APD

DHC

STRUCTURAL | CIVIL

APD 300D StormSlab® TANKS
CLASS M SOILS - THREE STOREY

APD LTD

REF NO: 7527-M(3)

1.GENERAL NOTES :

1.1 All work to be in accordance with New Zealand Building Code. All codes refer to the current edition plus all amendments.
1.2 These drawings are to read in conjunction with the drawings and specification of other consultants e.g. Architect, Mechanical, Building Services, Electrical etc. The Principal Consultant must be notified of any discrepancy.
1.3 No dimensions are to be scaled from these drawings. All dimensions to be established on site.
1.4 During construction, the structure shall be maintained in a stable state by means of temporary propping, bracing and guying and no part shall be overstressed.
1.5 During construction, all suspended floors and beams shall be propped U.N.O. for 28 days minimum.
1.6 Temporary propping is the responsibility of the contractor.
1.7 If during construction any part of the work shows signs of distress, excessive deflection, conflict of components or other indications of a problem, the Contractor shall immediately notify the Engineer who shall investigate and issue such instructions as are considered necessary.
1.8 Precast unit end seating shall be to manufacturer recommendations U.N.O.

2. CONCRETE NOTES :

2.1 Materials and workmanship to be in accordance with N.Z.S. 3109.
2.2 For minimum cover to principal reinforcement refer to NZ 3101 clause 5.11.3.3 or shall be minimum:

Member	Against natural ground	Against boxing or screed conc.	Exposed to weather	Not exposed to weather
Foundations, Beams, Columns (Principal reinforcing)	75mm	50mm	50mm	35mm

2.3 Slump and mix design shall be:

Member	Concrete slump (max.)	Concrete mix design
columns, beams floor slab on ground suspended slabs	120mm 80mm 80mm	refer to concreter specification

2.4 No holes or chases are to be made in concrete members other than those shown on drawings.
2.5 Concrete grades:
- Piles - 25MPa at 28 Days
- Foundations: - 25MPa at 28 Days
- Floor slab on grade: - 25MPa at 28 Days, min tensile strength 3.5MPa U.N.O.
- Suspended slabs, beams: - N/A
- Columns: - N/A
- Precast Panels: - 30MPa at 28 Days
- Masonry infill: - 25MPa at 28 Days

2.6 Allowance is to made for all cast-in cleats and bolts for fixing roof and floor beams etc.
2.7 Slabs on ground shall be sawcut 1/4 of slab thickness to approved dimension between 24 and 48 hours after pouring unless otherwise instructed. Alternate wires and/or bars are to be cut 40mm from joints and no laps are to occur at joints. Alternative construction may supersede these details ie. pours in panels or strips. Sawcut grids 5000x5000 maximum unless otherwise noted.
2.8 Suspended slabs and beam are likely to have a hog (precamber). This must be allowed for in construction and setting out of floor levels and in calculation of concrete topping volumes.
2.9 Suspended floors are to be poured to thickness – and NOT to a level.
2.9a All concrete that is to be poured against is to be scabbled to 5mm amplitude.

3. REINFORCEMENT NOTES :

3.1 Reinforcement is shown diagrammatically and is not necessarily shown in true projection.
3.2 Reinforcing has been designated;
- (a) High Yield deformed grade 500E (fy = 500 Mpa) e.g. D20H
- (b) High Yield plain grade 500E (fy = 500 Mpa) e.g. R20H
- (c) Mild Steel deformed grdad 300E (fy = 300 Mpa) e.g. D16
- (d) Mild Steel plain grade 300E (fy = 300 Mpa) e.g. R6

3.3 Laps in concrete reinforcement to be made only in the positions shown and shall be; (unless shown otherwise)

Deformed bars	D10	D12	D16	D20	D25	D32	D40
Grade 300	400	480	640	800	1000	1250	1600
Grade 500	650	800	1050	1300	1650	2100	2600

3.5 Reinforcement mesh laped with a minimum of 2 cross wire but not less than:
SE62-SE72 Mesh lap length 300mm; SE82-SE92 Mesh lap length 400mm
3.6 Where laps are not shown on the drawings, reinforcement in slabs and walls may, if approved, be lapped at random in a staggered pattern.
3.7 No welding, heating or reverse bending of bars is permitted without the consent of the engineer.
3.8 Reinforcement in slabs is to be supported on stools or other approved methods - starters to be tied in place before pouring.
3.9 All steel to be compliant with AS/NZS 4671 or equivalent. Steel reinforcing material shall be ductility class "E".

4. BLOCKWORK NOTES :

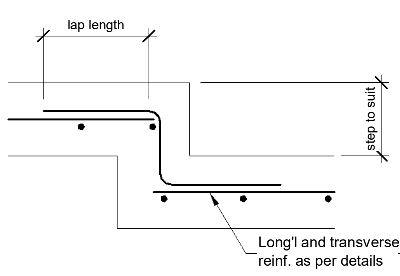
4.1 All blockwork shall be under the direct supervision of a registered Mason who shall provide continuous inspection. All work shall comply with N.Z.S. 4210 Masonry Materials and Workmanship.
4.2 Masonry is to be constructed by the 'High Lift' method with clean out ports at every vertical bar and at the bottom of every lift. Bottom course to be open ended bond beam blocks placed upside down.
4.3 Fix vertical bars before laying blocks and place horizontal bars as laying proceeds.
4.4 All cells filled unless otherwise noted.
4.5 Concrete for filling blockwork to have a compressive strength as shown in CONCRETE note 2.5 above and to have expanding admixture added on site and mixed immidiatly prior to placing.

5. STEELWORK NOTES :

5.1 All structural steelwork to be grade 300 unless noted otherwise complying with the appropriate standards listed in N.Z.S 3404.
5.2 Bolted connections to be made with grade 8.8 bolts, snug thightened, to A.S.1252. with 2mm clearance to holes unless shown otherwise.
5.3 Bolt threads to be excluded from shear plane.
5.4 All welding to be arc welding in accordance with AS/N.Z.S. 1554.1. All welds to be 6mm fillet continuous unless noted otherwise.
5.5 Do not paint steelwork that is to be encased in concrete.
5.6 This set of structural steelwork drawings show the design intent. Shop drawings remain the responsibility of the contractor.
5.7 All holding down bolts and other fixing devices are to be set by a template and checked for level and position before concreting.
5.8 Check and verify all dimensions and levels on site before commencing fabrication of any structural steelwork.
5.9 Unless shown otherwise, all baseplates shall bear directly on 25 +/- 5mm of dry pack mortar.
5.10 Washers tapered where necessary, are to be used under all nuts & bolt heads.
5.11 All R.H.S members are to be capped and all joints sealed.
5.12 Where items are to be hot dip galvanised, allow for tolerances, vent holes etc. as necessary.
5.13 All welding symbols shown on the drawings are in accordance with N.Z.S. 1100.501:1985.

