APD

DHC

STRUCTURAL | CIVIL

APD StormSlab® 220D TANKS
CLASS M SOILS - THREE STOREY

APD LTD

REF NO: 7527-M(3)-220D

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 proped 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 :

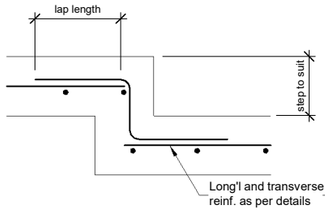
4.1 All blockwork shall be under the direct supervision of a registered Mason who shall provide continuous inspection. All work shall comply with N.Z.S. 4210 Masonry Materials and Workmanship.
4.2 Masonry is to be constructed by the 'High Lift' method with clean out ports at every vertical bar and at 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 :

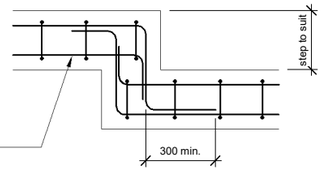
5.1 All structural steelwork to be grade 300 unless noted otherwise complying with the appropriate standards listed in N.Z.S 3404.
5.2 Bolted connections to be made with grade 8.8 bolts, snug thightened, to A.S.1252. with 2mm clearance to holes unless shown otherwise.
5.3 Bolt threads to be excluded 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.
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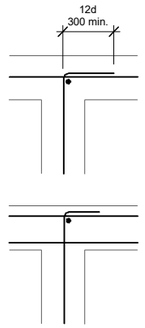
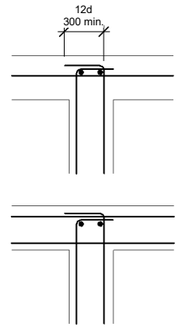
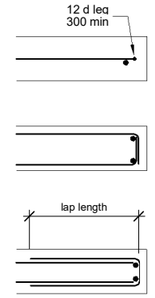
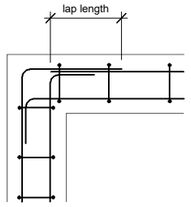


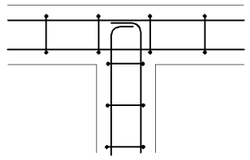




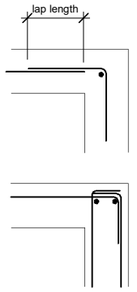
FOUNDATION STEPS

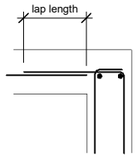


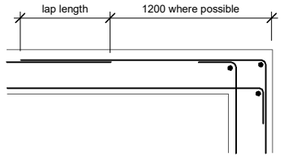
'L' JUNCTION - TYPE 1
(plan)



'T' JUNCTION - TYPE 1
(plan)







