PROJECT: DOUBLE STOREY 2 UNITS TOWNHOUSE ADDRESS: 9 GRANT STREET, DROMANA 3936

PLAN SET CONTENTS TITLE SHEET NO **COVER SHEET** 1 OF 20 GENERAL SPECIFICATIONS 2 OF 20 GALVANISING SPECIFICATIONS 3 OF 20 DRAINAGE NOTES 4 OF 20 SLAB & BEAMS DETAIL 1 5 OF 20 6 OF 20 SLAB & BEAMS DETAIL 2 SLAB & BEAMS DETAIL 3, STEEL COLUMN FOOTING DETAIL & RETAINING WALL 7 OF 20 STIFFENED RAFT SLAB DETAIL 8 OF 20 9 OF 20 L1 FLOOR FRAMING PLAN ROOF FRAMING PLAN 10 OF 20 TIMBER BEAM TIE DOWN DETAIL 11 OF 20 TIMBER FRAME SIZING TABLE 12 OF 20 BRACING PLAN (GROUND & UPPER) 13 OF 20 **BRACING TYPES 1** 14 OF 20 **BRACING TYPES 2** 15 OF 20 JOINT DETAIL 1 16 OF 20 17 OF 20 JOINT DETAIL 2 JOINT DETAIL 3 18 OF 20 JOINT DETAIL 4 19 OF 20 BOUNDARY RETAINING WALL DETAILS 20 OF 20

WB CIVIL STRUCTURAL ENGINEERS

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DISCLAIMER

CIVIL/STRUCTURAL DESIGN ENGINEER WB CIVIL STRUCTURAL ENGINEERS MUST NOT BE HELD RESPONSIBLE FOR ANY CLAIM ARISING DUE TO MISTAKES, OMISSIONS AND SUBSTANDARD WORKMANSHIP BY BUILDER OR ITS SUB CONTRACTORS AND SUPPLIERS

SETTINGOUT

SETTING-OUT OF ANY ELEMENT MUST BE DONE AS PER ARCHITECTURAL PLANS. DIMENSIONS PROVIDED ON THESE PLANS MUST ALWAYS BE CHECKED AGAINST ARCHITECTURAL PLANS. STRUCTURAL ENGINEER (MOBILE: 0401023328) MUST BE KEPT INFORMED IMMEDIATELY OF ANY DISCREPANCY AND CLARIFICATION SOUGHT BEFORE SETTING-OUT AND CONCRETING IS ORGANISED.

REVISION "A" NOTES - REFERENCE TO BS RFI DATED - 6/04/2022

9 - ENCLOSED COMPUTATIONS & R126

38 - BLOCK RETAINING WALL - SHT. NO: 7/20 (PROPPRITARY SYSTEM PROVIDED)

39 - RC SLEEPER RETAINING WALL - SHT. NO: 7/20

40 - SEQUENCE OF RW CONSTRUCTION - SHT NO. 7/20

41 - DESIGN LOADS - SHT. NO: 2/20

43 - ANGLE OF REPOSE TO SEWER LINE (THIS WILL APPY TO ANY PIPE) - 5/20

44 - SPECIFIC CORROSION PROTECTION TO ALL STEEL WORK - 3/20



WARNING

ALL SERVICES SHOWN ON THESE DRAWINGS ARE APPROXIMATE ONLY AND EXACT LOCATION IS TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORKS.

B BOUNDARY RETAINING WALL DETAILS 28/05/2022 PW

A REV. AS PER BS RFI DATED 6/04/2022 PW

REV. REMARKS/COMMENTS DATE APRV.

CLIENT: SHEDDEN FERNANDO

JOB NO: SF/DS/2022

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OFFICE: NO: 6 TENDULKAR DRIVE, VIC 3335 Mobile: 0401023328 / Ph: 03 9746 0089 REGISTERED ENGINEER
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PROJECT:
DOUBLE STOREY 2 UNITS
TOWNHOUSE
PROJECT ADDRESS:
9 GRANT STREET,
DROMANA 3936

SHEET NO: 1/20

SCALE: AS SHOWN

W:
CIVIL STRUCTURAL ENGINEERS

GENERAL SPECIFICATIONS

GENERAL

- G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANT'S DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER OR ARCHITECT BEFORE PROCEEDING
- G2. ALL DIMENSIONS ARE TO BE OBTAINED FROM THE ARCHITECT'S DRAWINGS OR FROM SITE. ENGINEER'S DRAWINGS MUST NOT BE SCALED.
- G3. DURING CONSTRUCTION THE BUILDER SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND ENSURING NO PART SHALL BE OVERSTRESSED UNDER CONSTRUCTION ACTIVITIES.
- G4. MATERIAL AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH THE RELEVANT SAA CODES, BCA/NCC REQUIREMENTS UNLESS OTHERWISE NOTED IN THE PROJECT SPECIFICATION.
- THE APPROVAL OF A SUBSTITUTION BY THE ENGINEER IS NOT AN AUTHORIZATION FOR AN EXTRA. ANY EXTRA INVOLVED MUST BE TAKEN UP WITH THE ARCHITECT BEFORE WORK COMMENCES.
- THE STRUCTURAL WORK SHOWN ON THESE DRAWINGS HAS BEEN DESIGNED FOR THE FOLLOWING LIVE LOADS:-

AREA	LIVE LOAD	
GARAGE	2.5 kPa	
FL00R	1.5 kPa	
ROOF	1.0 kPa – TILE ROOF 0.5 kPa – METAL ROOF	
BALCONY (IF APPLICABLE)	2.0 kPa	

- G7. FOUNDATION MATERIAL TO BE APPROVED BEFORE POURING CONCRETE FOR A SAFE BEARING CAPACITY OF: 50kPa.WAFFLE SLAB 100kPa....STRIP FOOTING
- G8. ALL DETAILS SHOWN IN WBCSE DRAWING SETS ARE FOR STRUCTURAL PURPOSES ONLY. THE ARCHITECT AND BUILDER MUST ENSURE ALL CONSTRUCTION REQUIREMENTS SET BY THE BCA/NCC ARE MET. THIS OFFICE SHOULD BE CONTACTED IF ANY CLARIFICATION IS REQUIRED.

STRUCTURAL STEELWORK

- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS
- S2. WELDING SHALL BE PERFORMED BY AN EXPERIENCED OPERATOR IN ACCORDANCE WITH AS 1554.
- S3. HIGH STRENGTH BOLTING SHALL BE IN ACCORDANCE WITH AS 1511.
 S4. TWO COPIES OF THE SHOP DETAIL DRAWINGS ARE TO BE SUBMITTED TO THE ENGINEERS AND APPROVAL OF SAME OBTAINED BEFORE COMMENCING FABRICATION. APPROVAL WILL NOT COVER DIMENSIONS OR LAYOUT.
- THE BUILDER SHALL PROVIDE AND LEAVE IN PLACE UNTIL PERMANENT BRACING ELEMENTS ARE CONSTRUCTED SUCH TEMPORARY BRACING AS IS NECESSARY TO STABILIZE THE STRUCTURE DURING
- CAMBER TO STRUCTURAL STEEL ROOF BEAMS, TRUSSES, PORTALS, ETC., TO BE 2mm FOR EVERY 1M OR SPAN UNLESS OTHERWISE NOTED.
- ALL CLEAT AND DRILLING FOR FIXING OF TIMBER MEMBERS, ETC., TO BE PROVIDED BY FABRICATOR.
- S8. EXCEPT WHERE OTHERWISE SHOWN CONNECTIONS SHALL HAVE 6mm CONTINUOUS FILLET WELDS, 2-M16 8.8/S BOLTS IN 1.5mm CLEARANCE HOLES AND 10mm THICK CLEAT PLATE.
- S9. CONCRETE ENCASED STEELWORK SHALL BE WRAPPED WITH SLAB FABRIC, UNLESS OTHERWISE SHOWN
- S10. ALL STEELWORK SHALL BE GALVANISED AS PER SPECIFICATION PROVIDED ON SHEET NO: 3/19. ALSO, FOLLOW FURTHER INSTRUCTIONS BEFORE PAINTING. ON SHEET NO: 3/19. GALVANISER TO PROVIDE A WARRANTY FOR ITS WORK.
- S11. ALL STEEL BEAMS AND LINTELS ARE TO HAVE 100mm MIN. END BEARING UP TO 1.0m & 150mm MIN. END BEARING OVER 1.0m, UNLESS OTHERWISE
- S12. STEEL FRAMING MUST BE PROTECTED FROM CORROSION WHERE REQUIRED IN ACCORDANCE WITH BCA 2016 3.4.2.2

CONCRETE

- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS
- C2. CONCRETE COVER TO ALL REINFORCEMENT (FINISHES NOT INCLUDED).

ELEMENT	FORMED AND SHELTERED	FORMED AND EXPOSED	NO FORM WORK
SLABS AND WALLS	20mm	30mm	65mm
BEAMS	25mm	40mm	65mm
COLUMNS	40mm	50mm	75mm
FOOTINGS		65mm	75mm

- C3. CONCRETE SIZES SHOWN DO NOT INCLUDE FINISH AND MUST NOT BE REDUCED OR HOLED IN ANY WAY WITHOUT THE ENGINEER APPROVAL.
- DEPTHS OF BEAMS ARE GIVEN FIRST AND INCLUDE SLAB THICKNESS.
- CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE PROPERLY FORMED AND LOCATED TO THE APPROVAL OF THE ENGINEER.
- REINFORCEMENT IS SHOWN DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
- SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.
- REINFORCEMENT SYMBOLS:-
 - L LOW DUCTILITY BARS TO AS 4671: 2001 N NORMAL DUCTILITY BARS TO AS 4671: 2001 E SEISMIC (EARTHQUAKE) DUCTILITY BAR TO AS 4671: 2001 THE NUMBER FOLLOWING THE BAR SYMBOL IS THE NOMINAL BAR DIAMETER IN MILLIMETRES.
- CAMBER TO BEAMS AND SLABS SHALL BE 2mm FOR EVERY 1M OF SPAN UNLESS OTHERWISE NOTED.
- C10. ALL CONCRETE SHALL BE GRADE 20MPa 100mm SLUMP (U.N.O.)
- C11. ALL REINFORCEMENT SHALL BE SUPPORTED IN ITS CORRECT POSITION SO AS NOT TO BE DISPLACED DURING CONCRETING ON APPROVED BAR CHAIRS AT 1.0m MAX CRS BOTH WAYS. WHERE REQUIRED PROVIDE SUPPORT BARS N16 AT 1.0M MAX CRS
- C12. CONCRETE TO BE KEPT FREE OF SUPPORTING BRICKWORK BY TWO LAYERS OF A SUITABLE MEMBRANE (MALTHOID, ETC.), OR AS DIRECTED BY THE ENGINEER. VERTICAL FACES OF CONCRETE TO BE KEPT FREE BY 10mm THICKNESS OF BITUMINOUS CANITE.
- C13. WHERE WALLS ARE NON-LOAD BEARING AT EITHER HORIZONTAL OR VERTICAL FACES THEY SHALL BE SEPARATED FROM CONCRETE OR BRICKWORK BY 10mm THICK CANITE.
- C14. ALL REINFORCEMENT FOR ANY ONE POUR SHALL BE COMPLETELY PLACED AND TIED PRIOR TO INSPECTION BY THE ENGINEER OR ARCHITECT. NO CONCRETE SHALL BE POURED UNTIL REINFORCEMENT HAS BEEN INSPECTED
- C15. WHERE SLABS AND BEAMS ARE TO SUPPORT BRICKWORK OVER, FORMWORK AND PROPS MUST BE REMOVED BEFORE COMMENCEMENT OF
- C16. TRENCH MESH IN BEAMS TO BE LAID CONTINUOUSLY WITH EACH LAYER BEING LAPPED FOR ITS FULL WIDTH AT INTERSECTIONS AND FOR A MINIMUM OF 500mm AT SPLICES. THE TRENCH MESH SHALL BE OVERLAPPED BY THE WIDTH OF THE FABRIC AT T & L JUNCTIONS
- C17. AS A GENERAL POLICY, WBCSE DO NOT RECOMMEND THE USE OF POLISHED CONCRETE. THE OWNER SHOULD BE MADE AWARE BY THE BUILDING DESIGNER AND BUILDER THAT CONCRETE IS A NATURAL MATERIAL AND THE POSSIBILITY OF SURFACE CRACK FORMATION MAY OCCUR AND CANNOT BE GUARANTEED EITHER IN THE SHORT OR LONG TERM, WE HIGHLY RECOMMEND CURING THE SLAB USING AN APPROVED CURING
- C18. WHEN NEW FOOTING IS ABUTTED TO THE ADJACENT STRUCTURES OF NEIGHBOURING BUILDING AT BOUNDARY, A MINIMUM OF 10mm THICK "ABLEFLEX" (OR APPROVED EQUIVALENT) MUST BE PLACED BETWEEN STRUCTURES (UNLESS OTHERWISE NOTED ON ENGINEERING DRAWINGS

BRICKWORK

- B1. THE UNCONFINED COMPRESSIVE STRENGTH OF A BRICK UNIT TO BE MIN. OF 15MPa AND COMPRESSIVE STRENGTH OF MASONRY TO BE A MIN. OF 5.4 MPa
- B2. THE MORTAR MIX FOR BRICKWORK SHALL BE 1:1:6
- B3. FOR NON-LOAD BEARING WALLS SEE NOTE C13.
- B4. ARTICULATION (OR EXPANSION) JOINT SPACING MUST BE IN ACCORDANCE WITH AS4773.1 - 2015, AS4773.2 - 2015 & TECHNICAL NOTE 61 (AUG 2008) FOR ARTICULATED WALLING UNLESS NOTED OTHERWISE.
- B5. ALL WALL TIES MUST BE GALVANISED.