6. INSPECTION NOTES :

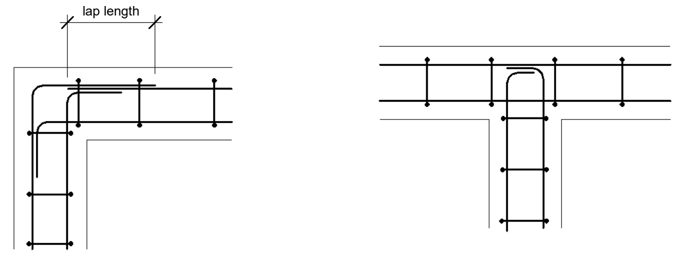
6.1 Adequate notice is required by the Engineer for inspection of the works. The Contractor must be satisfied that the works have been completed in accordance with the drawings and specification before confirming an inspection by the Engineer.



SINGLE LAYER REINF. (elevation)

DOUBLE LAYER REINF. (elevation)

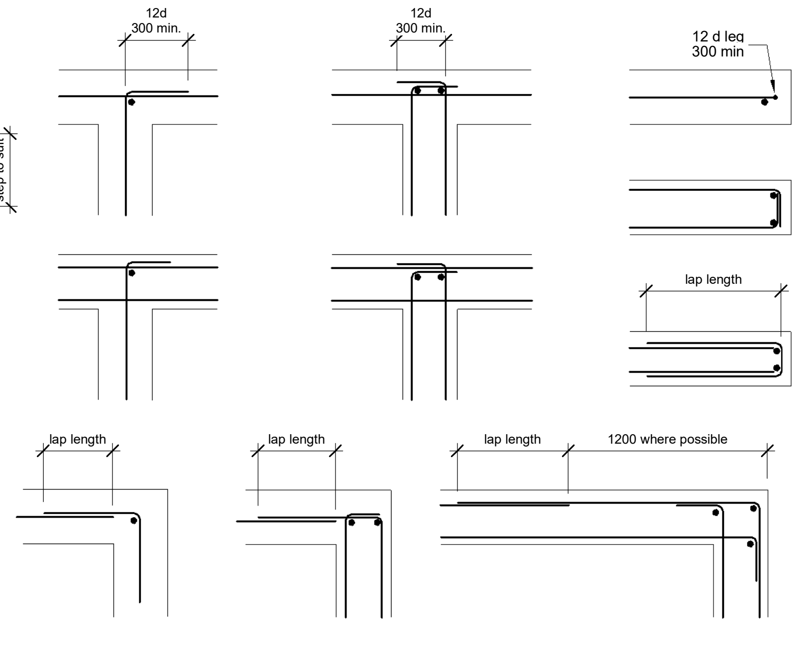
FOUNDATION STEPS



'L' JUNCTION - TYPE 1 (plan)

'T' JUNCTION - TYPE 1 (plan)

FOUNDATION JUNCTIONS

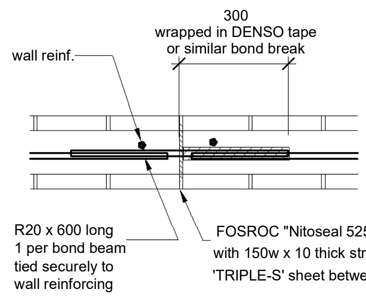


WALL JUNCTIONS AND TERMINATIONS

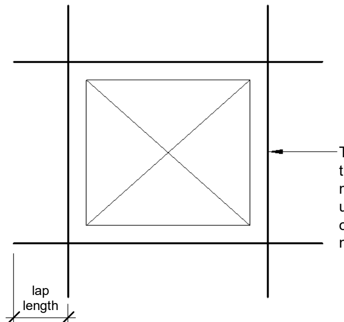
Notes:
1. Details apply unless shown otherwise on drawings.
2. Standard laps to be used unless shown otherwise.

Deformed bars	D10	D12	D16	D20	D25
Grade 300	400	500	650	800	1050
Grade 500	700	900	1200	1400	1750

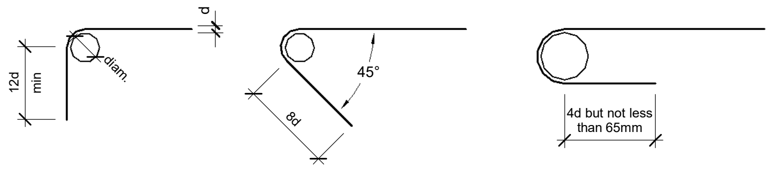
LAPS IN MASONRY REINFORCEMENT



TYP. BLOCK WALL CONTROL JOINT



MIN. TRIMMER REQUIRED TO WALL AND SLAB PENETRATIONS GREATER THAN 200Ø OR 200 x 200 UNLESS SHOWN OTHERWISE



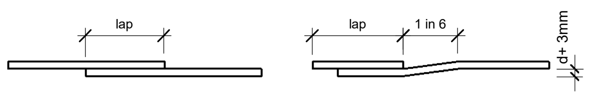
MAIN REINFORCEMENT

steel grade	bar size	min. dia. of bend
300 MPa or 500 MPa	6 - 20	5 d
	25-40	6 d

TIES AND STIRRUPS

steel grade	bar size	bar type plain diam	bar type deformed diam
300 MPa or 500 MPa	6 - 20	2 d	4 d
	25-40	3 d	6 d

REINFORCING BENDS

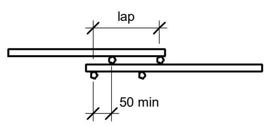


PARALLEL LAP

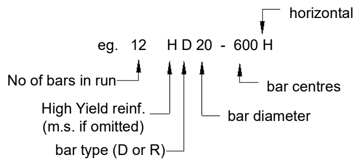
OFFSET LAP

For lap lengths see REINFORCEMENT note No.3

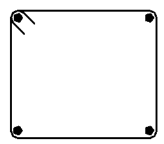
REINFORCING LAPS



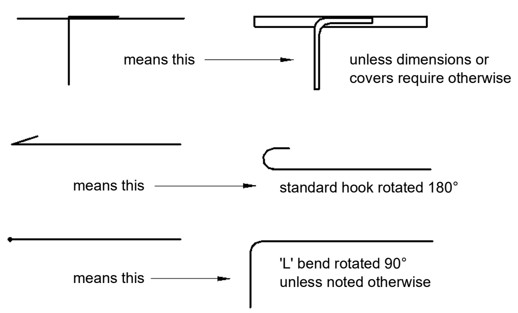
REINFORCING MESH LAPS



REINFORCING IDENTIFICATION



BEAM AND COLUMN STIRRUPS



REINFORCING REPRESENTATION

SOME COMMON ABBREVIATIONS

GENERAL
- COS CHECK ON SITE
- ES EQUALLY SPACED
- EXTG EXISTING
- FL FINISHED LEVEL
- GL GROUND LEVEL
- LG LONG
- NTS NOT TO SCALE
- SED SMALL END DIAMETER
- SFL STRUCTURAL FINISHED LEVEL
- TBA TO BE ADVISED
- TBC TO BE CONFIRMED
- TYP TYPICAL
- UNO UNLESS NOTED OTHERWISE

