

# STANDARD NOTES:

DURABILITY ZONE D (NZS3604)

## GENERAL:

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL, GEOTECHNICAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE ENGINEER FOR DECISION BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORK SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION AND FABRICATION IS COMMENCED. THE ENGINEERS DRAWINGS SHALL NOT BE SCALED.

DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STABILITY OF THE STRUCTURE UNTIL ITS COMPLETION AND SHALL ENSURE THAT NO PART OF THE STRUCTURE IS OVERSTRESSED BY EXCESSIVE LOADING.

WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT NEW ZEALAND STANDARDS AND LOCAL AUTHORITY REGULATIONS, EXCEPT WHERE VARIED IN CONTRACT DOCUMENTS.

THE LOCATION, SIZE, AND DETAILS OF ALL PENETRATIONS, HOLES, ETC IN STRUCTURAL MEMBERS MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION UNLESS OTHERWISE SHOWN ON STRUCTURAL DRAWINGS.

SUBSTITUTION FOR OR AMENDMENT OF SPECIFIED DETAILS OR MATERIALS SHALL NOT BE CARRIED OUT WITHOUT THE APPROVAL OF THE ENGINEER.

## CONCRETE

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH NZS 3101:2006

NO HOLES CHASES OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE APPROVAL OF THE ENGINEER.

CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN OR SPECIFICALLY APPROVED BY THE ENGINEER.

ALL CONCRETE TO BE MECHANICALLY VIBRATED AND CAREFULLY WORKED AROUND THE REINFORCEMENT AND INTO THE CORNERS OF THE FORMWORK.

MINIMUM COMPRESSIVE STRENGTHS OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

ELEMENT	GRADE(MPa)
SITE CONCRETE	17.5
SLAB ON GRADE	30
SUSPENDED SLAB	30

ALL CONCRETE IS TO HAVE 15 x 15 CHAMFER TO ALL EXPOSED EDGES UNLESS NOTED OTHERWISE.

FINISHES TO CONCRETE TO BE IN ACCORDANCE WITH NZS 3114.

WATER / CEMENT RATIOS FOR CONCRETE USED IN SLABS ON GRADE SHALL NOT EXCEED 0.45.

## REINFORCEMENT

ALL REINFORCEMENT SHALL CONFORM TO AS/NZS 4671. ALL HOOK BARS AND BENDS SHALL BE MADE WITHOUT FRACTURE IN ACCORDANCE TO NZS 3101. GRADE 500 BARS MAY BE BENT ONCE ONLY.

ALL REINFORCEMENT SHALL BE AS FOLLOWS:

SYMBOL	TYPE - TO AS/NZS 4671
R	PLAIN BARS GRADE 300 MPa
D	DEFORMED BARS GRADE 300 MPa
HD	DEFORMED BARS GRADE 500 MPa - MA
HR	PLAIN BARS GRADE 500 MPa - MA
	MESH TO NZS 3421 (500 MPa)

\* REINFORCEMENT SHALL BE CLASS E TO AS/NZS 4671 MANUFACTURED USING THE MICRO ALLOY PROCESS.

REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.

CLEAR COVER TO REINFORCEMENT SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON THE DWGS. WHERE NOT SPECIFICALLY DESIGNATED COVER IS TO BE IN ACCORDANCE WITH NZS 3109.

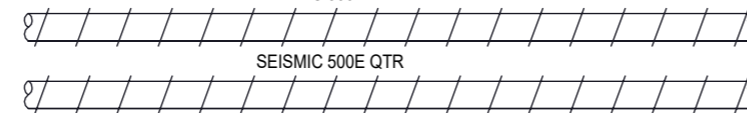
MEMBER	CAST AGAINST FORMWORK		CAST AGAINST GROUND (SEE NOTE BELOW)
	NOT EXPOSED TO WEATHER OR WATER	EXPOSED TO WEATHER OR WATER	
STRIP FOOTINGS	N/A	50	75 *
SLABS	35	50	75 *

\* WHERE THERE IS A PERMANENT IMPERMEABLE MEMBRANE BETWEEN CONCRETE AND GROUND USE 50mm COVER. FOR SITES WITHIN 500M OF MEAN HIGH WATER MARK INCREASE COVER BY 10mm.