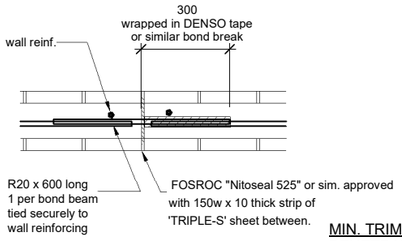
WALL JUNCTIONS AND TERMINATIONS

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

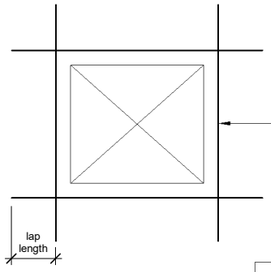
FOUNDATION JUNCTIONS

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

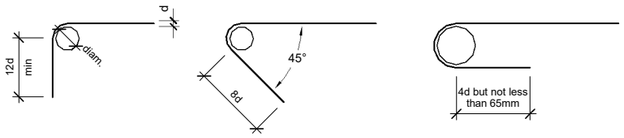
LAPS IN MASONRY REINFORCEMENT



TYP. BLOCK WALL CONTROL JOINT



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



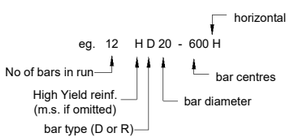
MAIN REINFORCEMENT

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

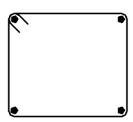
TIES AND STIRRUPS

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

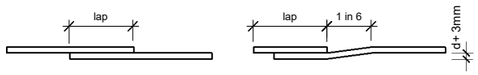
REINFORCING BENDS



REINFORCING IDENTIFICATION



BEAM AND COLUMN STIRRUPS

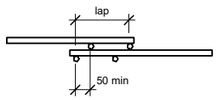


PARALLEL LAP

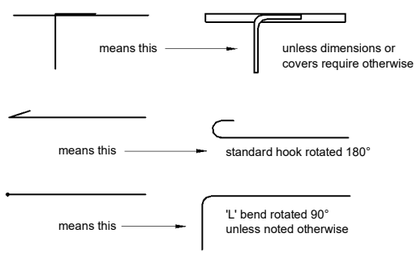
OFFSET LAP

For lap lengths see REINFORCEMENT note No.3

REINFORCING LAPS



REINFORCING MESH LAPS



REINFORCING REPRESENTATION

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