STRUCTURAL TIMBER

- T1. ALL TIMBER FRAMING IS TO BE IN ACCORDANCE WITH AS 1684-2010 RESIDENTIAL TIMBER FRAMED CONSTRUCTION.
- T2. ALL TIMBER STRESS GRADES NOMINATED SHALL BE IN ACCORDANCE WITH THE RELEVANT CODES AND MEANS THE STRUCTURAL QUALITY OF A TIMBER SECTION (REFER TO AS 1720).
- T3. TIMBER SHALL BE STORED AND HANDLED SO AS NOT TO BE DETRIMENTAL TO THEIR PERFORMANCE OR DAMAGE THEM. REFER APPENDIX H AS 1684-2:2010
- T4. ALL TIMBER SHALL BE DRY, IE: LESS THAN 15% MOISTURE CONTENT AT THE TIME OF CONSTRUCTION AND SHALL BE PROTECTED AND/OR TREATED
- T5. ALL TIMBER BEAMS AND LINTELS ARE TO BEAR ON DOUBLE STUDS (ONE JAMB AND ONE BEARING STUD), UNLESS OTHERWISE NOTED.
- BEAMS/STUDS HAVING MORE THAN 1 MEMBER TO BE NAIL LAMINATED
- TOGETHER IN ACCORDANCE WITH AS 1684-2010. T7. ALL EXPOSED TIMBER TREATMENT MUST BE IN ACCORDANCE WITH
- EXPOSURE CLASSIFICATION AS1684.2 TABLE B1, MINIMUM H3 TREATED OR DURABLE SPECIES TO BE ADOPTED TYPICAL U.N.O.

FRAMING

- F1. PROVIDE SOLID BLOCKING (45 WIDE x D-25 DEEP) SECURELY NAILED TO JOISTS/RAFTERS (D=DEPTH OF JOIST/RAFTER) AT 1800 MAX. CRS.
- F2. ALL EXTERNAL OR EXPOSED STEELWORK TO BE HOT DIP GALVANISED.
- F3. WATERPROOFING TO ARCHITECTS DETAILS.
- F4. ALL TIMBER FRAMING & BRACING NOT SHOWN TO COMPLY WITH AS1684 TIMBER FRAMING MANUAL.
- ALL BRICKWORK LINTELS TO ARCHITECTS DETAILS. ALL BRICKWORK LINTELS TO COMPLY WITH F.3.3.3.5 OF B.C.A 2012 VOLUME 2.
- ALL BEAMS/GIRDER & HIP TRUSSES TO BE SUPPORTED ON DOUBLE STUDS EACH END U.N.O.
- ALL LINTELS TO BE SUPPORTED ON SINGLE STUD AND JAMB STUD U.N.O.
- ALL TRUSSES & WALL FRAMES TO MANUFACTURER'S DESIGN & DETAILS.
- TRUSS DIRECTION ASSUMED AS SHOWN (IF APPLICABLE). CONTACT THIS OFFICE IF DIFFERENT TRUSS LAYOUT IS USED SO LINTELS ETC CAN BE REDESIGNED (IF REQUIRED).
- F10. ALL TIMBER LINTELS TO BE DESIGNED BY THE TRUSS MANUFACTURER.
- F11. BUILDER TO SUPPLY MANUFACTURERS TRUSS LAYOUT TO THIS OFFICE FOR APPROVAL PRIOR TO CONSTRUCTION. TRUSS DESIGN MUST BE IN ACCORDANCE WITH AS1720 AND AS1684. TRUSS FABRICATOR/BUILDER IS RESPONSIBLE FOR PROVIDING ADEQUATE ROOF/WALL BRACING TO ENSURE STABILITY OF THE STRUCTURE IN ACCORDANCE TO AS1684
- F12. ALL INTERNAL WALLS TO BE NON-LOAD BEARING (TYPICAL) UNLESS HATCHED OTHERWISE ON PLANS.

INSPECTIONS

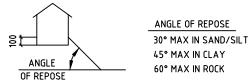
ALL STRUCTURAL WORK MUST BE INSPECTED AND APPROVED IN WRITING PRIOR TO ANY WORK PROCEEDING. 48 HOUR MIN. NOTICE IS REQUIRED FOR ALL INSPECTIONS

SITE DRAINAGE

- D1. AT THE TIME OF THE PREPARATION OF THIS DOCUMENT, IF THE DRAINAGE DESIGN WAS NOT PREPARED OR CERTIFIED BY THIS OFFICE THEN THE DRAINAGE SYSTEM MAY NEED TO BE DOCUMENTED BY A SUITABLY QUALIFIED PERSON TO COMPLY WITH AS2870-2011. THE DRAINAGE DESIGNER SHOULD ENSURE THAT THE ELEMENTS OF THE DRAINAGE SYSTEM DESIGN ARE CONSIDERED WITH RESPECT TO THE PROPOSED FOOTING SYSTEM.WE RECOMMEND THAT WBCSE OR AN EQUIVALENT CERTIFIED PRACTITIONER, REVIEW ALL THE DOCUMENTATION TO ENSURE COMPLIANCE.
- SITES SHOULD BE DRAINED SO THAT WATER CANNOT POND AGAINST OR NEAR THE HOUSE. THE GROUND IMMEDIATELY ADJACENT TO THE HOUSE SHOULD BE GRADED TO FALL 50mm OVER THE FIRST METRE. WHERE THIS IS IMPRACTICABLE (IE: ON SEVERAL SLOPING SITES) USE A.G. DRAINS ADJACENT TO FOOTINGS WHERE THE GROUND FALLS TOWARDS THE

FOOTING: ANGLE OF REPOSE

- A1. FOOTING MUST NOT UNDERMINE EXISTING FOOTING OR BE UNDERMINED BY PROPOSED EXCAVATION.
- A2. ENSURE ADEQUATE ANGLE OF REPOSE AT ALL TIMES (REFER DETAILS
- A3. NOTIFY THIS OFFICE IF FOOTING UNDERMINE OCCURS.
- A4. PIPE DEPTH & LOCATION MUST BE CONFIRMED PRIOR TO CONSTRUCTION.



OH & SAFETY

- 01. FOR ALL WORKS CONDUCTED ON THIS PROJECT, THE BUILDER SHALL HAVE ALL APPROPRIATE AND SUFFICIENT SAFETY MEASURES AND PROCEDURES
- 02. DEEP TRENCHES MAY EXIST ON THIS SITE. BUILDER TO ENSURE NECESSARY SAFETY MEASURES ARE TAKEN TO PREVENT FALL AND TRIPPING HAZARDS ARE ELIMINATED.
- 03. FOR LARGE SPAN BEAMS (SAY6000mm), BUILDER TO ENSURE SEAT PLATES/ANGLES TO STEEL COLUMNS FOR MAJOR BEAMS AND LINTELS ARE INSTALLED FOR SAFER CONNECTION, BOLTING AND SITE WELDING.
- 04. ADEQUATE PROPPING MAY BE REQUIRED FOR ANY RETAINING/LOAD BEARING WALLS ON BOUNDARIES. TEMPORARY SHORING MAY BE REQUIRED.
- 05. PROVISIONS SHALL BE MADE FOR APPROPRIATE DISTANCE FOR ROOF BATTENS/RAFTERS TO PROVIDE A SAFE WORKING PLATFORM DURING ROOF INSTALLATION AND WORKING AT HEIGHTS.
- 06. BUILDER MAY NEED TO BE AWARE OF APPROPRIATE MEASURES TO DEAL WITH HAZARDOUS MATERIALS SUCH AS ASBESTOS THAT MAY BE FOLIND IN SERVICE PITS
- 07. IF A CRANE IS REQUIRED, THE BUILDER IS TO PROVIDE ADEQUATE SAFETY MEASURES FOR CRANE USAGE AROUND POWER LINES.
- IF ANY DIGGING IS REQUIRED OUTSIDE OF SITE BOUNDARIES, INFORMATION REGARDING EXISTING COUNCIL ASSETS NEED TO BE SOUGHT FROM "DIAL BEFORE YOU DIG"
- 09. THE SAFETY CONCERNS AND HAZARDS IDENTIFIED ABOVE REPRESENT COMMONLY OCCURRING RISKS. THE LIST DOES NOT COVER THE FULL RANGE OF RISK AVOIDANCE MEASURES REQUIRED.

DOWNPIPE & GUTTER NOTES:

THEY ARE TO BE IN ACCORDANCE WITH NCC PART 3.5.2. AS 3500.3 AND AS 3500.5. A DOWNPIPE MUST NOT SERVE MORE THAN 12m OF GUTTER LENGTH AND BE LOCATED WITHIN 1.2m FROM A VALLEY. WHERE DOWNPIPES ARE LOCATED GREATER THAN 1.2m FROM A VALLEY, PROVISION FOR OVERFLOW MUST BE MADE TO THE GUTTER. EAVE GUTTERS ARE TO BE PROVIDED WITH OVERFLOW PROVISIONS ALONG THE LENGTH OF THE **GUTTERING IN ACCORDANCE WITH AS 3500.3**

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REGISTERED ENGINEER **CONSUMER AFFAIRS VICTORIA**

PRIYAN WIJEYERATNE PE 2448, F.I.E.(AUST)., C.P.ENG. M.Eng(Struct)., M.Tech.(Mgt.), BSc(Civil) PROJECT: **DOUBLE STOREY 2 UNITS TOWNHOUSE PROJECT ADDRESS:** 9 GRANT STREET, **DROMANA 3936**

SHEET NO: 2/20

DATE: 1/01/2022

SCALE: AS SHOWN

CIVIL STRUCTURAL

GALVANISING SPECIFICATIONS

SPECIFICATION FOR HOT DIP GALVANISING – ALL STEEL MEMBERS **INCLUDING STRUCTURAL MEMBERS**

SCOPE

This specification covers the galvanized coating applied to general steel articles, structural sections, angles, channels, beams, columns, fabricated steel assemblies, threaded fasteners and other steel components. This specification does not apply to the galvanized coating on semi-finished products such as wire, tube or sheet galvanized in specialised or automatic plants.

RELEVANT STANDARDS

VELEAWAL 21W	NUARUS
AS/NZS 1214	Hot dip galvanized coatings on threaded fasteners
AS 1627.1	Preparation and pre-treatment of surfaces - Removal of oil, grease and related contamination
AS 1627.4	Preparation and pre-treatment of surfaces - Abrasive blast cleaning of steel
AS 1627.5	Preparation and pre-treatment of surfaces - Pickling
AS/NZS 2312.2	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings - Part 2: Hot dip galvanising process
AS 4312	Atmospheric corrosivity zones in Australia
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles

FABRICATION

Care shall be taken to avoid fabrication techniques which could cause distortion or embrittlement of

All welding slag and burrs shall be removed prior to delivery to the galvanizer.

Holes and/or lifting lugs to facilitate handling, venting and draining during the galvanising process shall be provided at positions as agreed between the designer and the galvanizer.

SURFACE PREPARATION

Unsuitable marking paints shall be avoided and consultation by the fabricator with the galvanizer about removal of grease, oil, paint and other deleterious materials shall be undertaken prior to

Surface contaminants and coatings, which cannot be removed by the normal chemical cleaning process in the galvanising operation, shall be removed by abrasive blast deaning or some other suitable method.

Steelwork shall be pre-cleaned in accordance with the requirements of AS 1627.1 followed by acid pickling, in accordance with the requirements of AS 1627.5, Abrasive blast cleaning to Class 2 finish in accordance with the requirements of AS 1627.4 may be used.

GALVANISING

All articles to be galvanized shall be handled in such a manner as to avoid any mechanical damage and to minimize distortion. (See Note 2 above)

Design features that may lead to difficulties during galvanising should be pointed out prior to galvanising.

Galvanising parameters such as galvanising temperature, time of immersion, and withdrawal speed shall be employed to suit the requirements of the article.

The composition of the zinc in the galvanising bath shall comply with AS/NZS 4680.

