kPa
LL = 3.0 kPa

LIGHT PLANT
SIDL = 2.0 kPa
LL = 5.0 kPa

NOTE
- FACADE LINE LOADS
  (ALLOW FOR 6.5kN/m FOR BRICK VENEER)
- LOADS FROM N.L.B. ELEMENTS ADDITIONAL,
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Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
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DRAWING REFERENCE	REFERENCE No.
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R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

2

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
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RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
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CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

LOADING PLANS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:200	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-201	2

PRINT TIME: 18/12/2020 11:18:29 AM C:\Users\Peter\Documents\WI\20023 - LAHC Warwick Farm NSW - Central - STRUCTURAL_peter2(1)EP.rvt

WEBBER DESIGN

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DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
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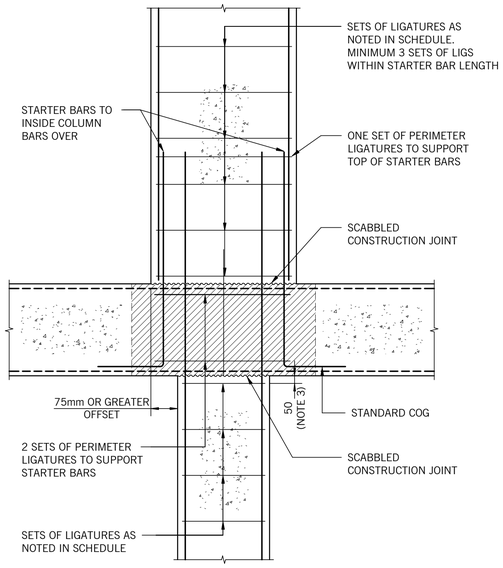
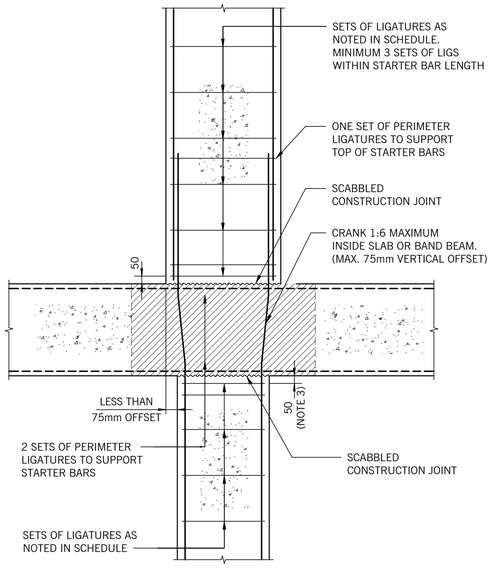
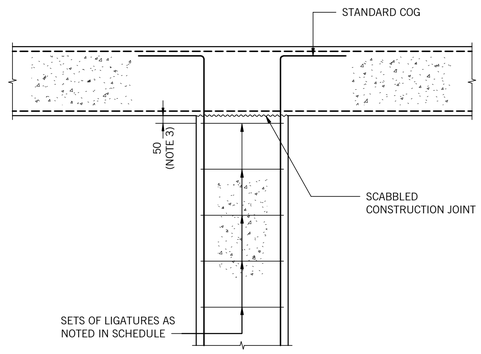
2



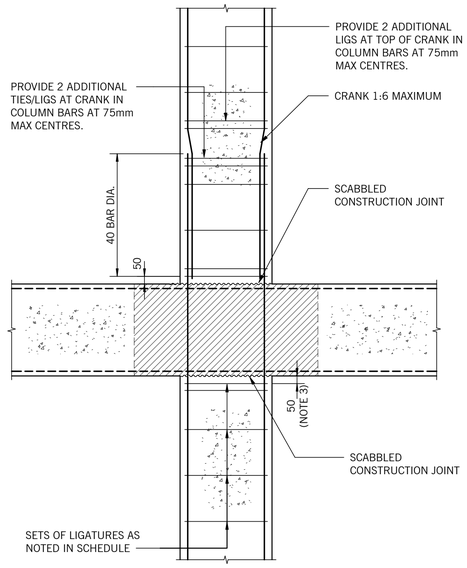
COLUMN TRANSITION TYPE 1

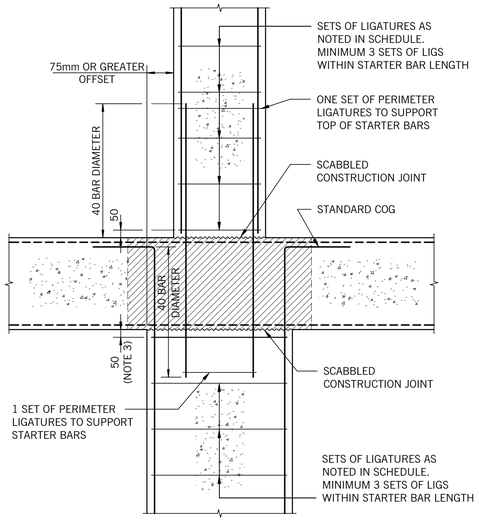


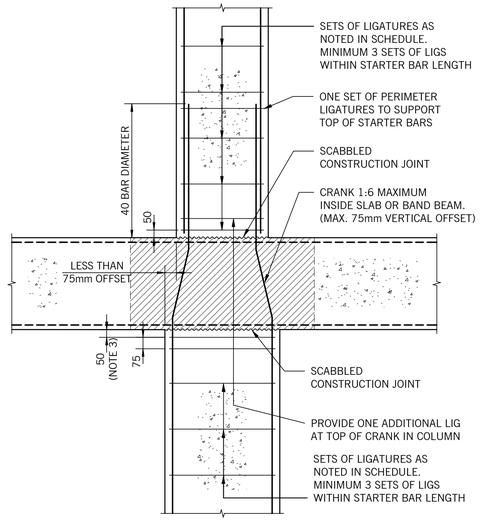


TYPICAL COLUMN TERMINATION DETAIL

SCALE 1:20







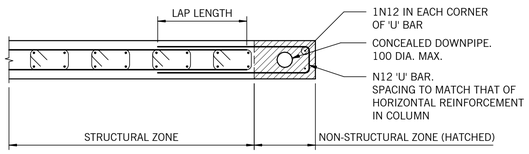
TYPICAL COLUMN TRANSITION DETAILS

SCALE 1:20

SLAB POUR CONCRETE STRENGTH f'c

DENOTES 1200 x 1200 LOCALLY INCREASED SLAB f'c ZONE.
LOCAL SLAB ZONE f'c SHALL BE ≥ 0.75 COLUMN f'c

eg. IF COLUMN f'c = 65MPa THEN THE DENOTED HATCHED SLAB ZONE SHALL BE 50MPa MIN.
IF COLUMN f'c = 80MPa THEN THE DENOTED HATCHED SLAB ZONE SHALL BE 65MPa MIN.



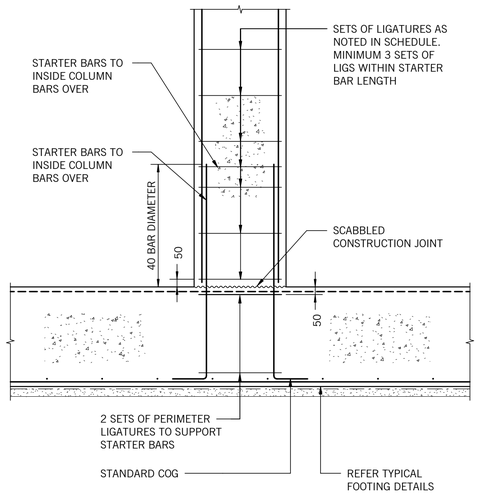
TYPICAL NON-STRUCTURAL COLUMN EXTENSION DETAIL

SCALE 1:20

NOTE:
1. REFER LATEST ARCHITECTURAL DRAWINGS AND HYDRAULIC SERVICES DRAWINGS FOR LOCATION OF CONCEALED PIPES.
2. NON-STRUCTURAL ZONE TO BE FORMED AND POURED MONOLITHICALLY WITH STRUCTURAL ZONE.

TYPICAL COLUMN SPLICE DETAILS

SCALE 1:20



TYPICAL COLUMN DETAIL AT FOOTING

SCALE 1:20

NOTE:
1. STARTER BARS TO BE SAME NUMBER, DIAMETER AND ARRANGEMENT AS COLUMN OVER.
2. REFER TO COLUMN SCHEDULE FOR COLUMN SIZES AND REINFORCEMENT.
3. LIGATURES 50mm BELOW SLABS WHERE THREE OR LESS INTERSECTING BEAMS OR LIGATURES 50mm BELOW THE SHALLOWEST BEAM WHERE FOUR INTERSECTING BEAMS.

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

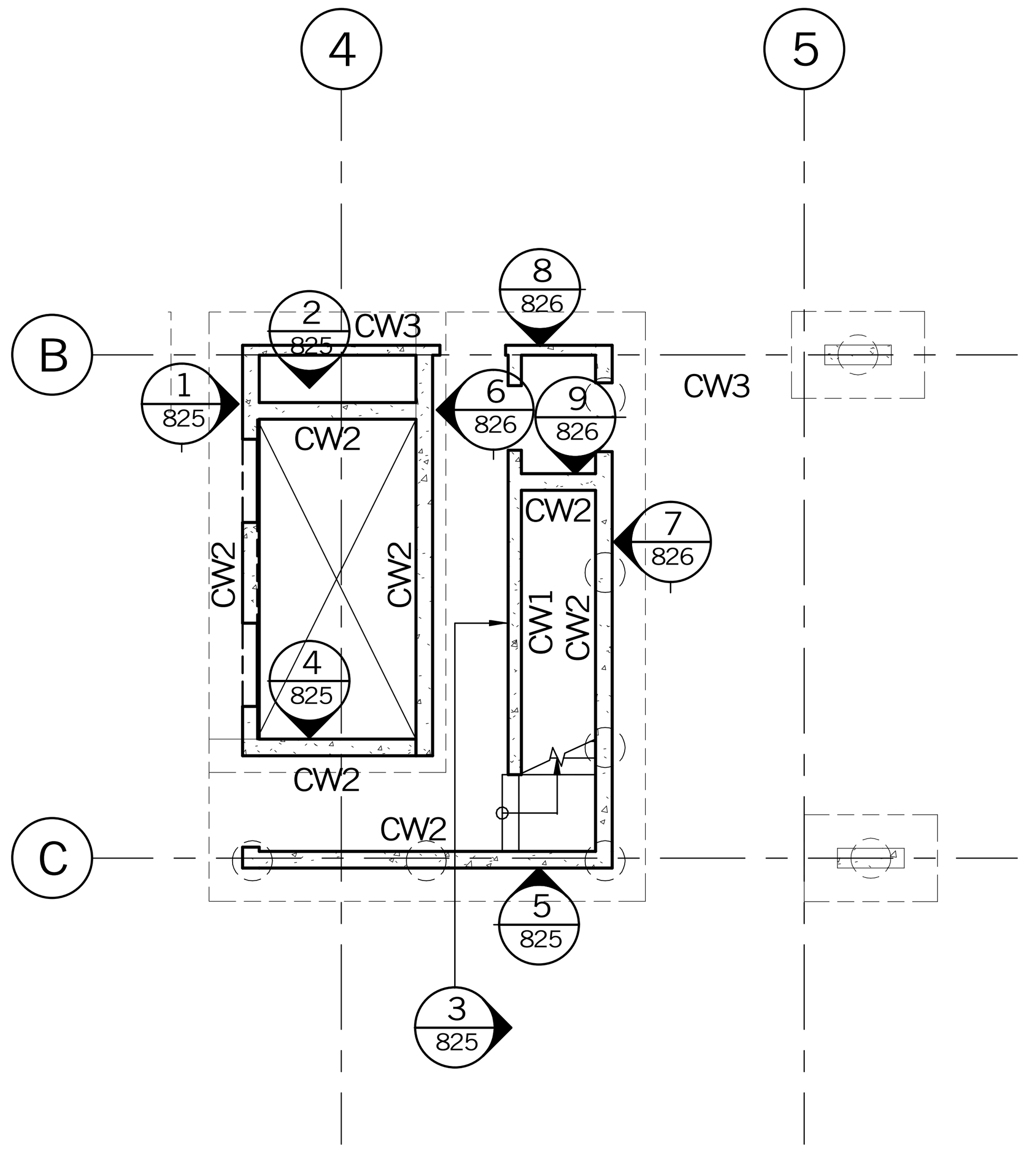
LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

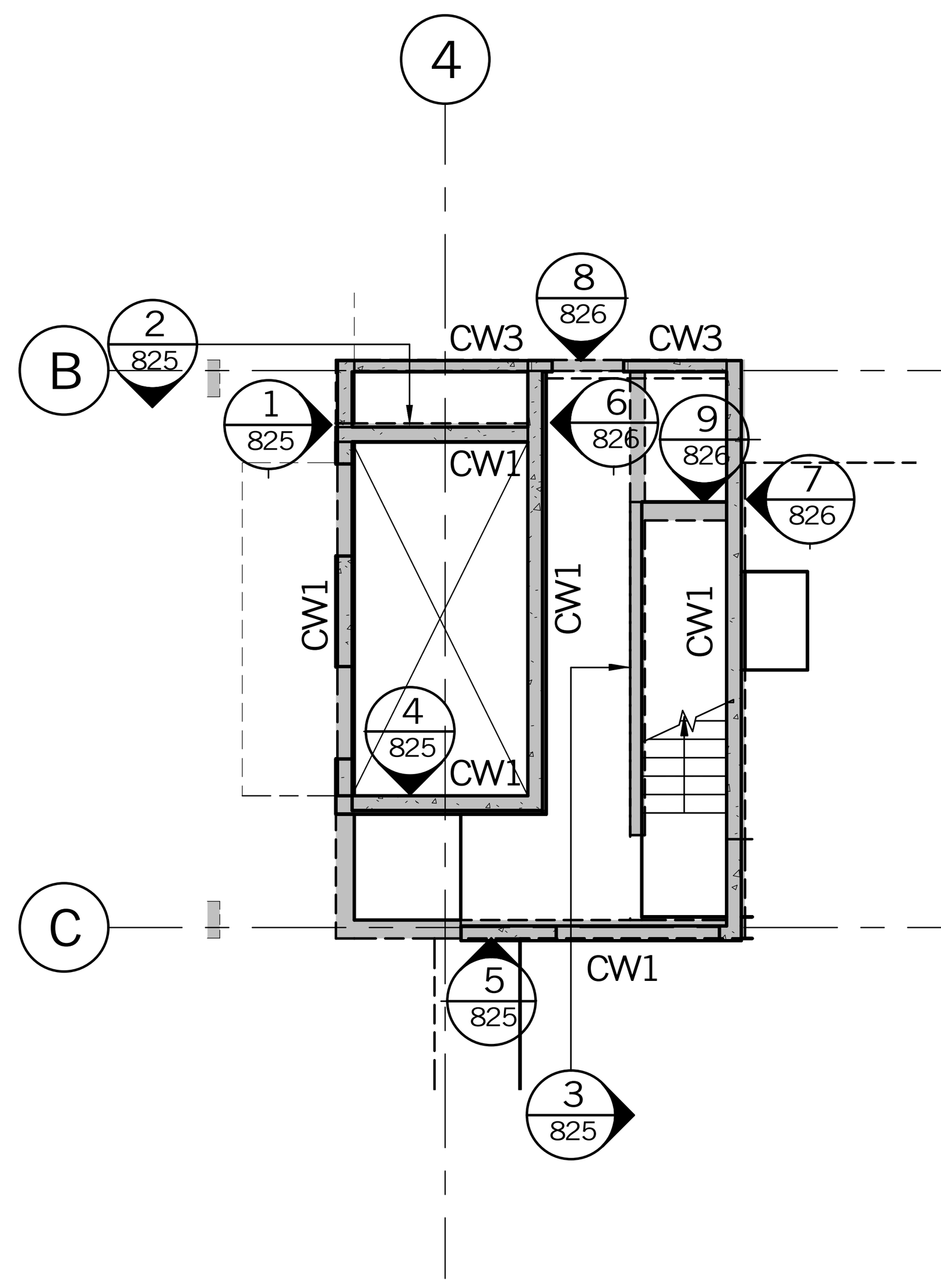
INSITU CONCRETE
COLUMN TYPICAL DETAILS
- SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-800	2

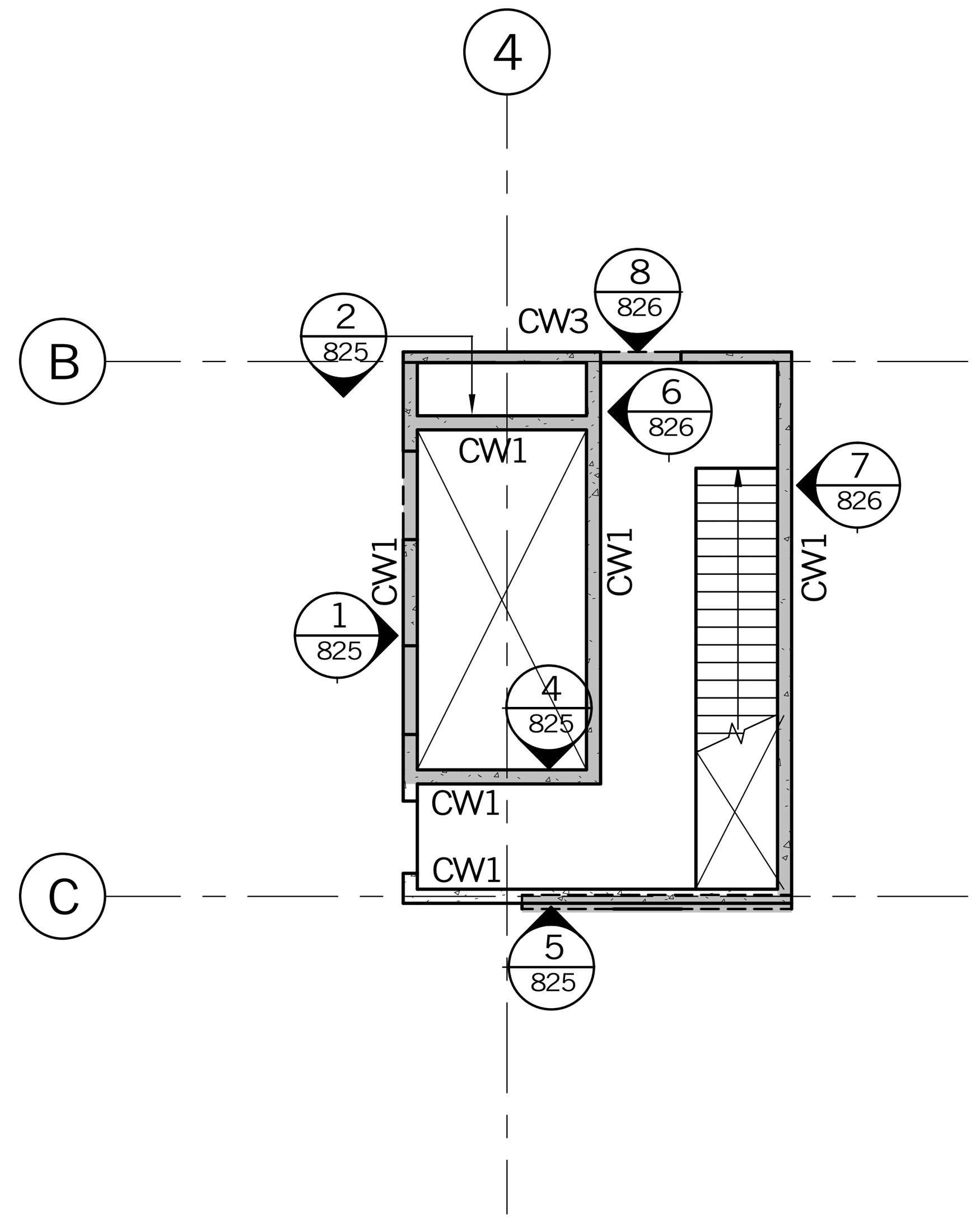
A1 0 1 2 3 4 5 6 7 8 9 10



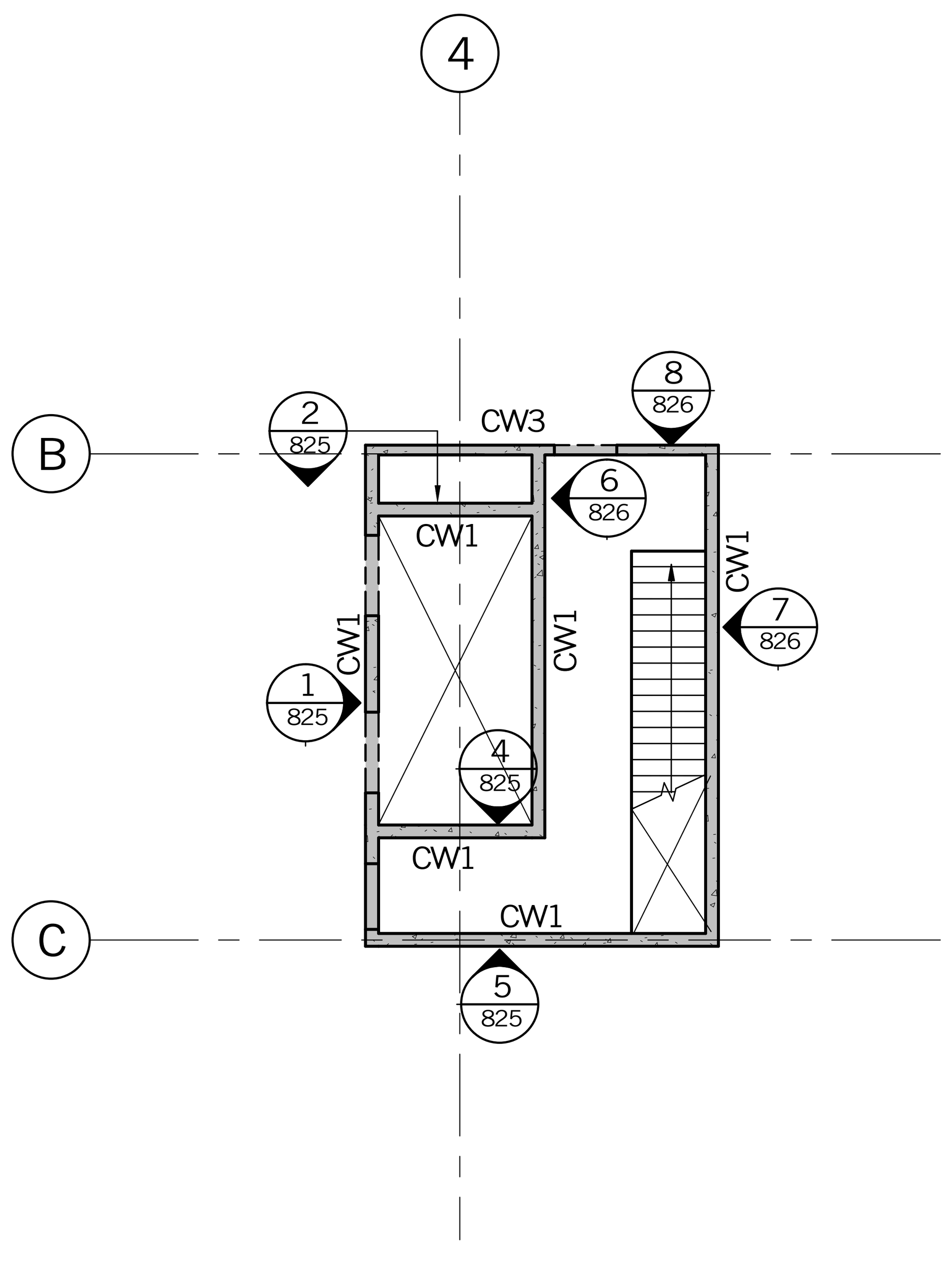
BASEMENT 1 - CORE WALL KEY PLAN
SCALE: 1 : 100



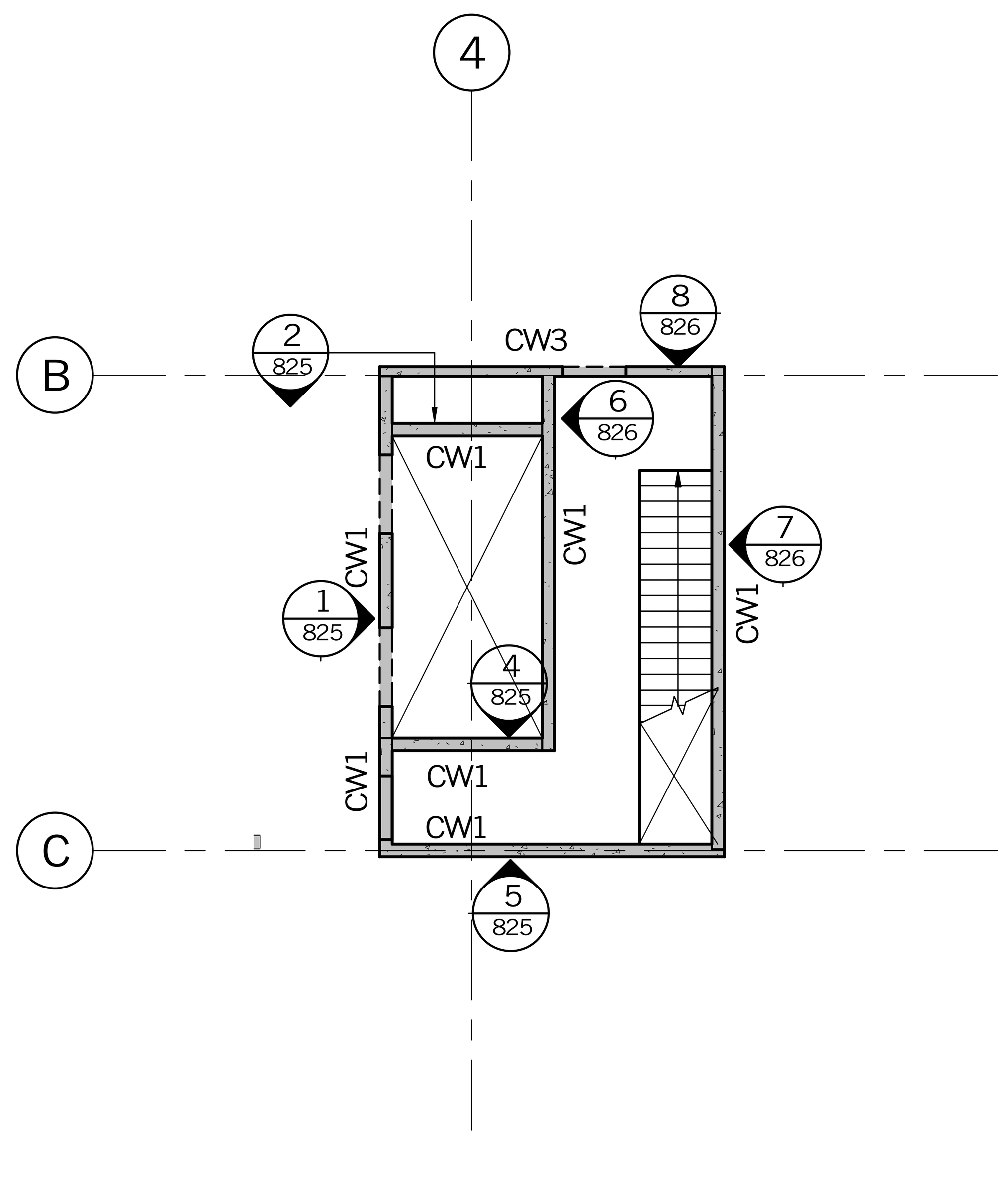
GROUND FLOOR - CORE WALL KEY PLAN
SCALE: 1 : 100