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

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CLIENT
APD

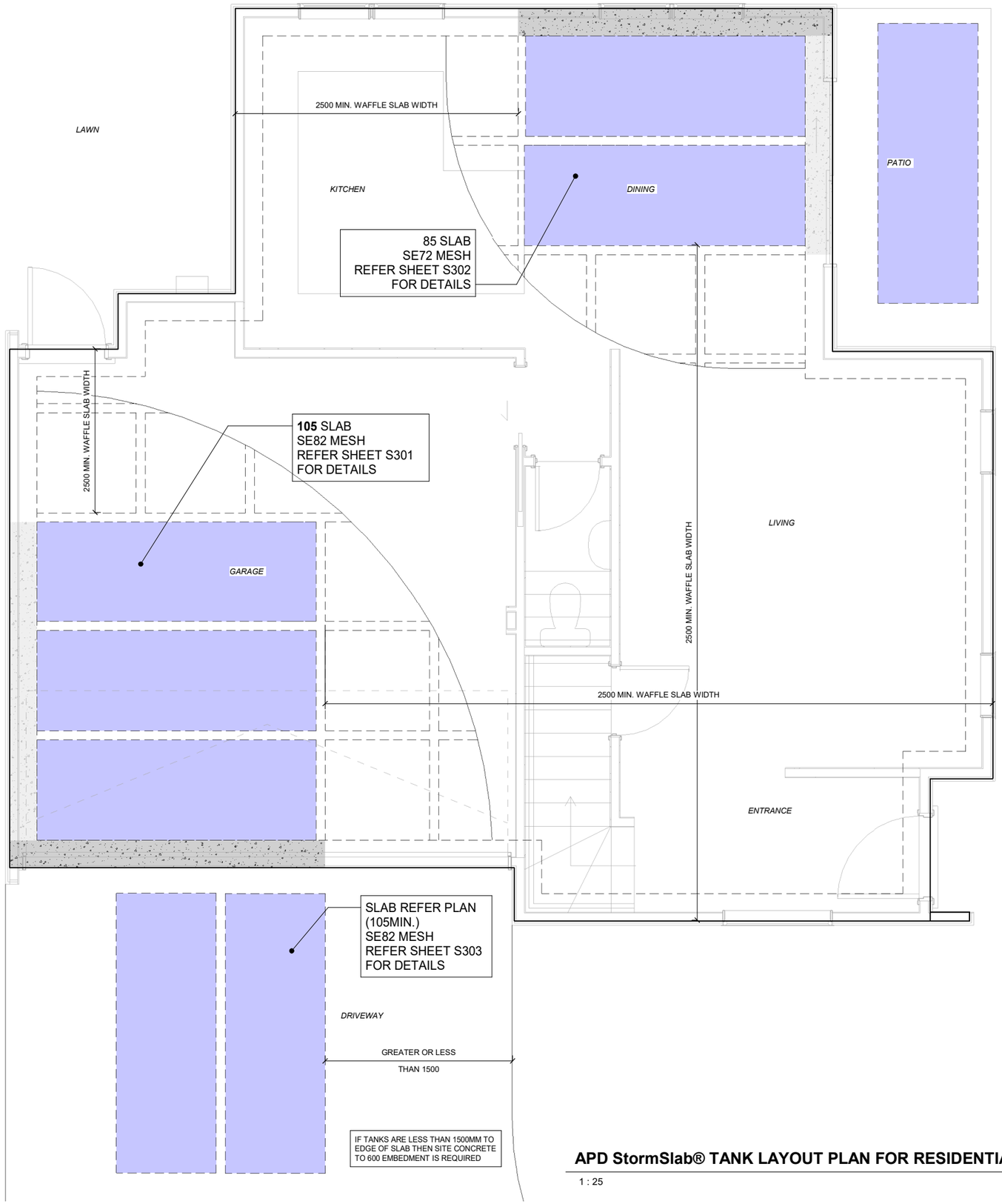
FOR BUILDING CONSENT

CLASS M SOILS - THREE STOREY - 220D 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



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

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

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CLIENT
APD

FOR BUILDING CONSENT

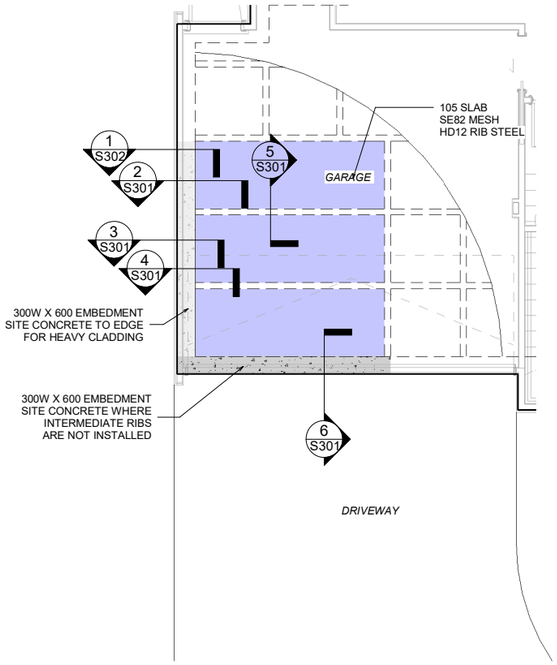
CLASS M SOILS - THREE STOREY - 220D TANKS

FOUNDATION PLAN WITH APD StormSlab®

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

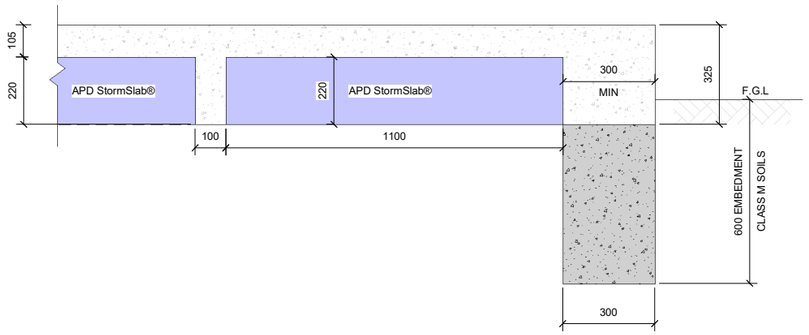
JOB No.	DWG No.	REVISION
7527-M(3)	S101	A

H:\JOB FOLDERS\7500-7599\7527-apd-slab-tank\3.0 Working\2.0 DHC Drawings Files\3.0 Updated drawings MAR 2024 - Tamaki\220D\7527 - 2024.04.26 - 220D APD Tank - Waffle slab Details - Class M(3).vwx
3/05/2024 12:49:42 PM



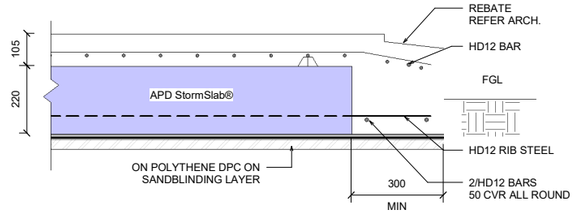
RESIDENTIAL GARAGE SLAB WITH APD StormSlab®