NO REINFORCEMENT SPLICES SHALL BE MADE, OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS, WITHOUT THE PRIOR APPROVAL OF THE ENGINEER. MINIMUM LAP FOR FABRIC SHALL BE ONE MESH PLUS 50mm.

WELDING OF REINFORCEMENT IS NOT PERMITTED UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER. WHERE WELDING OF REINFORCEMENT IS PERMITTED GRADE 500 STEEL SHALL NOT BE WELDED OR REBENT UNLESS IT IS CLEARLY MARKED AS MICRO ALLOY GRADE 500, QUENCHED AND TEMPERED STEEL SHALL NOT BE WELDED OR REBENT.

BAR MARKING FOR IDENTIFICATION OF MICRO ALLOY (MA) AND QUENCHED AND TEMPERED (QTR) REINFORCING ARE SHOWN BELOW: (INDICATIVE ONLY)



REINFORCEMENT SHALL BE ADEQUATELY FIXED AND SUPPORTED TO PREVENT IT SAGGING OR MOVING. MESH TO BE FULLY SUPPORTED ON PROPRIETARY CHAIRS. REFER TO SPECIFICATION FOR MINIMUM FIXING REQUIREMENTS.

THE MINIMUM CLEAR SPACING BETWEEN CONDUITS, CABLES, PIPES AND BARS SHALL BE AS REQUIRED BY NZS 3101 BUT NOT LESS THAN THREE DIAMETERS. CONDUITS IN SLABS ARE TO BE PLACED ABOVE BOTTOM REINFORCEMENT AND BELOW TOP REINFORCEMENT.

LEGEND USED FOR REINFORCEMENT LOCATION

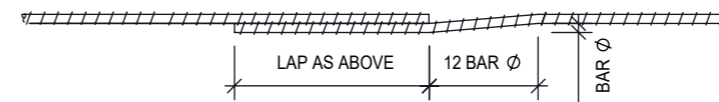
- BS BOTH SIDES
- BB BOTTOM BOTTOM
- B BOTTOM
- TT TOP TOP
- T TOP
- EW EACH WAY
- EF EACH FACE
- NF NEAR FACE
- FF FAR FACE
- ABR ALTERNATE BARS REVERSED

STANDARD SPLICE LAP LENGTHS FOR DEFORMED BARS:-

BAR SIZE DIA	CONCRETE LAPS	
	D GRADE 300	HD GRADE 500
10	400	600
12	450	750
16	600	1000
20	750	1200
25	900	1500
28	1100	1700
MESH	1 MESH SQ. + 50mm	

NOTE: FOR ROUND BARS SPLICE LAP LENGTH TO BE TWICE THE SPLICE LENGTH OF DEFORMED BARS.

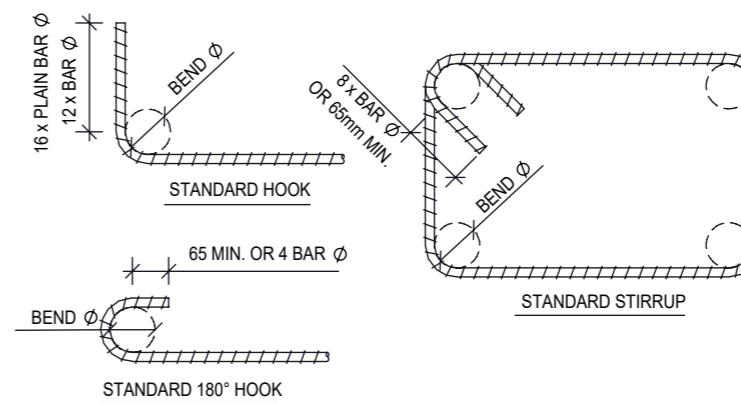
LAPS IN BEAMS & COLUMNS SHALL BE VIA AN OFFSET LAP CREATED BY CRANKING OF THE BAR AS SHOWN BELOW:



REVERSE COLD BENDING SHALL NOT BE CARRIED OUT ON-SITE. HOT BENDING MAY BE CARRIED OUT AT THE DISCRETION AND WITH THE WRITTEN APPROVAL OF THE ENGINEER. REFER TO SPECIFICATION FOR HEATING & HOT BENDING PROCEDURE.