COATING REQUIREMENTS

1 Thickness

Table 1. Requirements for coating thickness and mass for articles that are not centrifuged

Steel Thickness mm	Local coating thickness minimum µm	Average coating thickness minimum μm	Average coating mass minimum g/m²
≤1.5	35	45	320
>1.5 to ≤3	45	55	390
>3 to ≤6	55	70	500
>6	70	85	600

Table 2. Requirements for coating thickness and mass for articles that are centrifuged

Thickness of articles (all components including castings) mm	Local coating thickness minimum µm	Average coating thickness minimum µm	Average coating mass minimum g/m²	
<8	25	35	250	
≥8	40	55	390	

Note: 1 g/m^2 coating mass = $0.14 \mu \text{m}$ coating thickness.

The thickness of the galvanized coatings on ISO metric coarse threaded fasteners shall conform to the requirements of AS/NZS 1214:

The thickness of the galvanized coating shall first be tested by the purchaser/designer at the galvanizer's works, using an approved magnetic measuring device. In the event of any dispute, an independent test shall be carried out in accordance with AS/NZS 4680. Appendix G.

The galvanized coating shall be continuous, adherent, as smooth and evenly distributed as possible, and free from any defect that is detrimental to the stated end use of the coated article. On silicon killed steels, the coating may be dull grey, which is acceptable provided the coating is sound and continuous (See Note 3). Any reparation is to be carried out as per Clause 8 of AS/NZS 4680.

The integrity of the coating shall be determined by visual inspection and coating thickness measurements. Where slip factors are required to enable high strength friction grip bolting, where shown, these shall be obtained after galvanising by suitable mechanical treatment of the faying

Where a paint finish is to be applied to the galvanized coating, all sharp spikes shall be removed and all edges shall be free from excessive lumps and runs.

The galvanized coating shall be sufficiently adherent to with stand normal handling during transport

Inspection shall be carried out at the galvanizer's works by a designated party, or at some other place as agreed between fabricator and galvanizer.

CERTIFICATION

When requested by the purchaser/designer, a certificate shall be provided stating that the galvanising complies with the requirements of AS/NZS 4680.

TRANSPORT AND STORAGE

Galvanized components shall, wherever possible, be transported and stored under dry, wellventilated conditions to prevent the formation of wet storage staining following the recommendations contained in AS/NZS 4680 Appendix F.

A passivation treatment after galvanising may be used to minimise the wet storage staining which may occur on articles unable to be stored in dry, well-ventilated conditions.

Any wet storage staining shall be removed by the galvanizer if formed prior to leaving the galvanizer's plant, unless late pick-up or acceptance of delivery has necessitated the material being stored in unfavourable conditions. Provided the coating thickness complies with the requirements of AS/NZS 4680, no further remedial action is required to the stained areas.

WELDING

Where galvanized steel is to be welded, adequate ventilation shall be provided. If adequate ventilation is not available, supplementary air circulation shall be provided. In confined spaces a respirator shall be used.

Grinding of edges prior to welding may be permitted to reduce zinc oxide fumes formed during welding and eliminate weld porosity which can sometimes occur.

All uncoated weld areas shall be reinstated – see Coating Reinstatement or Clause 8 of AS/NZS 4680.

COATING REINSTATEMENT

Areas of significant surface that are uncoated shall, by agreement between the purchaser and the galvanizer, be reinstated by following the recommendations contained in AS/NZS 4680 - Repair after galvanising, or by other methods nominated by the galvanizer and approved by the contractor. Similar repair methods shall be used for areas damaged by welding or flame cutting, or during handling, transport and erection.

The size of the area able to be regained shall be relevant to the size of the object and the conditions of service but shall normally be in accordance with the provisions of AS/NZS 4680 - Repair after galvanising.

SWEEP (BRUSH) BLAST CLEANING OF GALVANISED STEEL PRIOR TO PAINTING Refer AS/NZS 2312.2 Clause 7.5.3.2

GENERAL INFORMATION ON FACTORS THAT AFFECT THE CORROSION OF GALVANISED STEEL Refer AS/NZS 2312.2.

CLIENT: SHEDDEN FERNANDO

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PRIYAN WIJEYERATNE PE 2448, F.I.E.(AUST)., C.P.ENG. M.Eng(Struct)., M.Tech.(Mgt.), BSc(Civil) PROJECT: **DOUBLE STOREY 2 UNITS TOWNHOUSE** PROJECT ADDRESS: 9 GRANT STREET, **DROMANA 3936**

SHEET NO: 3/20

SCALE: AS SHOWN



SITE DRAINAGE REQUIREMENTS

TYPICAL STORMWATER DRAINAGE Slope away from Slope away from Foundation (Tvp.) TYPICAL SECTION SITES WITH SLIGHT OR NO FALL TYPICAL PLAN Flow Flow TYPICAL PLAN Slope away from footing Slope away from Slope away t Cut Drain TYPICAL SECTION TYPICAL SECTION SITES WITH FALL UP TO 1:18 SITES WITH FALL GREATER THAN 1:18

DRAINAGE REQUIREMENTS

GENERAL

THESE DRAINAGE AND OTHER REQUIREMENTS FORM PART OF THE FOOTING DESIGN

DEFECTIVE SURFACE DRAINAGE IS A COMMON FACTOR IN REACTIVE CLAY FOUNDATION MOVEMENT PROBLEMS. THE EFFECTIVE DRANAGE OF THE SITE IS A PREREQUISITE FOR SATISFACTORY PERFORMANCE OF A FOUNDATION SYSTEM

THE BUILDER'S RESPONSIBILITY IS TO MAKE THE OWNER AWARE OF THE IMPORTANCE OF SURFACE DRAINAGE, EVEN IF IT IS NOT PART OF BUILDER'S CONTRACT TO CONSTRUCT SURFACE DRAINAGE

LANDSCAPING AND OTHER FINISHING SITE WORKS MUST BE INCORPORATED WITH WELL DESIGNED SURFACE DRAINAGE TO MITIGATE ANY ADVERSE IMPACTION A FOUNDATION

DRAINAGE NOTES

- ALL SURFACE DRAINAGE WORKS SHALL BE INSTALLED IN ACCORDANCE WITH CLAUSE 5.6.3 DRAINAGE REQUIREMENTS OF AS 2871-2011, WHEREIN FOR BUILDINGS ON MODERATELY, HIGH AND REACTIVE SITES
- . SURFACE DRAINAGE SHALL BE CONTROLLED THROUGHOUT CONSTRUCTION AND BE COMPLETED BY THE FINISH OF CONSTRUCTION
- THE BASES OF TRENCHES SHALL SLOPE AWAY FROM THE BUILDING.
- . WHERE PIPES PASS UNDER THE FOOTING SYSTEM, CLAY PLUGS ARE TO BE ADOPT ED TO PREVENT THE INGRESS OF WATER
- . FOR BUILDINGS ON HIGHLY REACTIVE SITES, DRAINER SHALL PROVIDE DRAINAGE ARTICULATION TO ALL STORMWATER, SANITARY PLUMBING DRAINS AND DISCHARGE PIPES IN ACCORDANCE WITH CLAUSE 56.4 PLUMBING REQUIREMENTS, WHEREIN FLEXIBLE JOINTS IMMEDIATELY OUTSIDE BUILDING AND COMMENCING WITHIN 1m OF THE BUILDING PERIMETER ARE REQUIRED TO ACCOMMODATE THE REQUIRED DIFFERENTIAL MOVEMENT BASED ON THE SOIL CLASSIFICATION, REFER TO TABLE BELOW FOR 'MIN. REQUIREMENTS FOR EXPANSION AND ALLOWABLE IN FITTINGS.
- FLEXIBLE JOINTS ARE REQUIRED AT ENTRY & EXIT OF SLAB/FOOTINGS, SURFACE WATER MUST BE DIVERTED AWAY FROM THE DWELLING AND GRADED AWAY FROM ALL FOUNDATIONS TO GIVE A SLOPE OF NOT LESS THAN 50mm OVER THE FIRST 1000mm FROM THE DWELLING
- . SUBSURFACE DRAINS TO REMOVE GROUND WATER SHALL BE DETAILED BY THE DESIGN ENGINEER, FURTHERMORE, DAMP-PROOF MEMBRANE IN ACCORDANCE. WITH CLAUSE 53.3 OF AS 2870 SHALL BE INSTALLED FOR GROUNDWATER. DRAINAGE ON AGGRESSIVE SOILS

SITE DRAINAGE REQUIREMENTS

CONSTRUCTION STAGE

THE GEOTECHNICAL REPORT HAS RECOMMED THE USE OF A CERTAIN FOOTING THAT IS A P PROPINATE FOR THIS SITE, WHILE MAKING THIS RECOMMENDATION IT HAS BEEN ASSUMES THAT CERTAIN SITE DRAINAGEREQUIREMENTS AS PER AS2870-2001 HAS BEEN

DURING THE CONSTRUCTION OF THE FOOTING THEFOLLOWING SITE DRAINAGE REQUIREMENTS ARE LISTED AS BEING PART OF THE FINAL FOOTING DESIGN BY THE DESIGN ENGINEER.

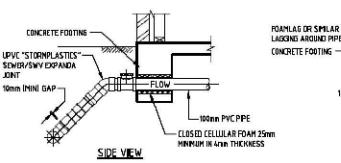
- MUST PREVENT WATER PONDING AGAINST OR NEAR THE FOOTING
- THE GROUND IN THE IMMEDIATE VICINITY OF THE PERIMETER SOCTING SHALL RE THE SHOUND IN THE INMEDIATE DELICION TO THE PER INTERES FOOT THIS SHALL BE OF FOODOM (120) AND SHAPED TO PREVENT FONDING OF WATER (THIS INCLUDES THE GROUND UP HILL FROM THE FOOT ING ON A CUTAFILL SITE) - WHERE FILLING IS PLACED ADJACENT TO THE BULIDING, THE FILLING SHALL BECOMPACTED AND GIRADED TO ENSURE DRAINAGE ANNAY FROM FOOTINGS OR
- ALL_COLLECTED STORMWATER MUST BE DISCHARGED TO A LEGAL POIT OF
- SURFACE DRAINING BO FITHE SITE SHALL BE CONTROLLED FROM THE START OF THE SITE PREPARATION AND CONSTRUCTION. SURFACE DRAINING BINCLUDES SURFACE WATER RUN-OFF AND BUILDING WATER (ROOF/FLOORCONCRETE)
- ALL WATER RUN-OFF SHALL BECONTROLLED AT ALL TIMES
- USE TEMPORARY DOWNPIPES TO COLLECT WATER FROM A ROOFED BUILDING-FRAME.
- WHEN SILT PITS A REUSED TO GATHER SURFACEWATER FRO MAREAS ADJACENT. TO THE FOOTINGS, THESE SILT PITS ARE TO BE AT LEAST 1000m m AWAY FROUTHE FOOTING AND CONNECTED TO THE STORMWATER SYSTEM WITH A SOLID PIPE
- STOR NUVATER DRAINS SHALL BE AT LEAST 90mm AND HAVE A MINIMUM FALL OF 1:100 AND 100mm COVER UNDER THE SOIL AND/OR PAVED AREAS
- INSPECTION OPENINGS SHOULD BE PROVIDED AT EACH PIPE CONNECTION POINT AND
- AVOID II NOER IIIN ING THE POOTING INITH ANY TRENCHES OR PIPE OR PITS IINI ESS. AND UP ON DE MINIMO THE POUT HIS WILLESS THE CONTROL OF THE CONTROL OF THE STATE OF THE ST TRENCH IS FILLED WITH 10mm CRUSHED ROCKOR SIMILAR COVERING THE SLOTED
- AG DRAINS MUST NOT BE INSTALLED WITHIN 1500mm FROM ANY FOOTING.
- AG DRAINS BUST BE INSTALLED AT THE BASE OF ALL SITE CUTS THAT EXCED 400mm IN HEIGHT, ALONG THE HIGH SINE OF A SLOPING SITE AND POSSIBLY ALONG THE LOW SIDE OF A SLOPING SITE ALONG THE BOUNDARY. TO BE CONNECTED TO

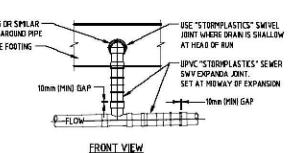
MAINTENANCE:

- THE MAINTENANCE OF THE SITE AROUND A NEW HOME IS AN IMPORTANT FACTOR IN THE LONG-TERM. PERFORMANCE OF THE FOOTING SYSTEM
- THE PRIMARY OBJECTIVE OF THIS MAINTENANCE IS TO MINIMISE THE VARIATION IN SOIL MOISTUE LE¹ AROUND THE FOOTING THAT COULD LEAD THE EXCESSIVE SOIL MOVEMENT AND POSSIBLE DISTRESS. THE SUPERSTUCTURE ANO/OR FOOTING, WHEN THE SLAB FORMS PART OF THE TERMITE BARRIER SY: FOR THE HOUSE, THEN IT IS ASLO NECESSARY TO MAINTAIN THE EFFECTIVENESS OF THAT BARRIER V. APPOPRIATE MAINTANCE ACTIVITIES.
- WHEN A CONCRETE SLAB-ON-GROUND IS USED AS PART OF THE TERMITE BARRIER SYSTEM AS OUTLIL AS3660.0, THEN IT CANNOT BE TOO HIGHLY STRESSES THAT REGULAR INSPECTION AND MAINTENANCI THE SLAB SURROUNDING BY A COMPETENT PROFESSIONAL IS REQUIRED TO ENSUE THAT ANY TERMIT INFESTATION IS DETECTED AND TREATED PROMPTLY.
- ONGOING MAINTENANCE AND INSPECTION ON A REGULAR BASIS IS A REQUIREMENT OF AS3660.1 AND OWNER SHOULD BE CLEARLY ADVISED IF THEIR RESPONSIBILITIES TO ENSURE THAT THEIR INVESTME PROPERLY PROTECTED
- LEAKING TAPS, DOWNPIPES, SEWERS GUTIERS AND DRAINAGE CAN ALSO AFFECT THE MOISTURE CON OF THE SOIL AND THESE MUST BE INSPECTE DIREGULARLY TO ENSURE AGAINST DAMAGE TO THE FOOTINGS, SIMILARLY, GUTIERS, DOWNPIPES AND COLLECTION POINTS CAN GET BLOCKED WITH LEAV AND OTHER DEBRIS, PREVENTING THE EFFECTIVE DRIANAGE OF STORMWATER AWAY FROM THE HOU AGAIN, REGULAR INSPECTIONS AND MAINTENANCE SHOULD BE CARRIED OUT TO PREVENT BLOCKAGE
- IT IS IMPORTANT FOR BUILDER TO MAKE THE HOMEOWNER AWARE OF THE MAINTENANCE ISSUES. ASSOCIATED WITH ENSURING THE LONG-TERM PERFORMANCE OF THE FOOTING SYSTEM

LANDSCAPING

- . THE WORKS ON GARDENS SHALL NOT IMPACT ON DRAINAGE REQUIREMENTS. SUBELOOR VENTILATION AND WEEPHOLE DRAINAGE SYSTEMS, GARDEN BEDS ADJACENT TO THE BUILDING SHALL BE AVOIDED, CARE SHALL BE TAKEN TO AVOID OVERWATERING OF GARDENS CLOSE TO THE BUILDING FOOTINGS. (AS 2870 CL B2 3(b))
- PLANTING OF TREES SHALL BE AVOIDED NEAR THE FOUNDATION OF A BUILDING OR NEIGHBOURING BUILDING AS THEY CAN CAUSE DAMAGE DUE TO DRYING OF THE CLAY AT SUBSTANTIAL DISTANCES, TO REDUCE THE POSSIBILITY OF DAMAGE TREES SHOULD BE RESTRICTED TO A DISTANCE FROM THE HOUSE AS FOLLOWS:
- 11/2 x MATURE TREE HEIGHT FOR CLASS E SITES.
- 11/2 x MATURE TREE HEIGHT FOR CLASS H1 AND CLASS H2 SITES
- 11/2 x MATURE TREE HEIGHTEOR CLASS MISITES
- . WHERE ROWS OR GROUPS OF TREES ARE INVOICED, THE DISTANGE FROM THE BUILDING SHOULD BE INCREASED. REMOVAL OF TREES FROM THE SITE CAN ALSO CAUSE SIMILAR PROBLEMS. (AS 2870 82.3 (c))





FLEXIBLE PIPE CONNECTIONS FOR CLASS "H" AND "E" SITES. (AND CLASS "P" SITES WITH HIGHLY REACTIVE SOLS WHERE SPECIFIED IN THE SOIL REPORT

SEWER & STORMWATER PIPE CONNECTION DETAIL

	MINIMUM REQUIREMENTS FOR SEWER RETICULATION					
SITE CLASS	SEWER EXIT POINTS		MIN. EXPANSION	ALLOWABLE	LAGGING	
	SWIVEL	EXPANDER	JOINT CAPACITY	ROTATION		
M	0	D	-	-	MIN. 20	
H1	1	1	60MM	15 ⁰	MIN. 40	
H2/H2-D	2	1	90MM	15°	MIN. 40	
E	2	1	120MM	15º	MIN. 40	
P	2	1	90MM (UNO)	15º	MIN. 40	
_						

CLIENT: SHEDDEN FERNANDO

JOB NO: SF/DS/2022

WB CIVIL STRUCTURAL ENGINEERS

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PRIYAN WIJEYERATNE PE 2448, F.I.E.(AUST)., C.P.ENG. M.Eng(Struct)., M.Tech.(Mgt.), BSc(Civil)

PROJECT: **DOUBLE STOREY 2 UNITS TOWNHOUSE PROJECT ADDRESS:** 9 GRANT STREET, **DROMANA 3936**

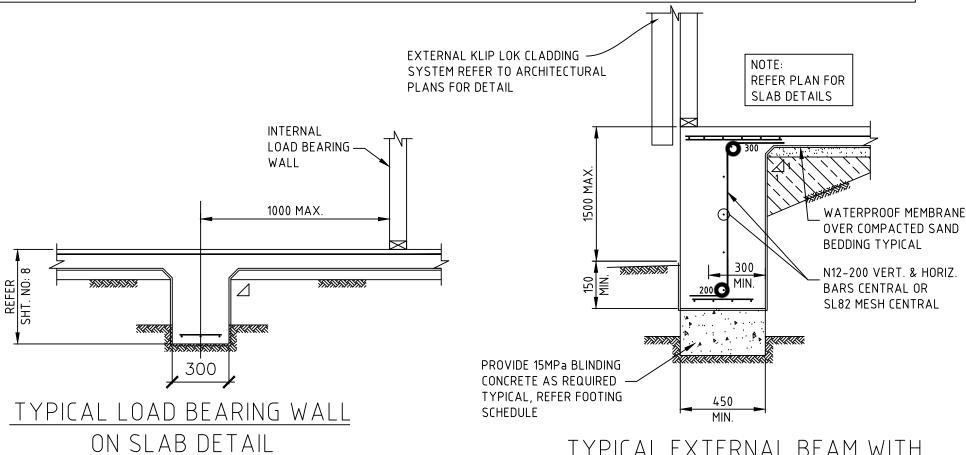
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SCALE: AS SHOWN

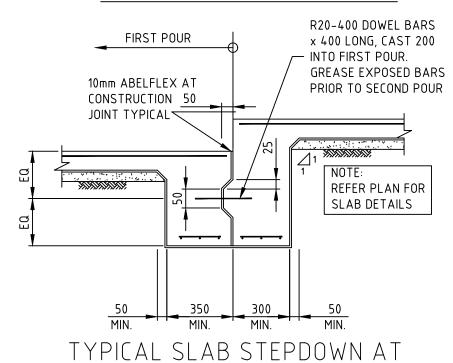


TYPICAL STIFFENED RAFT SLAB & BEAM DETAIL - 1 - NTS REINFORCEMENT & DIMENSION DETAIL FOR INTERNAL LOAD BEARING **BEAMS & SLAB REFER** TO SHT. NO: 7 **BOTTOM SLAB** NOTE: WALL VARIES REINFORCEMENT REFER PLAN/SCHEDULE FOR SLAB AND TO MATCH TOP STRIP FOOTING REINFORCEMENT DETAILS NOTE: U.N.O. REFER PLAN FOR SLAB DETAILS 5 ₹ CONCRETE SLAB STRIP FOOTING 600 MIN. ⊿1 LAP 500 MIN. 500 50 300 M N N MIN MIN. TYPICAL RECESS/SETDOWN AT NO INTERNAL RIB DETAIL TYPICAL LOAD BEARING WALL EXTERNAL KLIP LOK TYPICAL STRIP FOOTING TO SLAB ON SLAB DETAIL **CLADDING SYSTEM REFER** TO ARCHITECTURAL EDGE BEAM CONNECTION DETAIL PLANS FOR DETAIL NOTE: REFER PLAN FOR OFFSET TO CENTRLINE OF PIPE SLAB DETAILS TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION NOTE: REFER PLAN FOR EXTERNAL KLIP LOK INTERNAL LOAD-BEARING SLAB DETAILS CLADDING SYSTEM REFER-TIMBER FRAME TO ARCHITECTURAL PLANS FOR DETAIL . VIXIXIXIX CONSTRUCTION DEPTH OF PIPE INVERT TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION JOINT IF REQ'D N12-400 BARS **BOTH WAYS** BLINDING CONCRETE TO NOTE: 200 REFER PLAN FOR BE TAKEN THROUGH MIN SLAB DETAILS ANY FILL/LOOSE MATERIAL AND FOUNDED WATER PROOFING MINIMUM 100mm BELOW 4-L12TM TOP BY OTHERS ANGLE OF REPOSE DUE & BOTTOM 200 TO PIPE TRENCH ANGLE OF REPOSE: 30° MAX. IN SAND 45° MAX. IN CLAY 400 50 60° MAX. IN ROCK 500 500 PIPF TYPICAL DEEPENED STEPDOWN TYPICAL EXTERNAL WALL DETAIL TYPICAL ANGLE OF REPOSE DETAIL AT INTERNAL RIB DETAIL (IF REQUIRED) REGISTERED ENGINEER **WB CIVIL STRUCTURAL CLIENT:** PROJECT: SHEET NO: 5/20 **CONSUMER AFFAIRS VICTORIA SHEDDEN FERNANDO ENGINEERS DOUBLE STOREY 2 UNITS** ABN: 84119322436 **TOWNHOUSE SCALE: AS SHOWN PROJECT ADDRESS:** PRIYAN WIJEYERATNE OFFICE: NO: 6 TENDULKAR DRIVE, VIC 3335 PE 2448, F.I.E.(AUST)., C.P.ENG. 9 GRANT STREET. **CIVIL STRUCTURAL JOB NO: SF/DS/2022** Mobile: 0401023328 / Ph: 03 9746 0089 Email: priyan@wbcse.com.au DATE: 1/01/2022 M.Eng(Struct)., M.Tech.(Mgt.), BSc(Civil) **DROMANA 3936**

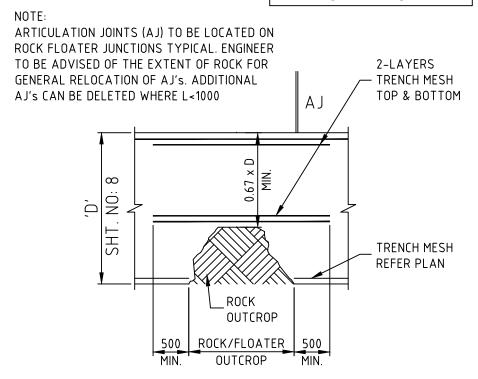
TYPICAL STIFFENED RAFT SLAB & BEAM DETAIL - 2 - NTS



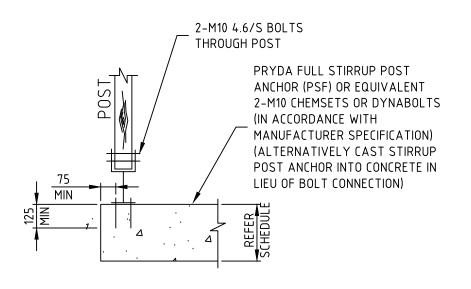
TYPICAL EXTERNAL BEAM WITH DEEPENED REBATE DETAIL



REINFORCEMENT &
DIMENSION DETAIL FOR
BEAMS & SLAB REFER
TO SHT. NO: 7



DETAIL WHERE ROCK FLOATER 'LOCALLY' PROJECTS INTO FOOTING



TYPICAL TIMBER FULL STIRRUP POST ON CONCRETE SLAB/FOOTING DETAIL

CLIENT: SHEDDEN FERNANDO

JOB NO: SF/DS/2022

550 MIN.

MIN

TYPICAL GARAGE STEPDOWN

AT INTERNAL RIB DETAIL

XXXXX

180 MAX. STEP

REFER ARCH.