1 : 50



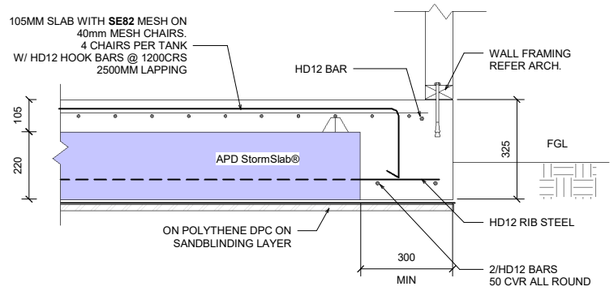
RESIDENTIAL GARAGE SLAB INSTALLATION WITH APD StormSlab®

1 : 10



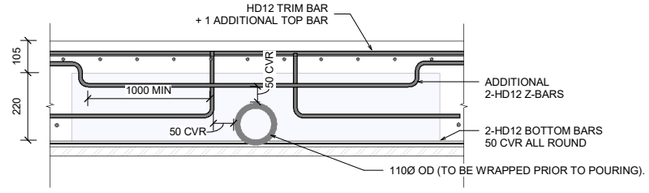
GARAGE SLAB - EDGE RIB WITH REBATE (WHERE APPLICABLE)

1 : 10

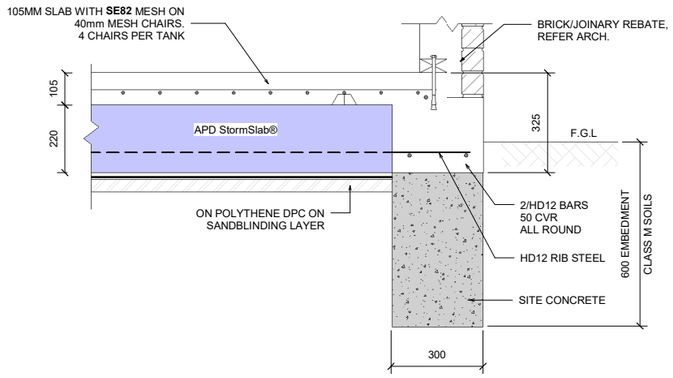


1 GARAGE SLAB - EDGE RIB

1 : 10

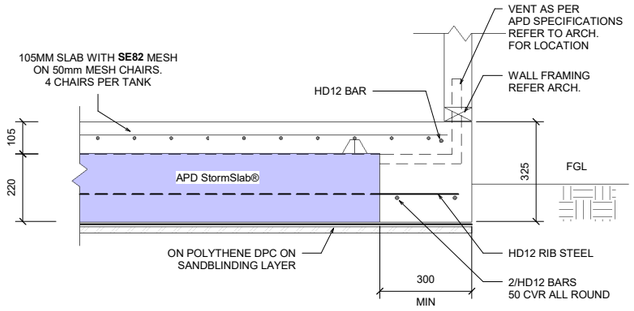


SECTION VIEW



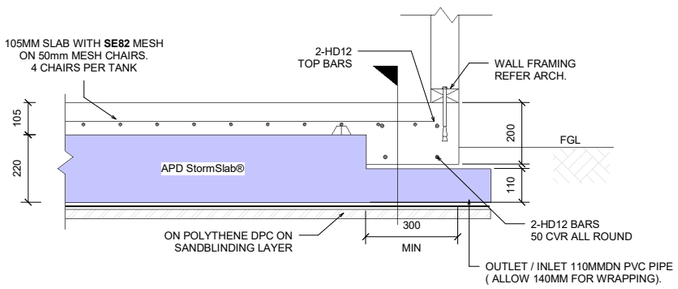
2 GARAGE SLAB - EDGE RIB WITH SITE CONCRETE.

