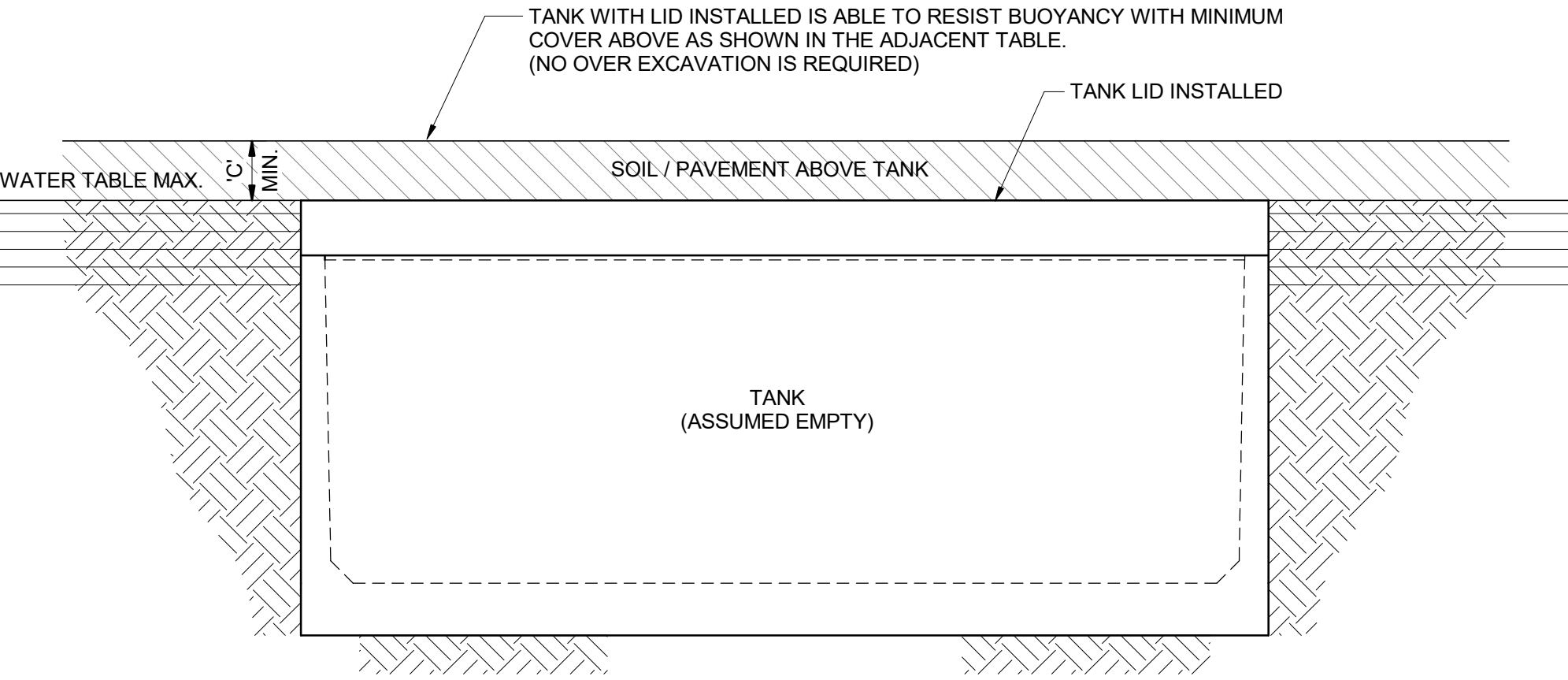
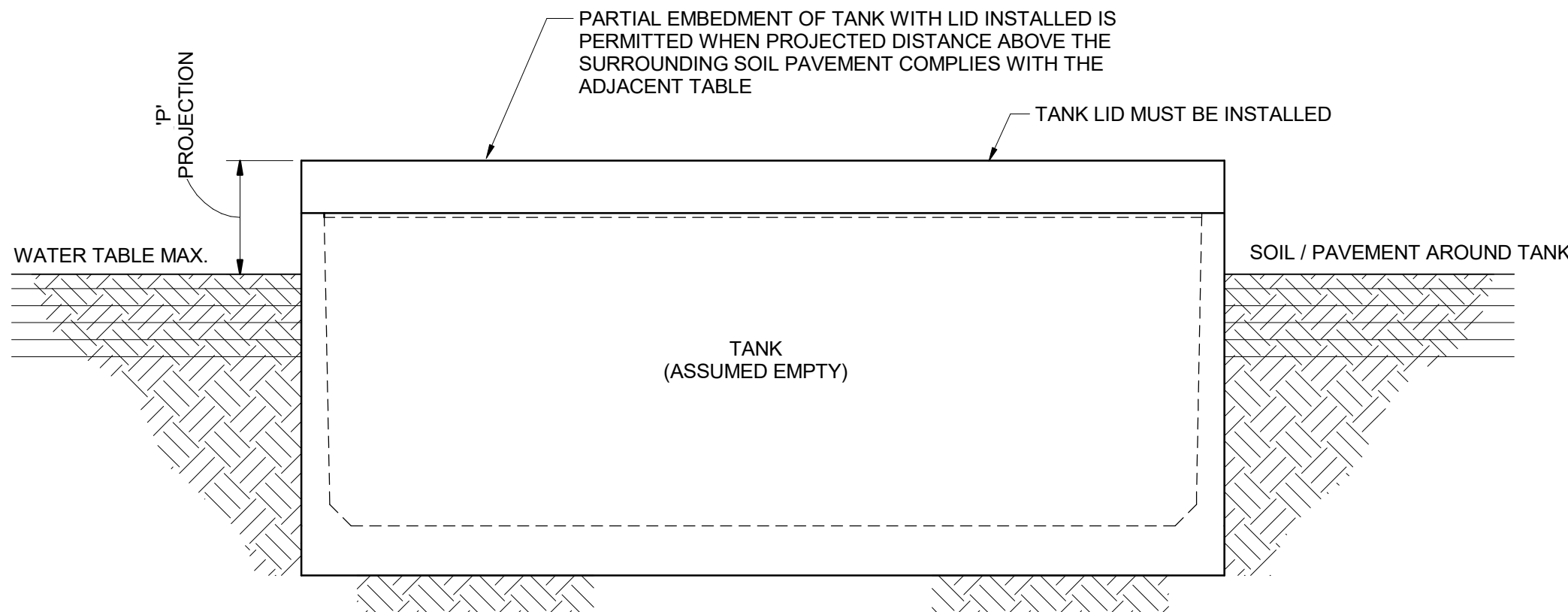
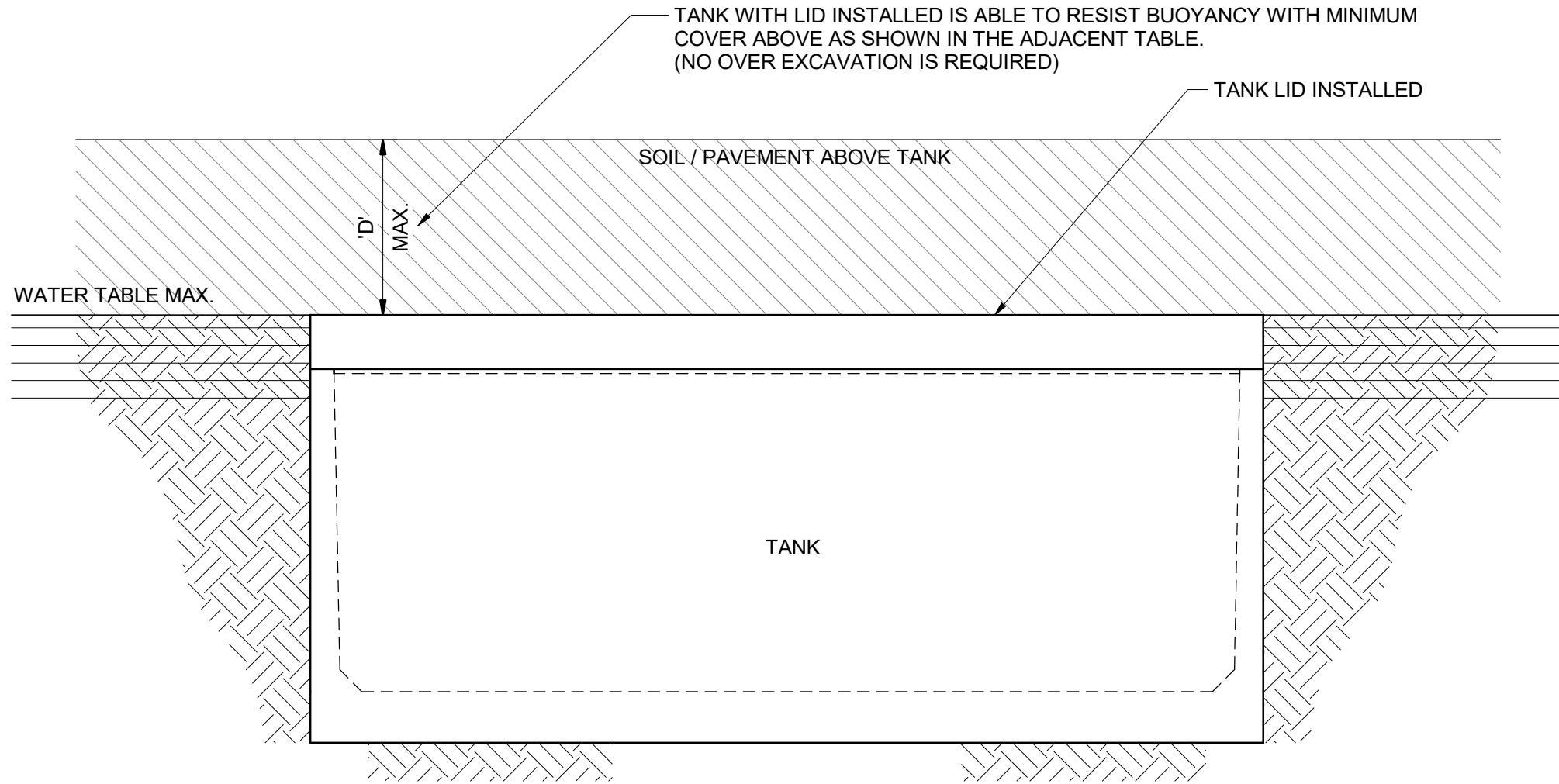