CONCRETE & REINFORCEMENT
- PC PRECAST CONCRETE
- PCP PRECAST CONCRETE PANEL
- PS PRESTRESSED CONCRETE
- RC REINFORCED CONCRETE
- REO REINFORCEMENT
- B BOTTOM
- C CENTRAL
- CAR COVER ALL ROUND
- CJ CONSTRUCTION/CONTROL JOINT
- CVR COVER
- EF EACH FACE
- EW EACH WAY
- FF FAR FACE
- H HORIZONTAL
- NF NEAR FACE
- SC SAWCUT
- T TOP
- V VERTICAL
- ABR ALTERNATE BAR REVERSED
- ABS ALTERNATE BAR STAGGERED
- LAR LAP AT RANDOM
- NL NO LAP
- STA STARTER(S)
- STR STIRRUP
- TRM TRIMMER

STEEL
- TOS TOP OF STEEL
- T/O TOP OF
- U/S UNDERSIDE
- CRS CENTRES
- DIA DIAMETER
- PCD PITCH CIRCLE DIAMETER
- R RADIUS
- C/W COMPLETE WITH
- HD HOLDING DOWN (BOLTS)
- HD GALV HOT DIP GALVANISED

WELDING
- FW FILLET WELD
- CFW CONTINUOUS FILLET WELD
- FWAR FILLET WELD ALL ROUND
- SVBW SINGLE V BUTT WELD
- DVBW DOUBLE V BUTT WELD
- SBBW SINGLE BEVEL BUTT WELD
- DBBW DOUBLE BEVEL BUTT WELD

REFER ARCHITECTURAL DRAWINGS FOR ALL DIMENSION, LEVELS, SETDOWNS, NIBS, REBATED, DUCTS THRU FLOORS / WALLS ETC, AND ALL OTHER SETTING OUT UNLESS SHOWN

THE STRUCTURAL DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND ALL OTHER RELEVANT DRAWINGS ASSOCIATED WITH THE PROJECT.

NOTES:

1. ALL STRUCTURAL STEEL TO BE CONSTRUCTION CATEGORY 2 IN ACCORDANCE WITH AS/NZS 5131:2016

REV	DATE	AMENDMENT
A	26/04/24	FOR BUILDING CONSENT

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STRUCTURAL | CIVIL
1/30 Ponsonby Rd, Grey Lynn
Auckland 1011
Ph:09 520 0355 E: info@dhc.nz

CLIENT
APD

FOR BUILDING CONSENT

CLASS M SOILS - THREE STOREYS - 300D TANKS

STANDARD NOTES AND DETAIL

DESIGNED IR	DATE 26/04/24
DRAWN JT	CHECKED AH
A1 SCALE 1 : 20	A3 SCALE

JOB No.	DWG No.	REVISION
7527-M(3)	S002	A

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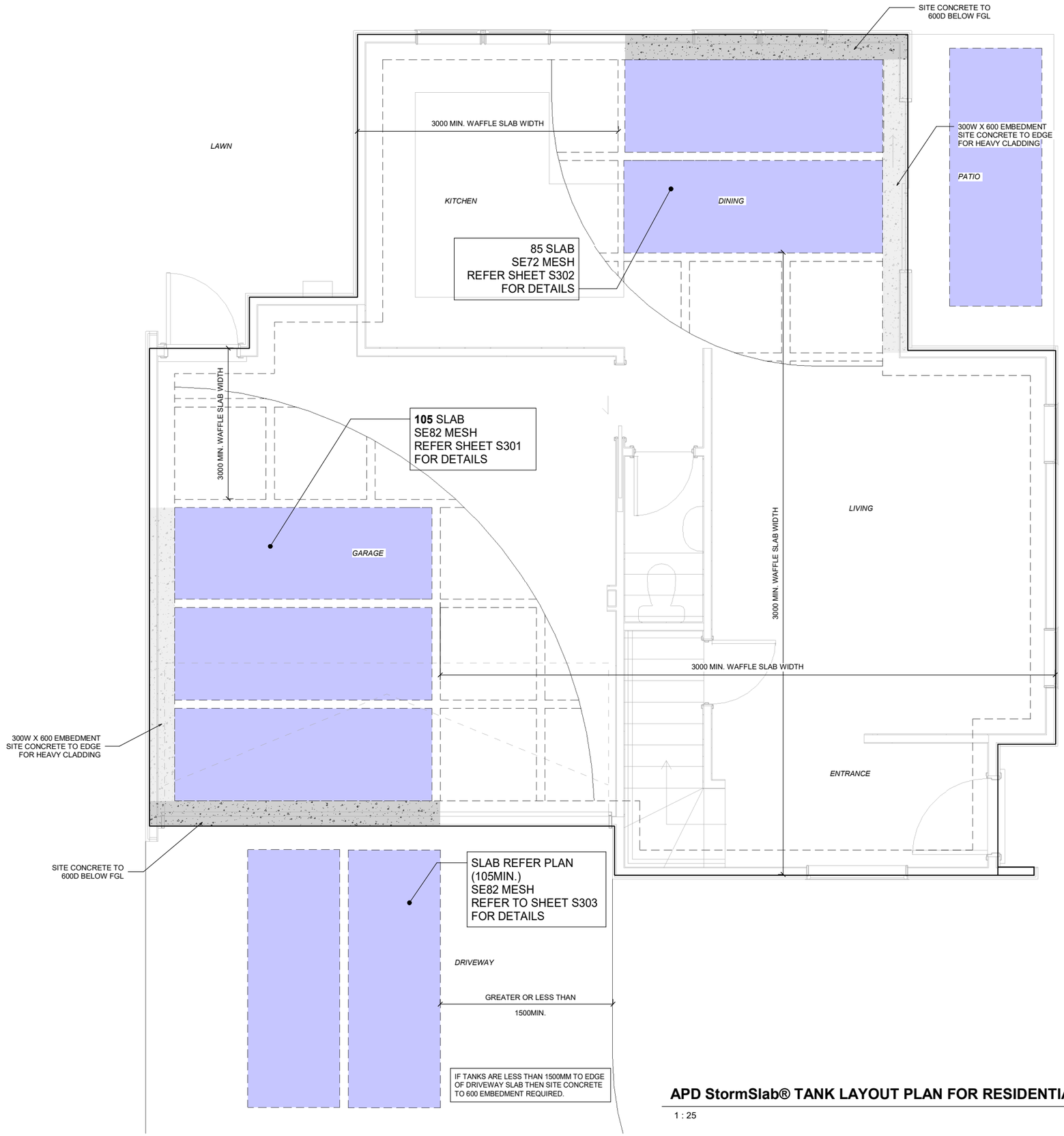