1 : 10



3 GARAGE SLAB - EDGE RIB WITH VENT

1 : 10

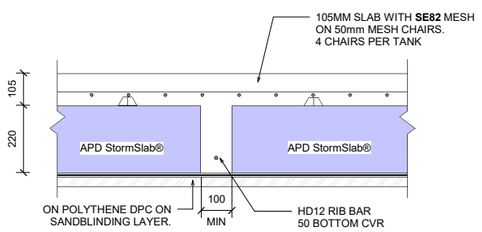


4 GARAGE SLAB - EDGE RIB WITH FLOW THROUGH

1 : 10

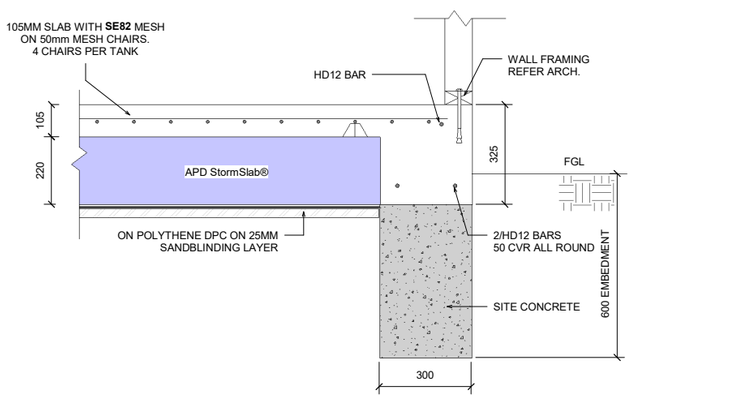
CONSTRUCTION NOTES FOR WAFFLE SLAB

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.



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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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

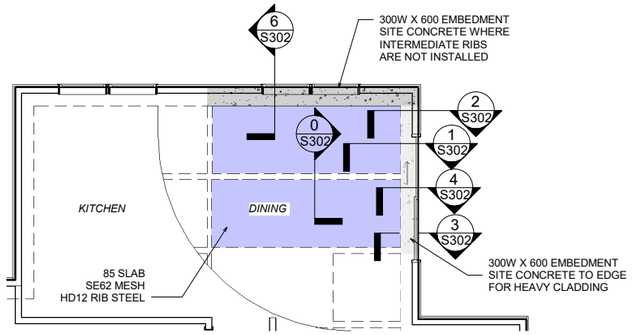
FOR BUILDING CONSENT

CLASS M SOILS - THREE STOREY - 220D TANKS

GARAGE SLAB DETAILS WITH APD StormSlab®

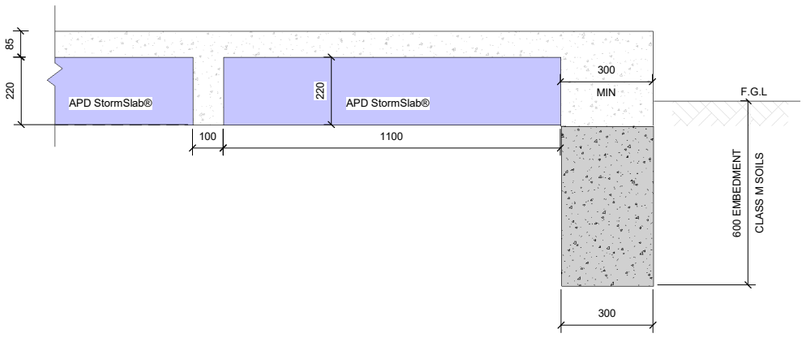
DESIGNED	PS	DATE	26/04/24
DRAWN	PS	CHECKED	AH
A1 SCALE As indicated		A3 SCALE	

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



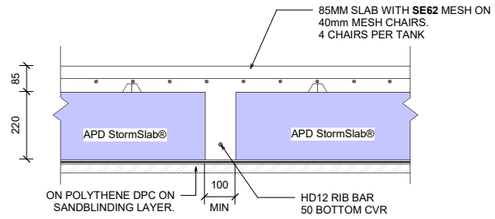
RESIDENTIAL TYPICAL SLAB WITH APD StormSlab®

1 : 50



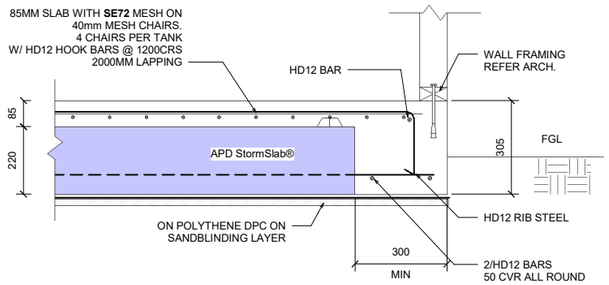
RESIDENTIAL TYPICAL SLAB INSTALLATION WITH APD StormSlab®