ANTI-FLOTATION REQUIREMENTS WHEN TANK IS FULLY BURIED



ANTI-FLOTATION REQUIREMENTS WHEN TANK IS PARTIALLY BURIED



MAXIMUM COVER ABOVE LID

MINIMUM COVER TO ACHIEVE ANTI-FLOTATION

TANK SIZE	'C' min. (mm)
3.0 kL ROUND - STANDARD TANK	0
1kL GREASE ARRESTOR	0
2kL GREASE ARRESTOR	0
5.0 kL ROUND	0
5.8 kL SQUARE - STANDARD TANK	370
3kL GREASE ARRESTOR	300
4kL GREASE ARRESTOR	275
5kL GREASE ARRESTOR	250
7.0 kL RECTANGULAR	220
10.0 kL ROUND - STANDARD TANK	0
6kL GREASE ARRESTOR	0
12.0 kL RECTANGULAR - STANDARD TANK	450
8.5kL TANK	300
9.5kL TANK	350
15.0 kL ROUND	0
8kL GREASE ARRESTOR	0
10kL GREASE ARRESTOR	0
20.0 kL ROUND	150
25.0 kL ROUND - STANDARD TANK	180
10kL GREASE ARRESTOR	150
16kL GREASE ARRESTOR	150

FLOTATION FACTOR OF SAFETY = 1.10
ASSUMED BULK DENSITY OF OVERBURDEN $\gamma = 18 \text{ kN/m}^3$.
REFER TO ON-SITE GEOTECHNICAL ADVICE AS TO WHETHER WATER TABLE IS PRESENT AND ANTI-FLOTATION CHECKS ARE REQUIRED.