COLD BENDING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH NZS 3109.

BENDS FOR ALL BARS EXCEPT STIRRUPS & TIES:-



STEEL GRADE	BAR DIAMETER	MINIMUM BEND DIAMETER
300 & 500	6 to 20	5 BAR DIAMETERS
300 & 500	25 to 40	7 BAR DIAMETERS

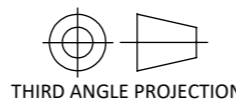
## FOUNDATIONS:

FOUNDATIONS ARE TO BE FOUNDED ON ORIGINAL UNDISTURBED GROUND, AT A MINIMUM DEPTH OF 600mm. BEFORE ANY CONCRETE IS PLACED THE SOILS SHALL BE VERIFIED TO BE 'GOOD GROUND' TO NZS3604.

50mm OF SITE CONCRETE MAY BE PLACED UNDER FOUNDATIONS TO CREATE A CLEAN SURFACE TO PLACE REINFORCING ON WHEN REQUIRED.

CAD DRAWING NO MANUAL REVISIONS REQUIRED DO NOT SCALE

**REMOVE ALL SHARP EDGES. 0.5 X 45**



Job # --  
Prod #

TOLERANCE (UNLESS OTHERWISE STATED)

0 = +/- 1.0  
0.0 = +/- 0.50  
0.00 = +/- 0.10  
0.000 = +/- 0.01

MATERIAL: N/A

Sheet 1 of 3

SCALE: VARIES - CHECK SHEET

DESIGNER: DA

CHECKED: --

DRAWN BY: DA

PRINT DATE: 1/09/2023

The information contained in this drawing is the sole property of APD LTD, is confidential, may only be used for the purpose issued and not be divulged to third parties, copied or reproduced in any way. All intellectual property rights pertaining to this drawing belong to APD LTD.

Project

STORMSLIM TANK FOOTINGS

sub ass

5000L TANK SLAB/REINFORCING DETAIL

part name

--

DWG No. 2100252

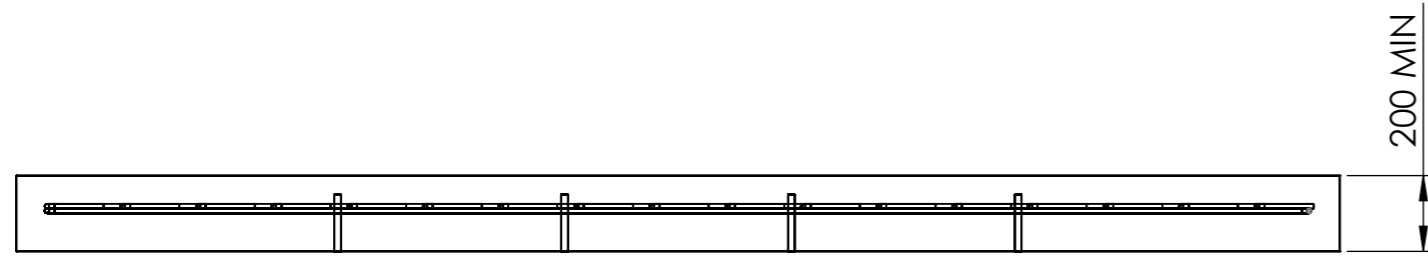
REVISION: A

ALL DIMENSIONS IN MILLIMETRES (mm)