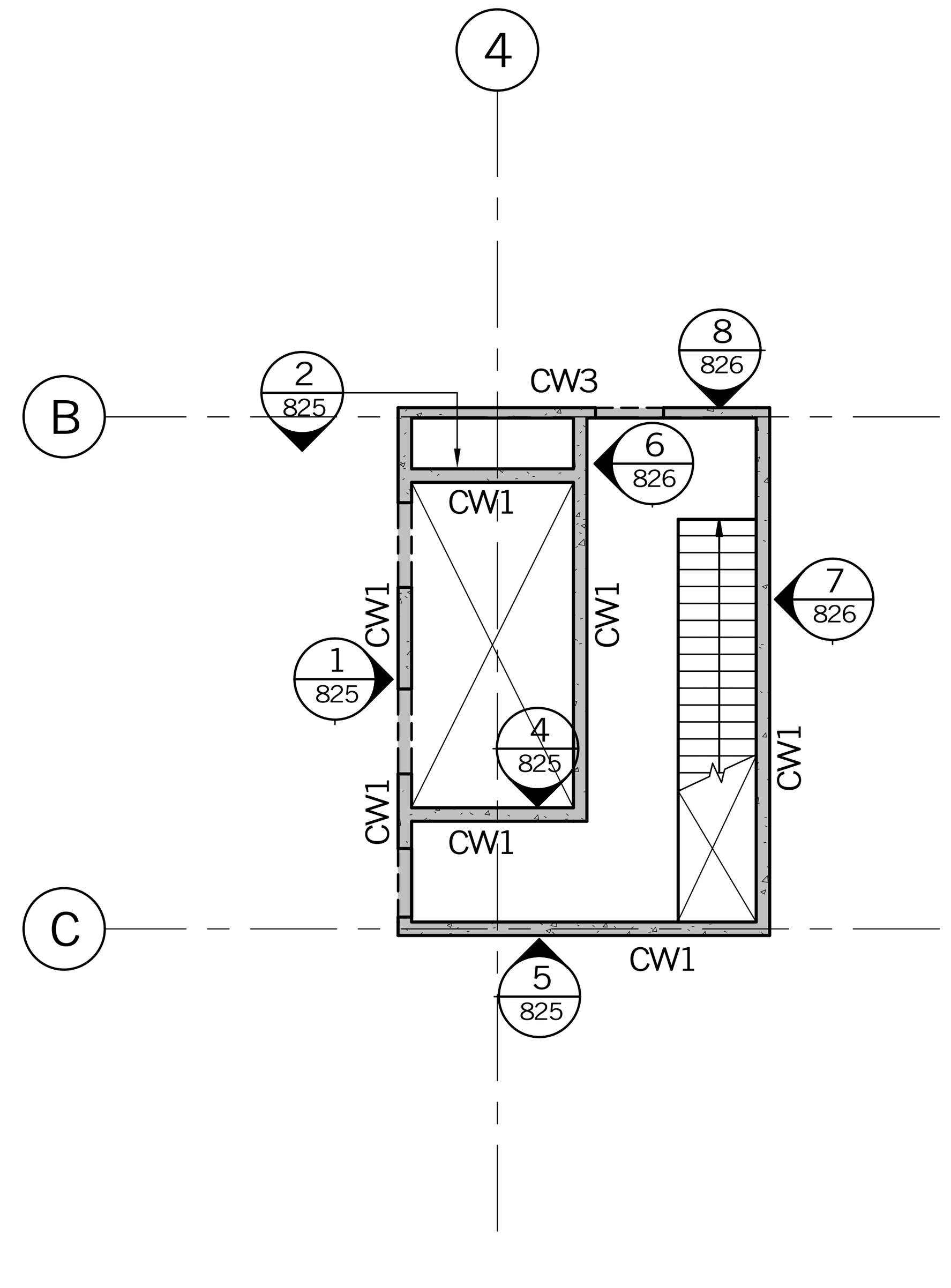
LEVEL 1 - CORE WALL KEY PLAN
SCALE: 1 : 100



LEVEL 2 - CORE WALL KEY PLAN
SCALE: 1 : 100



LEVEL 3 - CORE WALL KEY PLAN
SCALE: 1 : 100



LEVEL 4 - CORE WALL KEY PLAN (LEVEL 5 SIMILAR)
SCALE: 1 : 100

3

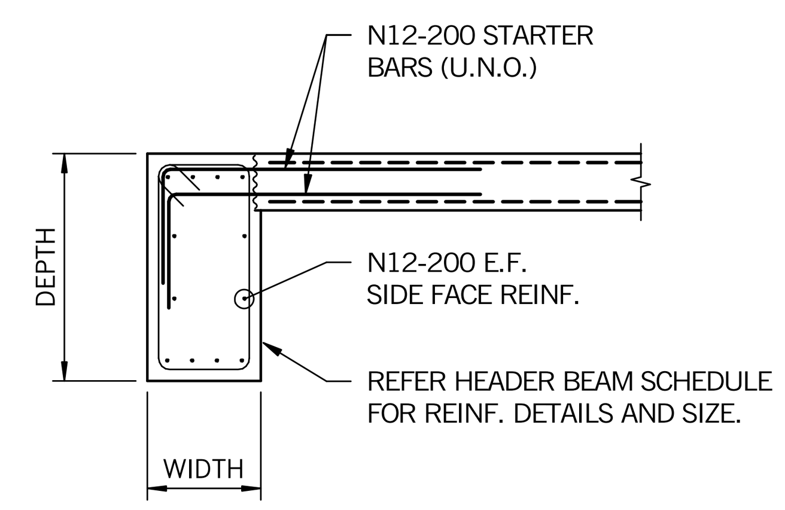
INSITU CORE WALL SCHEDULE				
MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
CW1	200	50	220	INSITU CONCRETE CORE WALL
CW2	250	50	180	INSITU CONCRETE CORE WALL
CW3	150	50	180	INSITU CONCRETE CORE WALL

IN-SITU WALL REINFORCEMENT & CONCRETE NOTES:

1. ALL SERVICES PENETRATION TO BE COORDINATED AND APPROVED BY WEBBER DESIGN.
2. CONTRACTOR SHALL ALLOW FOR CONSTRUCTION JOINT AS REQUIRED.
3. PROVIDE 25mm CLEAR COVER TO CORE WALL REINFORCEMENT (U.N.O.).
4. WHERE BARS OF DIFFERENT DIAMETERS ARE SPLICED,USE THE SPLICE OF THE LARGER BAR DIAMETER.
5. FOR WALLS WITH BARS ANCHORED OR SPLICED AT LESS THAN 150 CTS. MULTIPLY THE ABOVE LENGTHS BY 1.4
6. UNLESS SHOWN ON DRAWINGS, THE SPLICE LOCATIONS MUST BE APPROVED BY THE ENGINEER.
7. IF BARS HAVE STANDARD COGS AT THE ENDS, HALVE THE ABOVE LENGTHS.
8. N36 AND N40 BARS IN TENSION ARE NOT TO BE SPLICED.

NOTES:-
CO-ORDINATE ALL PENETRATION SIZES AND LOCATIONS WITH SERVICES CONSULTANTS. NO PENETRATION TO BE INCREASED IN SIZE OR MOVED WITHOUT THE WRITTEN AGREEMENT OF WEBBER DESIGN PTY. LTD.

ANCHORAGE AND SPLICE LENGTH FOR INSITU/PRECAST WALLS UNO.	
N12	600
N16	800
N20	1000
N24	1200
N28	1400
N32	1400
N36	1400 (COMPRESSION SPLICE)
GENERAL	45 BAR DIA.



HEADER BEAM DETAIL FOR IN-SITU WALLS
SCALE 1:20

1. REFER TO LIFT SHAFT MANUFACTURER SHOP DRAWINGS FOR LIFT DETAILS, REQUIREMENTS AND DIMENSIONS.
2. CO-ORDINATE ALL LIFT SHAFT PENETRATION SIZES AND LOCATIONS WITH SERVICES CONSULTANTS. NO PENETRATION TO BE INCREASED IN SIZE OR MOVED WITHOUT THE WRITTEN AGREEMENT OF THIS OFFICE.
3. REFER TO LIFT MANUFACTURER FOR ALL ADDITIONAL CAST IN ITEMS AND BLOCK OUTS.
4. REFER TO LIFT SUPPLIERS DRAWINGS FOR DETAILS AND LOCATIONS OF ALL CAST IN FERRULES, UNI-STRUTS ETC. FOR FIXING OF ALL LIFT EQUIPMENT.

IN-SITU CORE HEADER BEAM SCHEDULE				
MARK	WIDTH	DEPTH	LEVEL	REINF. (kg/m³)
CW1	200	800	BASEMENT 1 - LEVEL 3	220
CW2	250	800 MIN.	LEVEL 4 - LEVEL 5	200

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	05.02.21

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

CORE KEY PLANS

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW

JOB No.	DRAWING No.	REV.
20023	S-WEB-820	3

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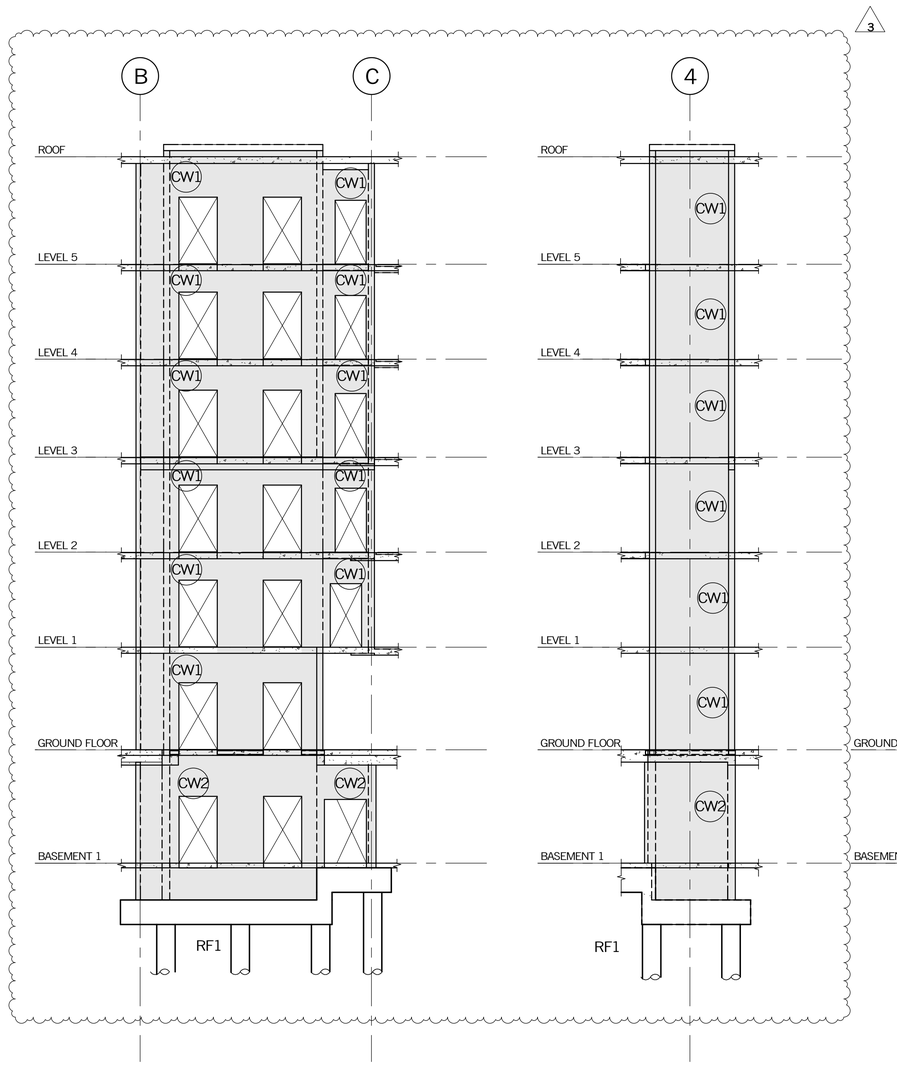
DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	05.02.21



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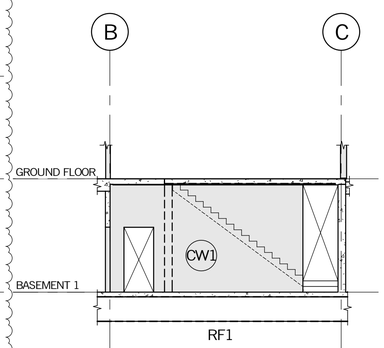
ELEVATION 2 — SCALE: 1 : 100 — 820



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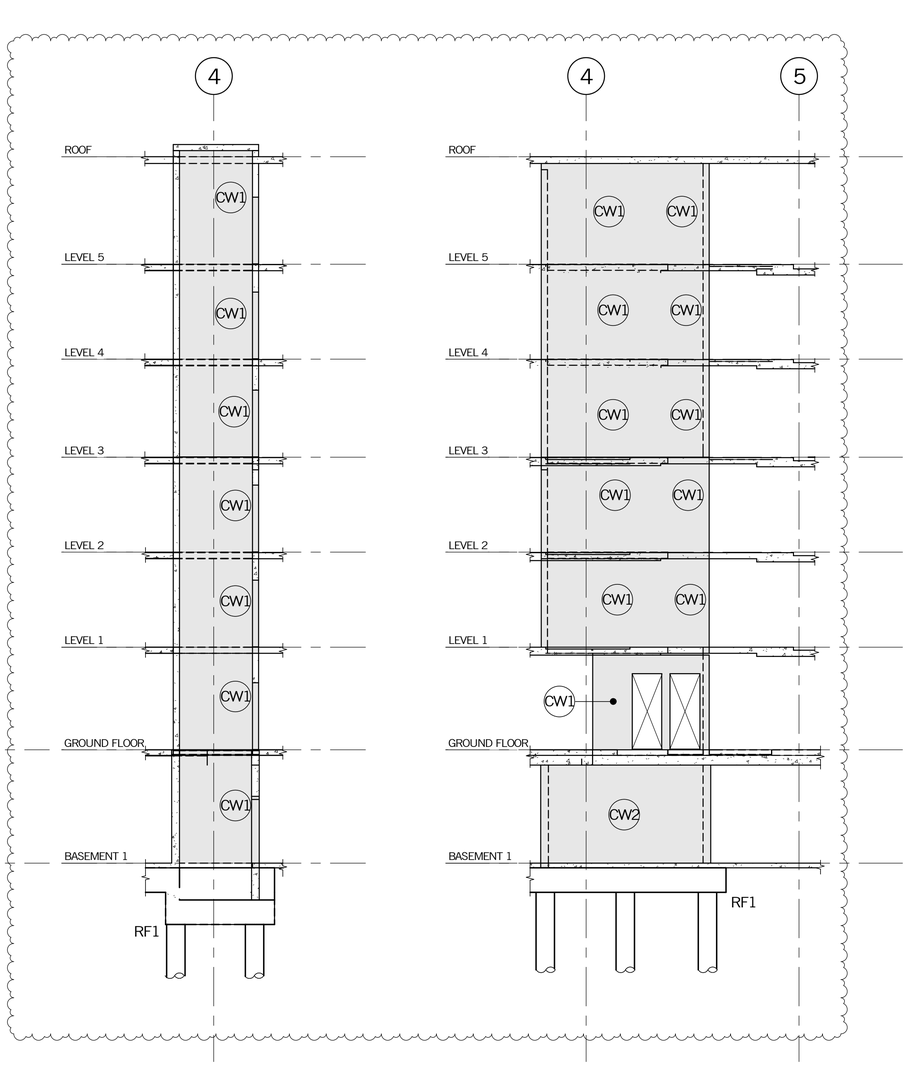

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DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

STAIR AND LIFT CORE
ELEVATIONS - SHEET 1

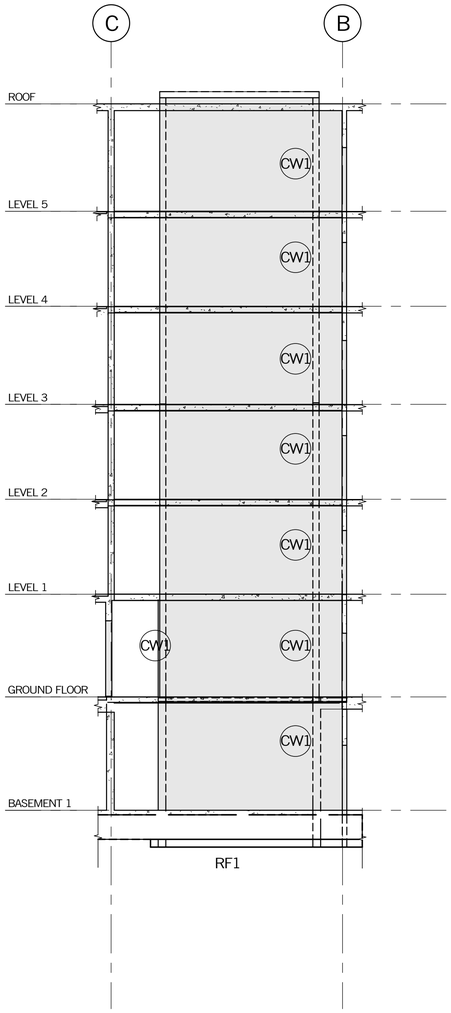
DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-825	3

WEBBER DESIGN

A1 0 1 2 3 4 5 6 7 8 9 10

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20
3	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	05.02.21



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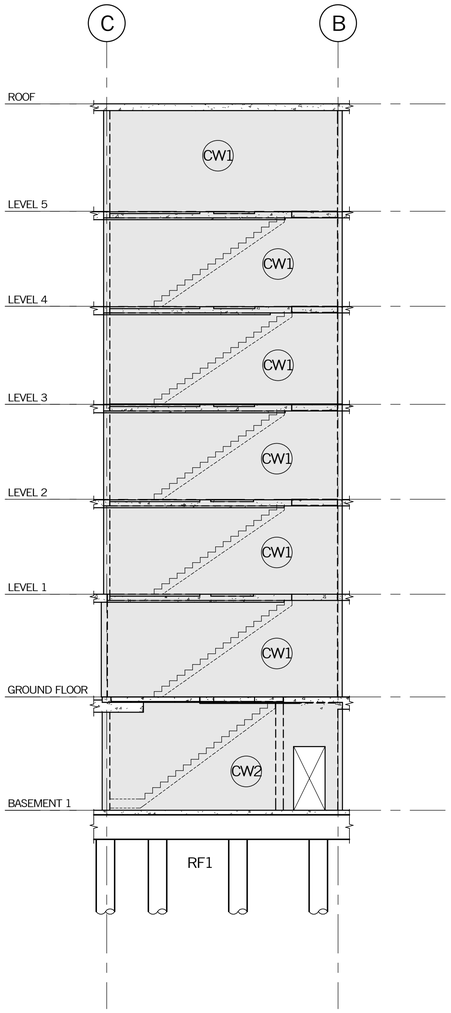
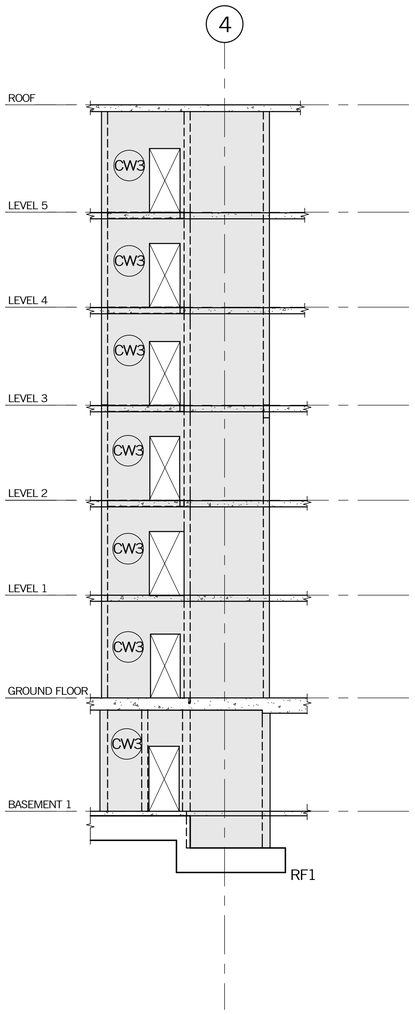
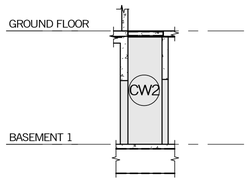


ELEVATION 7 / 820
SCALE: 1 : 100



ELEVATION 8 / 820
SCALE: 1 : 100



ELEVATION 9 / 820
SCALE: 1 : 100

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

STAIR AND LIFT CORE
ELEVATIONS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-826	3

WEBBER DESIGN

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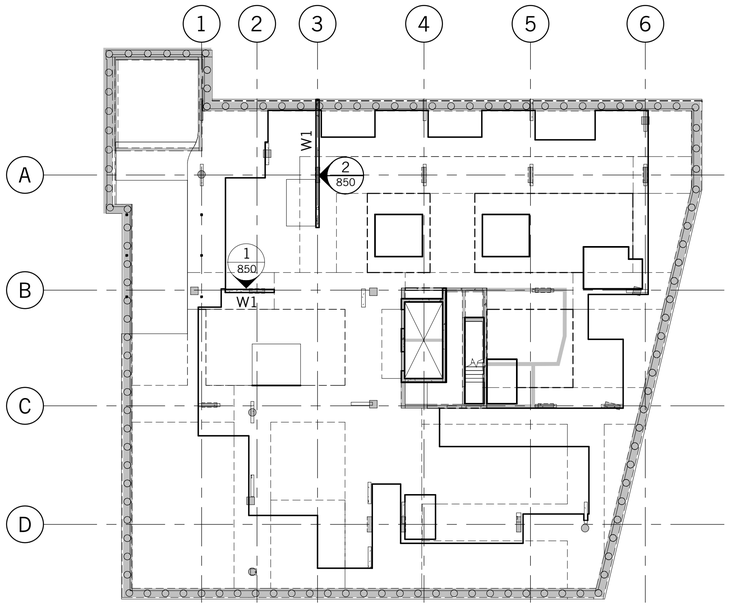
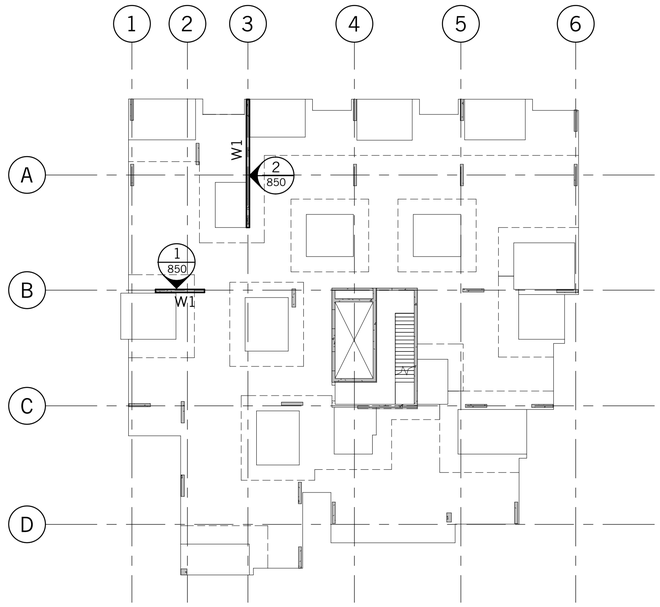


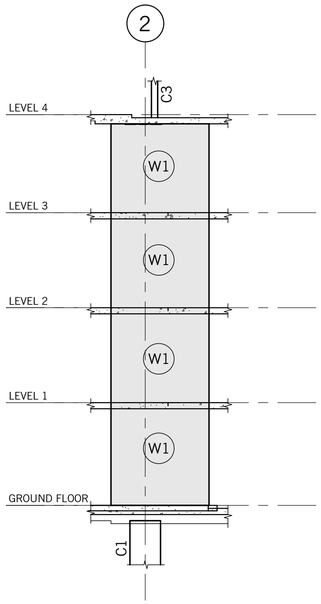
GROUND FLOOR - INSITU WALL KEY PLAN

SCALE: 1 : 200



LEVEL 1 - INSITU WALL KEY PLAN (LEVELS 2-5 SIMILAR)

SCALE: 1 : 200



ELEVATION 1

SCALE: 1 : 100

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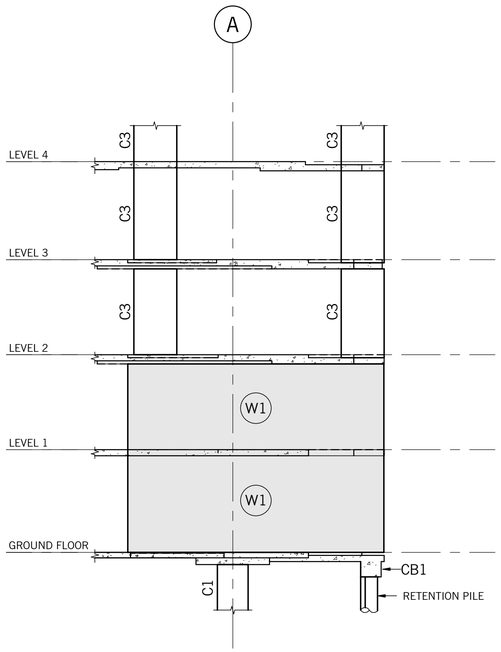

ELEVATION 2

SCALE: 1 : 100

850

INSITU WALL SCHEDULE				
MARK	WIDTH	f'c (MPa)	REINF. RATE (kg/m³)	REMARKS
W1	200	50	220	INSITU CONCRETE WALL
W2	250	40	180	INSITU CONCRETE WALL

IN-SITU WALL REINFORCEMENT & CONCRETE NOTES:

1. ALL SERVICES PENETRATION TO BE COORDINATED AND APPROVED BY WEBBER DESIGN.
2. CONTRACTOR SHALL ALLOW FOR CONSTRUCTION JOINT AS REQUIRED.
3. PROVIDE 25mm CLEAR COVER TO CORE WALL REINFORCEMENT (U.N.O.).
4. WHERE BARS OF DIFFERENT DIAMETERS ARE SPLICED,USE THE SPLICE OF THE LARGER BAR DIAMETER.
5. FOR WALLS WITH BARS ANCHORED OR SPLICED AT LESS THAN 150 CTS. MULTIPLY THE ABOVE LENGTHS BY 1.4
6. UNLESS SHOWN ON DRAWINGS, THE SPLICE LOCATIONS MUST BE APPROVED BY THE ENGINEER.
7. IF BARS HAVE STANDARD COGS AT THE ENDS, HALVE THE ABOVE LENGTHS.
8. N36 AND N40 BARS IN TENSION ARE NOT TO BE SPLICED.