APD StormSlab® TANK LAYOUT PLAN FOR RESIDENTIAL SLABS

1 : 25

NOTES:

1. REFER TO ARCHITECT'S DRAWINGS FOR BOUNDARY LINE SURVEY INFORMATION
2. REFER TO ARCHITECTURAL DRAWINGS FOR SETOUT
3. REFER TO ARCHITECTURAL DRAWINGS FOR ALL TIMBER FRAMING
4. REFER BELOW FOR CONCRETE STRENGTH
5. CONTRACTOR TO CONFIRM LOCATION OF EXISTING SERVICES WITH ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION
6. FOR REBATES & NIBS LOCATIONS REFER ARCH
7. REFER ARCH FOR SITE RETAINING WALLS

MAX UDL AND POINT LOADS AT PERIMETER FOOTING

WALL: G = 12.45KN/M (BRICK VENEER)
G = 3.24KN/M (WEATHER BOARD)

FLOOR: G = 3KN/M
Q = 7.5KN/M

ROOF: G = 1.35KN/M
Q = 0.75KN/M

GARAGE & DRIVEWAY:
G_{SDL} = 0.25KPA
Q = 2.5KPA
Q_{PL} = 12KN

CONCRETE STRENGTH:

20MPA
25MPA WITHIN SEASPRAY ZONE
30MPA WITHIN EXPOSURE CLASSIFICATION B2

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CLASS M SOILS - THREE STOREYS - 300D TANKS

FOUNDATION PLAN WITH APD StormSlab®

DESIGNED PS	DATE 26/04/24
DRAWN PS	CHECKED AH
A1 SCALE As indicated	A3 SCALE

JOB No.	DWG No.	REVISION
7527-M(3)	S101	A

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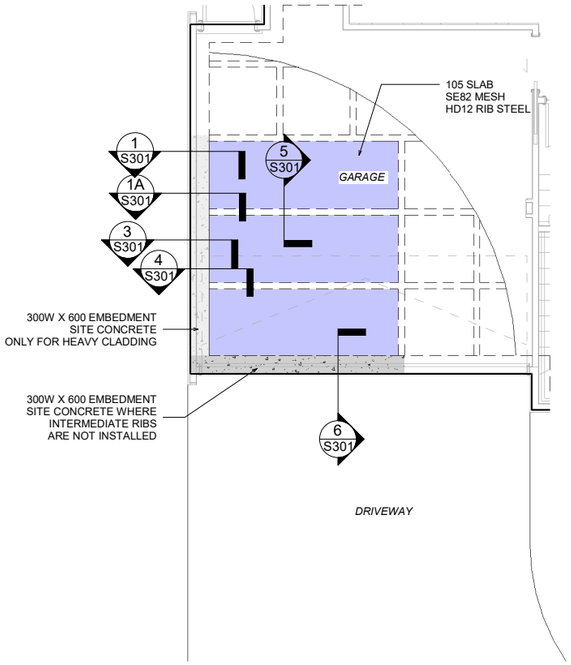
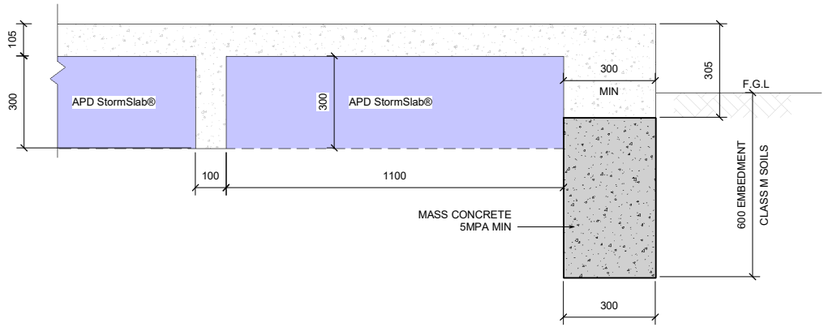


RESIDENTIAL GARAGE SLAB WITH APD StormSlab®

1 : 50



RESIDENTIAL GARAGE SLAB INSTALLATION WITH APD StormSlab®

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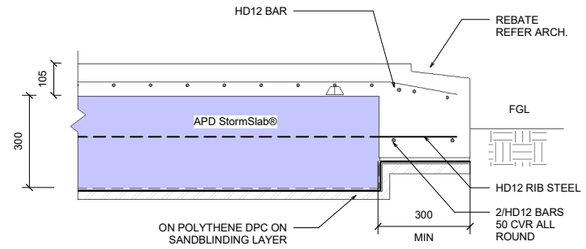
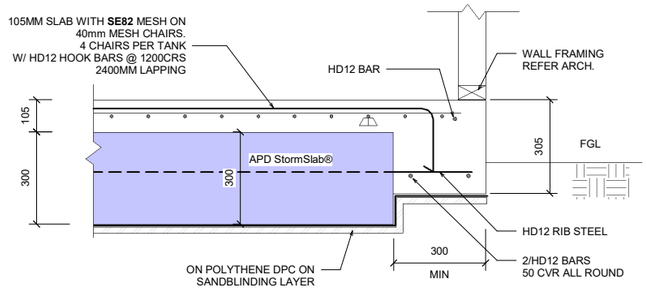


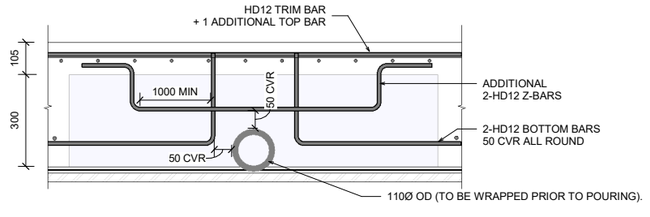
0 GARAGE SLAB - EDGE RIB WITH REBATE (WHERE APPLICABLE)