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CONSTRUCTION JOINT DETAIL

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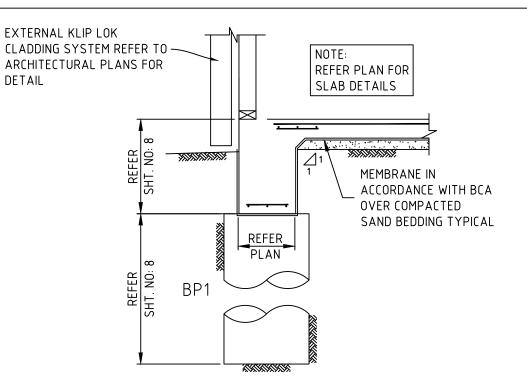
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PROJECT ADDRESS:
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SCALE: AS SHOWN



TYPICAL STIFFENED RAFT SLAB & BEAM DETAIL - 3 & RETAINING WALL - NTS

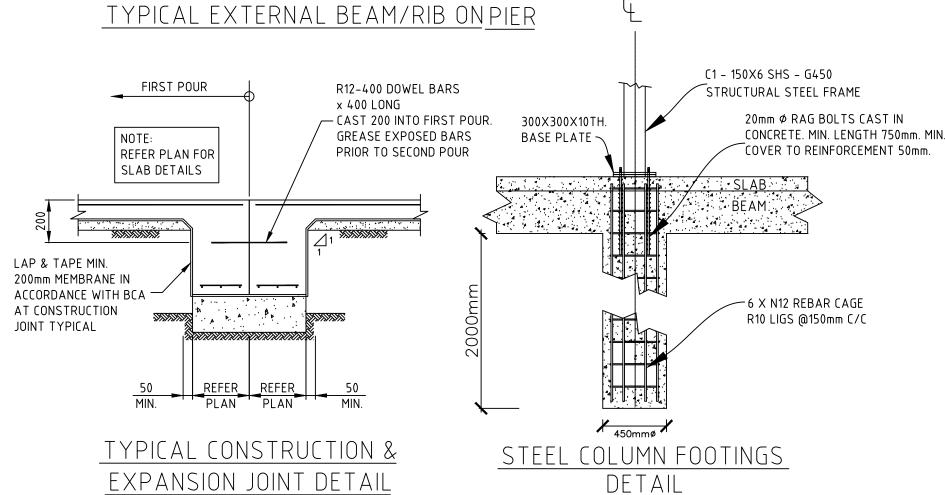


DETAIL

REFER PLAN BP1

REINFORCEMENT & DIMENSION DETAIL FOR BEAMS & SLAB REFER TO SHT. NO: 7

TYPICAL INTERNAL RIB ON PIER



CLIENT: SHEDDEN FERNANDO

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SCALE: AS SHOWN

DATE: 1/01/2022

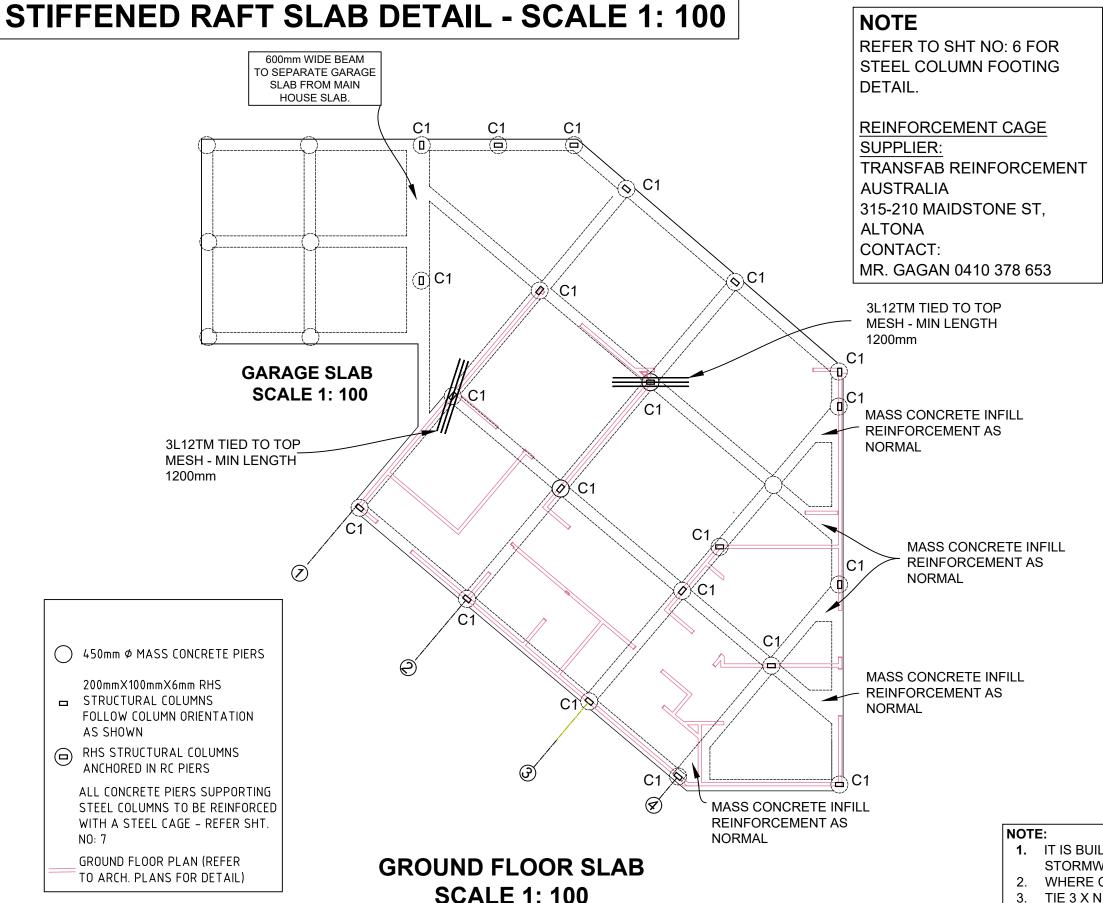
CIVIL STRUCTURAL

SEQUENCE OF CONSTRUCTION

HAVE NEIGHBOR INFROMED & CONSENT FORM SIGNED OFF.

NOTES - RC SLEEPER RETAINING WALL

- 2. CARRY OUT JOINT PRE-INSPECTION OF ADJOINING EXISTING STRUCTURE(S) & TAKE PHOTOS FOR EXISTING CONDITION
- BORE GROUND FOR FOOTINGS.
- PLACE 100UCs & ALIGN. POUR WET CONCRETE & COMPACT.
- LET CONCRETE CURE FOR MIN. 3 DAYS.
- START EXCAVATING GROUND DOWN TO REQUIRED RETAINING HEIGHT, SLOWLY & CAREFULLY, ONE BAY AT A TIME.
- WHEN EXCAVATION COMPLETE, INSERT SLEEPERS TO HEIGHT.
- REPEAT UNTIL ALL SLEEPERS INSTALLED.
- PLACE AG PIPE & CONNECT TO LPD & PLACE AND COMPACT SCREENING AS SHOWN ON DETAIL.
- BACKFILL WITH APPROVED FILL MATERIAL AND COMPACT. LEVEL AND CLEAN UP THE SITE.
- 11. CARRY OUT JOINT POST-INSPECTION OF ADJOINING STRUCTURE(S) INCLUDING PHOTOS.
- 12 IF ANY DEFECTS SUCH AS CRACKS DISCOVERED ON EXISTING STRUCTURES. CAREFULLY TAKE PHOTOS AND RECORD THEM JOINTLY.



CLASSIFICATION 'P' & WIND N2 REPORT NO: 1410 0540 - 1 A&Y ASSOCIATES - 6/12/2021

RAFT SLAB SCHEDULE

Overall Slab Depth - 400mm
Slab thickness - 100mm
Internal beam width - 300mm
Internal beams @ step-down width - min. 300mm
External beam width - 300mm

>>Vapour barrier 0.20mm th. in accordance with BCA to be lapped 200mm min. and taped at lap-joints.

CONCRETE

Concrete strength to be 20MPa at 28 days with a slump of 100mm at pouring. Min. cover to reinforcement to be 30mm

REINFORCEMENT

TOP

Slab mesh - SL81 Internal beams 2-N12 (tied to mesh) External beams 2-N12 (tied to mesh)

воттом

Internal beams - 3L-12TM20 External beams - 3L12TM20

MINIMUM LAP LENGTHS

3L-12TM20: 500mm SL 92/82 Mesh: 300mm N16 bars: 600mm

BEAM CORNERS & AT 'T's

LAPS TO BE FULL WIDTH **OF BEAM**

MASS CONCRETE BORED PIERS

450mm dia. Min. 32MPa grade concrete. Founding depth 2000mm from ground level. All Piers to be poured at once before the slab is poured. Finish slab levels as per Architectural Plans. It is builders responsibility to pour piers and finish at appropriate top level to suit finish slab levels. Concrete Piers supporting steel columns to be reinforced with a steel cage - Refer to Sht. No: 7.

- 1. IT IS BUILDER'S RESPONSIBILITY, TO DRAIN SURFACE & ROOF STORMWATER AWAY FROM FOUNDATION DURING & AFTER BUILDING.
- 2. WHERE CUT& FILL IS INVOLVED, FILL MUST BE COMPACTED WELL.
- 3. TIE 3 X N12 DIAGONAL BARS @ RE-ENTRANT CORNERS TO MESH
- 4. DIAGONAL BARS MAY BE CRANKED DOWN WHERE NEEDED

CLIENT: SHEDDEN FERNANDO

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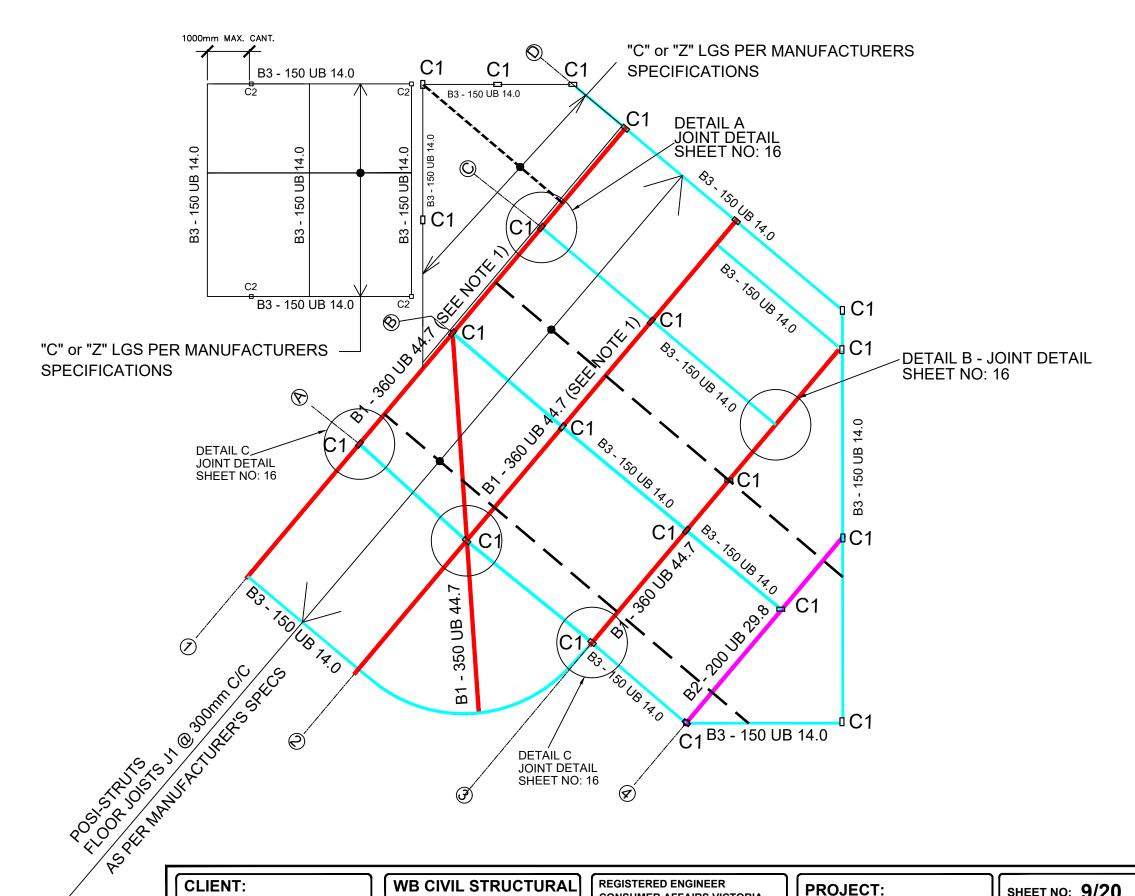
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DROMANA 3936

SHEET NO: 8/20

SCALE: AS SHOWN



L1 - FLOOR & CARPORT FRAMING DETAIL - NTS



L1 FLOOR & CARPORT FRAMING							
SCHEDULE							
MARK	SECTION	REMARKS					
B1	360 UB 44.7	MIN. G 300 (SEE NOTE 1 BELOW)					
B2	200 UB 29.8	MIN. G300					
В3	150 UB 14.0	MIN. G 300					
C1	200X100X6 RHS	MIN G450					
C2	100X100X4 SHS	TO BE ANCHORED TO GARAGE SLAB WITH 4/12mmø RAMSET OR SIMILAR ANCHORS MIN. EMBEDMENT 75mm IN CONCRETE. 10mm. STEEL BASEPLATE WELDED TO COLUMN BASE WITH CFW 6MM MIN. G450					
J1	@ 300mm C/C	POSI-STRUTS PER MANUFACTURER					
NOTE 1	NOTE 1 THESE 2, B1 – BEAMS MUST RUN ON COLUMNS & AT LEAST 2 CONTINUOUS SPANS, BEFORE CANTILEVER.						