NOTES:-
CO-ORDINATE ALL PENETRATION SIZES AND LOCATIONS WITH SERVICES CONSULTANTS. NO PENETRATION TO BE INCREASED IN SIZE OR MOVED WITHOUT THE WRITTEN AGREEMENT OF WEBBER DESIGN PTY. LTD.

2

ANCHORAGE AND SPLICE LENGTH FOR INSITU/PRECAST WALLS UNO.	
N12	600
N16	800
N20	1000
N24	1200
N28	1400
N32	1400
N36	1400 (COMPRESSION SPLICE)
GENERAL	45 BAR DIA.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
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DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

IN-SITU WALL KEY PLANS & ELEVATION

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:100, 1:200	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-850	2

PRINT TIME: 18/12/2020 11:18:41 AM C:\Users\Peter\Documents\WD20023 - LAHC Warwick Farm NSW - Centre - STRUCTURAL_peter2UJEEP.rvt

WEBBER DESIGN

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DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

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GENERAL NOTES	S-WEB-001-002
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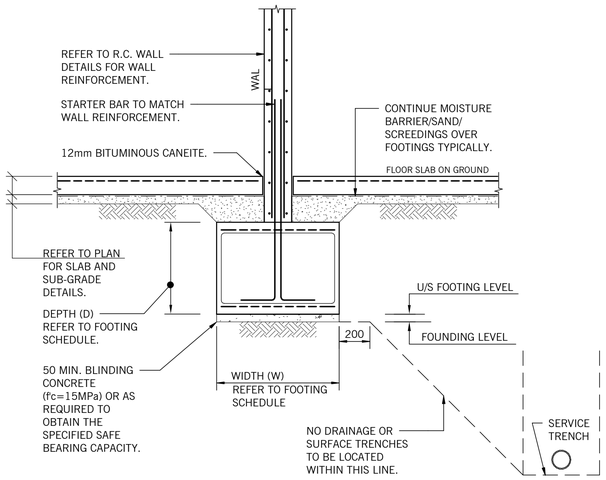
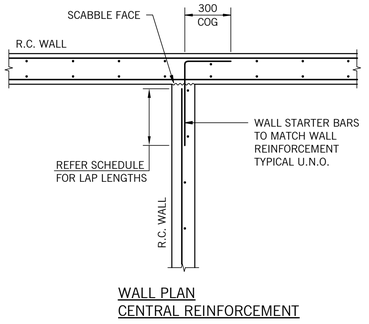
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991



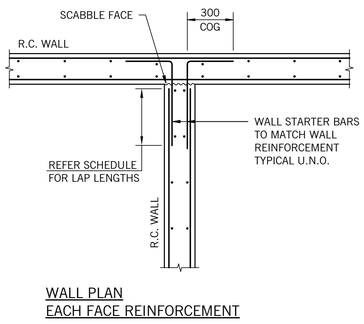
WALL SECTION

TYPICAL STRIP FOOTING TO R.C. WALL DETAIL

NOT TO SCALE



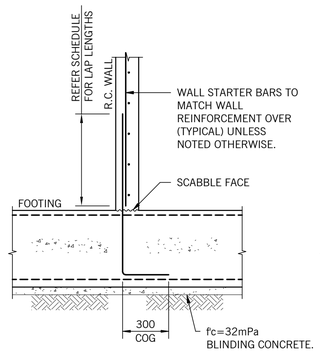
WALL PLAN
CENTRAL REINFORCEMENT



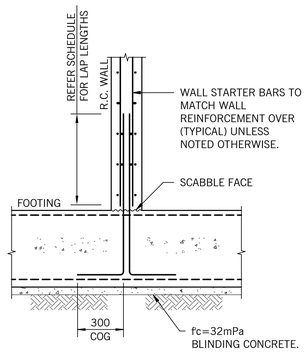
WALL PLAN
EACH FACE REINFORCEMENT

TYPICAL INTERNAL WALL UNDER DETAILS

SCALE 1:20



WALL SECTION
CENTRAL REINFORCEMENT

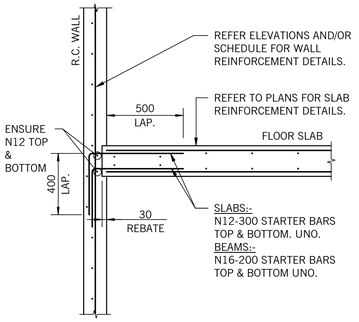


WALL SECTION
EACH FACE REINFORCEMENT

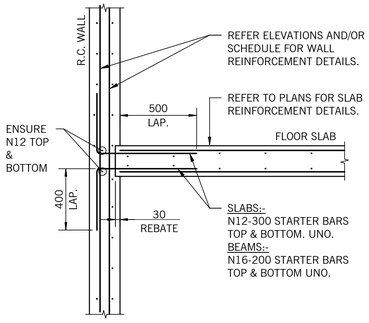
TYPICAL WALL BASE AT FOOTING DETAILS

SCALE 1:20

2



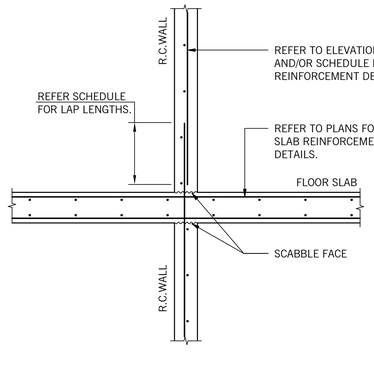
WALL SECTION
CENTRAL REINFORCEMENT



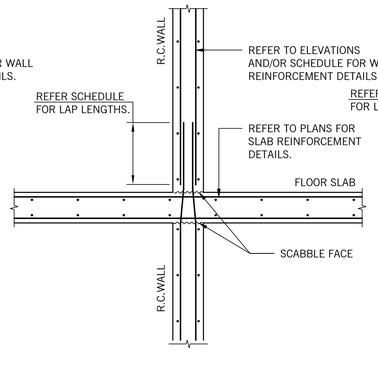
WALL SECTION
EACH FACE REINFORCEMENT

PERIMETER WALL TO SLAB / BEAM DETAILS - L STARTER BARS

SCALE 1:20



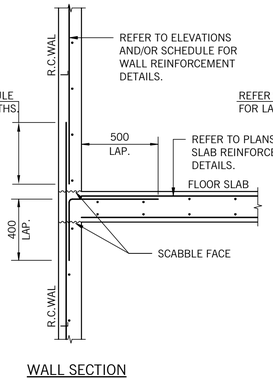
WALL SECTION
CENTRAL REINFORCEMENT



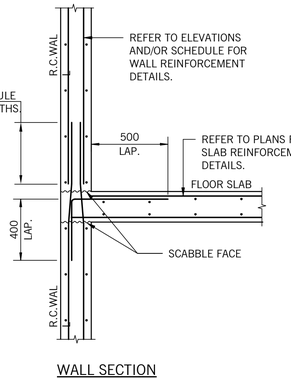
WALL SECTION
EACH FACE REINFORCEMENT

TYPICAL CONTINUOUS INTERNAL WALL TO SLAB DETAILS

SCALE 1:20



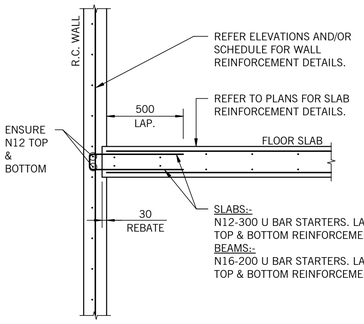
WALL SECTION
CENTRAL REINFORCEMENT



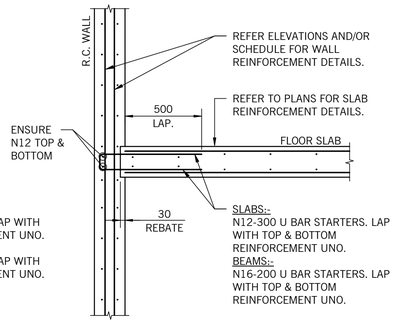
WALL SECTION
EACH FACE REINFORCEMENT

TYPICAL CONTINUOUS PERIMETER WALL TO SLAB DETAILS

SCALE 1:20



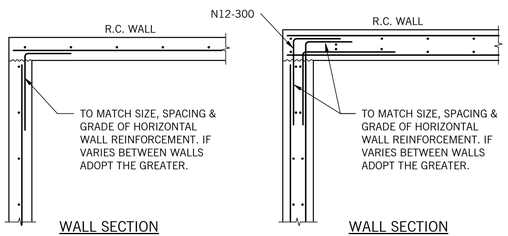
WALL SECTION
CENTRAL REINFORCEMENT



WALL SECTION
EACH FACE REINFORCEMENT

PERIMETER WALL TO SLAB / BEAM DETAILS - U BARS

SCALE 1:20

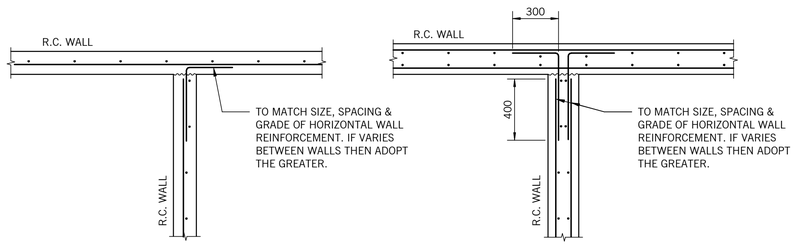


WALL SECTION
CENTRAL REINFORCEMENT

WALL SECTION
EACH FACE REINFORCEMENT

TYPICAL CORNER PLAN DETAILS

SCALE 1:20



WALL SECTION
CENTRAL REINFORCEMENT

WALL SECTION
EACH FACE REINFORCEMENT

TYPICAL 'T' INTERSECTION PLAN DETAILS

SCALE 1:20

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC. AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW. AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

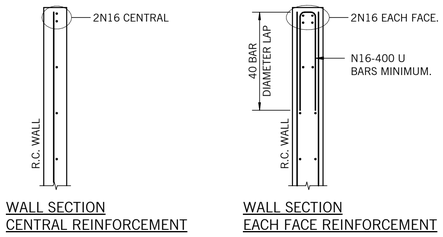
TITLE

IN-SITU WALL DETAILS - SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-877	2

WEBBER DESIGN

A1 0 1 2 3 4 5 6 7 8 9 10

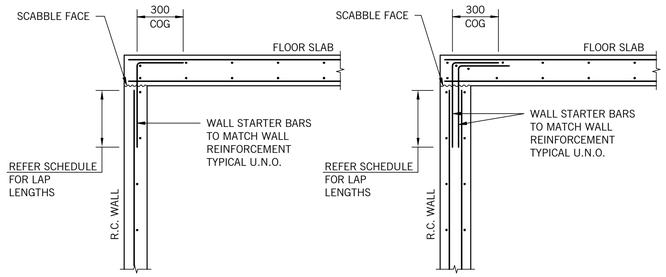


WALL SECTION
CENTRAL REINFORCEMENT

WALL SECTION
EACH FACE REINFORCEMENT

TYPICAL WALL TERMINATION DETAILS

SCALE 1:20

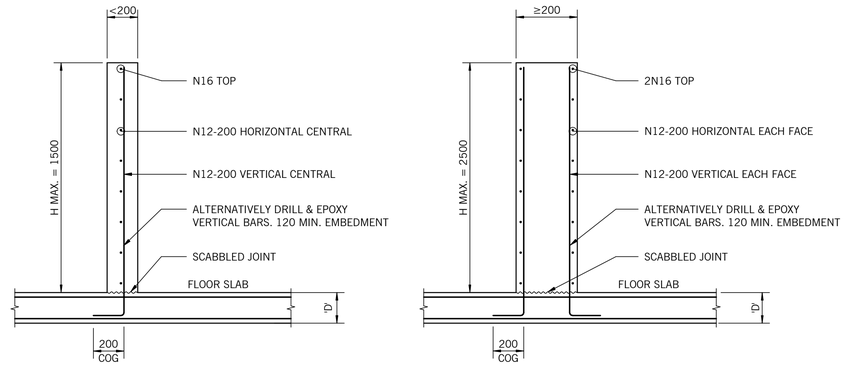


WALL SECTION
CENTRAL REINFORCEMENT

WALL SECTION
EACH FACE REINFORCEMENT

TYPICAL PERIMETER WALL UNDER DETAILS

SCALE 1:20

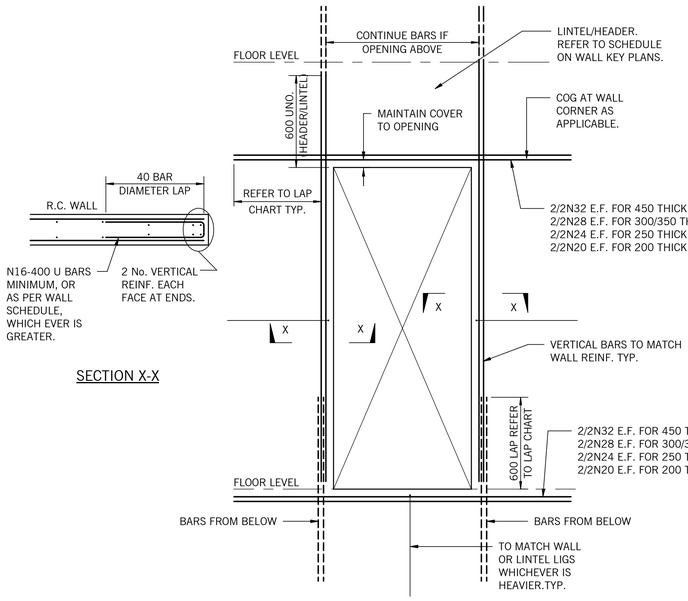


TYPICAL R.C. UPSTAND WALL DETAIL

SCALE 1:20

NOTES:

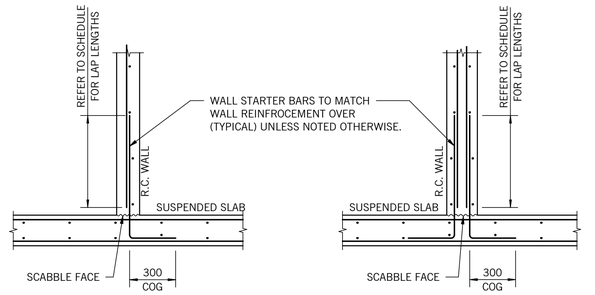
1: VERTICAL BARS 500 MIN. LAP U.N.O.
2: HORIZONTAL BARS 400 MIN. LAP U.N.O.
3: REFER TO ARCHITECTS DRAWINGS FOR DIMENSIONS AND LOCATIONS.
4: PROVIDE FORMED VERTICAL JOINTS & CUT HORIZONTAL REINFORCEMENT AT A SPACING OF NO GREATER THAN 4 TIMES THE WALL HEIGHT AND ALSO COINCIDE WITH CONTROL JOINTS.



SECTION X-X

TYPICAL DOOR OPENING DETAIL (OTHER WALL OPENINGS SIMILAR.)

NOT TO SCALE



WALL SECTION
CENTRAL REINFORCEMENT

WALL SECTION
EACH FACE REINFORCEMENT

TYPICAL INTERNAL WALL OVER SUSPENDED SLAB

SCALE 1:20

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

2

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC. AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW. AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

IN-SITU WALL DETAILS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-878	2

WEBBER DESIGN

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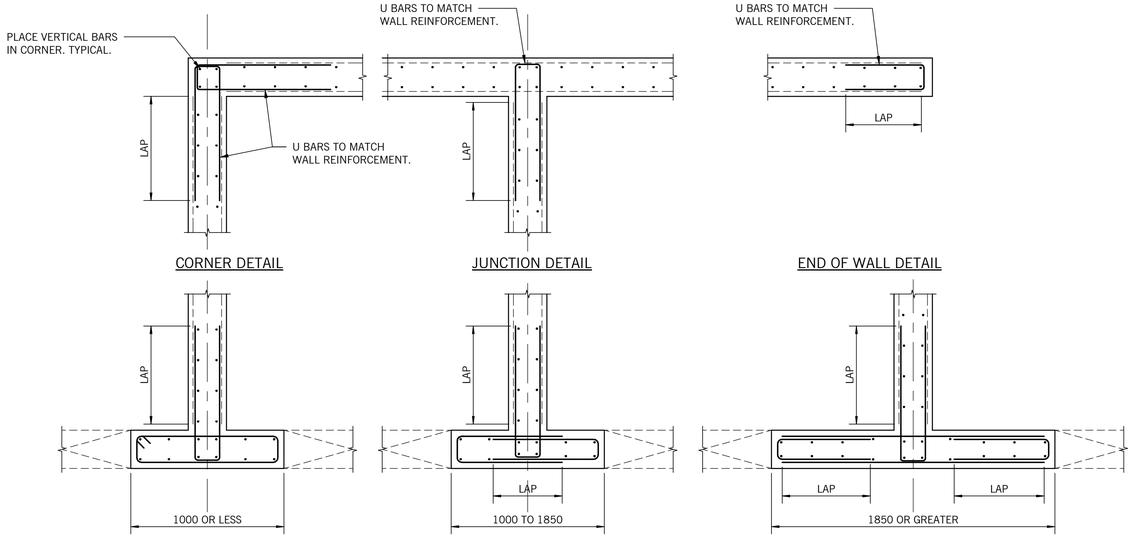

TYPICAL CORE WALL PLAN JUNCTION DETAILS (U.N.O.)

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

2

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING
MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

IN-SITU WALL DETAILS -
SHEET 3

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	PAC	PW

JOB No.	DRAWING No.	REV.
20023	S-WEB-879	2

WEBBER DESIGN

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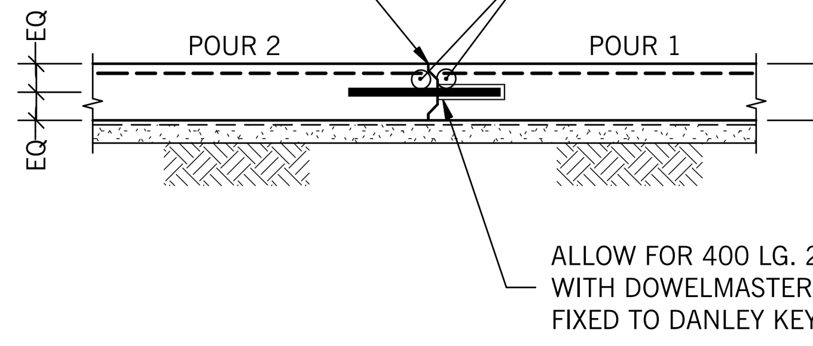
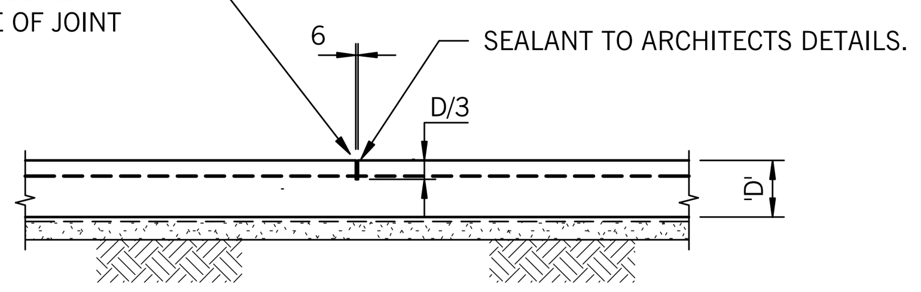


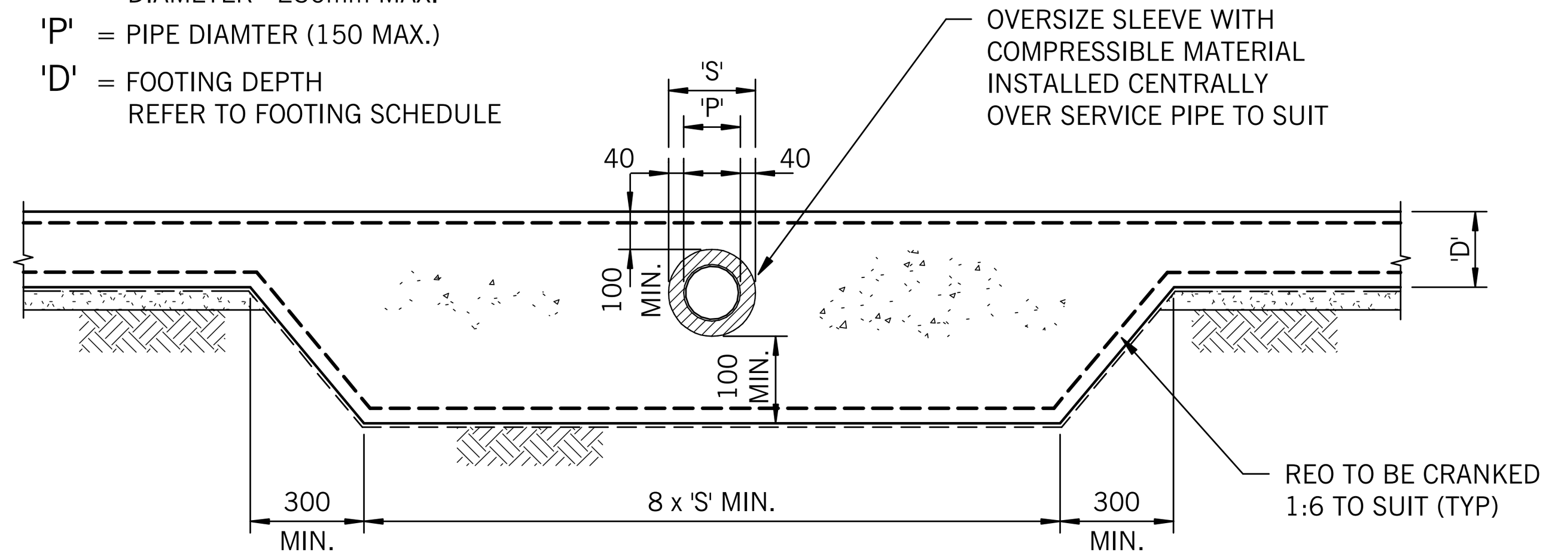
TYPICAL DOWELED CONSTRUCTION JOINT (D.C.J.)

SCALE 1:20



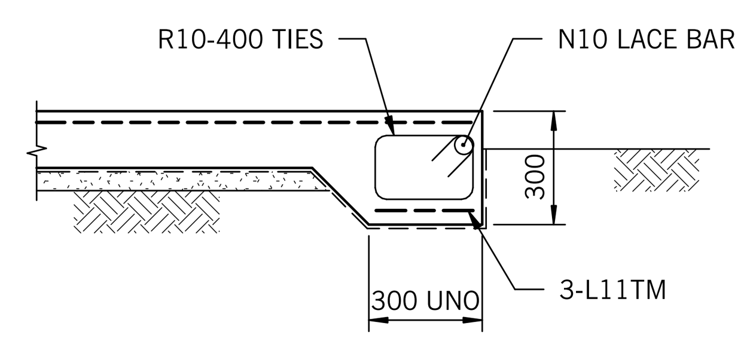
TYPICAL SAW CUT JOINT (S.C.J.)