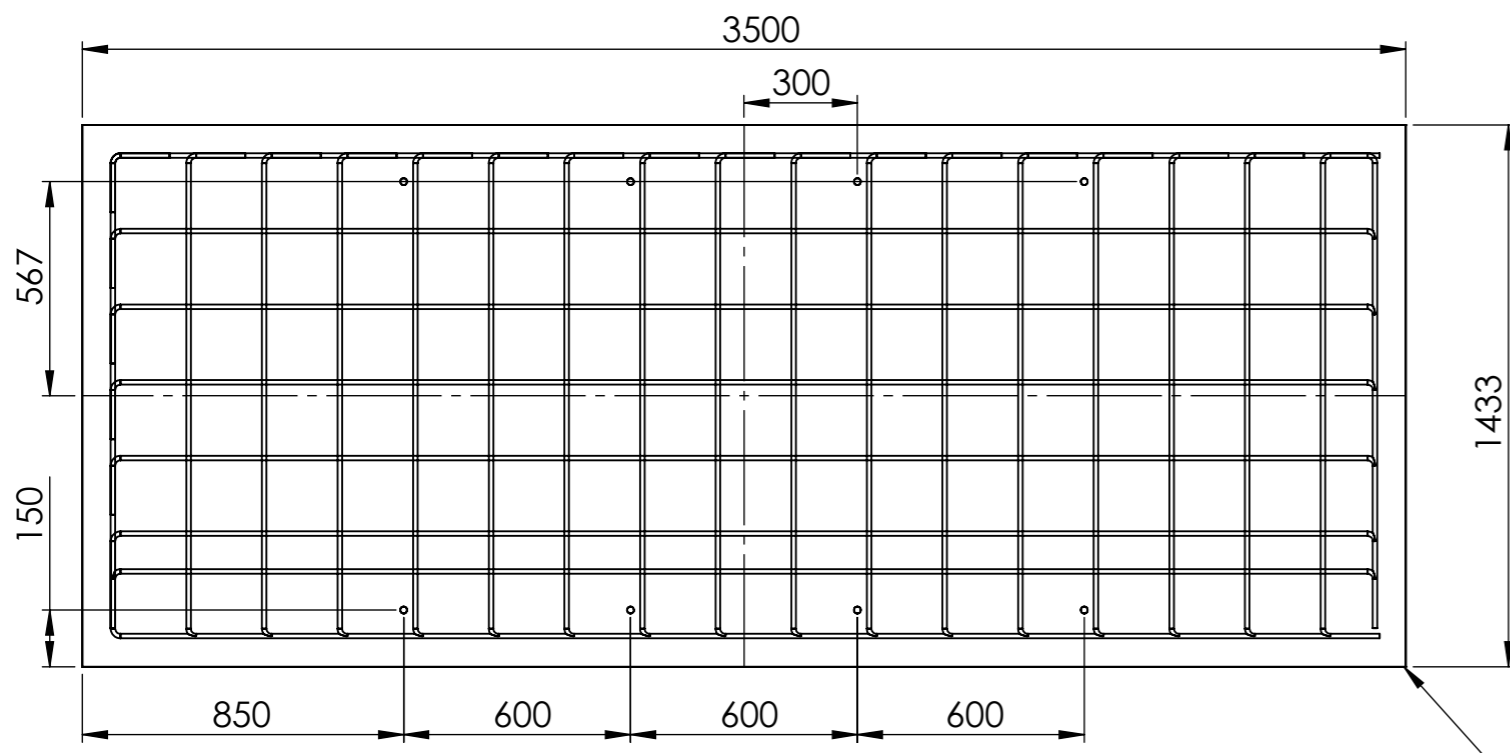
APD LTD  
49 McLaughlins Road,  
Wiri,  
AUCKLAND  
NEW ZEALAND

TEL: 00 64 9 263 7741 FAX: 00 64 9 263 7743  
www.apd.co.nz



**TANK FRAME ANCHORING DETAILS**

M16 CLASS 8.8 THREADED ROD  
 DRILL 18MM HOLE  
 EMBEDMENT DEPTH = 95MM  
 ANCHOR STUD WITH RAMSET EPCON C6  
 FOLLOW RAMSET GUIDELINES FOR CORRECT STUD BONDING  
 CENTER TANK ON SLAB - MINIMUM COVER FROM EDGE TO STUD CENTER = 150MM.