MINIMUM PROJECTION TO ACHIEVE ANTI-FLOTATION

TANK SIZE	'P' min. (mm)
3.0 kL ROUND - (2kL GREASE ARRESTOR)	0
5.0 kL ROUND	0
5.8 kL SQUARE - (3,4,5kL GREASE ARRESTORS)	350
7.0 kL RECTANGULAR	100
10.0 kL ROUND - (6kL GREASE ARRESTOR)	0
12.0 kL RECTANGULAR - STANDARD TANK	750
8.5kL TANK	480
9.5kL TANK	550
15.0 kL ROUND - (8, 10kL GREASE ARRESTORS)	100
20.0 kL ROUND	550
25.0 kL ROUND - (10, 16kL GREASE ARRESTORS)	900

WHEN 'P' = 0, TANK CAN BE PARTIALLY BURIED TO ANY DEPTH AS THE BUOYANCY FORCE NEVER OVERCOMES THE TANK SELF WEIGHT WITH A FACTOR OF SAFETY OF 1.10.
REFER TO ON-SITE GEOTECHNICAL ADVICE AS TO WHETHER WATER TABLE IS PRESENT AND ANTI-FLOTATION CHECKS ARE REQUIRED.

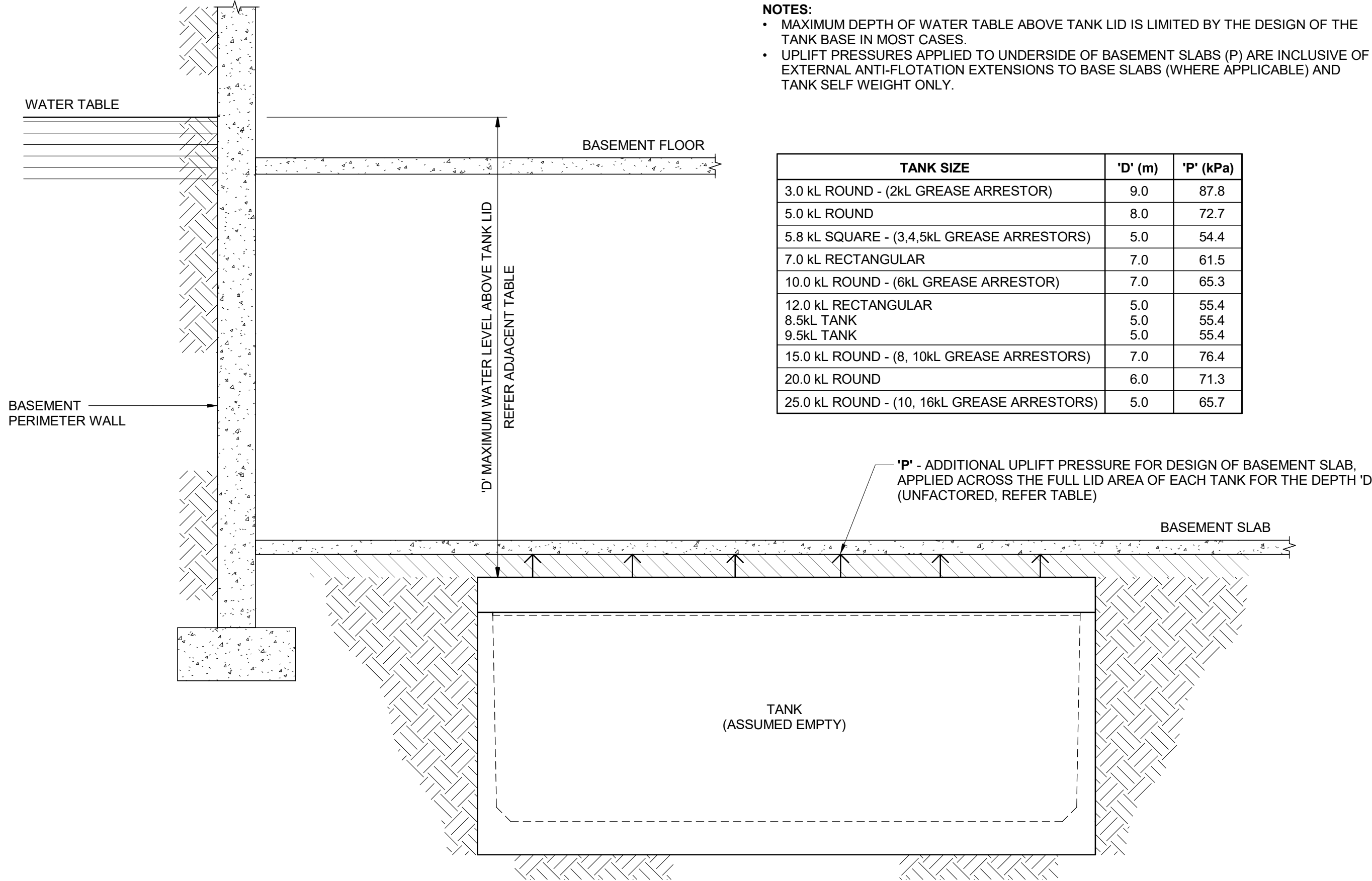
MAXIMUM DEPTH OF FILL/PAVEMENT ABOVE TANK LID

TANK SIZE	'D' max. (mm)
3.0 kL ROUND - (2kL GREASE ARRESTOR)	3000
5.0 kL ROUND	2000
5.8 kL SQUARE - (3,4,5kL GREASE ARRESTORS)	2000
7.0 kL RECTANGULAR	2000
10.0 kL ROUND - (6kL GREASE ARRESTOR)	2000
12.0 kL RECTANGULAR - STANDARD TANK	2000
8.5kL TANK	2000