1 : 10



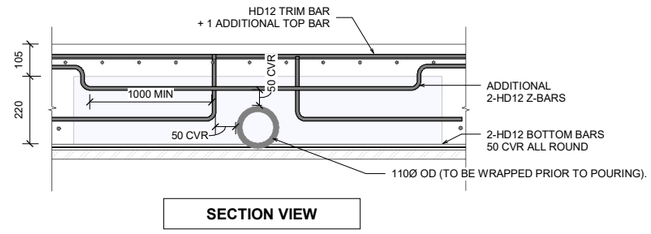
0 TYPICAL SLAB - INTERNAL RIB

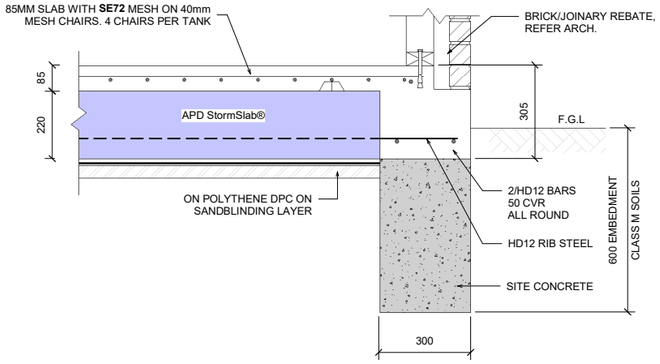
1 : 10



2 TYPICAL SLAB - EDGE RIB

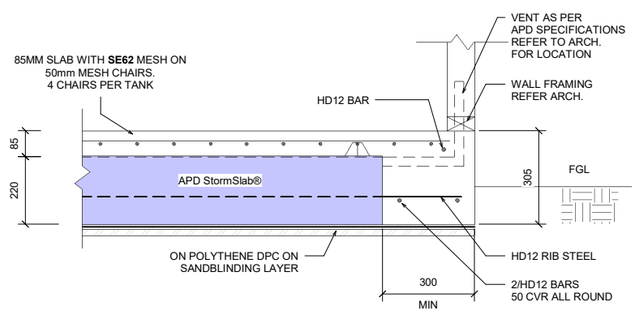
1 : 10





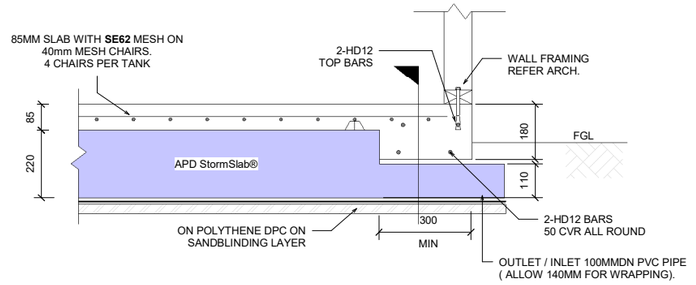
1 TYPICAL SLAB - EDGE RIB WITH BRICK REBATE

1 : 10



3 TYPICAL SLAB - EDGE RIB WITH VENT

1 : 10

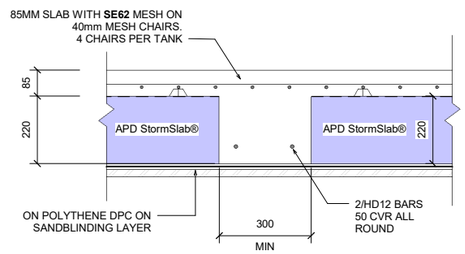


4 TYPICAL SLAB - EDGE RIB WITH FLOW THROUGH

1 : 10

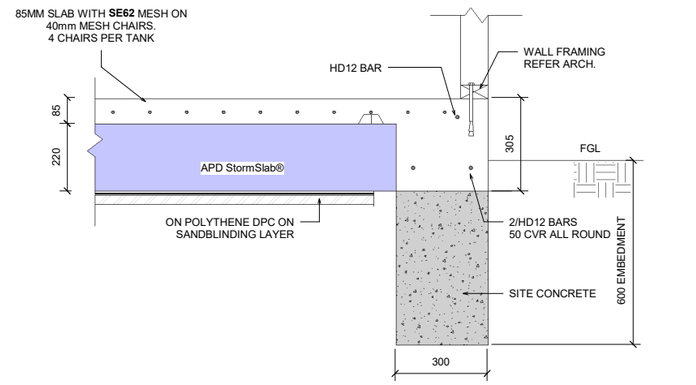
CONSTRUCTION NOTES FOR WAFFLE SLAB

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 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.