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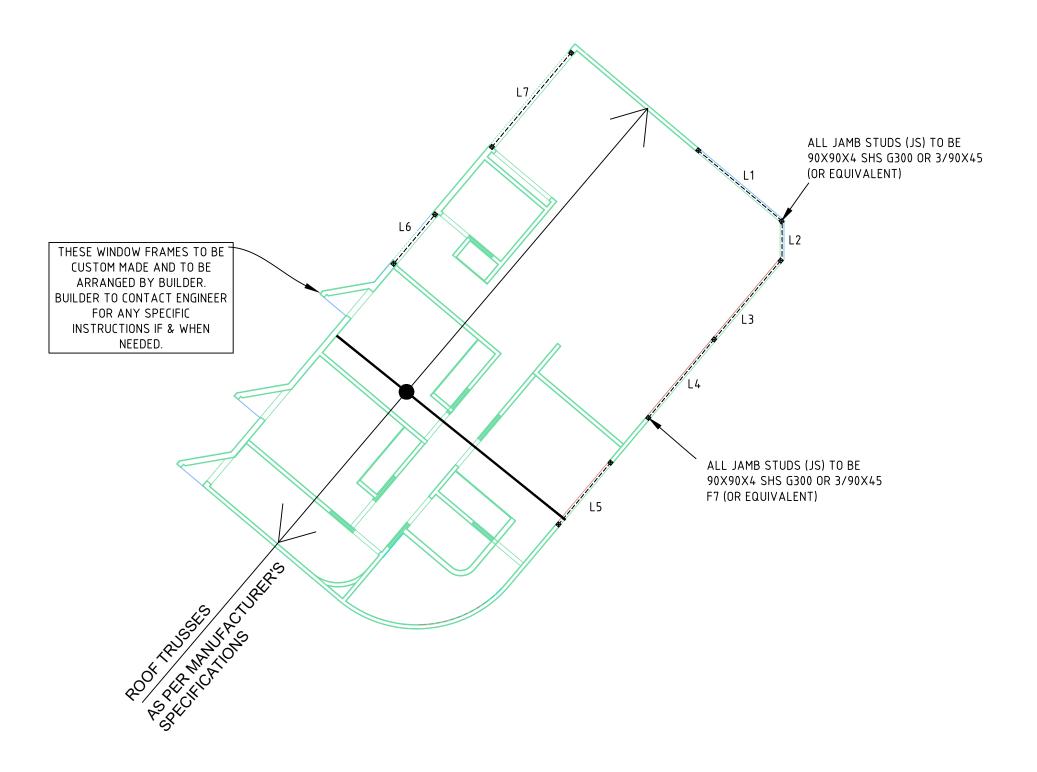
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SHEET NO: 9/20

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ROOF FRAMING PLAN - NTS



ROOF LINTEL SHEDULE MARK SECTION REMARKS OR EQUIVALENT L1 240mmX45mm F17 240mmX45mm F17 OR EQUIVALENT L2 L3 240mmX45mm F17 OR EQUIVALENT L4 240mmX45mm F17 OR EQUIVALENT L5 OR EQUIVALENT 240mmX45mm F17 <u>L6</u> 240mmX45mm F17 OR EQUIVALENT 240mmX45mm F17 OR EQUIVALENT L7 90X90X4 SHC G300 TIMBER JAMB STUDS F7 OR JS OR 3/90X45 F7 EQUIVALENT

CLIENT: SHEDDEN FERNANDO

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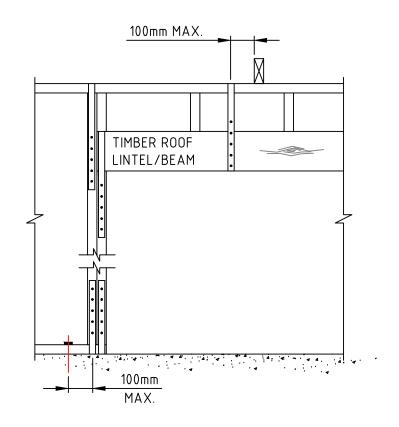
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TIMBER FRAME TIE DOWN DETAIL - NTS

THESE NOTES ARE TYPICAL DETAILS ONLY. BUILDER MAY USE EQUIVALENT MATERIALS & METHODS AS PER AS1684



TYPICAL TIMBER BEAM/LINTEL
TIE DOWN DETAIL

TIMBER ROOF LINTEL TIE DOWN SCHEDULE							
L	INTEL	WIND CLASSIFICATION (NON-CYCLONIC AREAS)					
	SPAN		N1 & N2		N3	N4	
0	- 1200		2/75×3.05¢ NAILS	NA	S. × 1 TOP & BOTTOM 4/2.8¢ ILS EACH END + M10 BOLT TO AB OR G.I.S. TO FLOOR FRAME	G.I.S. × 2 TOP & BOTTOM 4/2.8¢ NAILS EACH END + M10 BOLT TO SLAB OR FLOOR FRAME	
120	01 - 1800		2/75×3.05¢ NAILS	NA	.S. × 1 TOP & BOTTOM 6/2.8¢ ILS EACH END + M10 BOLT TO AB OR G.I.S. TO FLOOR FRAME	G.I.S. × 2 TOP & BOTTOM 6/2.8¢ NAILS EACH END + M12 BOLT TO SLAB OR FLOOR FRAME	
180	01 - 2400 2/75×3.05¢ NAILS			S. × 2 TOP & BOTTOM 4/2.8¢ ILS EACH END + M10 BOLT TO SLAB OR FLOOR FRAME	M12 BOLT/ROD THROUGH PLATE & LINTEL (EACH END) TO SLAB OR FLOOR FRAME		
24	401 – 3000 2/75×3.05¢ NAILS				M12 BOLT/ROD THROUGH PLATE & LINTEL (EACH END) TO SLAB OR FLOOR FRAME		
300	3001 - 3600 2/75×3.05¢ NAILS		NAILS EACH END + M12 BOLT TO LINTEL (M16 BOLT/ROD THROUGH PLATE & LINTEL (EACH END) TO SLAB OR FLOOR FRAME		
			FRAMING T	ΊE	DOWN SCHEDUL	E	
	ONNECTI	ON	WIND C	LAS	SIFICATION (NON-CYCL	ONIC AREAS)	
	UNNECTI	UN	N1 & N2		N3	N4	
STOREY	> STUDS TO BOTTOM/TOP PLATES		2/75×3.05¢ NAILS (UP TO 38 STUD) OR 2/90×3.05¢ NAILS (38-50 STUD)		G.I.S. 2/2.8¢ NAILS EACH END OR FRAMING ANCHOR × 1 WITH 4/2.8¢ NAILS EACH LEG		
/ UPPER	BOTTOM P TO SL				75 MASONRY NAILS 0.3m MAX CRS. OR M10 CAST IN BOLT (18 MIN. EMBEDMENT) 1.2m MAX. CR	0 M10 CAST IN BULTS WITH 180 MIN EMBEDMENT 1.2m MAY CDS	
SINGLE			LS	2/NO. 14 TYPE 17 SCREWS 90 MAX. CRS. (40 MIN. EMBEDMEN INTO JOIST)			

- 1. EQUIVALENT FIXING IS PERMISSIBLE TO BE ADOPTED IN LIEU OF ABOVE SPECIFICATION AND IT MUST BE IN ACCORDANCE WITH AS1684.2-2010
- 2. REFER TO TRUSS MANUFACTURER FOR TIE-DOWN FIXING ON ROOF BATTENS AND RAFTERS/TRUSSES
- 3. TIMBER MEMBERS ASSUMED TO BE JD4 GROUP OR STRONGER
- 4. HOUSE ASSUMED TO HAVE A MAXIMUM WIDTH OF 12m
- 5. STUDS ASSUMED TO BE AT 450 MAX. CRS.
- 6. THE TOP PLATE SHALL BE FIXED OR TIED TO THE LINTEL WITHIN 100mm OF EACH RAFTER/TRUSS, OR THE RAFTER/TRUSS FIXED DIRECTLY TO THE LINTEL WITH A FIXING OF EQUIVALENT TIE-DOWN STRENGTH TO THAT REQUIRED FOR THE RAFTER/TRUSS
- 7. G.I.S. MEANS 30 × 0.8 GALVANISED IRON STRAP

CLIENT: SHEDDEN FERNANDO

JOB NO: SF/DS/2022

WB CIVIL STRUCTURAL ENGINEERS

ABN: 84119322436

OFFICE: NO: 6 TENDULKAR DRIVE, VIC 3335 Mobile: 0401023328 / Ph: 03 9746 0089 Email: priyan@wbcse.com.au REGISTERED ENGINEER
CONSUMER AFFAIRS VICTORIA

PRIYAN WIJEYERATNE
PE 2448, F.I.E.(AUST)., C.P.ENG.
M.Eng(Struct)., M.Tech.(Mgt.), BSc(Civil)

PROJECT:
DOUBLE STOREY 2 UNITS
TOWNHOUSE
PROJECT ADDRESS:
9 GRANT STREET,
DROMANA 3936

SHEET NO:11/20

SCALE: AS SHOWN



TIMBER FRAME SIZING TABLE

TIMBER FRAMING MEMBERS (U.N.O)

STUDS:

90X35 MGP10 AT 450 MAX CRS 1ST FLOOR (MAX. HEIGHT 2700mm) 90 x 35 MGP10 AT 450 MAX. CRS. (MAX. GROUND FLOOR HEIGHT 2700mm)

90 x 45 MGP10 AT 450 MAX. CRS. (HEIGHT 2700-3000mm) 90 x 45 MGP12 AT 450 MAX. CRS. (HEIGHT 3000-3600mm)

NOGGINGS AT MIDHEIGHT

2-90 x 45 MGP12 AT 450 MAX. CRS. (HEIGHT 3600-4200mm)

NO NOTCHING OF STUDS NOGGINGS AT 1/3 HEIGHT

DOUBLE STUDS: 2-90 x 45 MGP10 STUDS U.N.O.

FIX END STUD WALL TO MASONRY WALLS WITH

M10 DYNABOLT AT TOP, BOTTOM AND 1200 MAX. CRS. TYPICAL

WALL PLATES:

UPPER STOREY: TOP PLATE - 1 X 45 x 90 MGP10 NOT TRENCHED

BTM PLATE - 45 x 90 MGP10 NOT TRENCHED

LOWER STOREY: TOP PLATE - 45 x 90 MGP10 NOT TRENCHED

BTM PLATE - 45 x 90 MGP10 NOT TRENCHED

FIXED TO SLAB WITH 75mm MASONRY NAILS AT 600mm MAX. CRS.

(FOLLOW TABLE 9.4 AS 1684.2)

REFER BRACING PLAN FOR FIXING REQUIREMENTS

PROVIDE DOUBLE TOP PLATES IF SUPPORTING METAL ROOF TRUSS

STUDS AT SIDE OPENINGS:

OPENING WIDTH STUDS:

WALL BRACING:

BRACING OF ALL STUD WALLS TO BE IN ACCORDANCE WITH THE RESIDENTIAL TIMBER FRAMING CONSTRUCTION AS 1684.2-2010. U.N.O.

FIXING REQUIREMENTS:

GENERAL: REFER TO AS1684.2-2010 RESIDENTIAL TIMBER FRAMING

CONSTRUCTION MANUAL TYPICAL FIXING REQUIREMENTS.

MINIMUM JOINT REQUIREMENTS FOR SHEET ROOF STRUCTURES:

JOINT OR MEMBER:	MINIMUM FIXING DETAILS:			
RAFTERS & PURLINS	METAL STRAPS, APPROVED FRAMING ANCHORS OR EQUIVALENT SHALL BE USED TO TIE RAFTERS TO TOP WALL PLATES AND TOP WALL PLATES TO STUDS (OR RAFTERS DIRECTY TO STUDS) WITH A MINIMUM OF 300MM x 3.15MM DIAMETER NAILS OR CLOUTS INTO THE SIDE GRAIN ON EACH MEMBER. MAXIMUM SPACINGS OF FASTENINGS SHALL BE 1800MM OR THREE STUD SPACINGS, WHICHEVER IS THE LESSER.			
LARGE SPAN ROOF MEMBER (SUCH AS TRUSSES OR ROOF BEAMS OF SPAN 6000MM OR GREATER).	AS FOR RAFTERS & PURLINS SPACINGS OF FASTNINGS SHALL NOT EXCEED THE SPACING OF THE ROOF MEMBERS.			

FIXING FOR STRUCTURES IN AREAS SUBJECT TO RELATIVELY HIGH WINDS:

GENERAL: REFER TO AS1684.2 –2010 RESIDENTIAL TIMBER FRAMING CONSTRUCTION MANUAL

ADDITIONAL FIXING REQUIREMENTS.