1 : 10

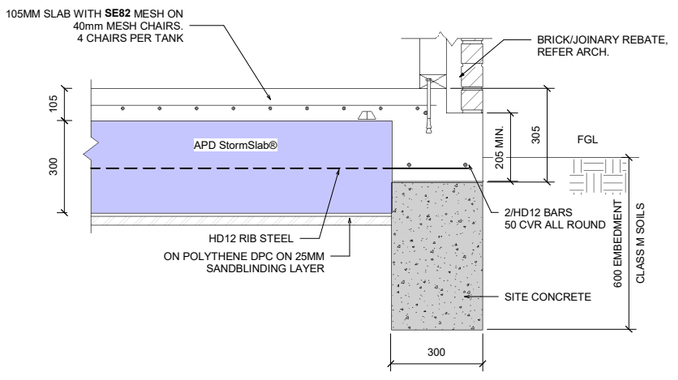


1 GARAGE SLAB - EDGE RIB

1 : 10

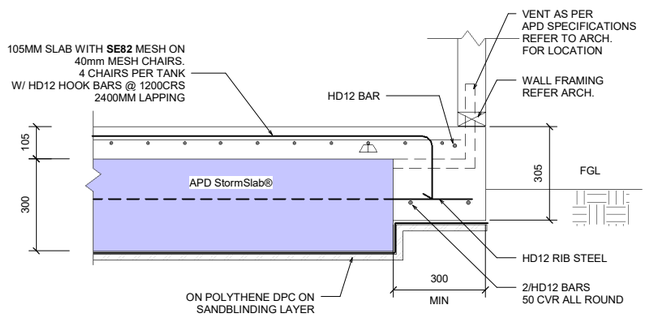


SECTION VIEW



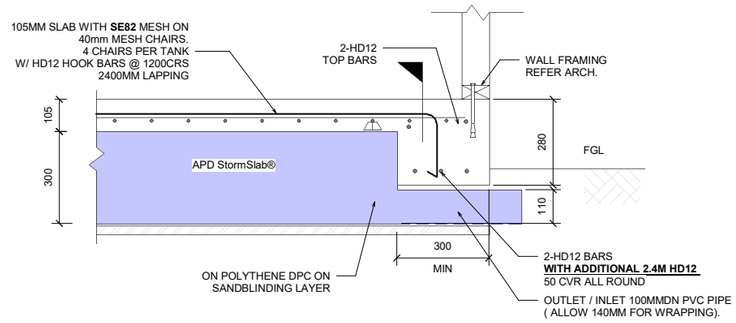
1A GARAGE SLAB - EDGE RIB WITH BRICK REBATE

1 : 10



3 GARAGE SLAB - EDGE RIB WITH VENT

1 : 10

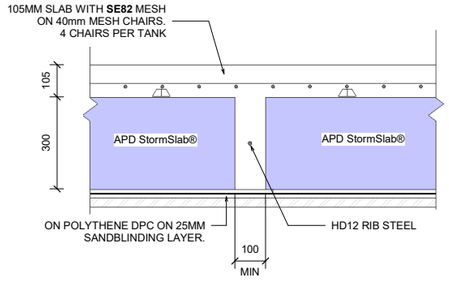


4 GARAGE SLAB - EDGE RIB WITH FLOW THROUGH

1 : 10

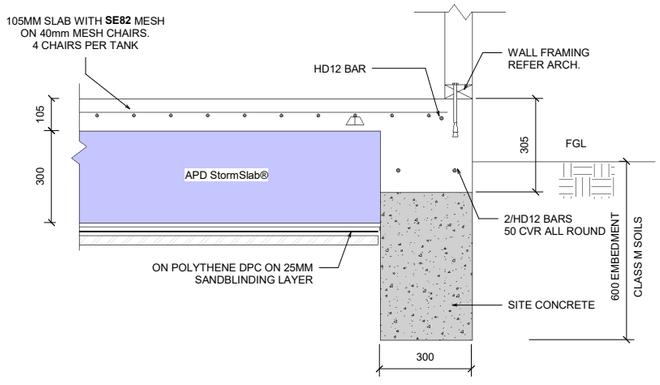
CONSTRUCTION NOTES FOR WAFFLE SLAB

1. CLEAR ALL TOPSOIL AND ORGANIC MATERIAL TO FORM CLEAN AND LEVEL BUILDING PLATFORM
2. CONFIRM THAT THE GROUND CONDITIONS MEET NZS 3604:2011 GOOD GROUND WITH 300KPA ULTIMATE BEARING CAPACITY WITH SOIL EXPANSIVENESS NO GREATER THAN CLASS M, Ys = 40mm MAX.
3. IMPORT HARDFILL IF REQUIRED TO RAISE GROUND LEVEL. COMPACTED IN 150 LOOSE LAYERS.
4. COVER BUILDING PLATFORM WITH 25MM(MAX.) SAND BLINDING.
5. COVER BLINDING WITH DPM, LAPPED AND TAPED, IN ACCORDANCE WITH NZS 3604.
6. PLACE 1100 SQ POLYSTYRENE PANELS ON A 1200x1200 GRID TO PATTERN AS SHOWN.
7. CUT ANY THICKENING FOR INTERNAL LOAD BEARING WALLS AND REINFORCE AS SHOWN.
8. REFER TO ARCHITECT'S DRAWINGS FOR ALL SETOUT DIMENSIONS, REBATES AND SERVICES.
9. POUR CONCRETE TOPPING SLAB, ALL THICKENINGS AND RIBS IN ONE OPERATION.
10. SAW CUT AS SHOWN. 20MM DEEP IN CONCRETE SLAB IN ACCORDANCE WITH NZS 3604.
11. CURE SLAB IN ACCORDANCE WITH NZS 3604 AND GOOD TRADES PRACTICE.
12. MUST ENSURE GROUND MOISTURE IS MAINTAINED DURING CONSTRUCTION OF SLAB



5 GARAGE SLAB - INTERNAL RIB

1 : 10



6 GARAGE SLAB - EDGE RIB WITH SITE CONCRETE

1 : 10

REFER ARCHITECTURAL DRAWINGS FOR ALL DIMENSION, LEVELS, SETDOWNS, NIBS, REBATED, DUCTS THRU FLOORS / WALLS ETC, AND ALL OTHER SETTING OUT UNLESS SHOWN

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NOTES:

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A	26/04/24	FOR BUILDING CONSENT

DHC STRUCTURAL | CIVIL
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Ph:09 520 0355 E: info@dhc.nz

CLIENT
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CLASS M SOILS - THREE STOREYS - 300D TANKS