9.5kL TANK	2000
15.0 kL ROUND - (8, 10kL GREASE ARRESTORS)	2000
20.0 kL ROUND	2000
25.0 kL ROUND - (10, 16kL GREASE ARRESTORS)	2000

MAXIMUM DEPTH OF COVER ABOVE TANK HAS BEEN ASSESSED FOR ALL DESIGN VEHICLE TYPES LISTED ON DRAWING 1355-G-EN-03. REFER NOTES ON THIS DRAWING FOR INFORMATION RELATED TO BRIDGE CODE STYLE LOADING (eg. SM1600 LOADS).

GREATER DEPTHS OF COVER ABOVE LIDS MAY BE ACHIEVED WITH RESTRICTIONS TO VEHICULAR TRAFFIC OR ALTERNATIVE LID DESIGNS - REFER ENGINEER.

ASSUMED BULK DENSITY OF OVERBURDEN $\gamma = 18 \text{ kN/m}^3$.



BASEMENT HYDROSTATIC LOADING REQUIREMENTS

SCALE 1 : 20

APPROVED FOR CONSTRUCTION

0.3	ISSUED FOR CONSTRUCTION	DTA	03/02/20
0.2	FOR REVIEW	DTA	04/11/19
0.1	PRELIMINARY ISSUE	DTA	10/10/19
Issue	Description	Issued By	Date



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E / dean.anderson@dtastuct.com.au
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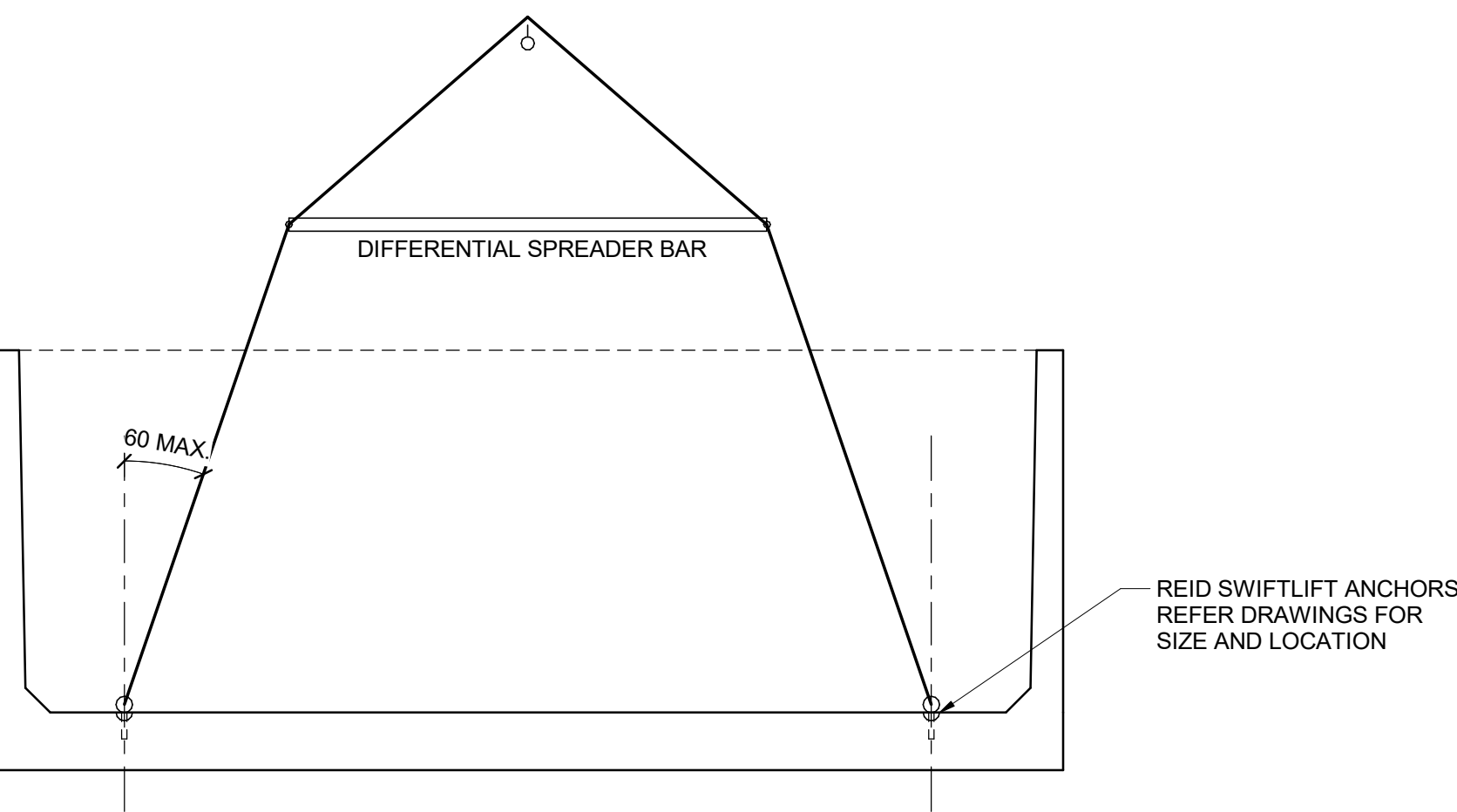
AustralianTanks
1300-A-TANKS
Water and Waste Water Specialists