NOTE: EQUIVALENT TIMBER GRADE CAN BE USED TO REPLACE TIMBER GRADES SPECIFIED

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PROJECT:
DOUBLE STOREY 2 UNITS
TOWNHOUSE
PROJECT ADDRESS:
9 GRANT STREET,

DROMANA 3936

SHEET NO:12/20

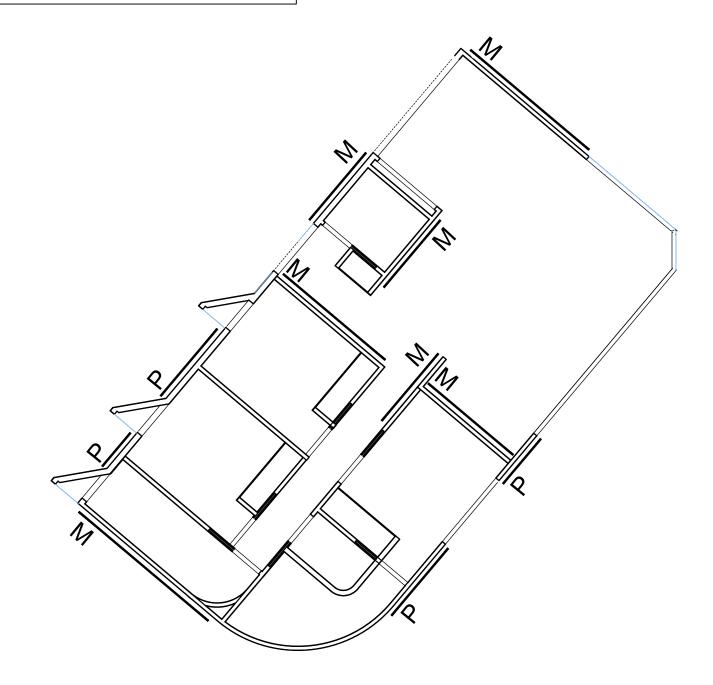
SCALE: AS SHOWN



BRACING PLAN GROUND & UPPER STOREYS - NTS

NOTES:

- NO GROUND FLOOR BRACING REQUIRED AS STEEL COLUMNS & BEAMS PROVIDE REQUIRED LATERAL SUPPORT.
- 2. L1 (UPPER FLOOR) TIMBER FRAME BRACING TO AS1864 & AS SPECIFIED HERE.
- 3. TIMBER FRAMING TO AS1864.
- 4. WIND CLASSIFICATION AS PER **A&Y ASSOCIATES REPORT - N2.**



L1 - FLOOR - NTS

METAL BRACING

PLYWOOD BRACING

CLIENT: SHEDDEN FERNANDO

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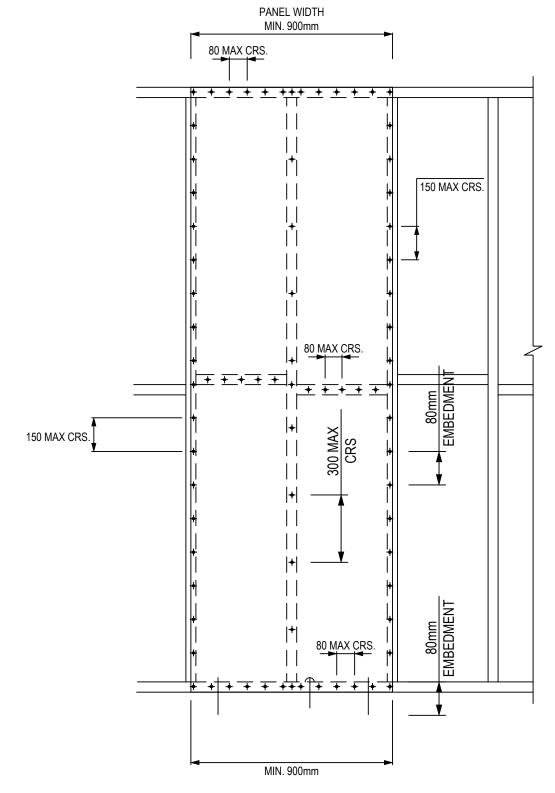
PROJECT ADDRESS: 9 GRANT STREET, **DROMANA 3936**

SHEET NO: 13/20

SCALE: AS SHOWN



WALL BRACING TYPES - TYPICAL 1 - NTS



MINIMUM PLYWOOD THICKNESS (mm)						
STRESS GRADE STUD SPACING						
	450 600)				
F8	7 7					
F11	4.5 4.	5				
F14	4 4					
F27	3 3					

NOTE:

PLYWOOD SHALL BE NAILED TO FRAME USING 30X2.8Ø GALV. FLAT HEAD NAILS @ CRS INDICATED ON FIGURE.

PLYWOOD BRACING SYSTEM - PW (BRACING CAPACITY - 3.4kN/m)

CLIENT: SHEDDEN FERNANDO

JOB NO: SF/DS/2022

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PROJECT:
DOUBLE STOREY 2 UNITS
TOWNHOUSE
PROJECT ADDRESS:
9 GRANT STREET,

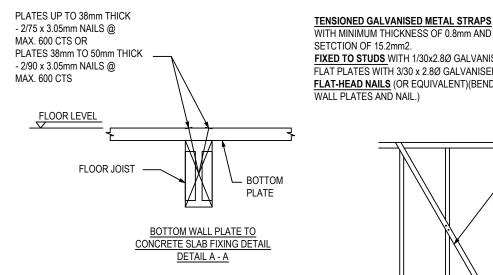
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SHEET NO: 14/20

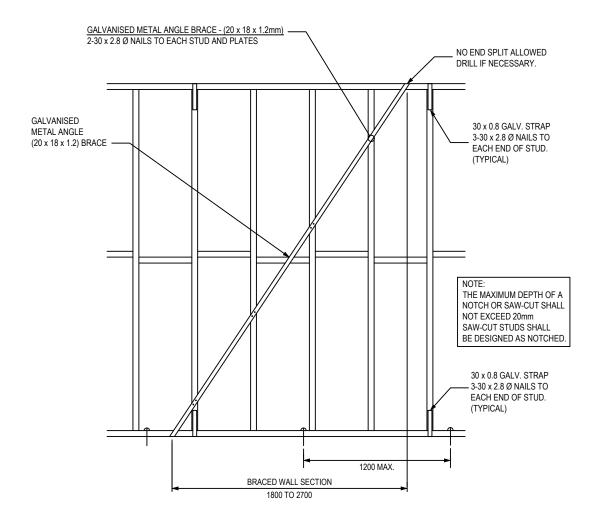
SCALE: AS SHOWN



WALL BRACING TYPES - TYPICAL 2 - NTS



WITH MINIMUM THICKNESS OF 0.8mm AND MINIMUM NET SETCTION OF 15.2mm2. FIXED TO STUDS WITH 1/30x2.8Ø GALVANISED FLAT PLATES WITH 3/30 x 2.8Ø GALVANISED FLAT-HEAD NAILS (OR EQUIVALENT)(BEND STRAPS OVER WALL PLATES AND NAIL.) OR 60° TO 1200 MA. BRACES WALL SECTION FIX BOTTOM PLATE TO FLOOR **DOUBLE DIAGONAL METAL TENSION STRAPS** FRAME OR SLAB WITH NOMINAL FIXING ONLY (SEE AS1684.2 (BRACING CAPACITY - 1.5kN/m TABLE 9.4)



DIAGONAL METAL ANGLE BRACES
(BRACING CAPACITY - 1.5kN/m)

CLIENT: SHEDDEN FERNANDO

JOB NO: SF/DS/2022

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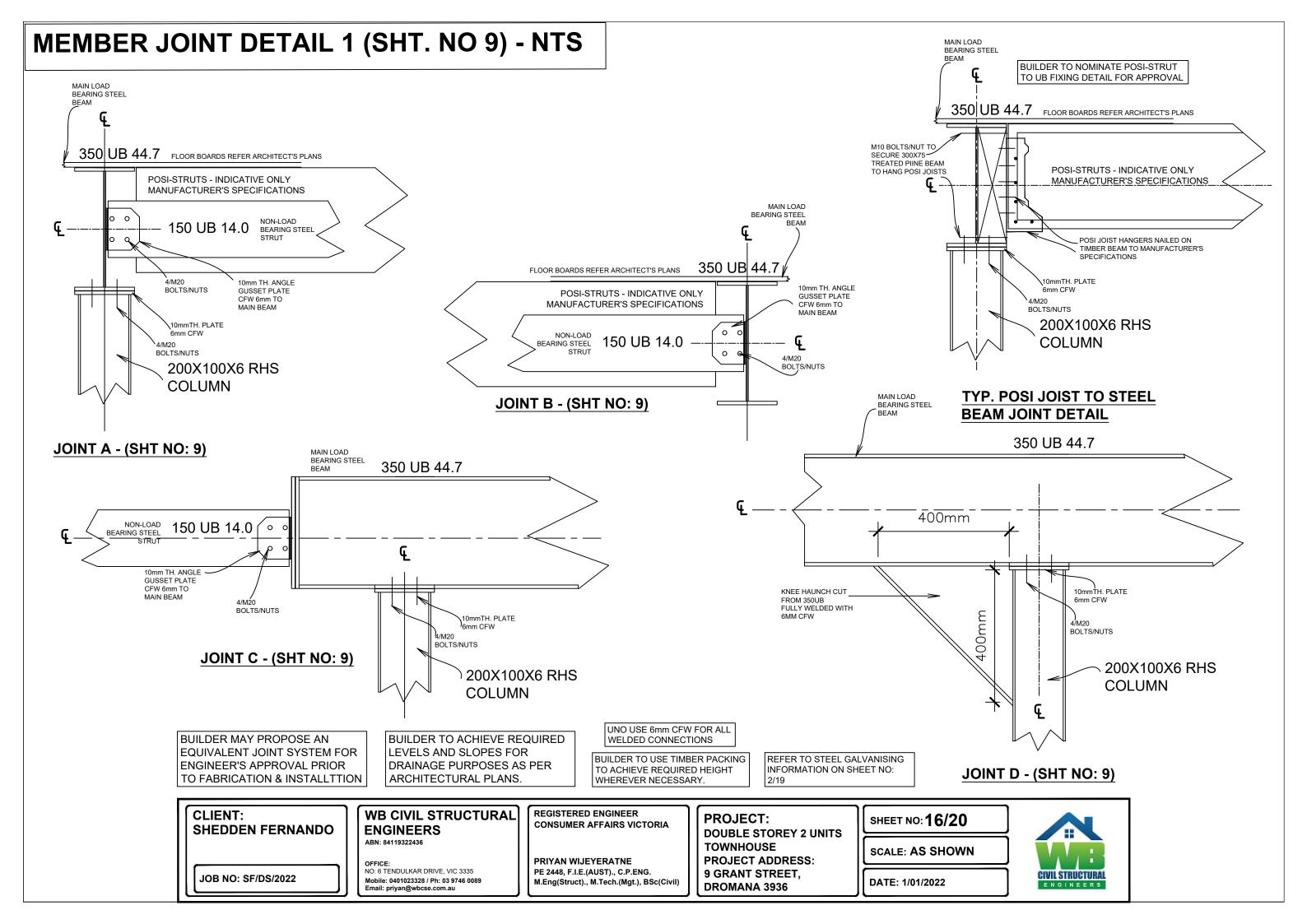
PROJECT:
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TOWNHOUSE
PROJECT ADDRESS:
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DROMANA 3936

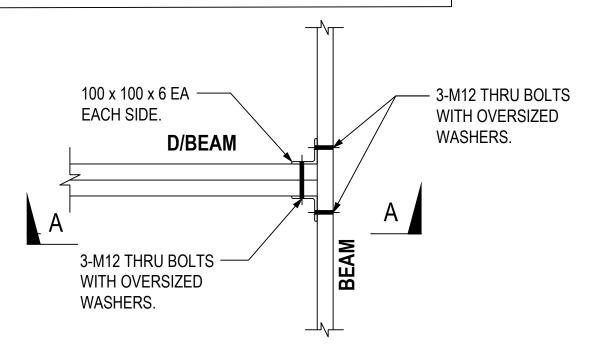
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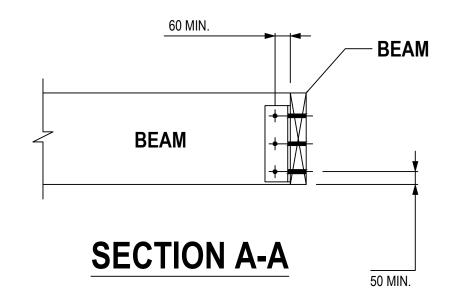
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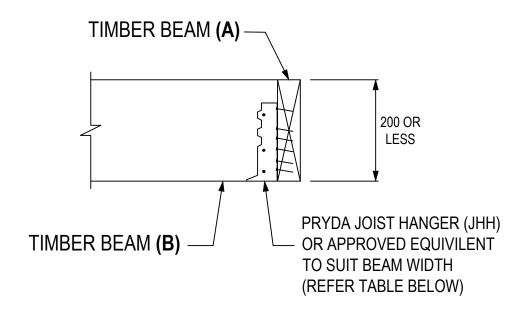


TYPICAL MEMBER JOINT DETAIL 2 - NTS





TIMBER BEAM TO TIMBER BEAM CONNECTION DETAIL



BUILDER MAY PROPOSE AN EQUIVALENT JOINT SYSTEM FOR ENGINEER'S APPROVAL PRIOR TO FABRICATION & INSTALLTTION

BUILDER TO ACHIEVE REQUIRED LEVELS AND SLOPE FOR DRAINAGE PURPOSES AS PER ARCHITECTURAL PLANS.