GARAGE SLAB DETAILS WITH APD StormSlab®

DESIGNED	PS	DATE	26/04/24
DRAWN	PS	CHECKED	AH
A1 SCALE As indicated		A3 SCALE	

JOB No.	DWG No.	REVISION
7527-M(3)	S301	A

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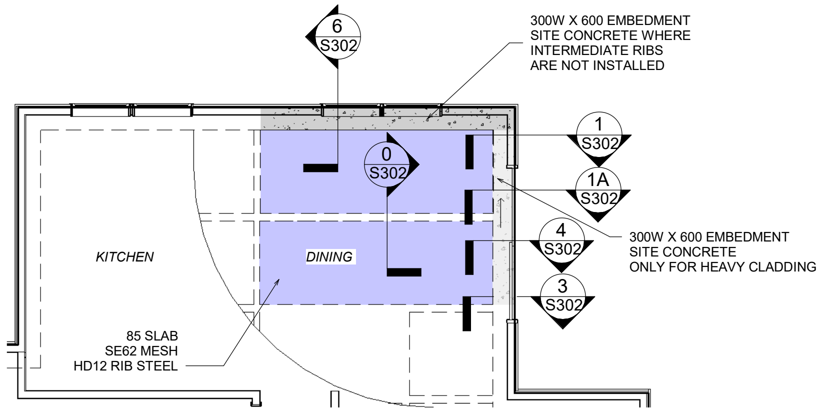

RESIDENTIAL TYPICAL SLAB WITH APD APD StormSlab®

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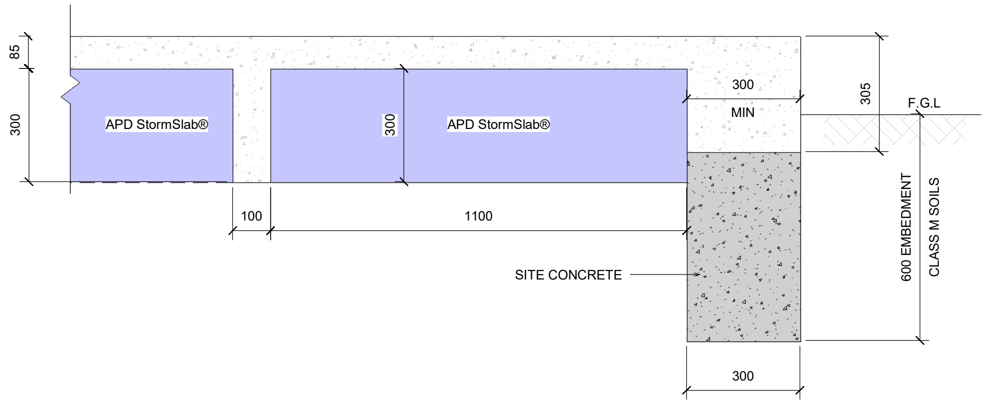
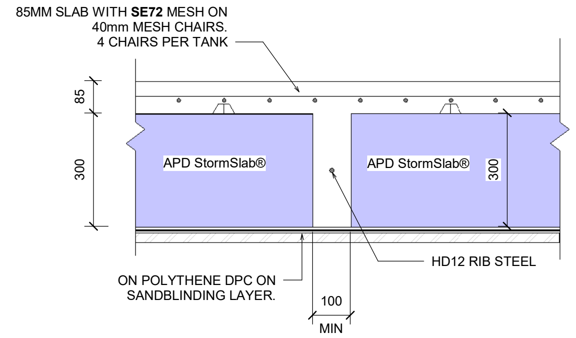


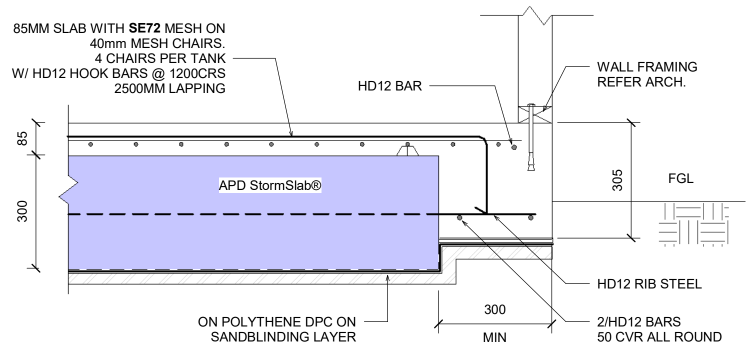
RESIDENTIAL TYPICAL SLAB INSTALLATION WITH APD StormSlab®