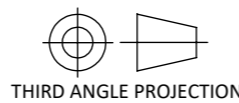


**REINFORCING DETAIL.**

D12 - 200 SINGLE LAYER IN TWO DIRECTIONS.  
 150MM RETURNS EACH END.  
 75MM MINIMUM BOTTOM AND SIDE COVER.  
 ALLOW TO EXCAVATE 200MM BELOW THE FOUNDATION AND BACKFILL WITH ENGINEERED COMPACTED HARDFILL ACHIEVING 30KPA AT THE FOUNDING LEVEL.

CAD DRAWING NO MANUAL REVISIONS REQUIRED DO NOT SCALE

**REMOVE ALL SHARP EDGES. 0.5 X 45**



Job # --  
 Prod #

TOLERANCE (UNLESS OTHERWISE STATED)

0 = +/- 1.0  
 0.0 = +/- 0.50  
 0.00 = +/- 0.10  
 0.000 = +/- 0.01

MATERIAL: N/A

Sheet 2 of 3

SCALE: VARIES - CHECK SHEET

DESIGNER: DA

CHECKED: --

DRAWN BY: DA

PRINT DATE: 1/09/2023

The information contained in this drawing is the sole property of APD LTD, is confidential, may only be used for the purpose issued and not be divulged to third parties, copied or reproduced in any way. All intellectual property rights pertaining to this drawing belong to APD LTD.