Model
TANK INSTALLATION NOTES &
SPECIFICATIONS

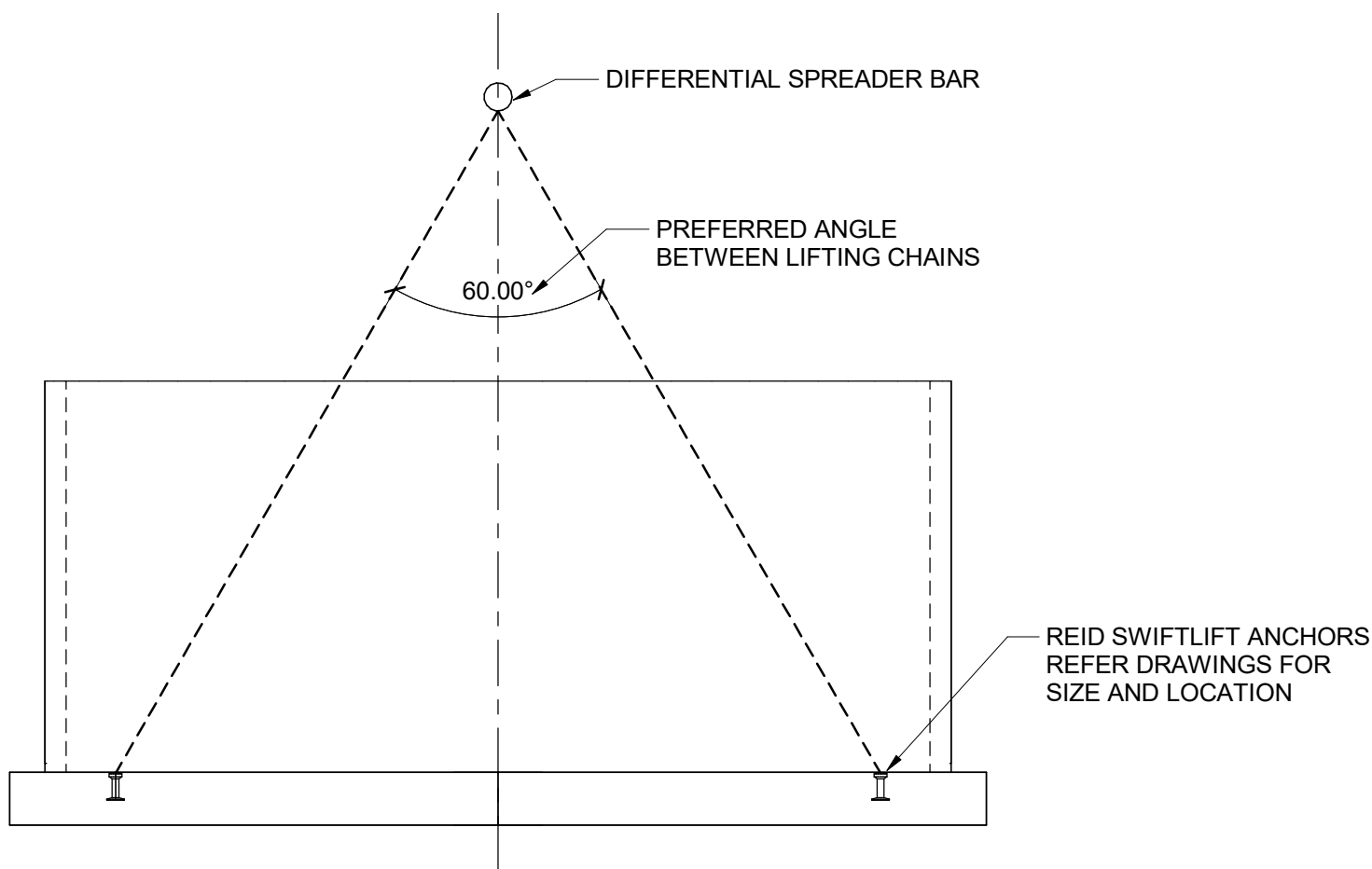
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Checked:	DTA		
RPEQ:	Dean Anderson (RPEQ 21536)		
Drawing Title:			
BOUYANCY & COVER HEIGHTS			
Drawing Number:		Rev:	
1355-G-EN-01		0.3	