1 : 10



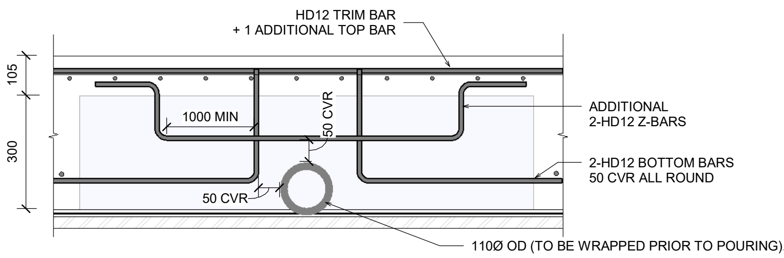
0 TYPICAL SLAB - INTERNAL RIB

1 : 10

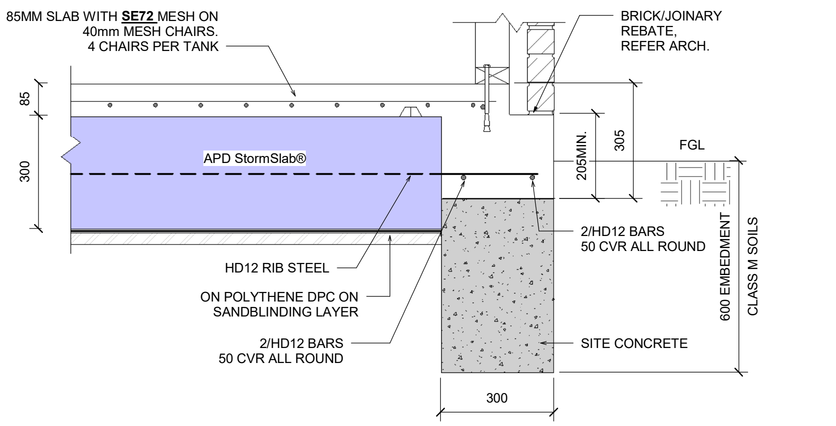


1 TYPICAL SLAB - EDGE RIB

1 : 10

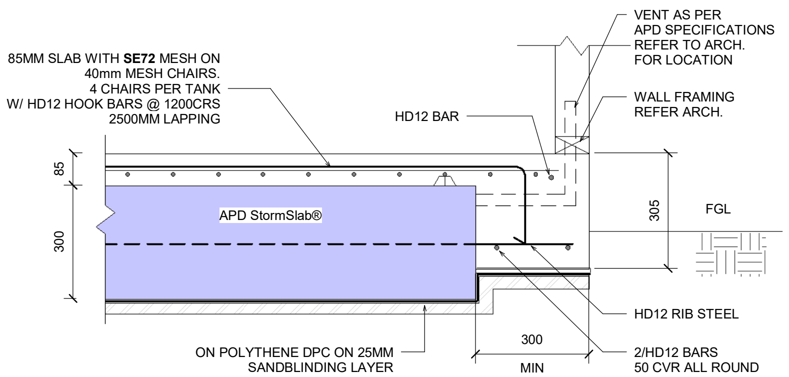


SECTION VIEW



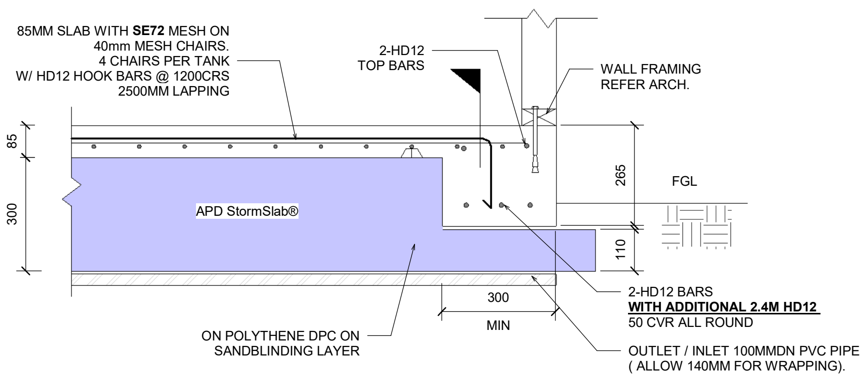
1A TYPICAL SLAB - EDGE RIB WITH BRICK REBATE

1 : 10



3 TYPICAL SLAB - EDGE RIB WITH VENT

1 : 10

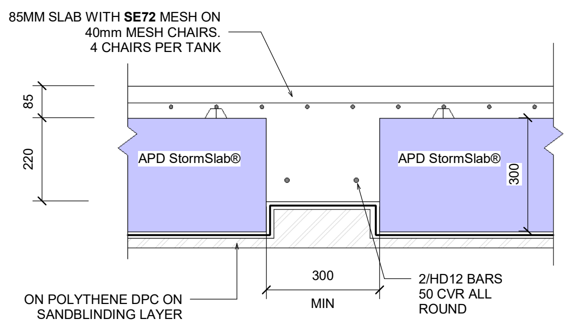


4 TYPICAL SLAB - EDGE RIB WITH FLOW THROUGH

1 : 10

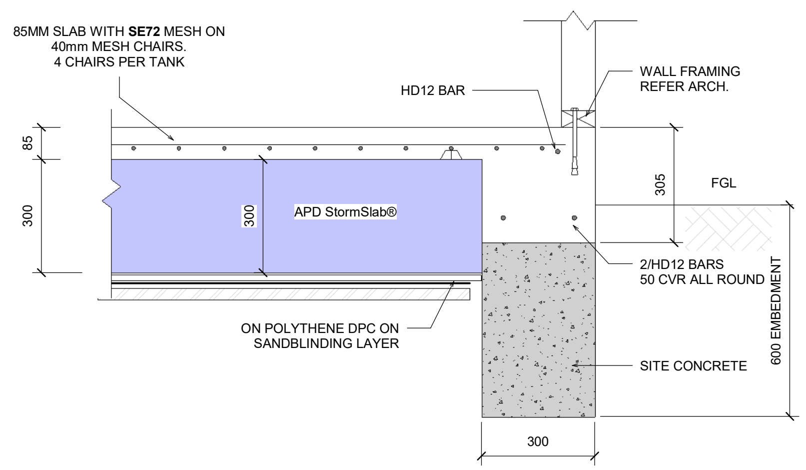
CONSTRUCTION NOTES FOR WAFFLE SLAB

1. CLEAR ALL TOPSOIL AND ORGANIC MATERIAL TO FORM CLEAN AND LEVEL BUILDING PLATFORM
2. CONFIRM THAT THE GROUND CONDITIONS MEET NZS 3604:2011 GOOD GROUND WITH 300KPA ULTIMATE BEARING CAPACITY WITH SOIL EXPANSIVENESS NO GREATER THAN CLASS H1, Ys = 40mm MAX.
3. IMPORT HARDFILL IF REQUIRED TO RAISE GROUND LEVEL. COMPACTED IN 150 LOOSE LAYERS.
4. COVER BUILDING PLATFORM WITH 25MM(MAX.) SAND BLINDING.
5. COVER BLINDING WITH DPM, LAPPED AND TAPED, IN ACCORDANCE WITH NZS 3604.
6. PLACE 1100 SQ POLYSTYRENE PANELS ON A 1200x1200 GRID TO PATTERN AS SHOWN.
7. CUT ANY THICKENING FOR INTERNAL LOAD BEARING WALLS AND REINFORCE AS SHOWN.
8. REFER TO ARCHITECT'S DRAWINGS FOR ALL SETOUT DIMENSIONS, REBATES AND SERVICES.
9. POUR CONCRETE TOPPING SLAB, ALL THICKENINGS AND RIBS IN ONE OPERATION.
10. SAW CUT AS SHOWN. 20MM DEEP IN CONCRETE SLAB IN ACCORDANCE WITH NZS 3604.
11. CURE SLAB IN ACCORDANCE WITH NZS 3604 AND GOOD TRADES PRACTICE.
12. MUST ENSURE GROUND MOISTURE IS MAINTAINED DURING CONSTRUCTION OF SLAB



5 TYPICAL SLAB - INTERNAL THICKENING

1 : 10



6 TYPICAL SLAB - EDGE RIB WITH SITE CONCRETE

1 : 10

REFER ARCHITECTURAL DRAWINGS FOR ALL DIMENSION, LEVELS, SETDOWNS, NIBS, REBATED, DUCTS THRU FLOORS / WALLS ETC, AND ALL OTHER SETTING OUT UNLESS SHOWN

THE STRUCTURAL DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND ALL OTHER RELEVANT DRAWINGS ASSOCIATED WITH THE PROJECT.