SCALE 1:20



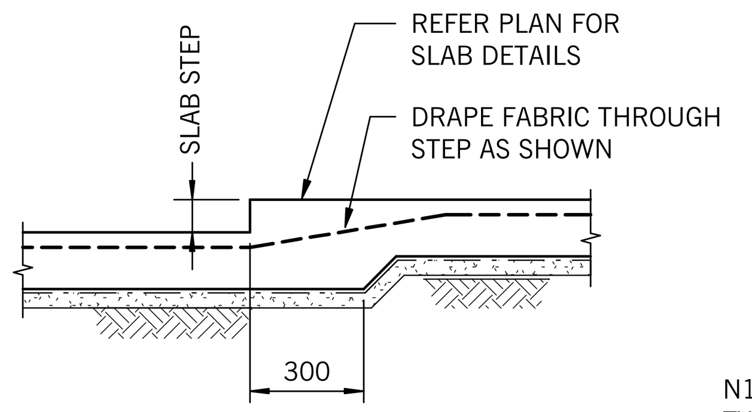
PIPE PENETRATION DETAIL

SCALE 1:20

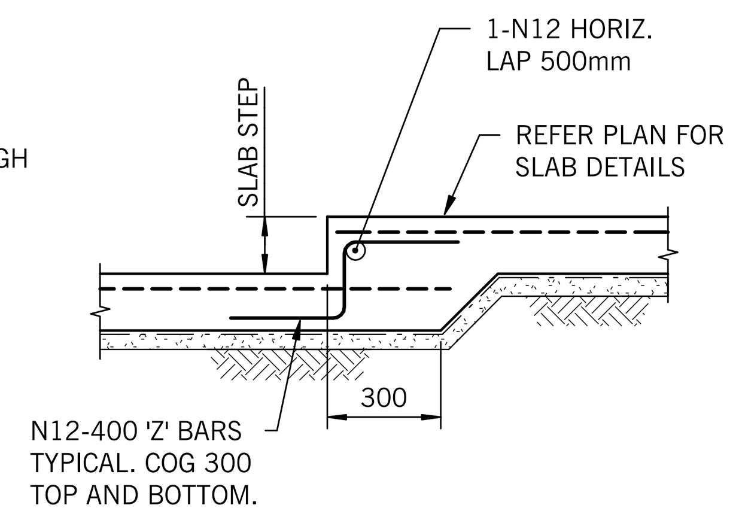


TYPICAL EDGE THICKENING

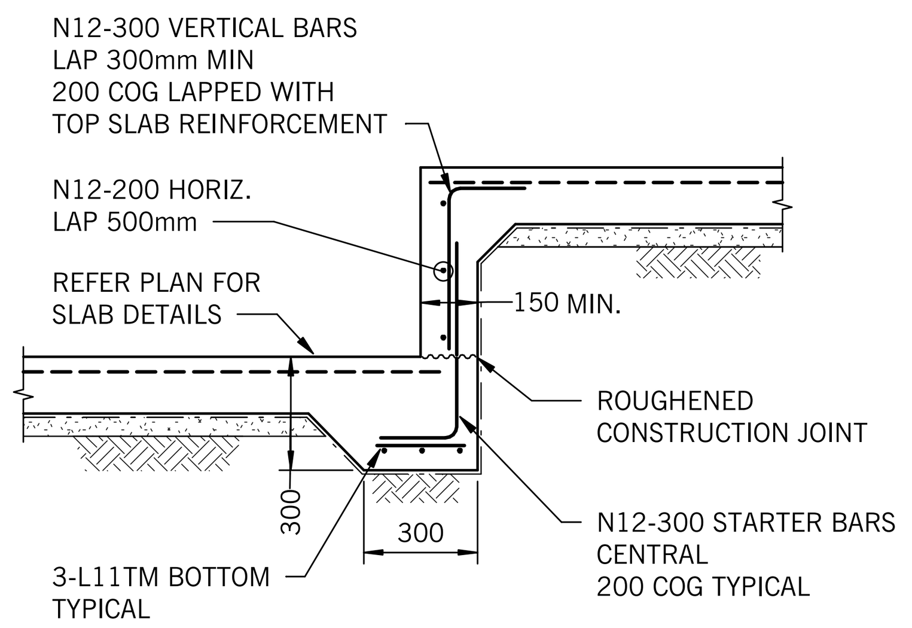
SCALE 1:20



TYPICAL SLAB STEP LESS THAN 95mm HIGH



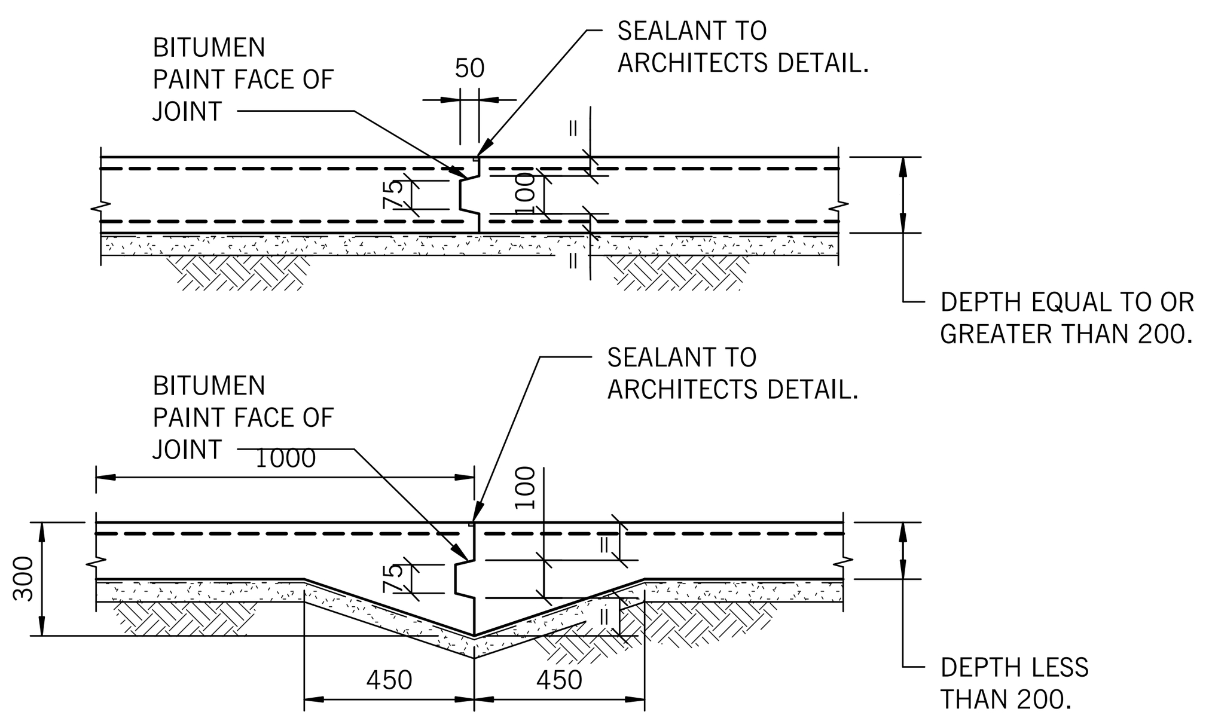
TYPICAL SLAB STEP GREATER THAN 100mm AND LESS THAN 300mm



TYPICAL SLAB STEP GREATER THAN 300mm AND LESS THAN 1000mm

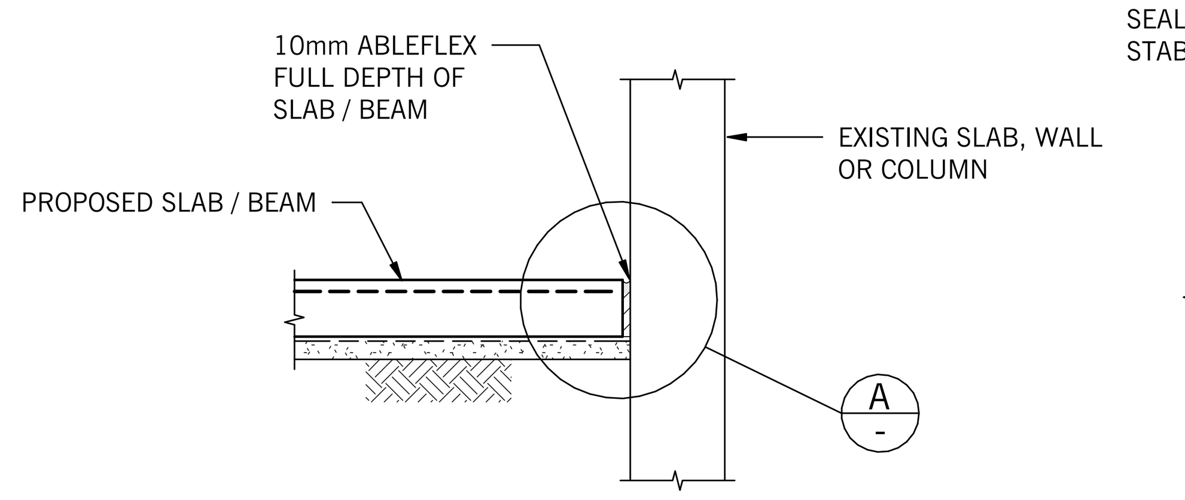
TYPICAL SLAB STEP DETAILS

NTS



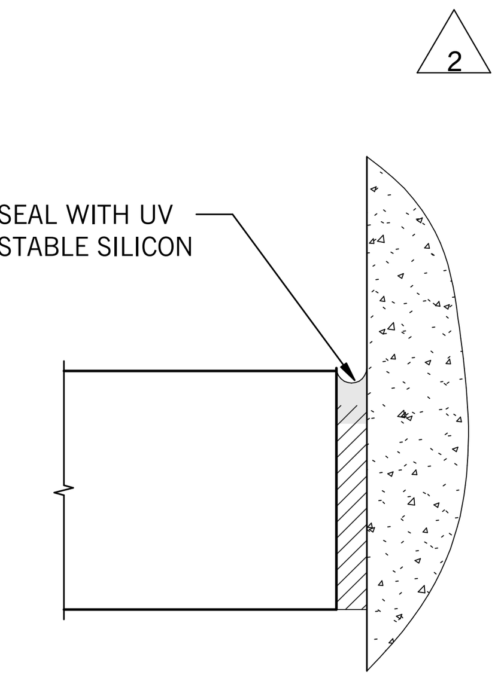
KEYED CONSTRUCTION JOINT (K.C.J.)

SCALE 1:20



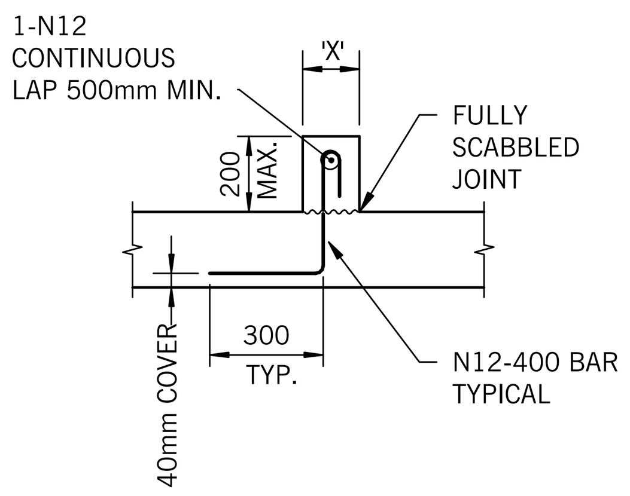
TYPICAL ISOLATION JOINT (I.J.)

SCALE 1:20



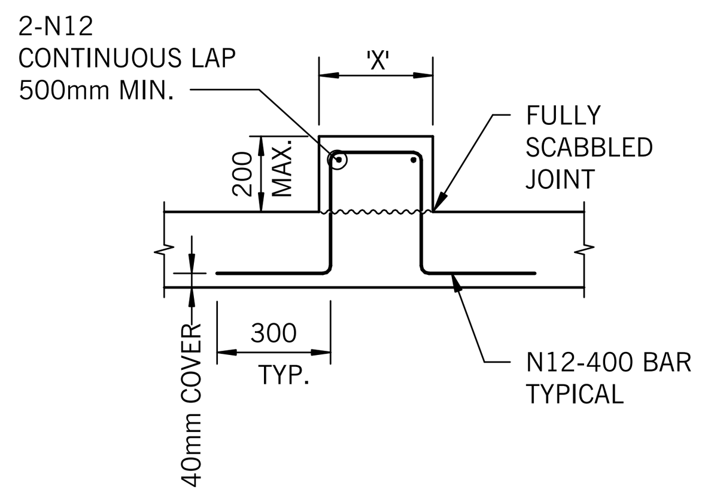
DETAIL A

SCALE: 1 : 5



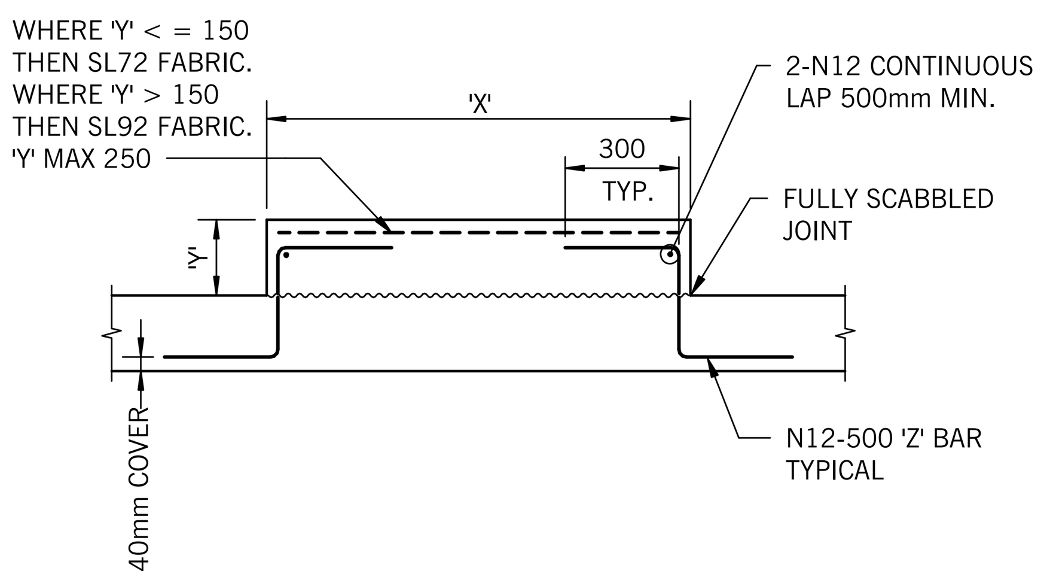
WHERE 'X' = 70 TO 150

EXISTING SLAB DRILL INJECTION GROUT BAR AS SPECIFIED INTO EXISTING SLAB.



WHERE 'X' = 150 < 700

EXISTING SLAB DRILL INJECTION GROUT BAR AS SPECIFIED INTO EXISTING SLAB.

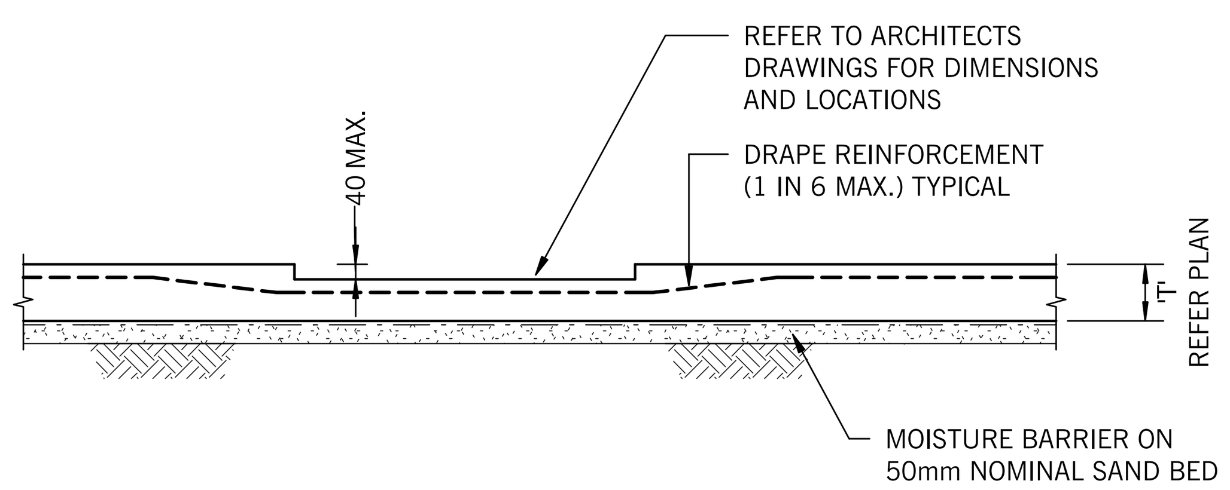


WHERE 'X' > 700

NOTE:
PROVIDE 12mm CHAMFER TO ALL TOP EDGES OF KERB/PLINTH

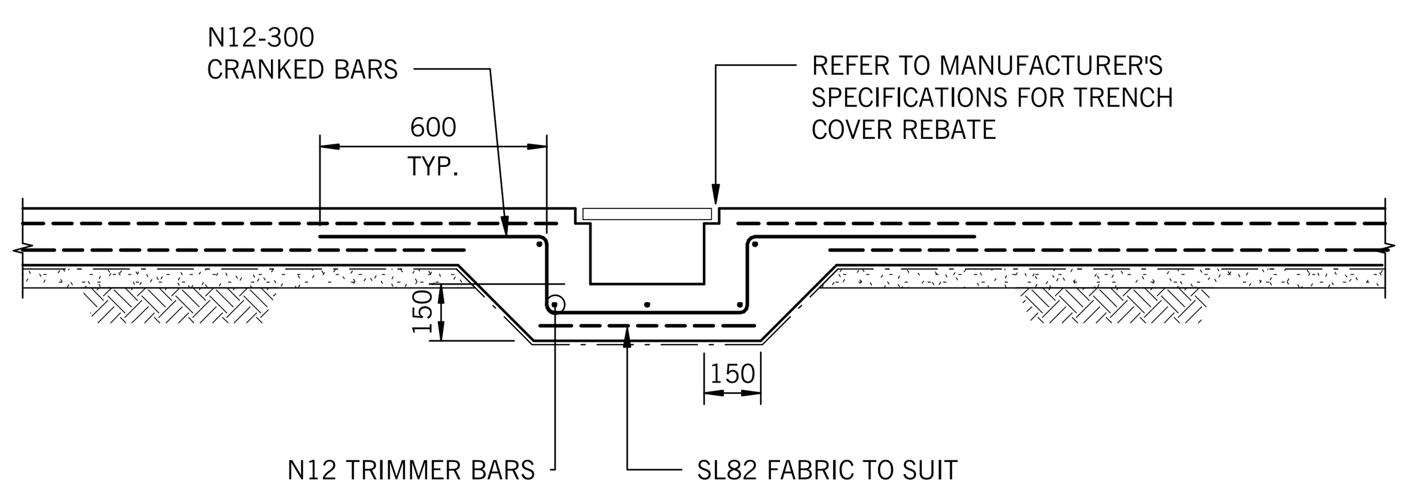
TYPICAL KERB/PLINTH DETAILS

NTS



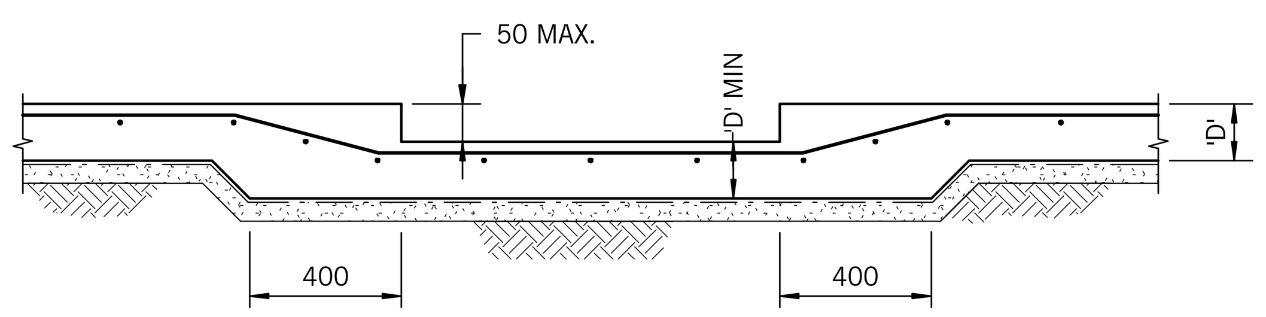
SLAB MAT RECESS DETAIL

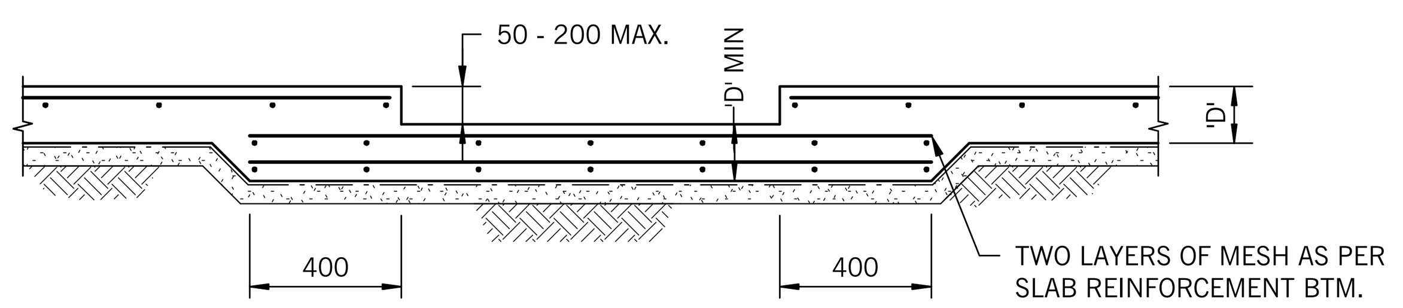
NTS



TYPICAL GRATED TRENCH DETAIL

SCALE 1:20

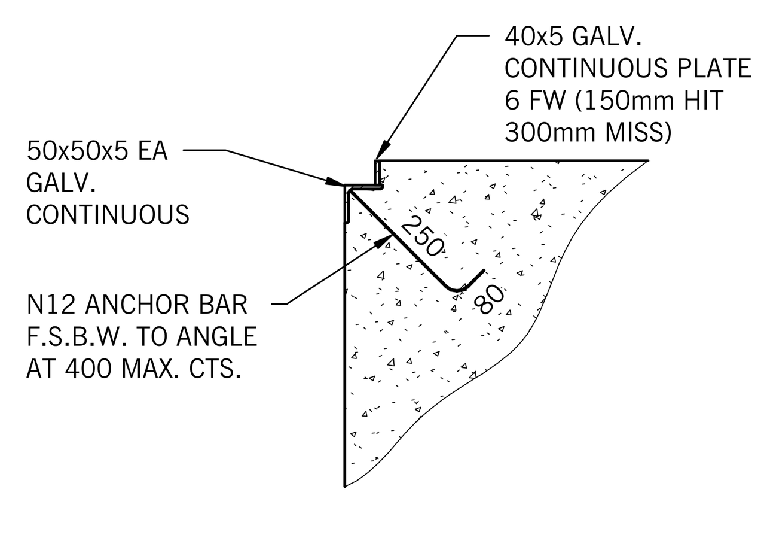




TYPICAL SETDOWNS IN SLAB

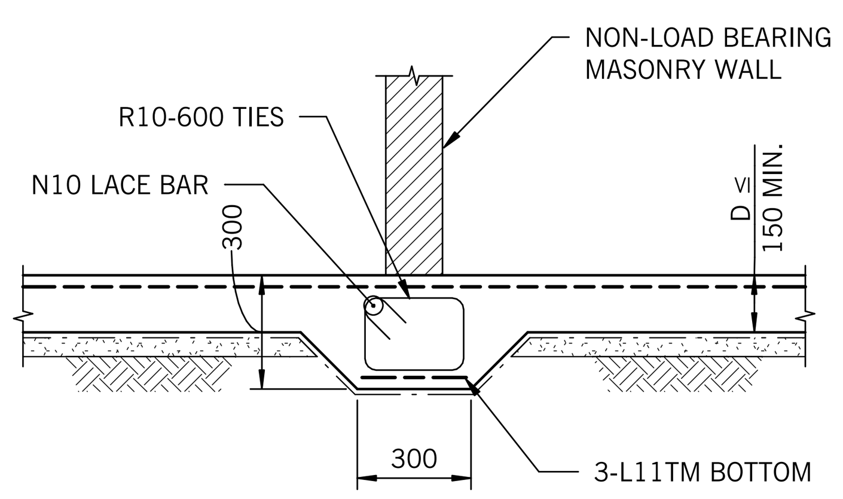
SCALE 1:20

NOTES:
REFER TO PLANS FOR EXTENTS OF SETDOWNS.
REFER TO ARCHITECTURAL DRAWINGS FOR DEPTH AND DIMENSIONAL SETOUT OF ALL SETDOWN REQUIREMENTS.



TYPICAL CAST-IN TRENCH EDGE ANGLE DETAIL

NTS



SLAB THICKENING DETAIL

TYPICAL DETAIL AT MASONRY WALL

SCALE 1:20

NOTE: REFER TO ARCHITECTS DRAWINGS FOR DIMENSIONS AND LOCATIONS.