LIFTING NOTES

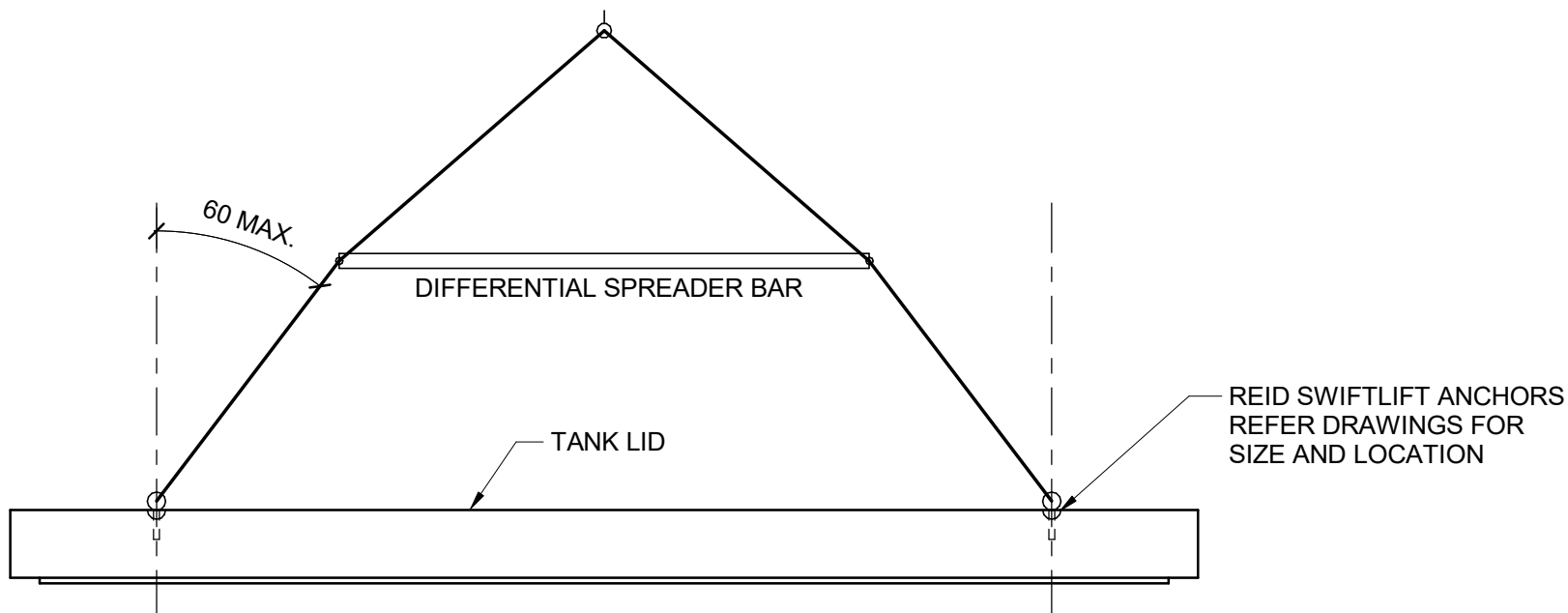
1. INSTALLATION OF CAST-IN ANCHORS AND LIFTING PROCEDURES TO BE IN ACCORDANCE WITH "PSA FOOT AND EYE ANCHORS" SPECIFICATIONS AND CERTIFICATION FOR MULTIPLE LIFTS. ANCHORS AND SURROUNDING CONCRETE SHOULD BE INSPECTED PRIOR TO EACH USE. DAMAGED ANCHORS SHALL NOT BE USED (CONTACT MANUFACTURER FOR ADVICE IF REQUIRED).
2. CONCRETE STRENGTH OF PRECAST ELEMENTS TO BE F'C = 30MPa MINIMUM AT TIME OF LIFTING.
3. ALL LIFTING MUST BE CARRIED OUT USING A CRANE AT NORMAL HOIST SPEEDS WITH A MAXIMUM SLING ANGLE OF 60 DEGREES. TANKS MAY BE CARRIED BY SLOW MOVING MOBILE CRANES OVER LEVEL TERRAIN.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE GENERAL NOTES ON 1355-G-EN-04.
5. ENSURE THAT ALL LIFTING INSERTS ARE INSTALLED IN THE CORRECT POSITION PRIOR TO LIFTING.
6. DAMAGED LIFTING ANCHORS TO BE IMMEDIATELY GROUTED OVER TO PREVENT FURTHER USE.
7. ENSURE ALL REINFORCEMENT BARS ARE INSTALLED AS PER THE MANUFACTURER'S REQUIREMENTS TO EYE ANCHORS.
8. THE FOLLOWING NOTES ARE A GUIDE ONLY. LIFTING PROCEDURES TO BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE WORKS.