5 TYPICAL SLAB - INTERNAL THICKENING

1 : 10



6 TYPICAL SLAB - EDGE RIB WITH SITE CONCRETE

1 : 10

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CLASS M SOILS - THREE STOREY - 220D 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.	DWG No.	REVISION
7527-M(3)	S302	A

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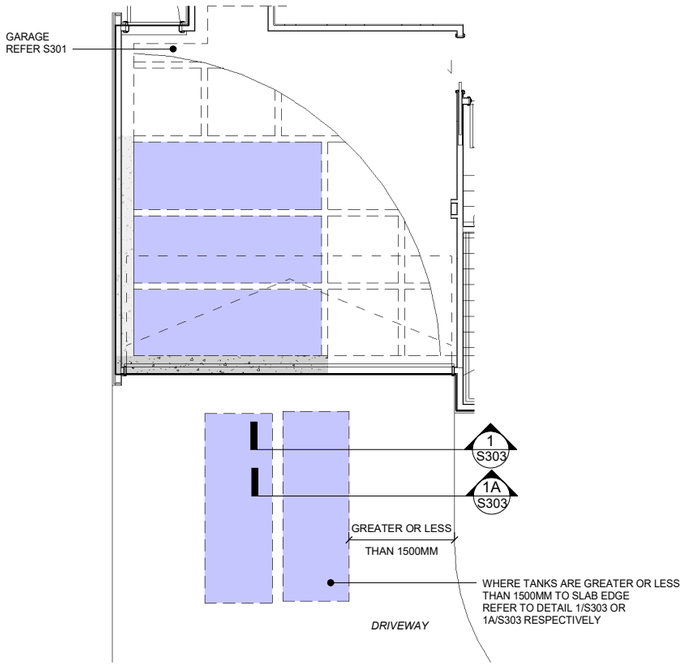
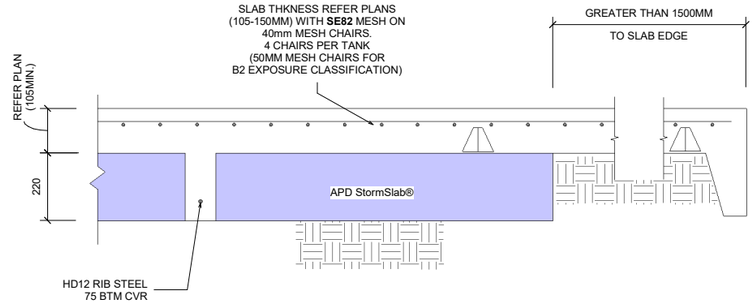


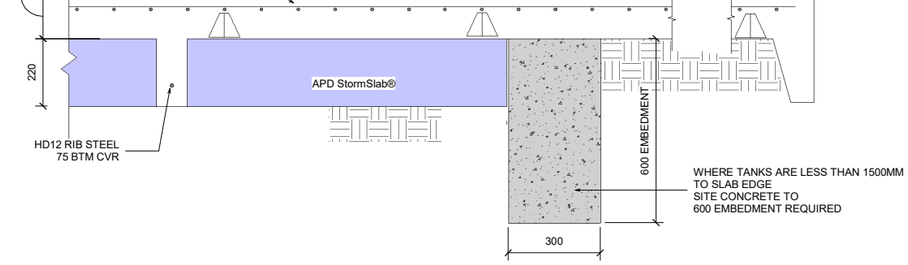
RESIDENTIAL DRIVEWAY SLAB WITH APD StormSlab®

1 : 50



1 DRIVEWAY SLAB - TANKS GREATER THAN 1500MM TO SLAB EDGE

1 : 10



1A DRIVEWAY SLAB - LESS THAN 1500MM TO SLAB EDGE

1 : 10

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DRIVEWAY SLAB DETAILS WITH APD StormSlab®

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DRAWN	PS	CHECKED	AH
A1 SCALE As indicated		A3 SCALE	

JOB No.	DWG No.	REVISION
7527-M(3)	S303	A

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