A1

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
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DRAWING REFERENCE	REFERENCE No.
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RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

STRUCTURAL ENGINEERING

MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155

SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

TYPICAL SLAB ON GROUND DETAILS - SHEET 1

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:5, 1:20	PAC	PW
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20023	S-WEB-950	2

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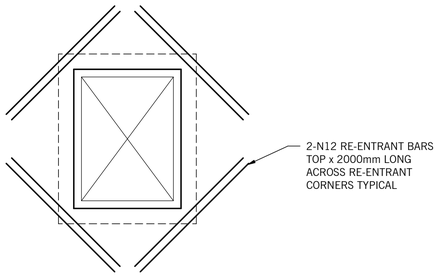

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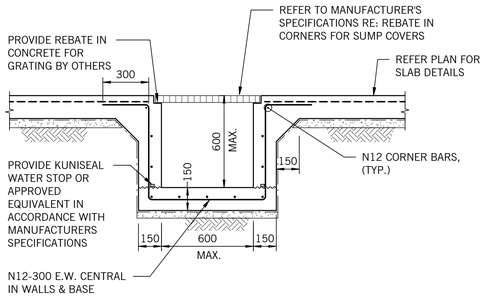
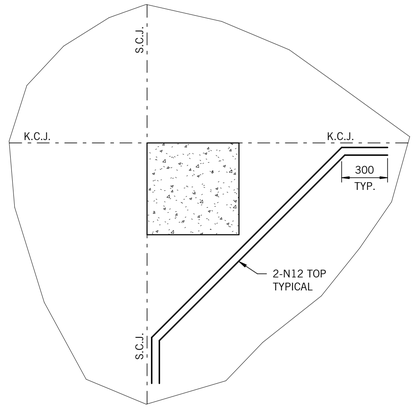


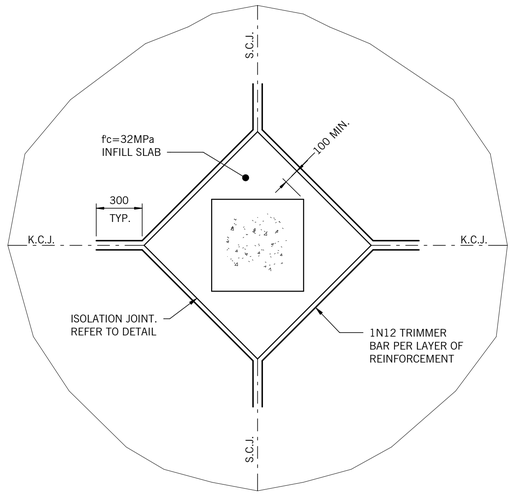
TYPICAL PIT/SUMP/GRATED TRENCH DETAIL

SCALE 1:20



TYPICAL RE-ENTRANT BAR DETAIL

SCALE 1:20



TYPICAL INFILL SLAB DETAIL AT STEEL OR R.C. COLUMN LOCATION

SCALE 1:20

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Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
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11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

TYPICAL SLAB ON GROUND
DETAILS - SHEET 2

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NOV 2020	MA/BT	AC
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1:20	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-951	2

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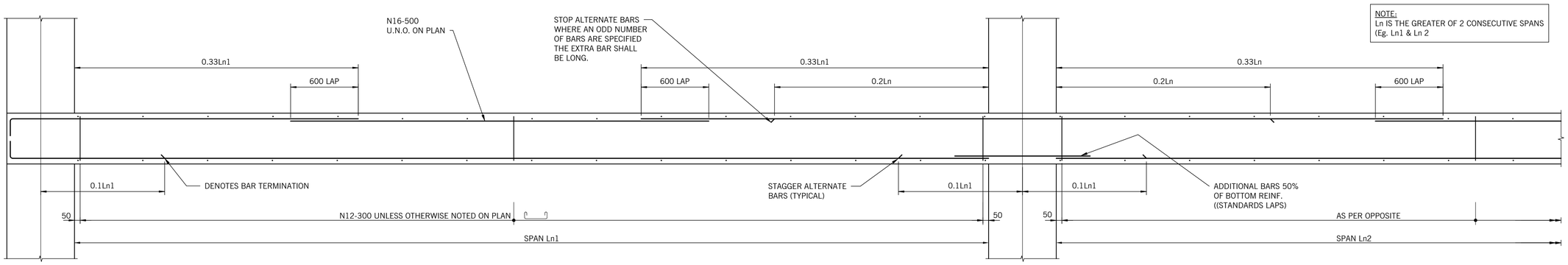
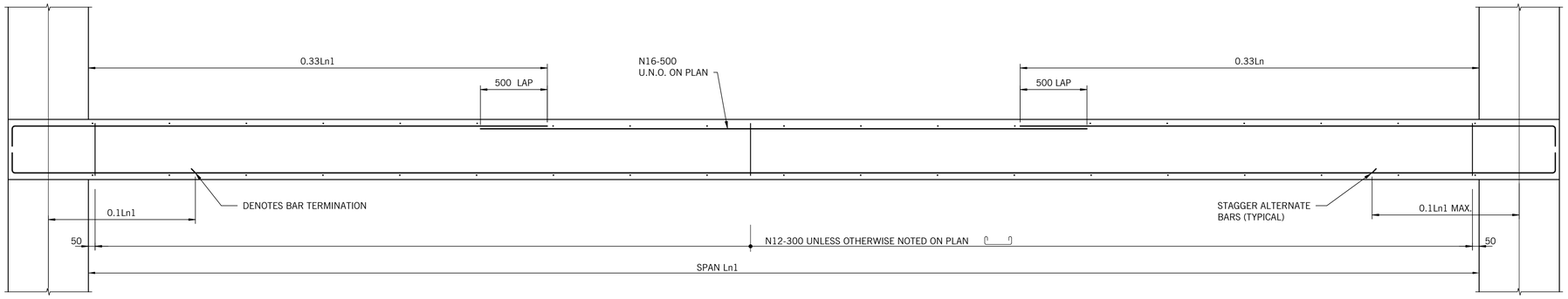


TYPICAL SECTION ALONG CONTINUOUS SPAN SLAB AND BEAM

SCALE 1:20



TYPICAL SECTION ALONG SINGLE SPAN SLAB AND BEAM

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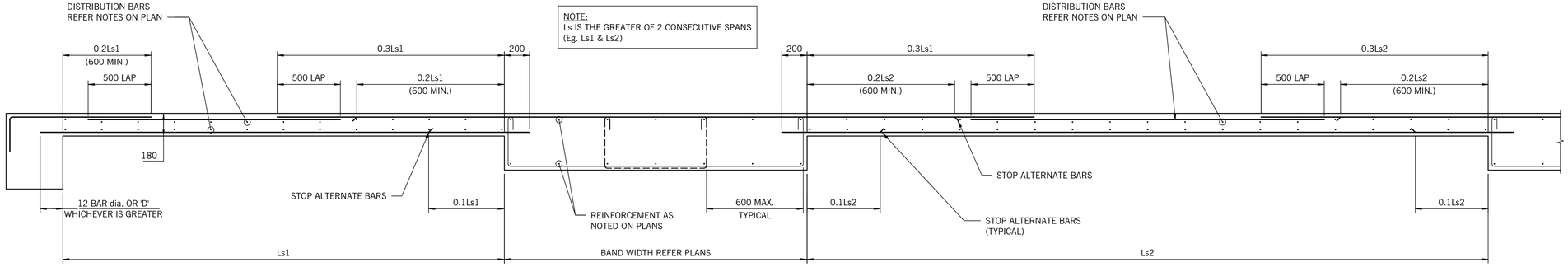
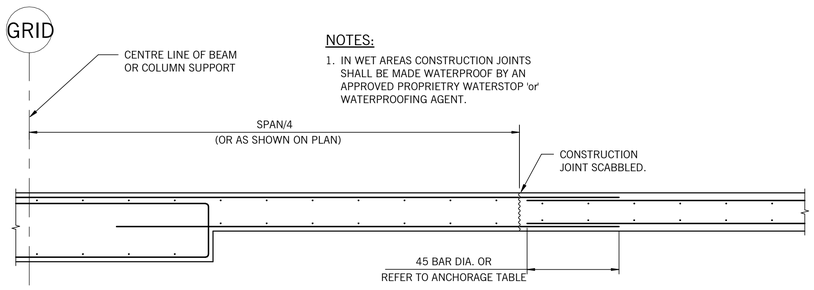


TYPICAL SECTION THROUGH R.C. SLAB AND BAND BEAM

SCALE 1:20



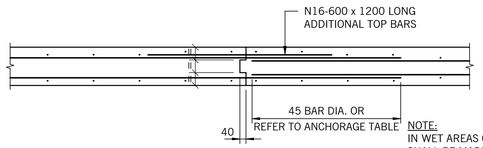
NOTES:

1. IN WET AREAS CONSTRUCTION JOINTS SHALL BE MADE WATERPROOF BY AN APPROVED PROPRIETRY WATERSTOP 'or' WATERPROOFING AGENT.

SLAB CONSTRUCTION JOINT

PERPENDICULAR TO BAND BEAMS

SCALE 1:20

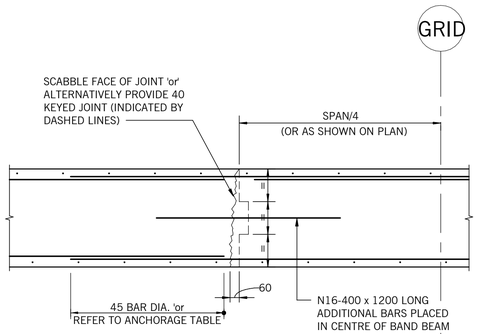


SLAB CONSTRUCTION JOINT

PARALLEL TO BAND BEAMS

SCALE 1:20

NOTE:
IN WET AREAS CONSTRUCTION JOINTS SHALL BE MADE WATERPROOF BY AN APPROVED PROPRIETRY WATERSTOP 'or' WATERPROOFING AGENT.



BAND BEAM CONSTRUCTION JOINT

SCALE 1:20

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WARWICK FARM, NSW 2170

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JOB No.	DRAWING No.	REV.
20023	S-WEB-960	2

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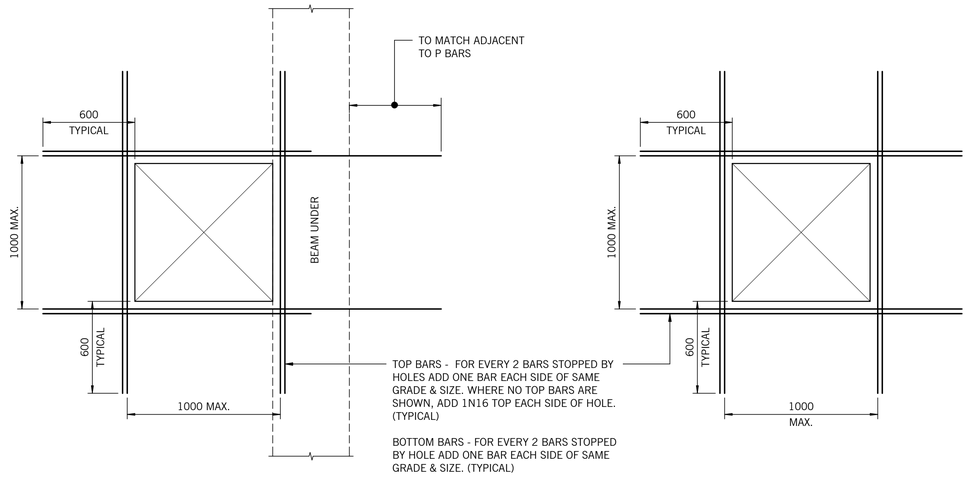


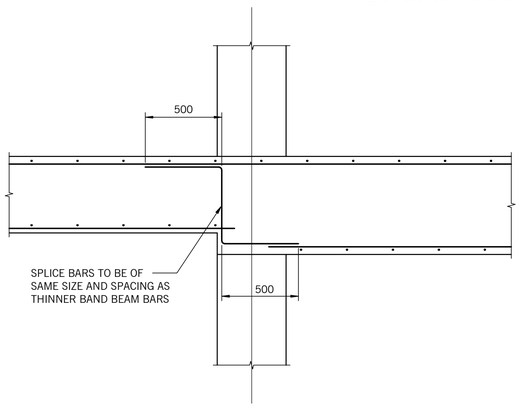
REINFORCEMENT TO SLAB PENETRATIONS

SCALE 1:20

NOTES:

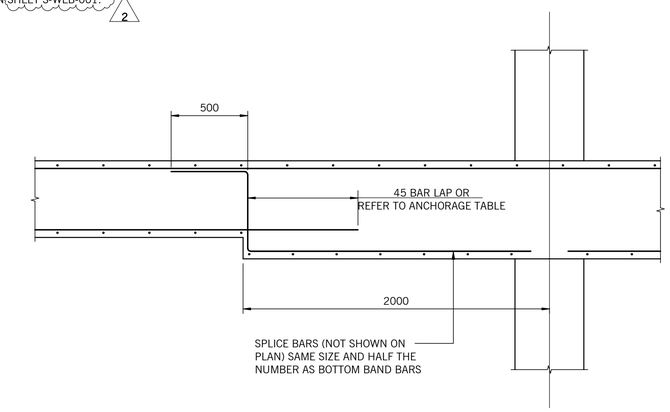
1. FOR HOLES LESS THAN 300 x 300, SLAB BARS TO BE RE-ARRANGED AROUND HOLE WITHOUT CUTTING.
2. FOR HOLES GREATER THAN 300 x 300 BUT LESS THAN 1000 x 1000, USE ABOVE DETAILS.
3. FOR HOLES GREATER THAN 1000 x 1000, REFER TO ENGINEERS PLANS.
4. LOCATIONS OF HOLES TO BE TO THE APPROVAL OF THE ENGINEER.
5. REFER ALSO TO STANDARD NOTES ON SHEET S-WEB-001.

2



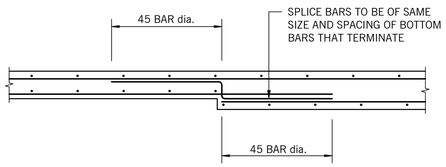
TYPICAL CHANGE IN SLAB THICKNESS AT SUPPORT

SCALE 1:20



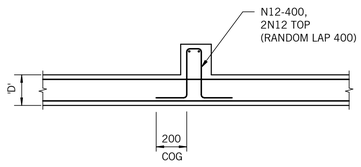
TYPICAL CHANGE IN BAND BEAM THICKNESS BETWEEN SUPPORT

SCALE 1:20



TYPICAL CHANGE IN SLAB THICKNESS

SCALE 1:20

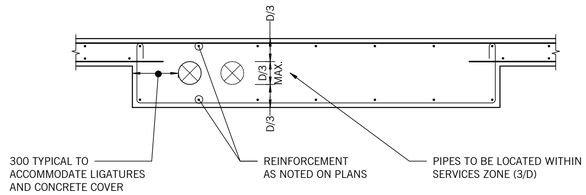


TYPICAL HOB DETAIL

SCALE 1:20

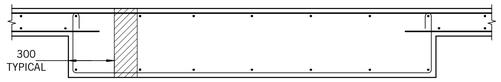
NOTES:

1: REFER TO ARCHITECTS DRAWINGS FOR DIMENSIONS AND LOCATIONS.



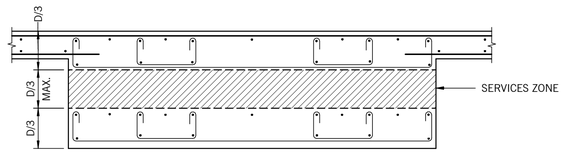
TYPICAL HORIZONTAL CAST-IN SERVICES PIPES ALONG BEAM

SCALE 1:20



TYPICAL VERTICAL CAST-IN PIPES

SCALE 1:20



TYPICAL HORIZONTAL SERVICES CAST-IN PIPES ACROSS BEAM

SCALE 1:20

MINIMUM D/3 ZONE REQUIRED TOP AND BOTTOM OF PIPE TO ACCOMMODATE ADDITIONAL LIGS DETAIL REQUIRED LIGS SHOWN ARE INDICATIVE ONLY AND ARE SUBJECT TO FINAL DETAIL DESIGN.

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1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
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CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

TYPICAL SUSPENDED SLAB DETAILS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
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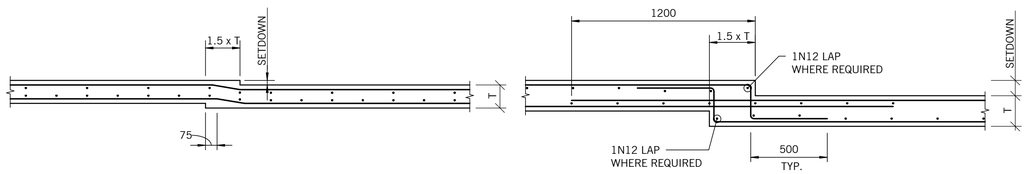


SETDOWN ≤ 0.2 x T

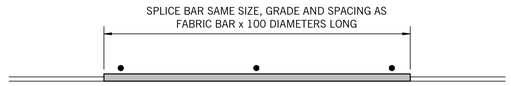
SETDOWN ≤ 0.8 x T

TYPICAL SUSPENDED FLOOR STEP DETAILS

SCALE 1:20

NOTES:

1. DETAILS APPLY UNLESS OTHERWISE SHOWN.
2. ALSO REFER TO STANDARD NOTES.

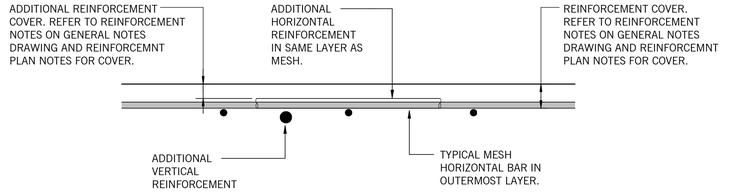


TYPICAL FABRIC DETAIL

SCALE 1:10

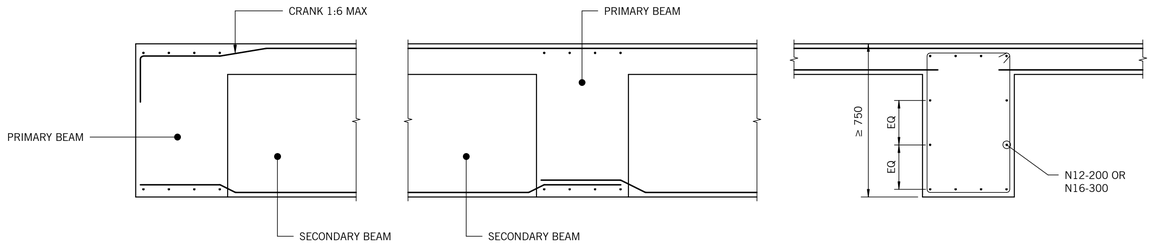
NOTE:

COMMON VERTICAL AND HORIZONTAL



TYPICAL REINFORCEMENT COVER DETAILS

SCALE 1:5

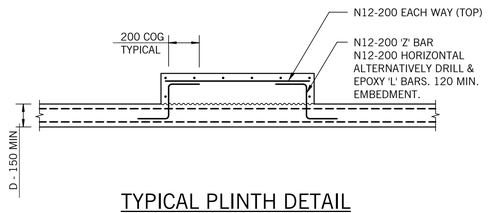


TYPICAL PRIMARY TO SECONDARY BEAM DETAILS

SCALE 1:20

TYPICAL SIDE FACE REINFORCEMENT DETAIL FOR BEAMS ≥750 IN DEPTH

SCALE 1:20



TYPICAL PLINTH DETAIL

SCALE 1:20

NOTE:

1. REFER TO ARCHITECTS DRAWINGS FOR DIMENSIONS AND LOCATIONS.

ANCHORAGE AND SPLICE LENGTHS OF TENSION BARS IN BEAMS AND SLABS

BAR SIZE	LESS THAN 300mm OF CONCRETE BELOW HORIZONTAL BAR		MORE THAN 300mm OF CONCRETE BELOW HORIZONTAL BAR	
	CONCRETE GRADE		CONCRETE GRADE	
	25 MPa	>=32 MPa	25 MPa	>=32 MPa
N10	400	400	500	500
N12	500	450	650	600
N16	700	650	900	800
N20	900	800	1200	1100
N24	1100	1000	1550	1300
N28	1250	1100	1750	1600
N32	1600	1400	2100	1850
N36	2000	1700	2600	2200

NOTES:

2

1. THESE LENGTHS APPLY FOR ALL BARS IN BEAMS AND SLABS.
2. THE MINIMUM CONCRETE COVER TO ALL REINFORCEMENT BARS ARE TO BE IN ACCORDANCE WITH THE REINFORCEMENT NOTES ON THE GENERAL NOTES DRAWING (S-WEB-001).
3. THE MINIMUM CLEAR SPACING BETWEEN BARS MUST BE GREATER THAN TWICE THE COVER TO THE BAR.
4. FOR ALL SLABS WITH BARS AT LESS THAN 150mm CENTRES TO BE ANCHORED OR SPLICED, ANCHORAGE AND SPLICE LENGTHS NOTED ABOVE MUST BE MULTIPLIED BY 1.4.
5. UNLESS SHOWN ON THE DRAWINGS, THE SPLICE LOCATIONS MUST BE APPROVED BY WEBBER DESIGN.
6. IF BARS HAVE STANDARD COGS AT THE ENDS, ANCHORAGE LENGTHS NOTED ABOVE CAN BE HALVED.
7. N40 AND N50 BARS IN TENSION ARE NOT TO BE LAP SPLICED UNLESS APPROVED BY THE ENGINEER.
8. FOR PLAIN BARS USED AS LIGATURES OR TIES THE ANCHORAGE LENGTH SHALL BE 40 BAR DIAMETERS BUT NOT LESS THAN 300mm. OTHER PLAIN BARS MUST BE ANCHORED WITH A STANDARD HOOK OR COG.
9. THE ANCHORAGE LENGTH OF HARD DRAWN WIRE IS 50 BAR DIAMETERS.

2

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T: +61 2 9690 2488

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PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

TYPICAL SUSPENDED SLAB DETAILS - SHEET 3

DATE	DESIGNED BY	CHECKED BY
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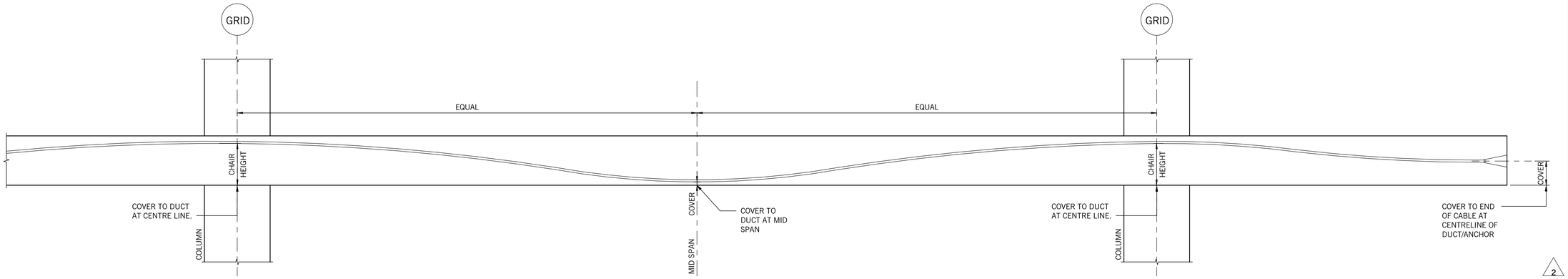


TYPICAL INTERNAL COLUMN

TYPICAL INTERNAL COLUMN

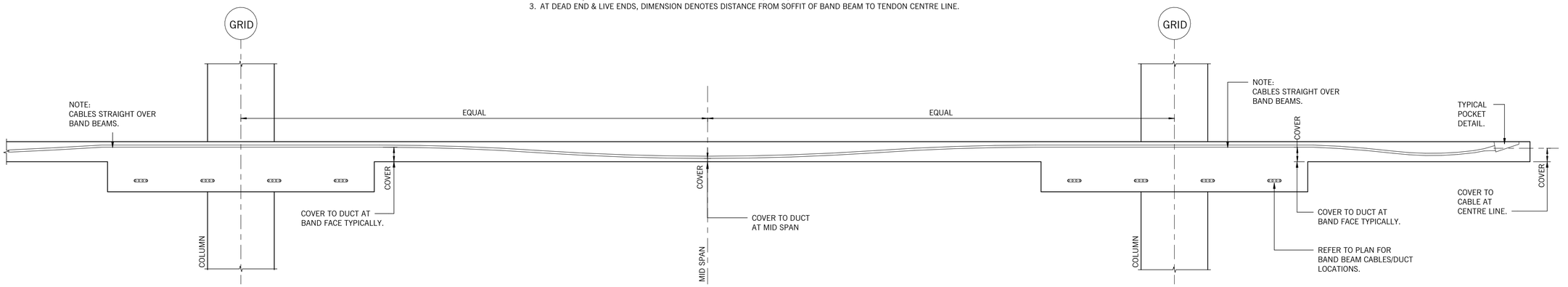
DEAD/LIVE END

TYPICAL BAND BEAM - POST TENSIONED TENDON LAYOUT

SCALE 1:20

NOTE:

1. REFER TO POST TENSIONING PLAN FOR DIMENSIONS.
2. GENERALLY, DIMENSION DENOTES BOTTOM COVER TO DUCT (IN mm).
3. AT DEAD END & LIVE ENDS, DIMENSION DENOTES DISTANCE FROM SOFFIT OF BAND BEAM TO TENDON CENTRE LINE.



TYPICAL INTERNAL COLUMN

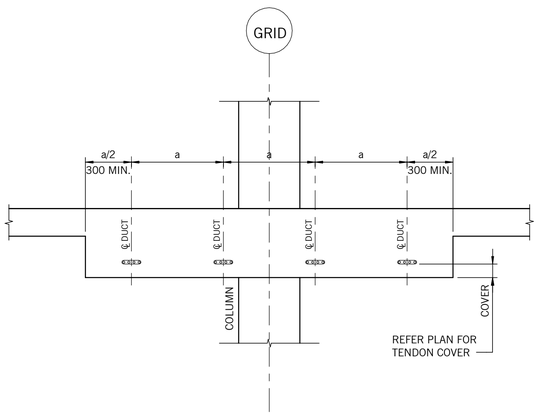
TYPICAL INTERNAL COLUMN

TYPICAL SLAB - POST TENSIONED TENDON LAYOUT

SCALE 1:20

NOTE:

1. REFER TO POST TENSIONING PLAN FOR DIMENSIONS.
2. GENERALLY, DIMENSION DENOTES BOTTOM COVER TO DUCT (IN mm)
3. AT DEAD AND LIVE ENDS, DIMENSION DENOTES DISTANCE FROM SOFFIT OF BAND BEAM TO TENDON CENTRE LINE.