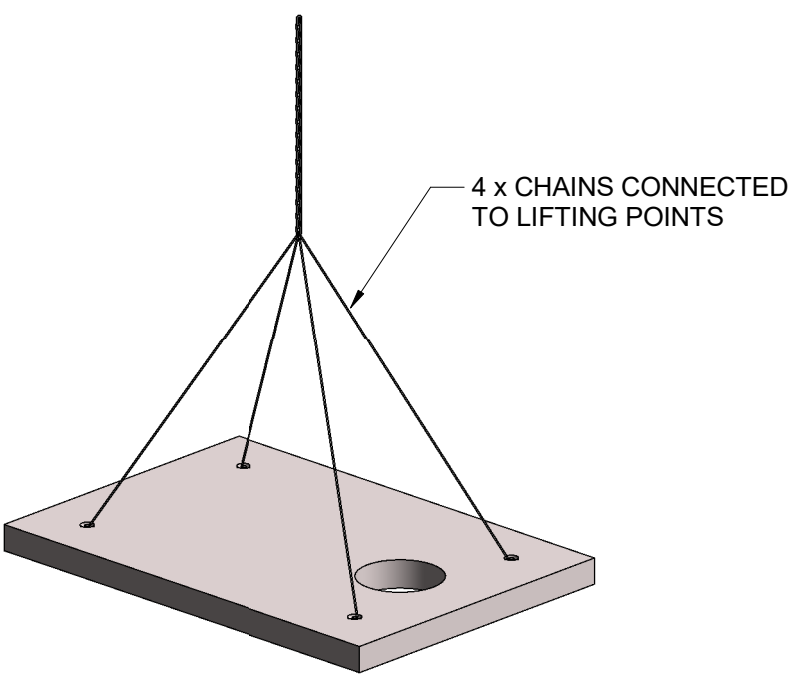
RECTANGULAR TANK - INTERNAL LIFTING POINTS



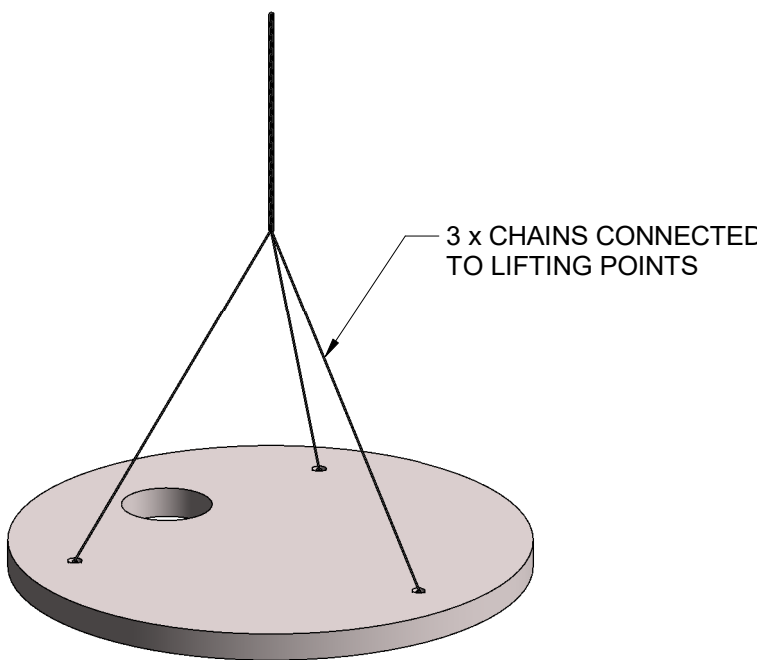
ROUND TANK - INTERNAL LIFTING POINTS



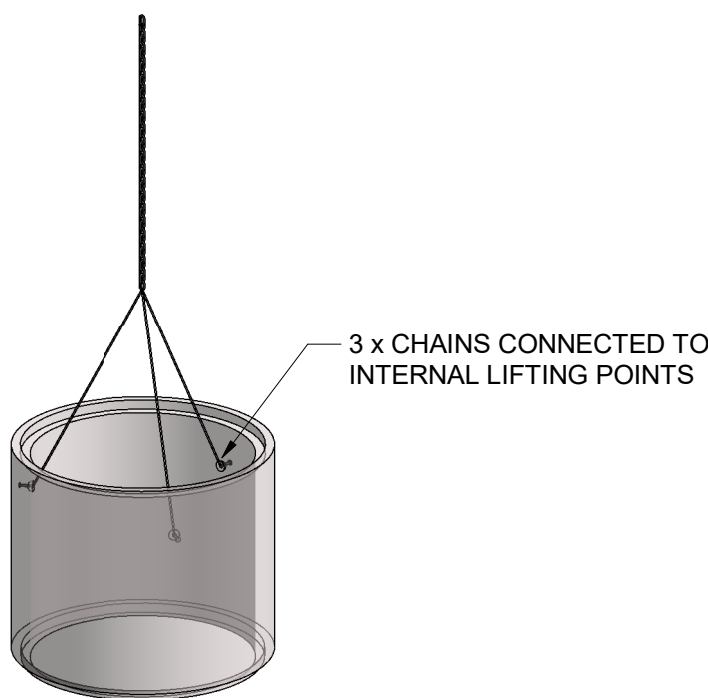
TANK LID - LIFTING POINTS



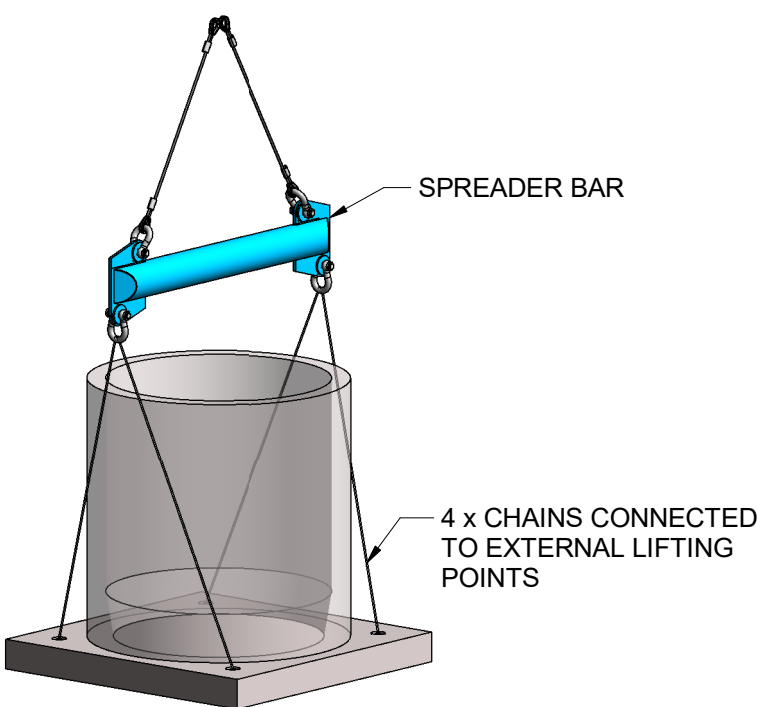