Project

5000L STORMSLIM TANK FOOTINGS

sub ass

5000L ZONE 1 TANK SLAB/REINFORCING DETAIL

part name

DWG No. 2100252

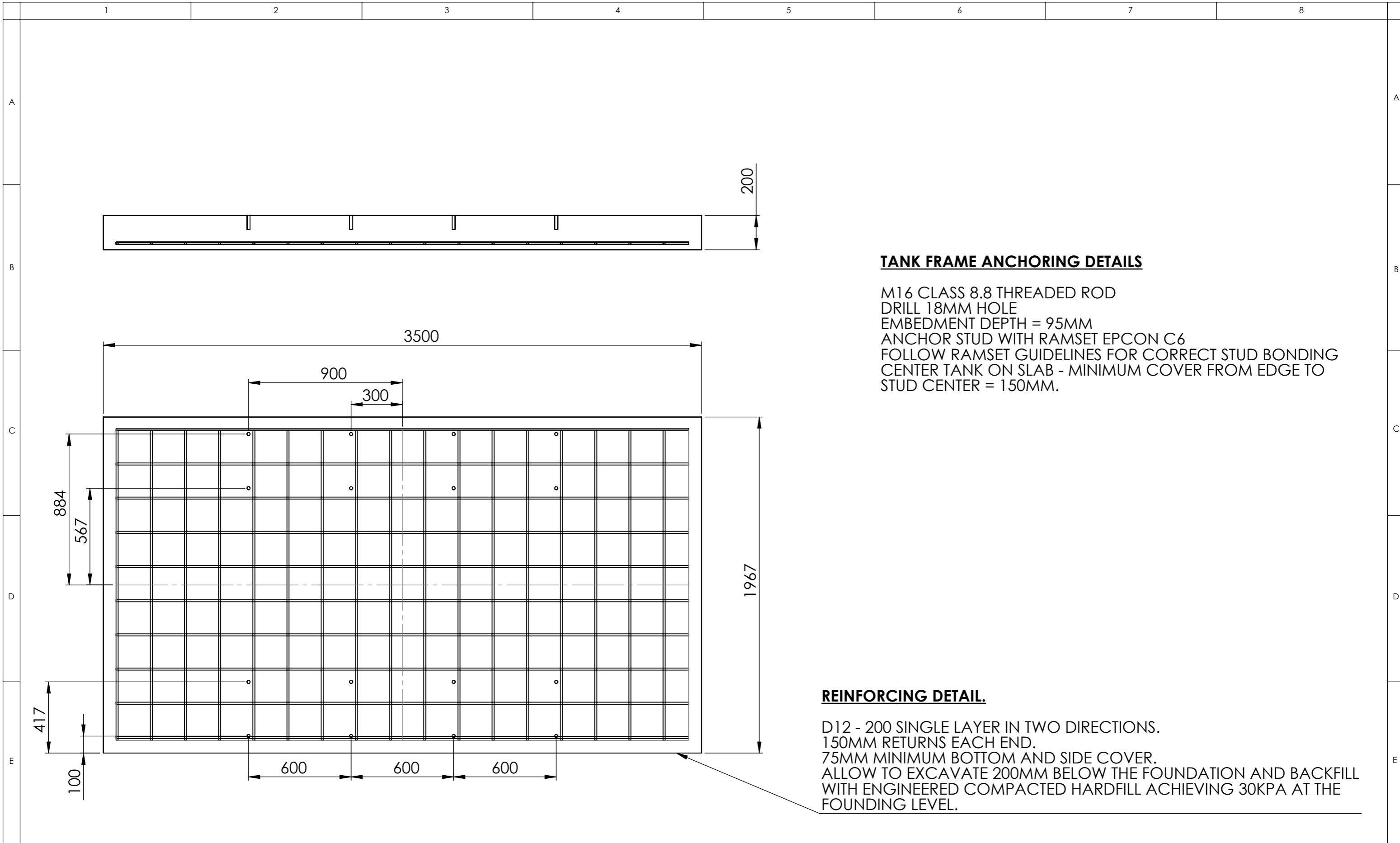
REVISION: A

ALL DIMENSIONS IN MILLIMETRES (mm)



APD LTD  
 49 McLaughlins Road,  
 Wiri,  
 AUCKLAND  
 NEW ZEALAND

TEL: 00 64 9 263 7741 FAX: 00 64 9 263 7743  
 www.apd.co.nz



**TANK FRAME ANCHORING DETAILS**

M16 CLASS 8.8 THREADED ROD  
 DRILL 18MM HOLE  
 EMBEDMENT DEPTH = 95MM  
 ANCHOR STUD WITH RAMSET EPCON C6  
 FOLLOW RAMSET GUIDELINES FOR CORRECT STUD BONDING  
 CENTER TANK ON SLAB - MINIMUM COVER FROM EDGE TO  
 STUD CENTER = 150MM.

**REINFORCING DETAIL.**

D12 - 200 SINGLE LAYER IN TWO DIRECTIONS.  
 150MM RETURNS EACH END.  
 75MM MINIMUM BOTTOM AND SIDE COVER.  
 ALLOW TO EXCAVATE 200MM BELOW THE FOUNDATION AND BACKFILL  
 WITH ENGINEERED COMPACTED HARDFILL ACHIEVING 30KPA AT THE  
 FOUNDING LEVEL.



**APD LTD**  
 49 McLaughlins Road,  
 Wiri,  
 AUCKLAND  
 NEW ZEALAND  
 TEL: 00 64 9 263 7741  
 FAX: 00 64 9 263 7743  
 www.apd.co.nz

**REMOVE ALL SHARP EDGES 0.5 X 45**

The information contained in this drawing is the sole property of APD LTD, is confidential, may only be used for the purpose issued and not be divulged to third parties, copied or reproduced in any way.  
 All intellectual property rights pertaining to this drawing belong to APD LTD.

**CAD DRAWING NO MANUAL REVISIONS REQUIRED DO NOT SCALE**

**TOLERANCE (UNLESS OTHERWISE STATED)**  
 0 = +/- 1.0  
 0.0 = +/- 0.50  
 0.00 = +/- 0.10  
 0.000 = +/- 0.01

<i>Material:</i>	<i>Project</i> 5000L STORMSLIM FOOTINGS		
<i>Designer:</i>	<i>Part Name:</i> 5000L TANK ZONE 2 3 SLAB/REINFORCING DETAIL		<i>Rev.</i> A
<i>Drawn By:</i>	<i>Print Date:</i> 1/09/2023	Scale: 1:50	<i>Sheet:</i> 3 of 3