BAND BEAM TENDON LOCATION

SCALE 1:20

NOTE:

1. REFER TO POST TENSIONING PLAN FOR DIMENSIONS.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

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R.C. STAIR DETAILS	S-WEB-970
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STEEL DETAILS	S-WEB-990-991

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T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

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11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

TYPICAL POST TENSIONING DETAILS - SHEET 1

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PRINT TIME: 18/12/2020 11:18:54 AM C:\Users\Pete\Documents\WD20\20023 - LAHC Warwick Farm NSW - Central_ STRUCTURAL_pete20JEEP.rvt

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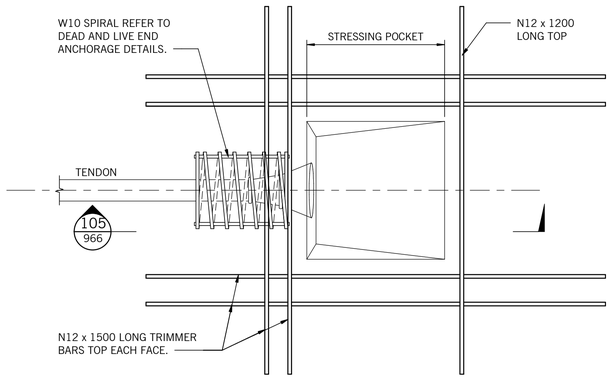
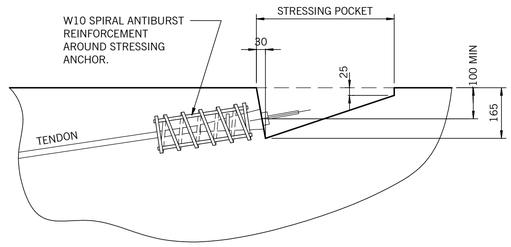


PLAN VIEW

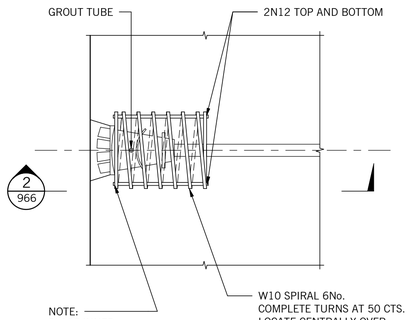


SECTION 1-1

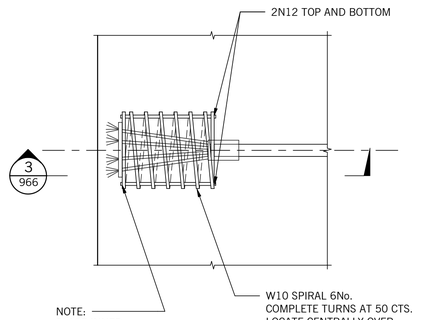
TYPICAL INTERNAL STRESSING POCKET

SCALE 1:10

1. REFER TO PLAN FOR ADDITIONAL REINFORCEMENT.

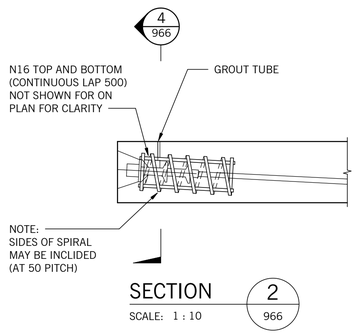


PLAN



PLAN

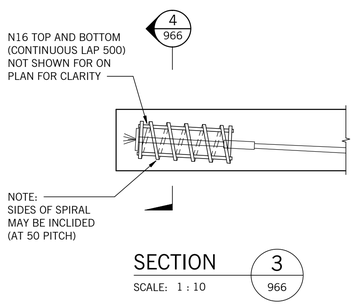
TYPICAL LIVE END BLOCK REINFORCEMENT



SECTION 2 / 966

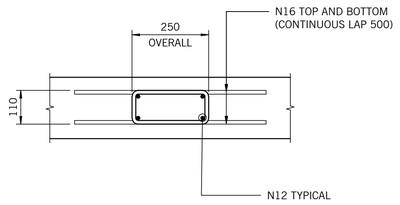
SCALE: 1 : 10

TYPICAL DEAD END BLOCK REINFORCEMENT



SECTION 3 / 966

SCALE: 1 : 10



SECTION 4 / 966

SCALE: 1 : 10

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MELBOURNE OFFICE:
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T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 302, LEVEL 3, 19A BOUNDARY STREET
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WARWICK FARM, NSW 2170

TITLE

TYPICAL POST TENSIONING DETAILS - SHEET 2

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NOV 2020	MA/BT	AC	
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WEBBER DESIGN

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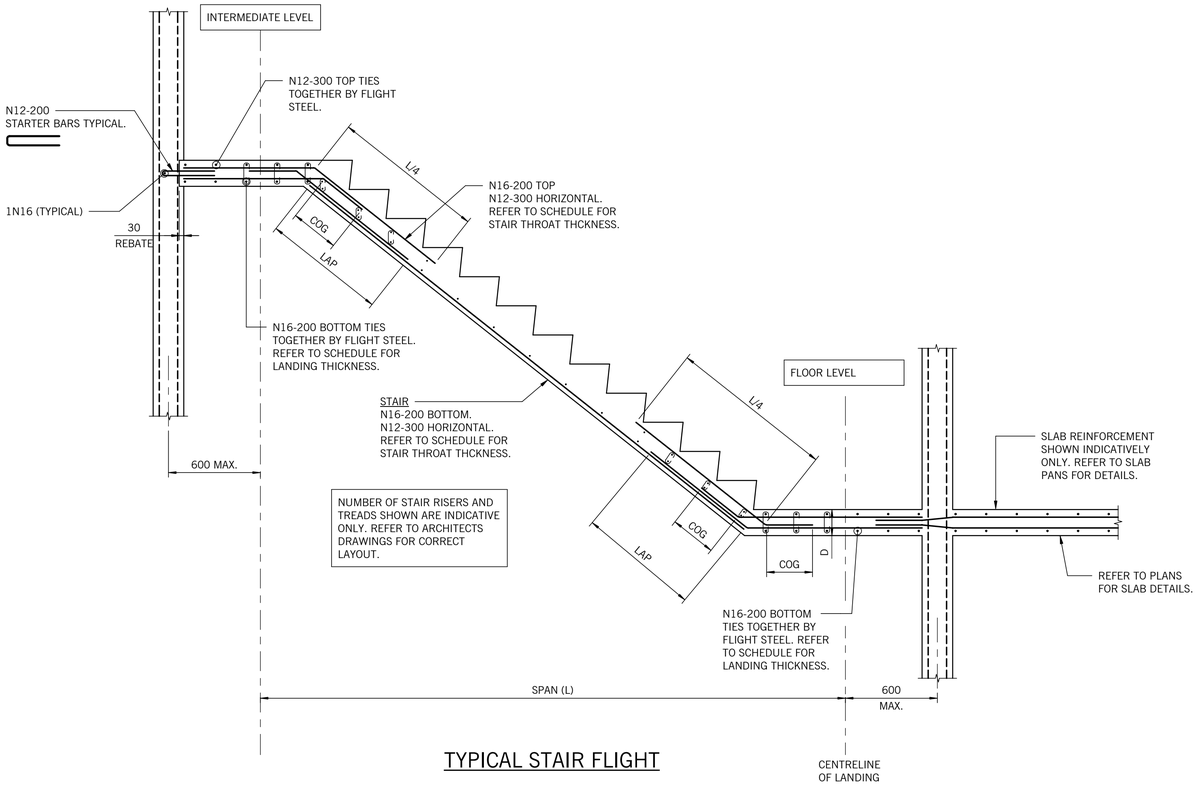


TYPICAL STAIR FLIGHT

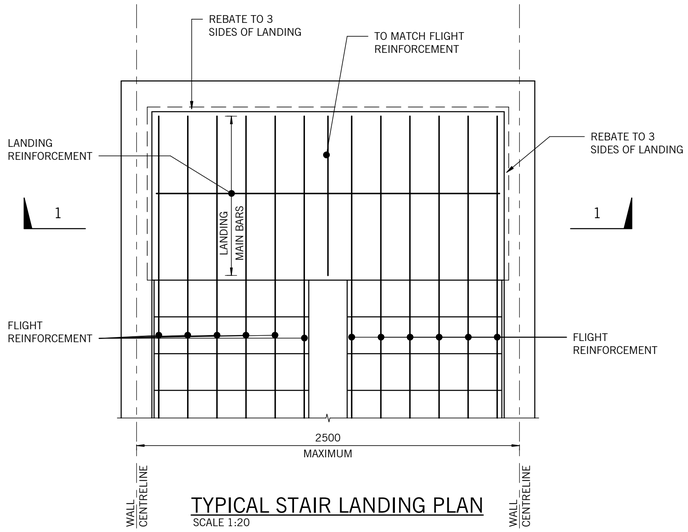
STAIR MASTER STAIRS

1. MAIN WIRES OF BOTTOM MESH TO BE CONTINUOUS (ie NO LAPS OR WELDS)
2. WELDING TO MESH IS NOT PERMITTED UNLESS PROCESS IS USED DO NOT ALTER MESH STRENGTH PROPERTIES OF AS. 1034 GRADE 450.
3. DO NOT WELD TO MAIN WIRES OF MESH.
4. MAIN WIRES TO BE LOWER MOST WITH 20mm COVER TO TRAY FORMWORK.
5. LANDING REINFORCEMENT MUST NOT BE INTERRUPTED BY SIDES OF FLIGHTS CONTINUOUS INTO LANDING.

STAIR THROAT THICKNESS (T) mm	STAIR LANDING THICKNESS (D) mm	MAXIMUM FLIGHT SPAN (L) mm	COMMENT
150	150	3200	-
160	160	3500	-
170	170	3800	-
180	180	4000	-
190	190	4300	-
200	200	4600	-
250	250	5600	-

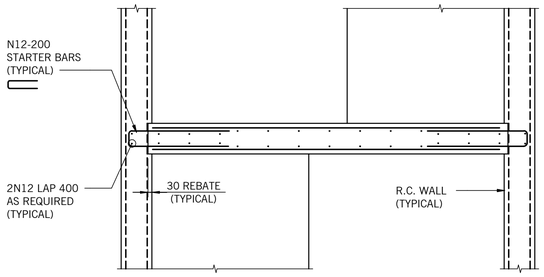
NOTES

1. MAXIMUM SPANS NOTED ABOVE FOR STAIR SLIGHTS ASSUME SPAN TO CENTRE LINES OF LANDINGS AND THAT LANDING SPANS ACROSS TO THE ADJACENT LOAD BEARING WALLS (ie WALLS THAT RUN PARALLEL TO STAIR FLIGHTS).
2. DESIGN LOADING FOR STAIRS = 4.0 kPa LIVE LOAD.
4. REFER TO PLANS FOR LOCATIONS.



TYPICAL STAIR LANDING PLAN

SCALE 1:20



SECTION 1-1

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WARWICK FARM, NSW 2170

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R.C. STAIR DETAILS -
SHEET 1

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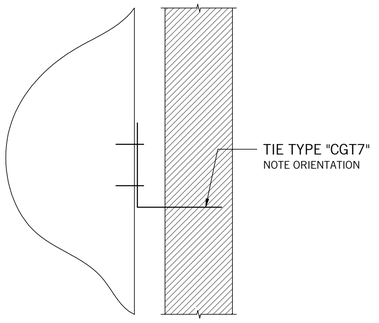
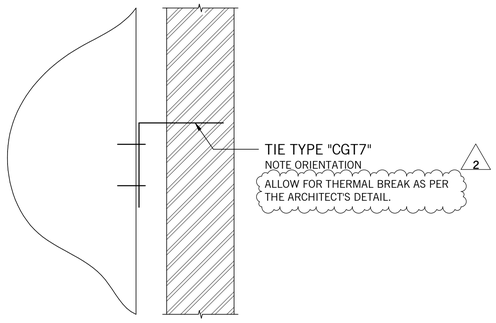


CONCRETE BLOCK



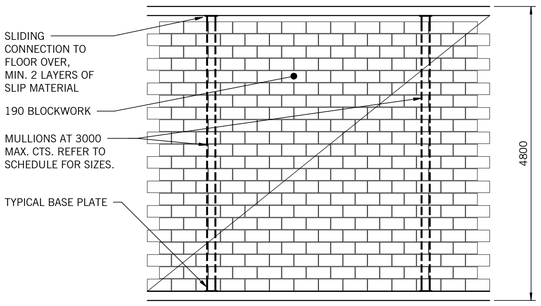
CLAY BRICKS

(CAVITY)

MASONRY WALL TO CONCRETE FACE

SCALE 1:10

SECTION DETAILS



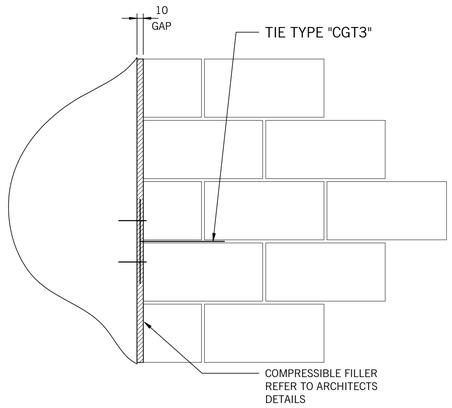
BLOCKWORK RESTRAINT DETAILS FOR HEIGHTS GREATER THAN 3.5m

SCALE 1:50

WALL HEIGHT:	MULLIONS (AT 3000 CTS.U.N.O.):
LESS THAN 4800	150 x 50 x 5.0 RHS (GRADE 350)

NOTE:

FIRST WALL PANEL WHERE WALL FREESTANDING TO HAVE 2 MULLIONS. THEREAFTER PROVIDE 1No. MULLION EVERY 3000.

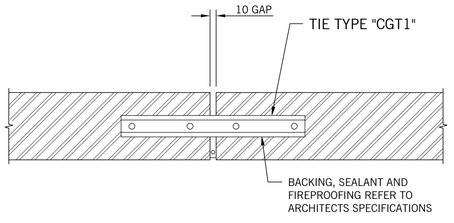


(CLAY BRICK OR CONCRETE BLOCKS)

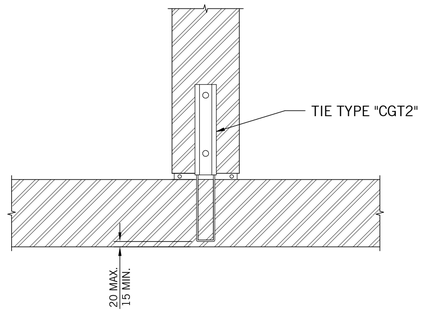
MASONRY WALL TO CONCRETE FACE

SCALE 1:10

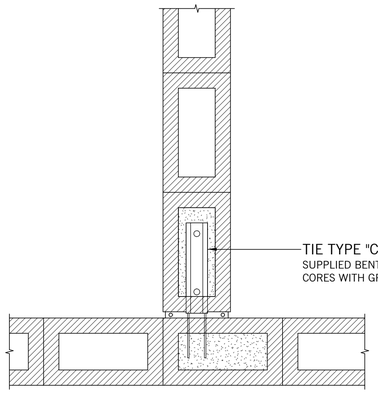
ELEVATION DETAILS



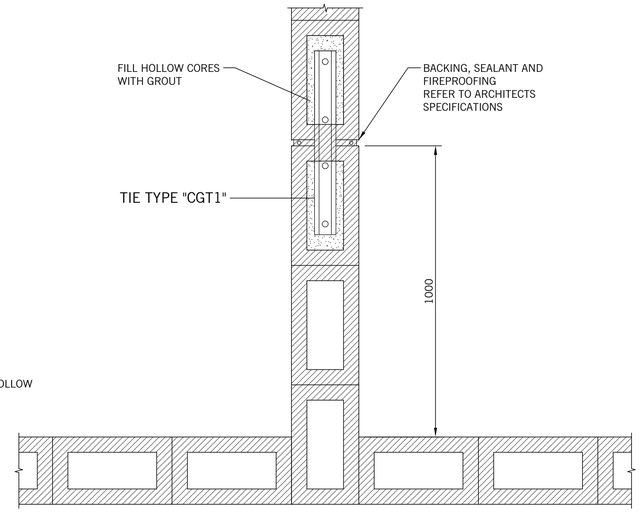
(SOLID CONCRETE BLOCKS OR CLAY BRICKS)



(INTERSECTING SOLID BLOCK WALLS)



(INTERSECTING HOLLOW BLOCK WALLS)



(CHANGES IN WALL DIRECTION)
(SIMILAR FOR SOLID BLOCKS)

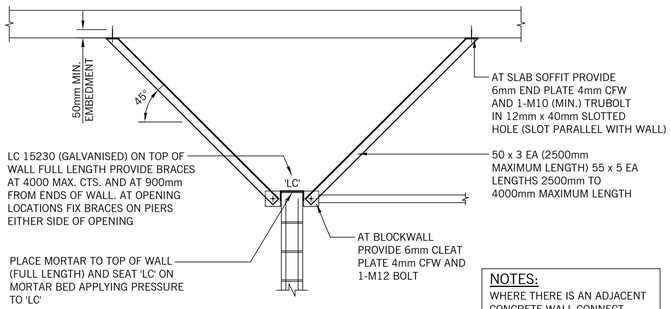
(NOTE: - BLOCKS TO BE TOOTHED UNLESS CONTROL JOINTS IS DENOTED ON PLANS)

VERTICAL CONTROL JOINTS

SCALE 1:10

PLAN DETAILS

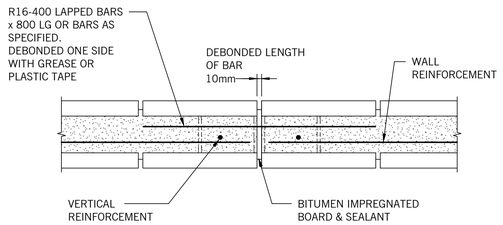
REFER TO ARCHITECTS DRAWINGS FOR LOCATIONS OF VERTICAL CONTROL JOINTS.
REFER TO CATALOGUE FOR VARIATIONS OF "CERRA CGT" TIES FOR JOINTS AT INTERSECTIONS.
FOR FIRE RATED WALLS PROVIDE FIRE BLANKET TO ARCHITECTS DETAILS TO ALL WALL JOINTS.



(APPLICABLE WHERE BLOCKWALL TERMINATES AT CEILING)

NOTES:
WHERE THERE IS AN ADJACENT CONCRETE WALL CONNECT BRACE HORIZONTALLY TO WALL (INDICATED BY DASHED LINES)

FOR CONCRETE FLOOR SLAB OVER



VERTICAL CONTROL JOINT THROUGH CORE FILLED REINFORCED BLOCK WALLS

SCALE 1:10

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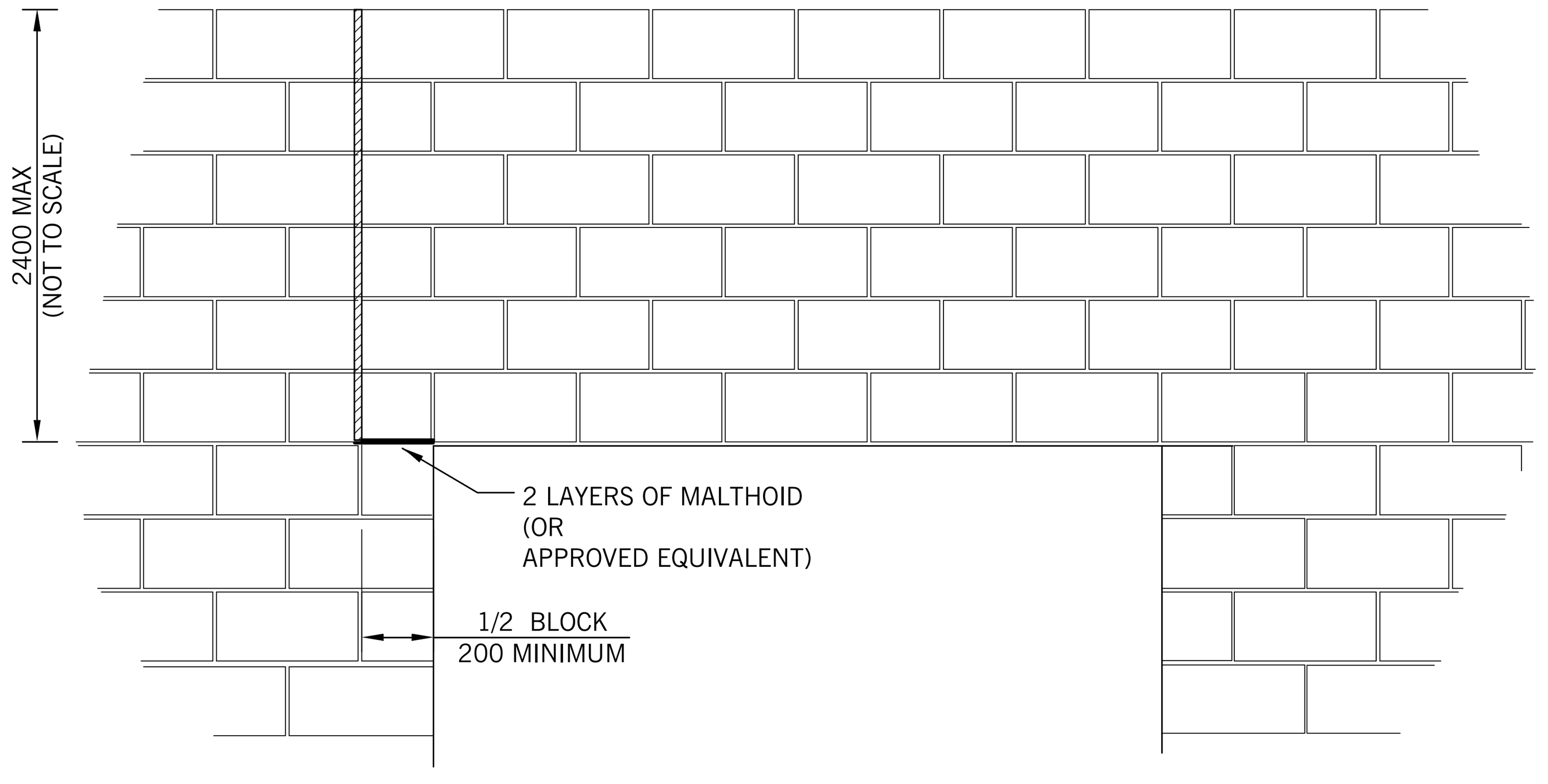


ELEVATION

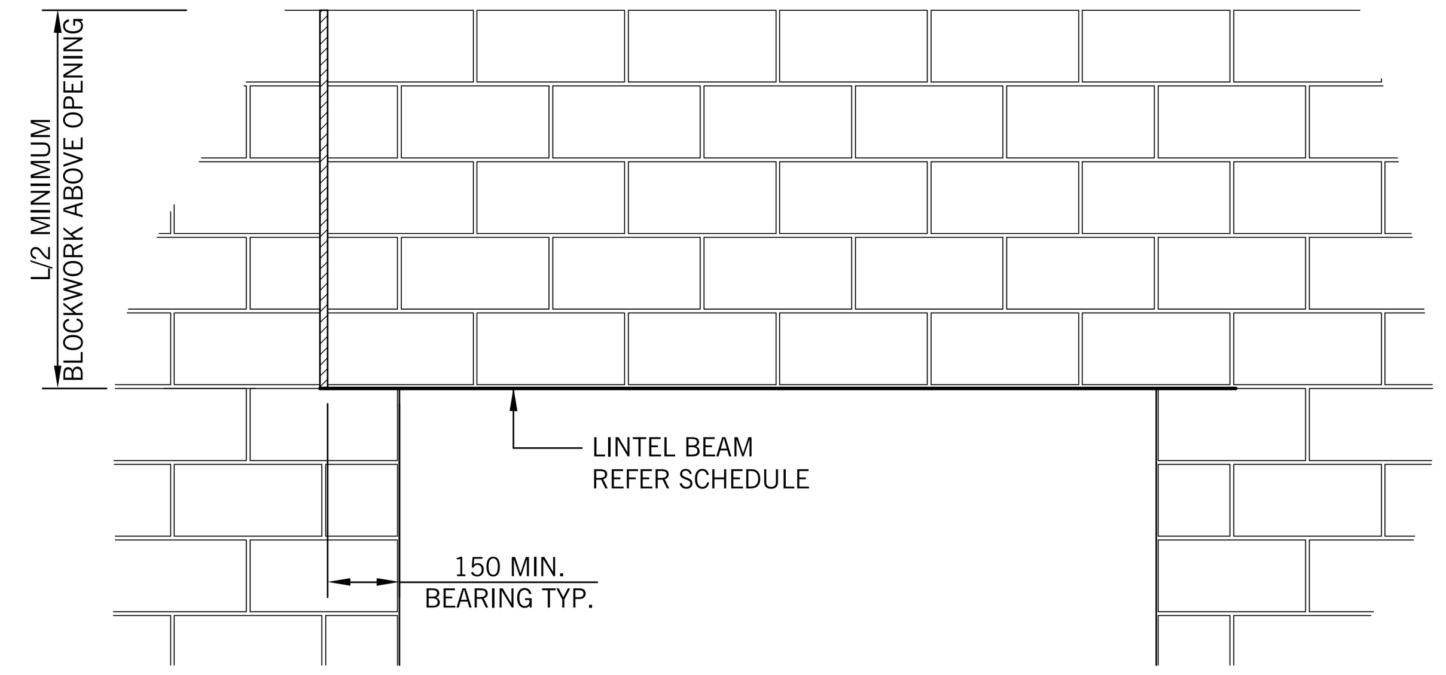
TYPICAL CONTROL JOINT AT DOOR / WINDOW HEADER

SCALE 1:20

NOTE

1: WHERE NO VERTICAL CONTROL JOINT HAS BEEN SPECIFIED AT DOOR OR WINDOW HEAD, THEN USE TWO LAYERS OF BED JOINT REINFORCEMENT. ONE IN EACH JOINT ABOVE THE LINTEL, EXTEND 1000 PAST EACH DOOR/WINDOW JAMB.

2: MAXIMUM CENTRES FOR VERTICAL CONTROL JOINTS SHALL BE 8000 UNLESS NOTED OTHERWISE ON PLANS.



TYPICAL INTERNAL LINTEL DETAILS ≤ 1350mm SPAN

SCALE 1:20

ELEVATION

NOTE: REFER TO TYPICAL CONTROL JOINT AT DOOR/WINDOW HEADER FOR DETAIL NOT SHOWN.

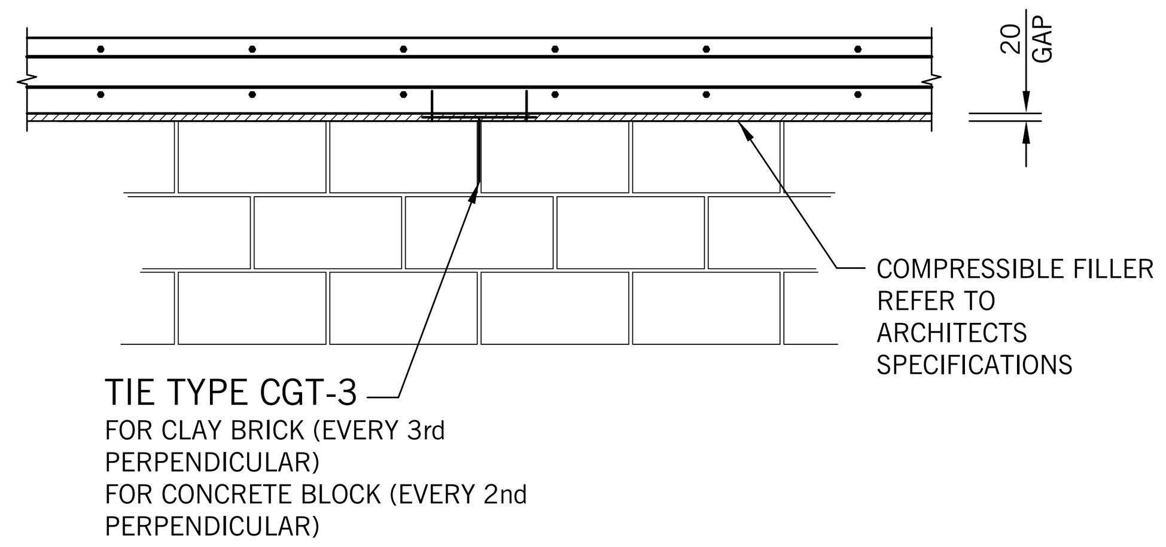
FORMING NEW OPENING (≤ 1350mm)

1. SAWCUT BRICKWORK TO REQUIRED DOOR SIZE AND REMOVE BRICKWORK.
2. CHASE AND / OR CHISEL 30mm DEEP REBATE OUT FOR LINTELS.
3. SUPPORT LINTELS USING LOCAL PACKERS THEN RAMPACK GAPS WITH NON-SHRINK GROUT.