REV	DATE	AMENDMENT
A	26/04/24	FOR BUILDING CONSENT

DHC
STRUCTURAL | CIVIL
1/30 Ponsonby Rd, Grey Lynn
Auckland 1011
Ph:09 520 0355 E: info@dhc.nz

CLIENT
APD

FOR BUILDING CONSENT

CLASS M SOILS - THREE STOREYS - 300D TANKS

TYPICAL SLAB DETAILS WITH APD StormSlab®

DESIGNED	PS	DATE	26/04/24
DRAWN	PS	CHECKED	AH
A1 SCALE As indicated		A3 SCALE	
JOB No. 7527-M(3)		DWG No. S302	REVISION A

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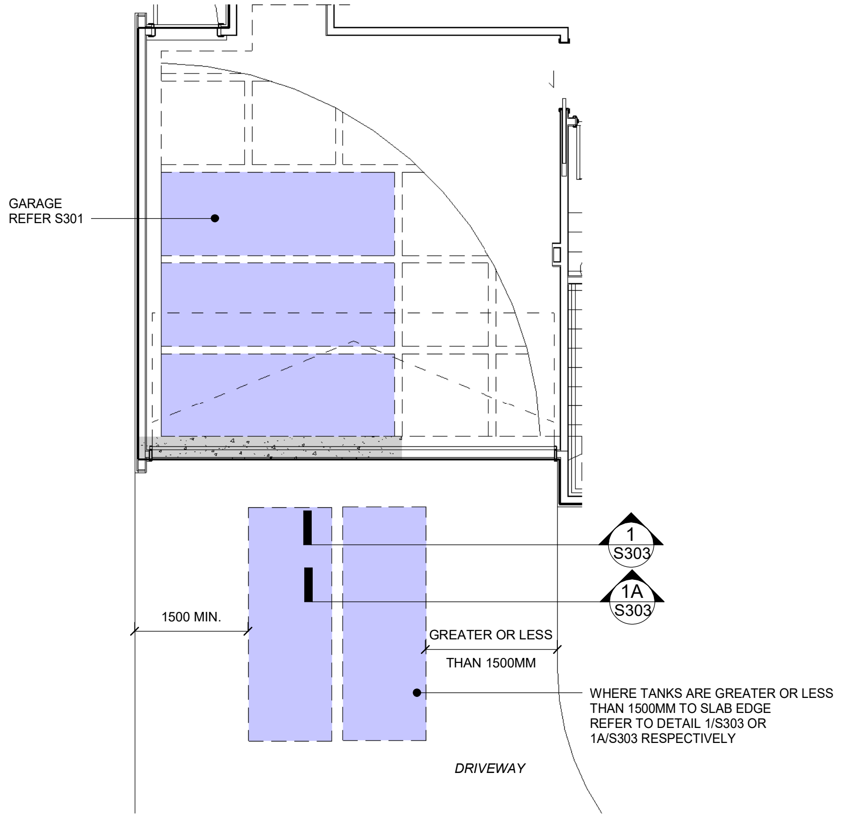
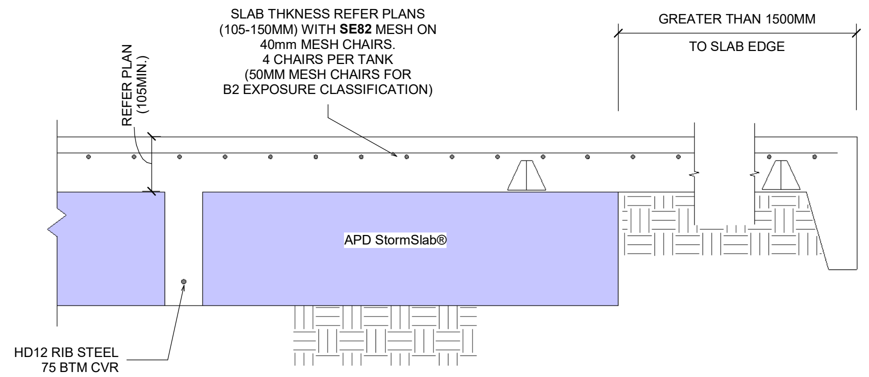


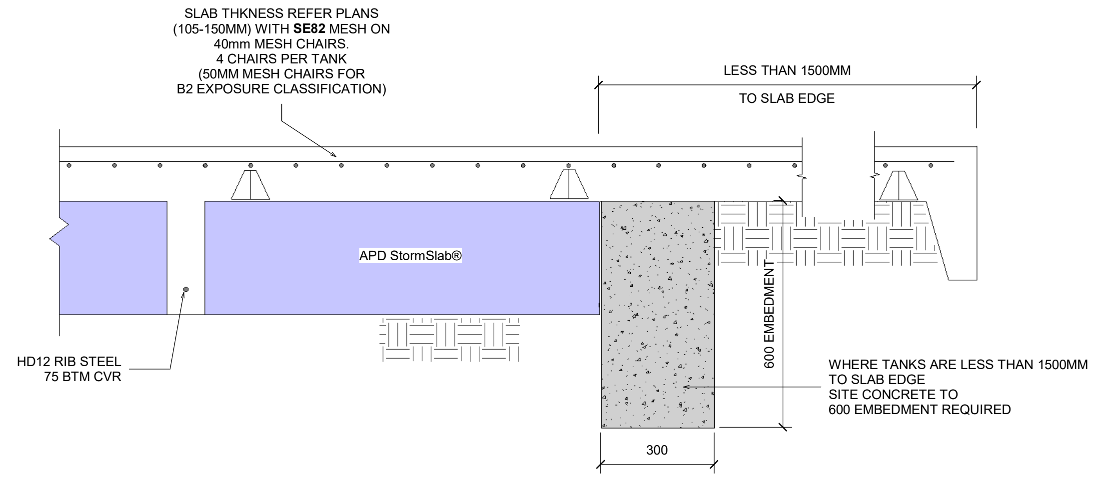
RESIDENTIAL DRIVEWAY SLAB WITH APD StormSlab®

1 : 50



1 DRIVEWAY SLAB - TANKS NOT WITHIN 1500MM TO SLAB EDGE

1 : 10



1A DRIVEWAY SLAB - TANKS WITHIN 1500MM TO SLAB EDGE

1 : 10

REFER ARCHITECTURAL DRAWINGS FOR ALL DIMENSION, LEVELS, SETDOWNS, NIBS, REBATED, DUCTS THRU FLOORS / WALLS ETC, AND ALL OTHER SETTING OUT UNLESS SHOWN

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A	26/04/24	FOR BUILDING CONSENT

DHC
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1/30 Ponsonby Rd, Grey Lynn
Auckland 1011
Ph:09 520 0355 E: info@dhc.nz

COMPANY
APD

FOR BUILDING CONSENT

CLASS M SOILS - THREE STOREYS - 300D TANKS

DRIVEWAY SLAB DETAILS WITH APD StormSlab®

DESIGNED	PS	DATE	26/04/24
DRAWN	PS	CHECKED	AH
A1 SCALE	As indicated	A3 SCALE	
JOB No.	7527-M(3)	DWG No.	S303
REVISION	A		

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