JOIST HANGER DETAIL

CLIENT: SHEDDEN FERNANDO

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PROJECT:
DOUBLE STOREY 2 UNITS
TOWNHOUSE
PROJECT ADDRESS:

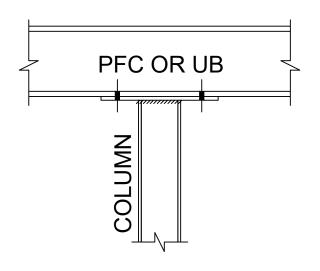
PROJECT ADDRESS:
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DROMANA 3936

SHEET NO: 17/20

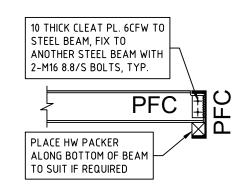
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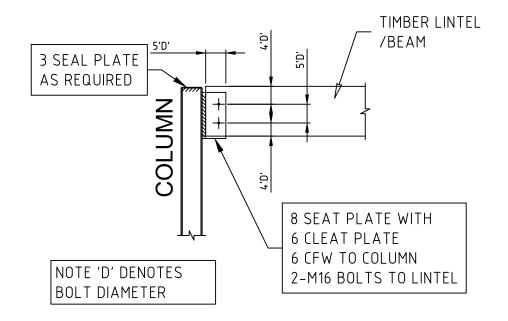
TYPICAL MEMBER JOINT DETAIL 3 - NTS



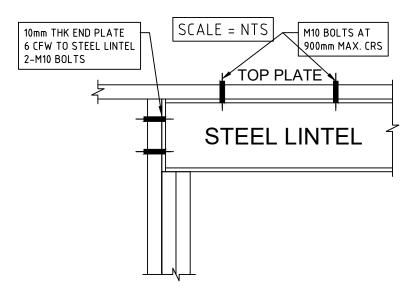
STEEL BEAM TO STEEL COLUMN DETAIL



STEEL BEAM TO STEEL BEAM DETAIL



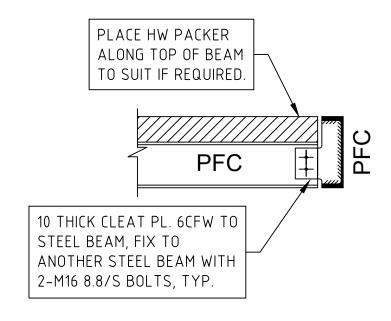
TIMBER BEAM/LINTEL TO S/COLUMN CONNECTION DETAIL



STEEL LINTEL TO DOUBLE STUD DETAIL

BUILDER MAY PROPOSE AN EQUIVALENT JOINT SYSTEM FOR ENGINEER'S APPROVAL PRIOR TO FABRICATION & INSTALLTTION

BUILDER TO ACHIEVE REQUIRED LEVELS AND SLOPE FOR DRAINAGE PURPOSES AS PER ARCHITECTURAL PLANS.



STEEL BEAM TO STEEL BEAM DETAIL

CLIENT: SHEDDEN FERNANDO

JOB NO: SF/DS/2022

WB CIVIL STRUCTURAL ENGINEERS

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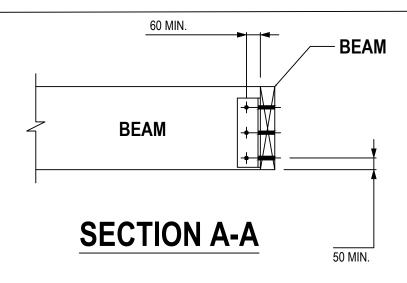
PROJECT:
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PROJECT ADDRESS:
9 GRANT STREET,
DROMANA 3936

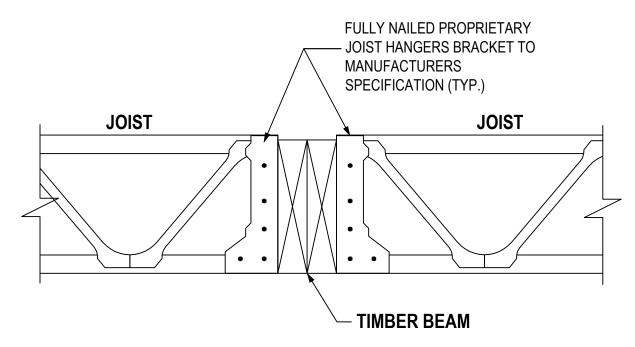
SHEET NO: 18/20

SCALE: AS SHOWN



TYPICAL MEMBER JOINT DETAIL 4 - NTS





FLOOR JOIST TO TIMBER BEAM CONNECTION DETAIL

BUILDER MAY PROPOSE AN EQUIVALENT JOINT SYSTEM FOR ENGINEER'S APPROVAL PRIOR TO FABRICATION & INSTALLTTION

BUILDER TO ACHIEVE REQUIRED LEVELS AND SLOPE FOR DRAINAGE PURPOSES AS PER ARCHITECTURAL PLANS.

CLIENT: SHEDDEN FERNANDO

JOB NO: SF/DS/2022

WB CIVIL STRUCTURAL ENGINEERS

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PROJECT:
DOUBLE STOREY 2 UNITS
TOWNHOUSE
PROJECT ADDRESS:
9 GRANT STREET,
DROMANA 3936

SHEET NO: 19/20

SCALE: AS SHOWN

DATE: 1/01/2022



100 x 100 x 6 EA
EACH SIDE.

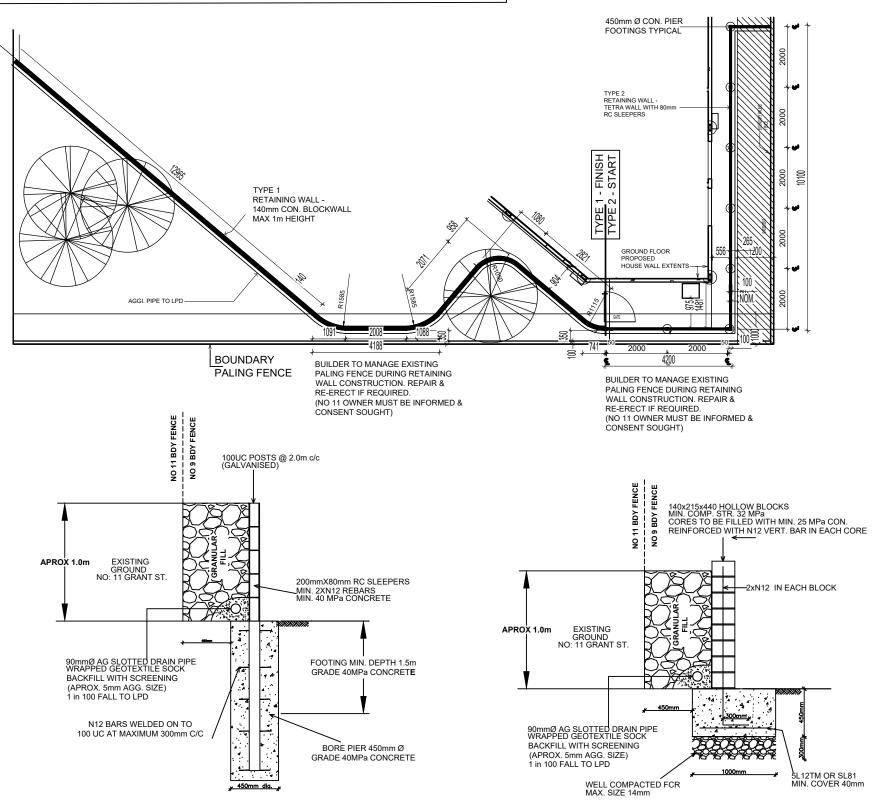
D/BEAM

3-M12 THRU BOLTS
WASHERS.

3-M12 THRU BOLTS
WITH OVERSIZED
WASHERS.

TIMBER BEAM TO TIMBER
BEAM CONNECTION DETAIL

RETAINING WALLS DETAIL - NTS



NOTES - TYPE 1 - RC CORE FILLED CON BLOCK RETAINING
WALL

SEQUENCE OF CONSTRUCTION

- HAVE NEIGHBOR INFORMED & CONSENT FORM SIGNED OFF
- CARRY OUT JOINT PRE-INSPECTION OF ADJOINING EXISTING STRUCTURE(S) & TAKE PHOTOS FOR EXISTING CONDITION RECORD.
- 3. EXCAVATE GROUND & PREPARE FOR FOR FOOTINGS (REFER TO NOTE 12).
- PLACE 4R12TM WITH 40mm COVER, AND POUR CONCRETE.
- 5. LET CONCRETE CURE FOR MIN. 3 DAYS.
- START LAYING CON. BLOCKS. INCLUDE 20MPa CONCRETE TO CORE FILL AND R12 BARS IN EACH CORE VERTICALLY.
- 7. COMPLETE LAYING BLOCKWORK.
- 8. PLACE AG PIPE & CONNECT TO LPD & PLACE AND COMPACT SCREENING AS SHOWN ON DETAIL.
- BACKFILL WITH APPROVED GRANULAR FILL MATERIAL AND COMPACT. LEVEL AND CLEAN UP THE SITE.
- CARRY OUT JOINT POST-INSPECTION OF ADJOINING STRUCTURE(S) INCLUDING PHOTOS.
- IF ANY DEFECTS SUCH AS CRACKS DISCOVERED ON EXISTING STRUCTURES, CAREFULLY TAKE PHOTOS AND RECORD THEM JOINTLY.
- 12 IT IS ADVISED TO REMOVE EXISTING PALING FENCE WHERE CLEARANCE BTW FENCE AND WALL IS LESS THAN 500mm AND RE-INSTALL AFTER RW CONSTRUCTION, WITH THE CONSENT OF THE ADJOINING OWNER.

NOTES - TYPE 2 - RC SLEEPER RETAINING WALL

SEQUENCE OF CONSTRUCTION

- HAVE NEIGHBOR INFROMED & CONSENT FORM SIGNED OFF.
- 2. CARRY OUT JOINT PRE-INSPECTION OF ADJOINING EXISTING STRUCTURE(S) & TAKE PHOTOS FOR EXISTING CONDITION RECORD.
- BORE GROUND FOR FOOTINGS.
- PLACE 100UCs & ALIGN. POUR WET CONCRETE & COMPACT.
- LET CONCRETE CURE FOR MIN. 3 DAYS.
- START EXCAVATING GROUND DOWN TO REQUIRED RETAINING HEIGHT, SLOWLY & CAREFULLY, ONE BAY AT A TIME.
- 7. WHEN EXCAVATION COMPLETE, INSERT SLEEPERS TO HEIGHT.
- 8. REPEAT UNTIL ALL SLEEPERS INSTALLED.
- PLACE AG PIPE & CONNECT TO LPD & PLACE AND COMPACT SCREENING AS SHOWN ON DETAIL.
- BACKFILL WITH APPROVED GRANULAR FILL MATERIAL AND COMPACT. LEVEL AND CLEAN UP THE SITE.
- 11. CARRY OUT JOINT POST-INSPECTION OF ADJOINING STRUCTURE(S) INCLUDING PHOTOS.
- 12 IF ANY DEFECTS SUCH AS CRACKS DISCOVERED ON EXISTING STRUCTURES, CAREFULLY TAKE PHOTOS AND RECORD THEM JOINTLY.
- IT IS ADVISED TO REMOVE EXISTING PALING FENCE WHERE CLEARANCE BTW FENCE AND WALL IS LESS THAN 500mm AND RE-INSTALL AFTER RW CONSTRUCTION, WITH THE CONSENT OF THE ADJOINING OWNER.

TYPE 2 - RETAINING WALL (REFER TO PLAN ABOVE FOR START & FINISH)

TYPICAL CONCRETE SLEEPER RETAINING WALL (PRE-CAST CON.)

RECOMMENDED PRODUCT: TETRAWAL

CONTACT DETAIL: 360 BACCHUS MARSH ROAD, CORIA, GEELONG 3214 - PH: 1300 838 729

TYPE 1 - RETAINING WALL (REFER PLAN ABOVE FOR START & FINISH)

TYPICAL RC CORE FILLED CON. BLOCK RETAINING WALL

RECOMMENDED BLOCK SIZE: 140mmX215mmX440mm

CLIENT: SHEDDEN FERNANDO

JOB NO: SF/DS/2022

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DOUBLE STOREY 2 UNITS
TOWNHOUSE
PROJECT ADDRESS:
9 GRANT STREET,
DROMANA 3936

SHEET NO: 20/20

SCALE: AS SHOWN