LINTEL SCHEDULE

SPAN "L"	LINTEL REQUIRED
≤ 900	100 x 10 FLAT PLATE EACH FACE
≤ 1100	100 x 12 FLAT PLATE EACH FACE
≤ 1350	100 x 16 FLAT PLATE EACH FACE

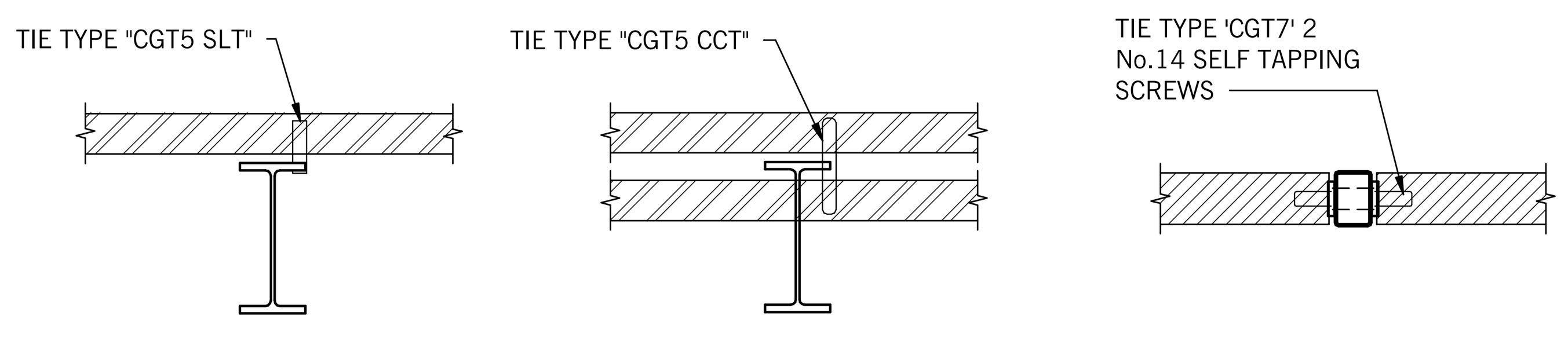
NOTE:- ALL STEELWORK TO BE HOT DIPPED GALVANISED



ELEVATION VIEW

NON LOAD-BEARING WALL TO SLAB OVER

SCALE 1:20

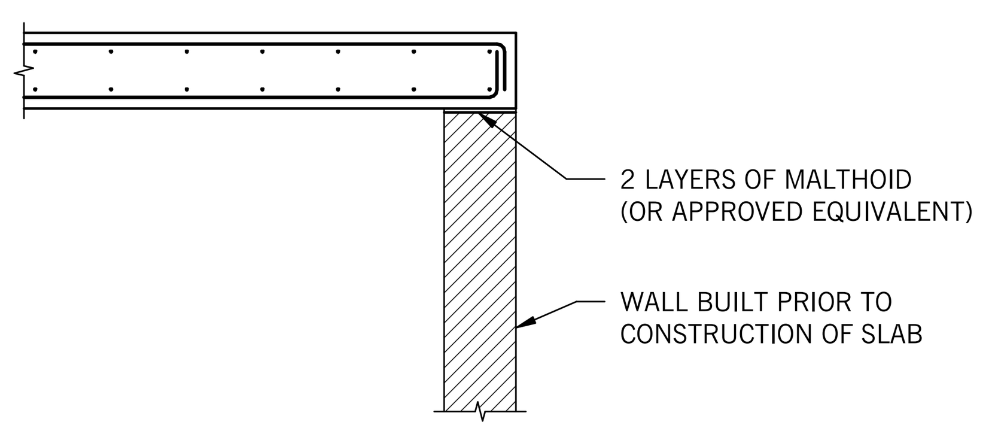


(SINGLE LEAF WALL) (CAVITY WALL) (RHS MULLION)

MASONRY WALL TO STEEL MULLION

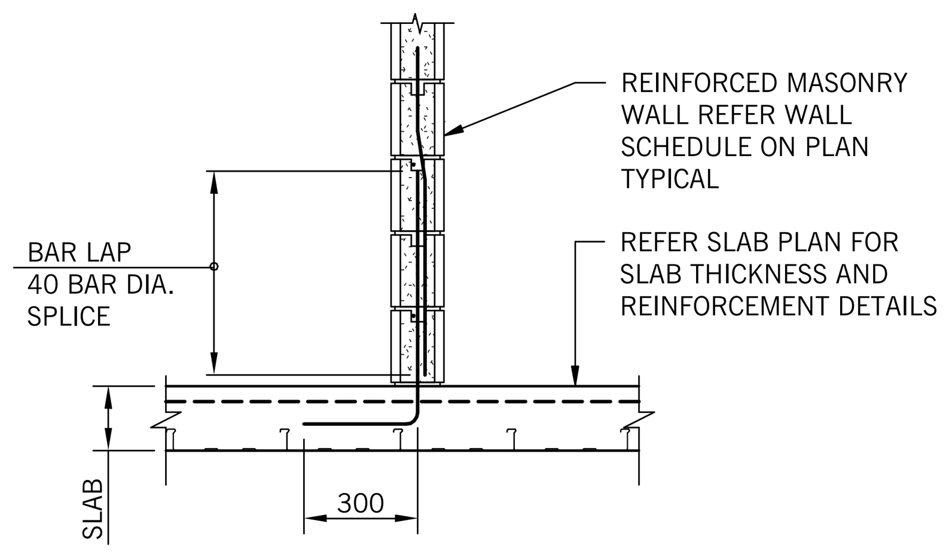
PLAN DETAILS

MULLION CENTRES TO BE ADVISED BY ENGINEER.



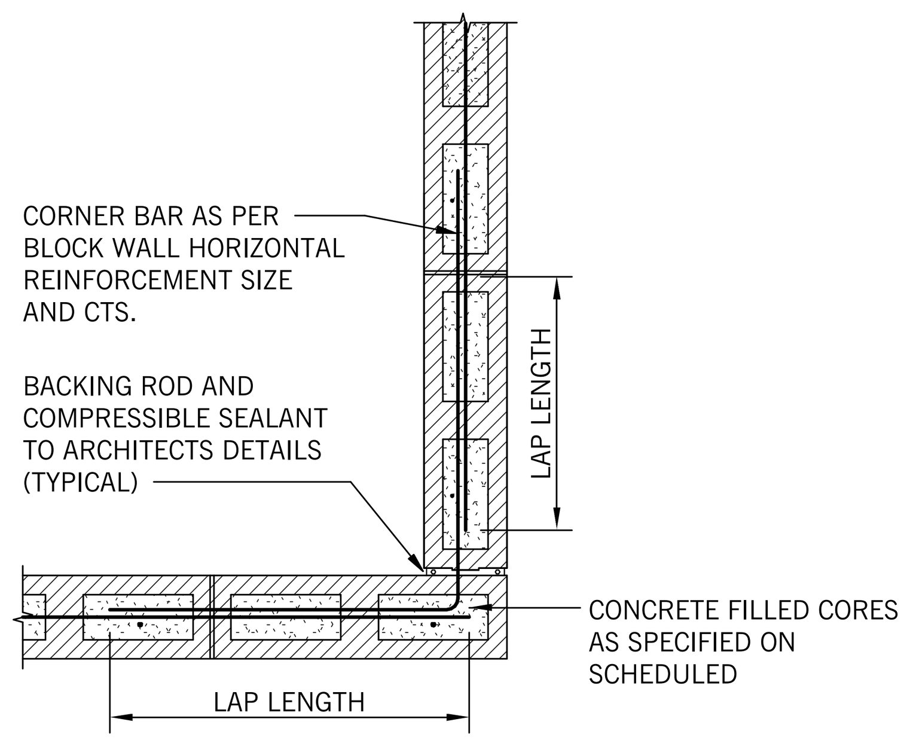
LOAD-BEARING WALL TO SLAB OVER

SCALE 1:20



REINFORCED BLOCKWALL TO SUSPENDED SLAB

SCALE 1:20

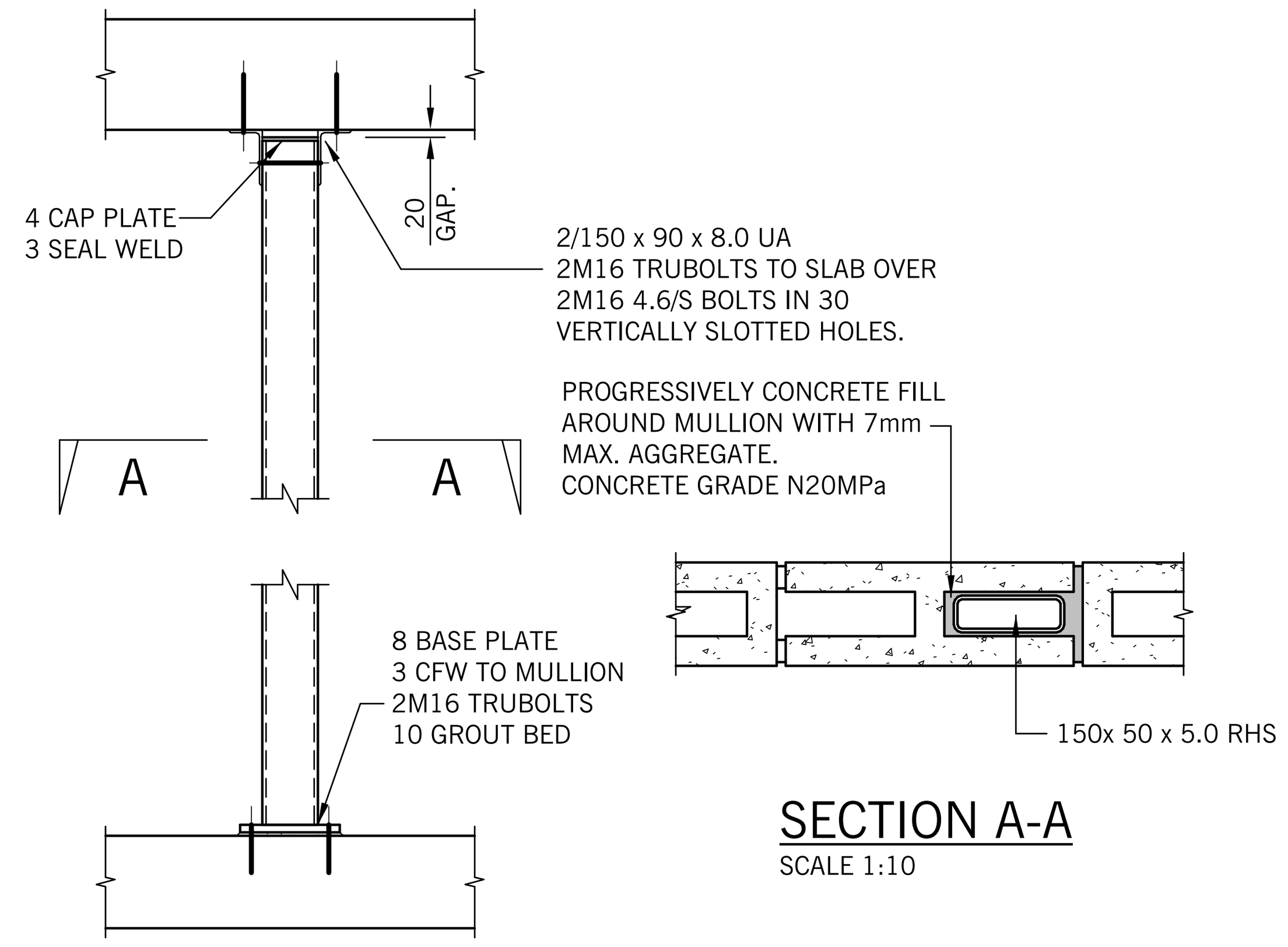


90° CORNER DETAIL

REINFORCED BLOCKWALL INTERSECTION

SCALE 1:20

CONTROL JOINT TO BE VERTICAL FOR FULL HEIGHT OF WALL. APPLY SEALANTS AS SPECIFIED TO EACH FACE OF THE BLOCKWALL.



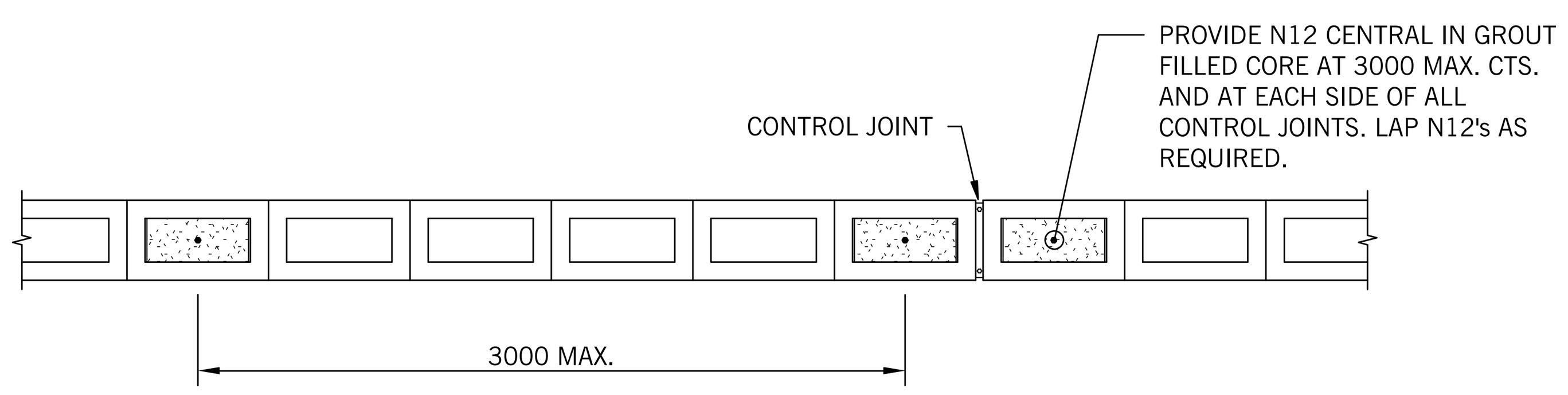
SECTION A-A

SCALE 1:10

TYPICAL MULLION CONNECTION

SCALE 1:20

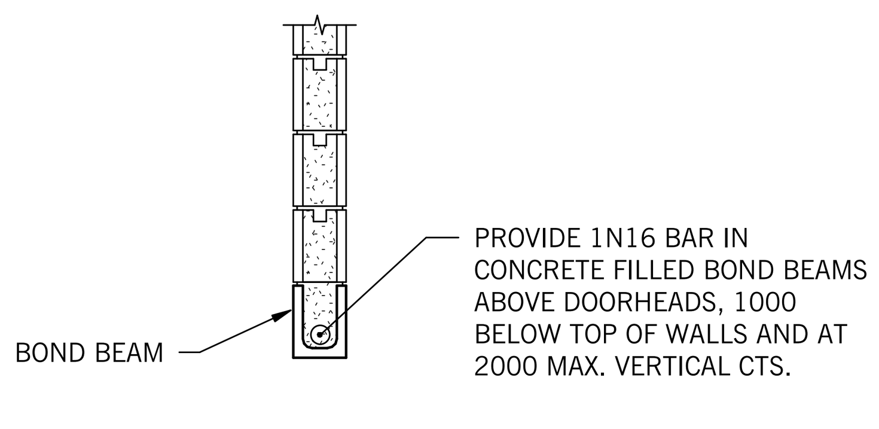
SUBJECT TO LATERAL LOAD AND FIRE RATING - REFER TO WEBBER DESIGN FOR CONFIRMATION



TYPICAL REINFORCED WALL - TYPE 1

SCALE 1:20

REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS



TYPICAL REINFORCED WALL - TYPE 2

SCALE 1:20

REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS

EXTERNAL LINTEL SCHEDULE

HEIGHT OVER LINTEL (mm) BRICK WORK	CLEAR SPAN OF OPENING (mm) 1000	1200	1500	1800	2100	2400	2700	3000
500	75x75x6.0 EA	75x75x6.0 EA	75x100x6.0 UA	75x100x6.0 UA	75x100x6.0 UA	100x100x6.0 EA	100x100x6.0 EA	100x100x6.0 EA
1000	75x75x6.0 EA	75x100x6.0 UA	75x100x6.0 UA	75x100x6.0 UA	100x100x6.0 EA	100x100x6.0 EA	100x100x6.0 EA	150x90x8.0 UA
1500	75x100x6.0 UA	75x100x6.0 UA	75x100x6.0 UA	100x100x6.0 EA	100x100x6.0 EA	100x100x6.0 EA	150x90x8.0 UA	150x90x8.0 UA
2000	75x100x6.0 UA	75x100x6.0 UA	100x100x6.0 EA	100x100x6.0 EA	100x100x6.0 EA	150x90x8.0 UA	150x90x8.0 UA	150x90x8.0 UA
2500	75x100x6.0 UA	75x100x6.0 UA	100x100x6.0 EA	100x100x6.0 EA	100x100x6.0 EA	150x90x8.0 UA	150x90x8.0 UA	150x100x10.0 UA
3000	75x100x6.0 UA	75x100x6.0 UA	100x100x6.0 EA	100x100x6.0 EA	100x100x6.0 EA	150x90x8.0 UA	150x100x10.0 UA	

NOTES:
FIRST DIMENSION CORRESPONDS TO THE VERTICAL LINTEL LEG (eg. 75x100x6.0 UA LINTEL - 75 LEG VERTICAL).
PROVIDE 150 END BEARING EACH END ONTO BRICKWORK.
FOR HIGHER LOAD CONDITIONS (EG. POINT & ROOF LOADS) SEEK THE ADVICE OF AN ENGINEER.

A1

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

Rev.	Description	Eng.	Draft.	Date
1	ISSUED FOR TENDER (DRAFT)	MA/BT	PAC	27.11.20
2	ISSUED FOR TENDER (UPDATED)	MA/BT	PAC	18.12.20

DRAWING REFERENCE	REFERENCE No.
DRAWING INDEX	S-WEB-000
GENERAL NOTES	S-WEB-001-002
RETENTION	S-WEB-010-029
CONCRETE COLUMNS	S-WEB-800-819
IN-SITU WALLS	S-WEB-820-879
PRECAST WALLS	S-WEB-880-909
SLAB ON GROUND DETAILS	S-WEB-950-951
SUSPENDED CONCRETE SLABS	S-WEB-960-962
POST TENSIONING DETAILS	S-WEB-965-966
R.C. STAIR DETAILS	S-WEB-970
MASONRY DETAILS	S-WEB-980-981
STEEL DETAILS	S-WEB-990-991

2

ALL BLOCKWALL DETAILS SHOWN ARE INTENDED TO BE INFORMATIVE AND IS FOR SUB-CONTRACTOR CONSIDERATION. SUB-CONTRACTOR IS TO CAREFULLY REVIEW WALL SPANNING WIDTH AND HEIGHT AND ITS CORRESPONDING FIRE RATING REQUIREMENT TO BUILDER SURVEYOR AND SUBMIT CONSTRUCTION DETAIL TO WEBBER DESIGN FOR APPROVAL PRIOR TO CONSTRUCTION ON SITE.

ISSUED FOR TENDER

Status

STRUCTURAL DRAWING

WEBBER DESIGN
STRUCTURAL ENGINEERING

MELBOURNE OFFICE:
LEVEL 2, 31 QUEEN STREET
MELBOURNE, VIC, AUSTRALIA 3000
T: +61 3 9614 7155
SYDNEY OFFICE:
SUITE 301, LEVEL 3, 19A BOUNDARY STREET
RUSHCUTTERS BAY, NSW, AUSTRALIA 2011
T: +61 2 9690 2488

CLIENT

TAYLOR

PROJECT

LAHC WARWICK FARM
11-13 MANNIX PARADE,
WARWICK FARM, NSW 2170

TITLE

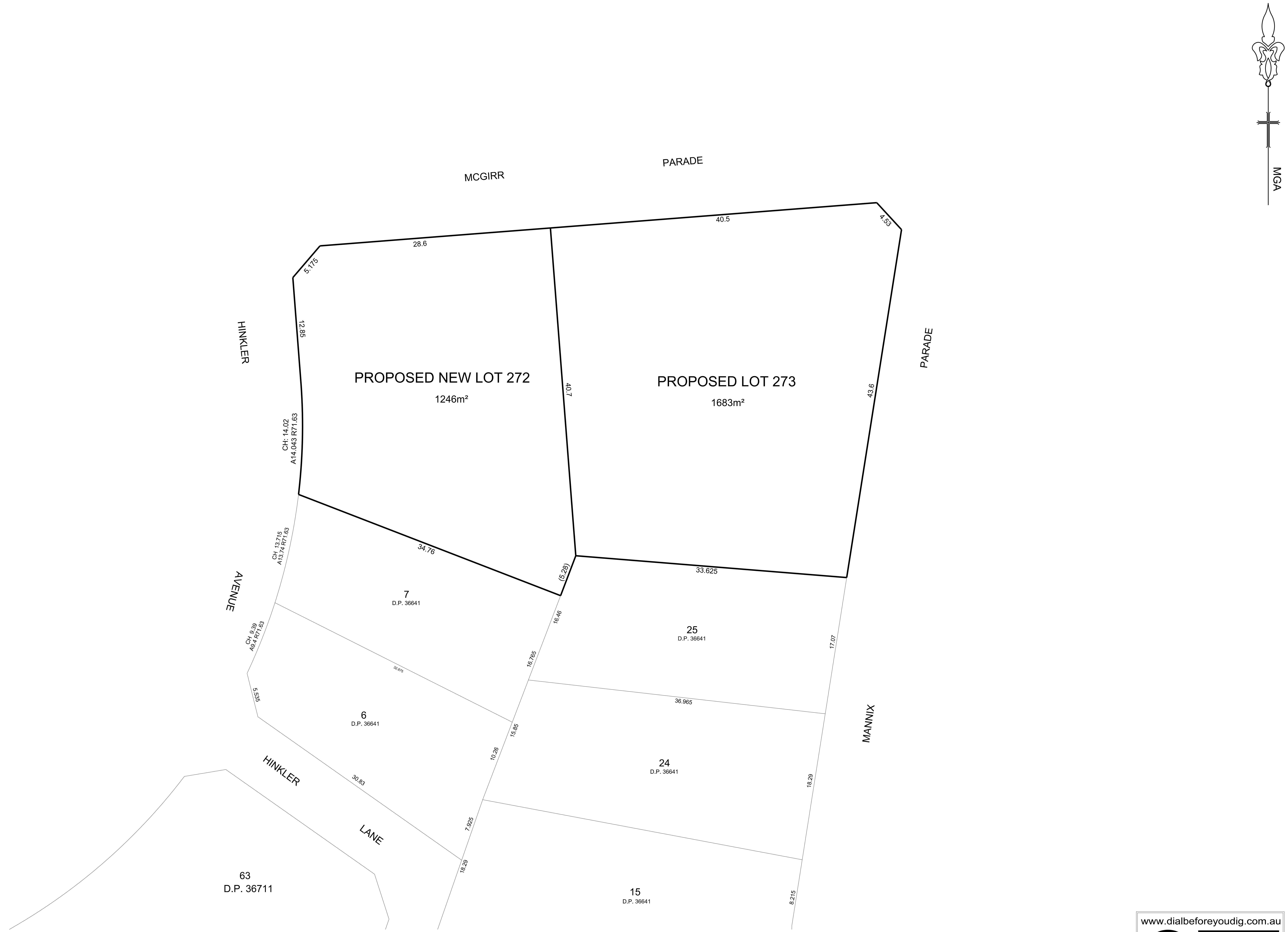
TYPICAL MASONRY
DETAILS - SHEET 2

DATE	DESIGNED BY	CHECKED BY
NOV 2020	MA/BT	AC
SCALES AT A1	DRAWN BY	APPROVED BY
1:20	PAC	PW
JOB No.	DRAWING No.	REV.
20023	S-WEB-981	2

LOCATION OF FENCES ARE APPROXIMATE ONLY

ONLY VISIBLE SERVICES HAVE BEEN LOCATED ACCURATELY

NO UNDERGROUND SERVICES SEARCH HAS BEEN CARRIED OUT



BOUNDARY DIMENSIONS AND AREAS ARE SUBJECT TO FINAL SURVEY

www.dialbeforeyoudig.com.au
DIAL1100
BEFORE YOU DIG

No.	DATE	NOTATION/AMENDMENT	No.	DATE	NOTATION/AMENDMENT

FILE	FILE SIZE (MB)	CHECKED BY

CONTOUR INTERVAL: 0.5m
DATUM: A.H.D.
ORIGIN OF DATUM: S.S.M. 38840
14.738 SCIMS
100 YEAR FLOOD RL:
RECOMMENDED MINIMUM FLOOR RL:
SOURCE OF FLOOD INFO:

LEGEND OF COMMONLY USED SYMBOLS
WATER — W — H — SV
SEWER — S — MH 151.29 151.14 — LH
ELECTRICITY O/H U/G — E — PP — Street Light — Consumer Connection Box
TELECOM O/H U/G — T — Joint Pit — Distribution Pillar
GAS — G — Valve — Identification Plate
DRAINAGE - Common — D — 150 dia — Pit 116.18 INV — Junction
- Main — 525 dia
BENCH MARK
SURVEY CONTROL MARK PM SSM

REDUCTION RATIO 1 : 250 @ A1 / 500 @ A1
0 12.5 25

LAND TITLE INFORMATION
LOT: 6, 7, 8, 9, 10, 14, 15, 24, 25, 26 & 27
PLAN NO : D.P. 36641
OTHER:
AREA: TOTAL 6582.4m²

DATE OF SURVEY: 16 / 06 / 2016
SURVEY CONSULTANT:
Degotardi Smith & Partners
CONSULTING SURVEYORS ESTABLISHED 1957
11/19-23 Bridge Street | Pymble | NSW 2073 | Australia
t. (+61) 2 9440 1100 | f. (+61) 2 9440 1055
e. surveys@degotardi.com.au | w. www.degotardi.com.au
REGISTERED SURVEYOR
PAUL GARRETT
REF. 34441A01.DWG

NSW GOVERNMENT
Family & Community Services
Land & Housing Corporation

DRAWING TITLE
PROPOSED SUBDIVISION

LOCATION
WARWICK FARM

STREET ADDRESS
MANNIX PARADE, HINKLER AVENUE & MCGIRR PARADE

JOB NUMBER
BGMLG

TYPE
LUA

SHT. 1
OF 1

L.G.A. OF LIVERPOOL

LEGEND :

+36.41	- DENOTES SPOT LEVEL
+36.41A	- DENOTES AWNING
+33.27TK	- DENOTES TOP OF KERB LEVEL
+30.12G	- DENOTES GUTTER FLOWLINE LEVEL
+30.11LIP	- DENOTES LIP OF KERB
+37.76FL	- DENOTES FLOOR LEVEL
+30.17VFL	- DENOTES VERANDAH FLOOR LEVEL
+37.76DFL	- DENOTES DECK FLOOR LEVEL
+33.15VC	- DENOTES VEHICLE CROSSING
+45.40GUT	- DENOTES TOP OF GUTTER
+41.92TW	- DENOTES TOP OF WALL
+40.19BW	- DENOTES BOTTOM OF WALL
+49.15RR	- DENOTES ROOF/RIDGE
VC	- DENOTES VEHICLE CROSSING
	- DENOTES GATE.
	- DENOTES WATER STOP VALVE
WM	- DENOTES WATER METER
HY	- DENOTES WATER HYDRANT
	- DENOTES WATER TAP
	- DENOTES SINGLE TELSTRA PIT
	- DENOTES TELSTRA TWIN CONC. PIT
	- DENOTES TELSTRA DISTRIB. PILLAR
DP	- DENOTES DOWN PIPE
	- DENOTES GRATED DRAIN.
	- DENOTES DRAIN
PP	- DENOTES POWER POLE
LP	- DENOTES LIGHT POLE
A	- DENOTES BOUNDARY CORNER
1	- DENOTES PHOTO LOCATION
	- DENOTES SIGN
SMH	- DENOTES SEWER MANHOLE
	- DENOTES MAILBOX
LH	- DENOTES LAMPHOLE
SIP	- DENOTES SEWER INSPECTION POINT
GM	- DENOTES GAS METER
E	- DENOTES OVERHEAD ELEC. LINE
W	- DENOTES WATER MAIN (DBYD)
S	- DENOTES SEWER LINE (DBYD)
G	- DENOTES GAS LINE (DBYD)
T	- DENOTES TELSTRA LINE
EU	- DENOTES U/G ELEC. LINE (DBYD)
TEL	- DENOTES TELEPHONE LINE
D	- DENOTES DRAINAGE LINE
	- DENOTES COMMUNICATIONS

Notes:

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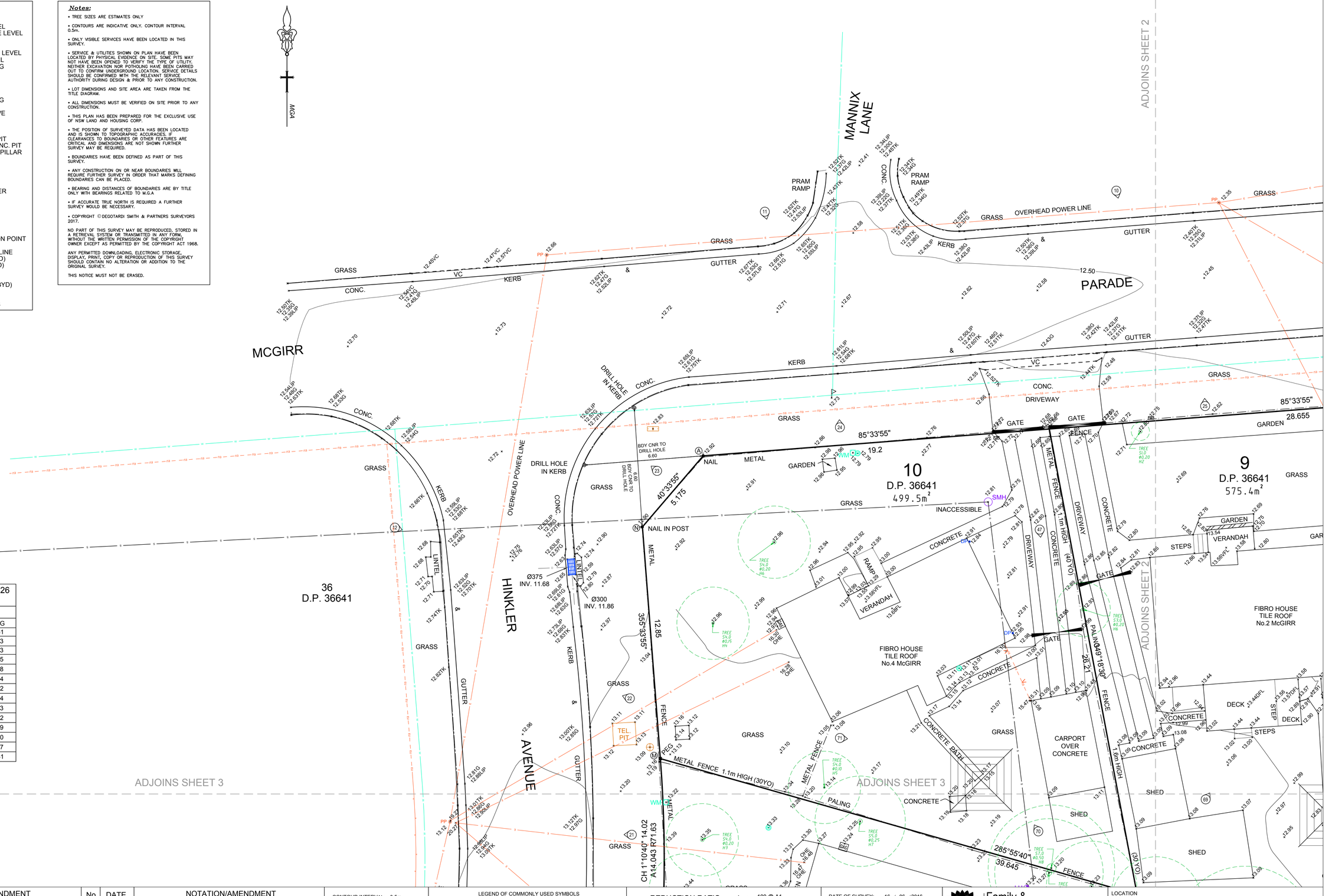
- BEARING AND DISTANCES OF BOUNDARIES ARE BY TITLE ONLY WITH BEARINGS RELATED TO M.G.A
- IF ACCURATE TRUE NORTH IS REQUIRED A FURTHER SURVEY WOULD BE NECESSARY.

MGA

LOTS 6, 7, 8, 9, 10, 14, 15, 24, 25, 26 & 27 BOUNDARY CORNERS		
M.G.A. COORDINATES		
CORNER	EASTING	NORTHING
A	308708.103	6245611.961
B	308776.985	6245617.303
C	308780.058	6245613.973
D	308766.486	6245527.875
E	308766.331	6245512.318
F	308768.031	6245506.464
G	308716.532	6245509.742
H	308725.630	6245535.944
I	308700.419	6245553.693
J	308699.077	6245559.062
K	308702.526	6245567.799
L	308705.445	6245581.200
M	308705.733	6245595.217
N	308704.739	6245608.031



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14.738 SCIMS
100 YEAR FLOOD RL:
RECOMMENDED MINIMUM FLOOR RL:
SOURCE OF FLOOD INFO:

LEGEND OF COMMONLY USED SYMBOLS

WATER, SEWER, ELECTRICITY, TELECOM, GAS, DRAINAGE

BENCH MARK SURVEY CONTROL MARK PM SSM

REDUCTION RATIO 1 : 100 @ A1

0 1 2 3 4 5 6 7 8 9 10

LAND TITLE INFORMATION

LOT: 6, 7, 8, 9, 10, 14, 15, 24, 25, 26 & 27

PLAN NO : D.P. 36641

OTHER:

AREA: TOTAL 6582.4m²

DATE OF SURVEY: 16 / 06 /2016

SURVEY CONSULTANT:

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CONSULTING SURVEYORS ESTABLISHED 1957
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t. (+61) 2 9440 1100 | f. (+61) 2 9440 1055
e. surveys@degotardi.com.au w. www.degotardi.com.au

REGISTERED SURVEYOR PAUL GARRETT

REF. 34441A01.DWG

NSW GOVERNMENT Family & Community Services Land & Housing Corporation

DRAWING TITLE

DETAIL & LEVEL SURVEY

-

LOCATION

WARWICK FARM

STREET ADDRESS

3-13 MANNIX PARADE,
2-6 HINKLER AVENUE &
2-4 MCGIRR PARADE

TYPE

S

SITE LAYOUT JOB

/ /

SHT. 1

OF 6

Notes:

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LEGEND :

+36.41	- DENOTES SPOT LEVEL
+36.41A	- DENOTES AWNING
+33.27TK	- DENOTES TOP OF KERB LEVEL
+30.12G	- DENOTES GUTTER FLOWLINE LEVEL
+30.17LIP	- DENOTES LIP OF KERB
+37.76FL	- DENOTES FLOOR LEVEL
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	- DENOTES GATE.
	- DENOTES WATER STOP VALVE
WM	- DENOTES WATER METER
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	- DENOTES WATER TAP
	- DENOTES SINGLE TELSTRA PIT
	- DENOTES TELSTRA TWIN CONC. PIT
	- DENOTES TELSTRA DISTRIB. PILLAR
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	- DENOTES GRATED DRAIN.
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LP	- DENOTES LIGHT POLE
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1	- DENOTES PHOTO LOCATION
	- DENOTES SIGN
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LOTS 6, 7, 8, 9, 10, 14, 15, 24, 25, 26 & 27 BOUNDARY CORNERS

M.G.A. COORDINATES

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D	308766.486	6245527.875
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I	308700.419	6245553.693
J	308699.077	6245559.062
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L	308705.445	6245581.200
M	308705.733	6245595.217
N	308704.739	6245608.031

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FILE	FILE SIZE (MB)	CHECKED BY

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WATER — H — SV
SEWER — MH — LH
ELECTRICITY — O/H U/G — PP — Street Light — Consumer Connection Box
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GAS — Valve — Identification Plate
DRAINAGE - Common — 150 dia — Pit — Junction
- Main — 525 dia

BENCH MARK — SURVEY CONTROL MARK — PM SSM

REDUCTION RATIO 1 : 100 @ A1

0 1 2 3 4 5 6 7 8 9 10

LAND TITLE INFORMATION

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DATE OF SURVEY: 16 / 06 / 2016
SURVEY CONSULTANT:

D S & P
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REGISTERED SURVEYOR
PAUL GARRETT
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NSW GOVERNMENT | Family & Community Services | Land & Housing Corporation

DRAWING TITLE
DETAIL & LEVEL SURVEY
-

LOCATION: WARWICK FARM

STREET ADDRESS: 3-13 MANNIX PARADE, 2-6 HINKLER AVENUE & 2-4 MCGIRR PARADE

TYPE: S

SITE LAYOUT JOB
/ /

SHT. 2 OF 6

Notes:

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WM	- DENOTES WATER METER
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	- DENOTES TELSTRA TWIN CONC. PIT
	- DENOTES TELSTRA DISTRIB. PILLAR
DP	- DENOTES DOWN PIPE
	- DENOTES GRATED DRAIN.
	- DENOTES DRAIN
PP	- DENOTES POWER POLE
LP	- DENOTES LIGHT POLE
(A)	- DENOTES BOUNDARY CORNER
(1)	- DENOTES PHOTO LOCATION
	- DENOTES SIGN
SMH	- DENOTES SEWER MANHOLE
	- DENOTES MAILBOX
LH	- DENOTES LAMPHOLE
SIP	- DENOTES SEWER INSPECTION POINT
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GAS — G — Valve — G — Identification Plate — G
DRAINAGE – Common — D — 150 dia — Pit 116.78 INV — D — Junction — D
– Main — 525 dia
BENCH MARK
SURVEY CONTROL MARK PM SSM

REDUCTION RATIO 1 : 100 @ A1

0 1 2 3 4 5 6 7 8 9 10

LAND TITLE INFORMATION

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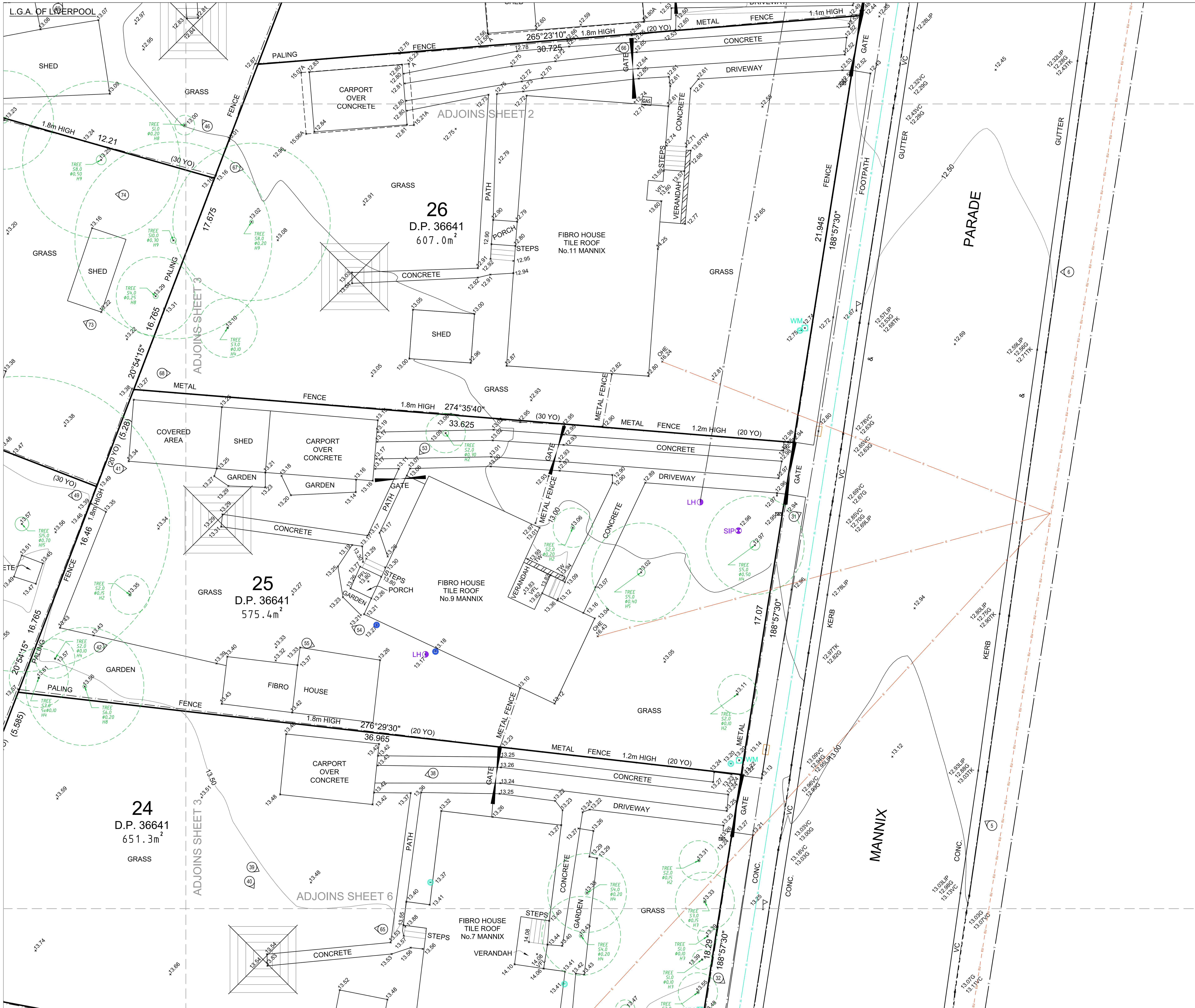
TYPE
S

SITE	LAYOUT	JOB
	/	/

SHT. 3 OF 6



MGA

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SITE	LAYOUT	JOB
	/	/

TYPE
S

SHT. 4
OF 6

L.G.A. OF LIVERPOOL

ADJOINS SHEET 3

MGA

63
D.P. 36711

LANE

CONC

FENCE

OVERHEAD POWER LINE

KERB

GUTTER

30.83
305°08'50"

1.8m HIGH

SHED

CONCRETE

19°08'50"
7.925

(20 YO)

NAIL IN FENCE

19°08'50"
18.29

PALING

GRASS

15
D.P. 36641
682.9m²

ADJOINS SHEET 6

CARPORT OVER CONCRETE

14
D.P. 36641
746.1m²

19°08'50"
17.375

HINKLER

CONC. DRIVEWAY

DRILL HOLE IN KERB

GATE

273°38'30"
51.605

11
D.P. 36641

12
D.P. 36641

3
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BENCH MARK SURVEY CONTROL MARK PM SSM

REDUCTION RATIO 1 : 100 @ A1

0 1 2 3 4 5 6 7 8 9 10

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OTHER:

AREA: TOTAL 6582.4m²

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STREET ADDRESS

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TYPE

S

SITE LAYOUT JOB

SHT. 5

/ /

OF 6

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SITE / LAYOUT / JOB

TYPE: S

SHT. 6 OF 6

Appendix C – Tables of Investigation Results

Table 1: Soil Analytical Results

E25074.E06 - Warwick Farm

Sample ID	Depth of Sample (mBGL)	Sampling Date	Heavy Metals								PAHs				BTEX				TRHs				OCPs	OPPs	Total PCBs	Asbestos		
			As	Cd	Cr#	Cu	Pb	Hg	Ni	Zn	Carcinogenic PAHs (as B(a)P TEQ)	Benzo(a)pyrene	Naphthalene	Total PAHs	Benzene	Toluene	Ethylbenzene	Total Xylenes	F1 less BTEX	F2 less Naphth.	F3	F4				Visual (Presence / Absence)	Bonded (>7mm)	AF / FA (<7mm)
(JK, 2020)																												
BH1	0.0-0.1	26.03.21	18	0.4	19	21	48	<0.1	3	70	<0.5	<0.05	<1	<0.05	<0.2	<0.5	<1	<1	<25	<50	<100	<100	ND	ND	<0.1	Yes	0.0073	<0.001
BH1	0.1-0.3	26.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.0046	<0.001
BH2	0.0-0.2	26.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	-	-
BH2	0.2-0.5	26.03.21	24	<0.4	25	8	20	<0.1	2	13	<0.5	<0.05	<1	<0.05	<0.2	<0.5	<1	<1	<25	<50	<100	<100	ND	ND	<0.1	Yes	0.0011	<0.001
BH3	0.0-0.1	26.03.21	11	0.8	21	18	72	<0.1	4	98	<0.5	<0.05	<1	<0.05	<0.2	<0.5	<1	<1	<25	<50	<100	<100	NA	NA	NA	ND	-	-
BH3	0.5-0.6	26.03.21	10	<0.4	24	11	12	<0.1	2	5	<0.5	<0.05	<1	<0.05	<0.2	<0.5	<1	<1	<25	<50	<100	<100	NA	NA	NA	ND	-	-
BH4	0.0-0.15	26.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	-	-
BH4	0.15-0.35	26.03.21	10	<0.4	22	7	18	<0.1	3	11	<0.5	<0.05	<1	0.07	<0.2	<0.5	<1	<1	<25	<50	<100	<100	NA	NA	NA	ND	-	-
BH5	0.0-0.15	26.03.21	10	<0.4	20	6	42	<0.1	3	28	<0.5	<0.05	<1	<0.05	<0.2	<0.5	<1	<1	<25	<50	<100	<100	NA	NA	NA	NA	NA	NA
BH5	0.18-0.3	26.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	<0.01	<0.001
BH5	0.5-0.65	26.03.21	12	<0.04	25	6	14	<0.1	2	6	<0.5	<0.05	<1	<0.05	<0.2	<0.5	<1	<1	<25	<50	<100	<100	NA	NA	NA	ND	-	-
BH6	0.0-0.1	26.03.21	8	0.5	16	12	50	<0.1	4	64	<0.5	<0.05	<1	<0.05	<0.2	<0.5	<1	<1	<25	<50	<100	<100	ND	ND	<0.1	Yes	0.1369	0.0112
BH6	0.12-0.3	26.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	0.08	<0.001
BH7	0.0-0.1	26.03.21	8	<0.04	17	19	75	<0.1	4	93	<0.5	<0.05	<1	<0.05	<0.2	<0.5	<1	<1	<25	<50	<100	<100	NA	NA	NA	ND	-	-
BH7	0.1-0.4	26.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	-	-
(EI, 2021)																												
TP1_0.2-0.3	0.2-0.3	30.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	No	<0.01	<0.001
TP2_0.2-0.3	0.2-0.3	30.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	<0.01	<0.001
TP3_0.1-0.2	0.1-0.2	30.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	No	<0.01	<0.001
TP4_0.1-0.2	0.1-0.2	30.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	<0.01	0.007
TP5_0.1-0.2	0.1-0.2	30.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	No	<0.01	<0.001
TP6_0.2-0.3	0.2-0.3	30.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	<0.01	0.004
TP7_0.2-0.3	0.2-0.3	30.03.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	No	<0.01	<0.001
Adopted Criteria																												
NEPM (2013) Health Investigation Levels (HILs)	Residential with Minimal Soil Access Land Use (HIL-B)		500	150	500 Cr(V1)	30,000	1,200	120	1,200	60,000	4			400									10		1			
	Public Open Space (HIL-C)		300	90	300	17,000	600	80	1,200	30,000	3		5	300	0.7	480	NL	110	50	280								
NEPM (2013) Health Screening Levels (HSLs)	HSL A & B - low - high density residential Soil texture classification –CLAY [1]	(0 m to <1 m BGL)											5		0.7	480	NL	110	50	280								
		(1 m to <2 m BGL)											NL		1	NL	NL	310	90	NL								
		(2 m to <4 m BGL)											NL		2	NL	NL	NL	150	NL								
		(4 m + BGL)											NL		3	NL	NL	NL	290	NL								
	HSL C - Recreational / Open Space Soil texture classification –CLAY [1]	(0 m to <1 m BGL)											NL		NL	NL	NL	NL	NL	NL								
		(1 m to <2 m BGL)											NL		NL	NL	NL	NL	NL	NL								
		(2 m to <4 m BGL)											NL		NL	NL	NL	NL	NL	NL								
		(4 m + BGL)											NL		NL	NL	NL	NL	NL	NL								
	Asbestos Recreational (HSL-C)	Bonded (%w/w)																								>	0.02	
		FA and AF (%w/w)																								>	0.001	
	Asbestos Residential (HSL-B)	Bonded (%w/w)																								>	0.04	
		FA and AF (%w/w)																								>	0.001	
NEPM (2013) Ecological Criteria [2]	Urban Residential and Public Open Space (B&C)		100		338 [b]	168	1,240		41	419		33 [c]	170		50	85	70	105	180	120	300 [1]	2,800	180 [d]					
NEPM (2013) Management Limits	Fine grained soil texture [1]	Public Open Space (C)																	700	1,000	3,500	10,000						
		Residential (B)																										

Notes: All results are recorded in mg/kg, unless otherwise specified.

Highlighted yellow values indicates concentration exceeds human health criteria□

Residential (B)	NEPM 2013 'B' - Residential with minimal oportunities for soil access; inlcudes dwellings with fully and permenantly paved yard space such as high-rise buildings and apartments.
Public Open Space (C)	NEPM 2013 'C' - Public open space such as parks, playgrounds, playing fields, secondary schools and footpaths.
#	Results are reported as total Chromium concentrations
NL	'Not Limiting'
ND	'Not detected' i.e. all concentrations of the compounds within the analyte group were found to be below the laboratory limits of detection.
NA	'Not Analysed' i.e. the sample was not analysed.
F1	TRH C_6-C_{10} less the sum concentration of BTEX.
F2	TRH $C_{>10}$-C_{16} less the concentration of Naphthalene.
F3	TRH $C_{>16}$-C_{34}
F4	TRH $C_{>34}$-C_{40}
1	Fine grained soil values were applied as the most conservative material type.
2	Site specific EILs/ESLs were derived using the methodology prescribed by NEPM (2013). See Table 1A for details.
a	Values are for Cr (V)
b	Values are for Cr (III)
c	Value derived from CRC Care Report No. 39, Table 11.
d	Value shown is for DDT
e	Value shown is for Chlorpyrifos

Table 2 – Summary of Groundwater Investigation Results 11-13 Mannix Parade, Warwick Farm NSW

Sample Identification	GME date	Heavy Metals								BTEX					VOCs		TRHs				PAHs			
		As	Cd	Cr	Cu	Pb	Ni	Zn	Hg	Benzene	Toluene	Ethylbenzene	o-xylene	m/p-xylene	p-isopropyltoluene	Total VOCs	F1*	F2**	F3 ($>C_{16}-C_{34}$)	F4 ($>C_{34}-C_{40}$)	Total PAHs	Benzo(a)pyrene	Naphthalene	Phenol
EI Australia (2019)																								
GW_BH1M-1	1/4/2021	3	0.5	2	24	3	170	2700	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<10	<50	<60	<500	<500	<1	<0.1	<0.5	0.03
GW_BH2M-1		<1	0.5	<1	12	<1	81	4800	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<10	<50	<60	<500	<500	<1	<0.1	<0.5	<0.01
GW_BH3M-1		7	0.6	1	18	1	360	2100	<0.1	<0.5	<0.5	<0.5	<0.5	<1	1.8	<10	<50	800	<500	<500	<1	<0.1	<0.5	0.01
GIL[4] (Marine)		NR	0.7 [3]	27(Cr III) [1]	1.3	4.4	7	15 [2]	0.1 [3]	500 [2]	NR	NR	NR	NR									50 [2]	400
HSL[5]										5,000	NL	NL	NL	NL			6,000	NL					NL	
GIL4 [6] (Fresh Water)		24 (AsIII) 13 (AsV)	0.2	NR (Cr III)	1.4	3.4	11	8 [2]	0.06 [3]	950	NR	NR	350	200									16	320
Drinking Water [7,8]		100	20	NR	20,000	100	200	NR	10	10	8,000	3,000	6,000								NR	0.1	NR	NR

Notes:

All values are µg/L unless stated otherwise.

NA	Not analysed
NR	No current published criterion.
ND	'Not detected' i.e. all concentrations of the compounds within the analyte group were found to be below the laboratory limits of detection.
*	To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.
**	To obtain F2 subtract Naphthalene from the >C10-C16 fraction.
1	Values have been calculated using a calculated mean hardness of 30 mg/L CaCO3 refer to ANZECC & ARMCANZ (2000) for further guidance on recalculating for site-specific hardness.
2	Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance.
3	Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for further guidance.
4	NEPM (2013) Groundwater Investigation Levels for marine water quality, based on ANZECC & ARMCANZ (2000).
5	NEPC (2013) Table 1A(4) Groundwater HSL D for vapour intrusion at the contaminant source depth ranges in sand 2m to <4m.
6	NEPM (2013) Groundwater Investigation Levels for fresh water quality, based on ANZECC & ARMCANZ (2000), level of species protection is 90% due to being located in an urbanized area.
7	NEPM (2013) Groundwater Investigation Levels for drinking water quality, based on Australian Drinking Water Guidelines (NHMRC 2011).
8	Drinking Water value has been used multiplied by a factor of 10 to address the secondary contact recreation.
9	NEPC (2013) Table 1A(4) Groundwater HSL D for vapour intrusion at the contaminant source depth ranges in clay 2m to <4m.
	Highlighted indicates analyte concentration value exceeding the Groundwater Investigation Levels for marine water quality
	Highlighted indicates analyte concentration value exceeding the Groundwater Investigation Levels for drinking water quality

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Appendix D – Unexpected Finds Protocol

Unexpected Finds Protocol