SQUARE/RECTANGULAR TANK LID LIFTING DIAGRAM



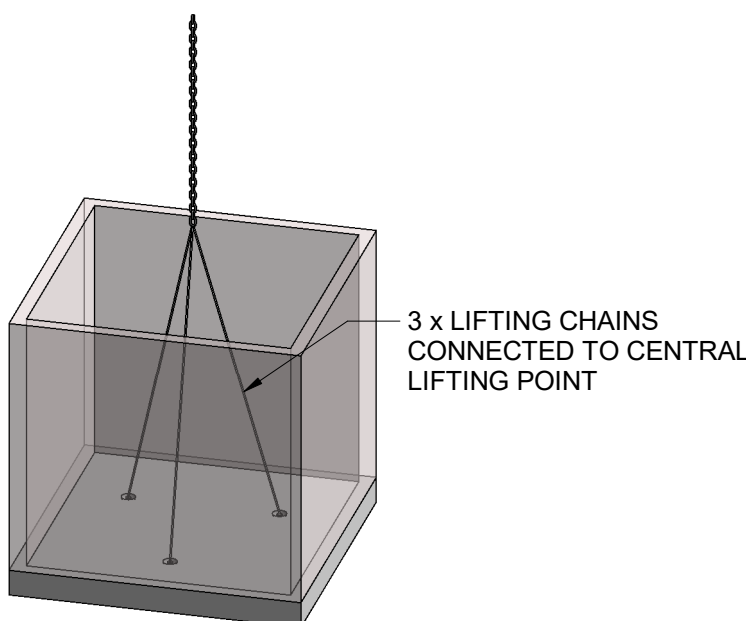
ROUND TANK LID LIFTING DIAGRAM



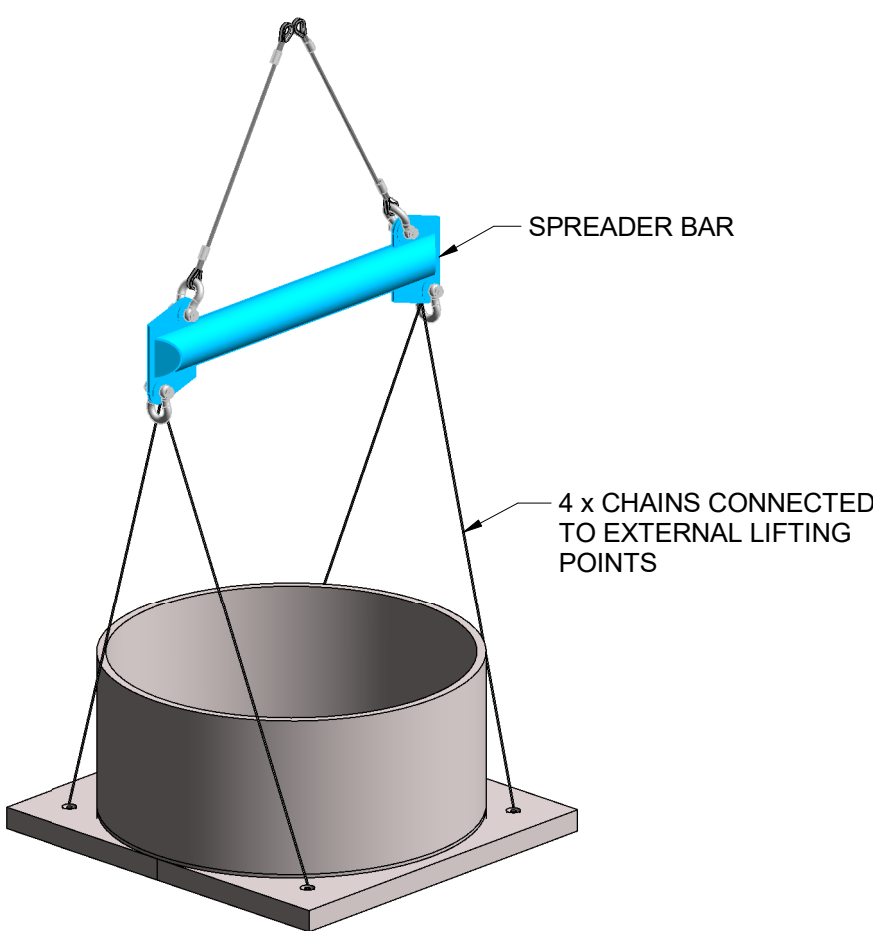
1500Ø RING LIFTING DIAGRAM



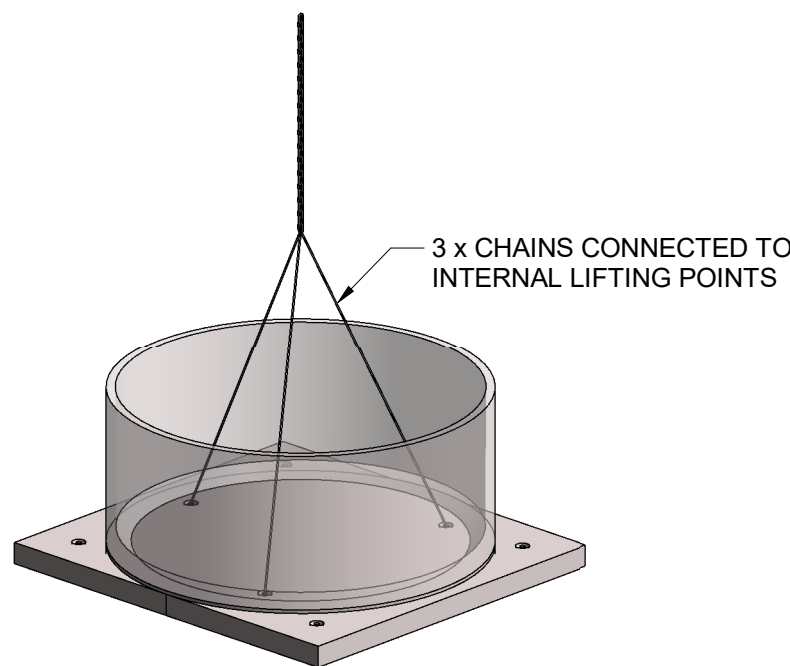
3kL TANK LIFTING DIAGRAM



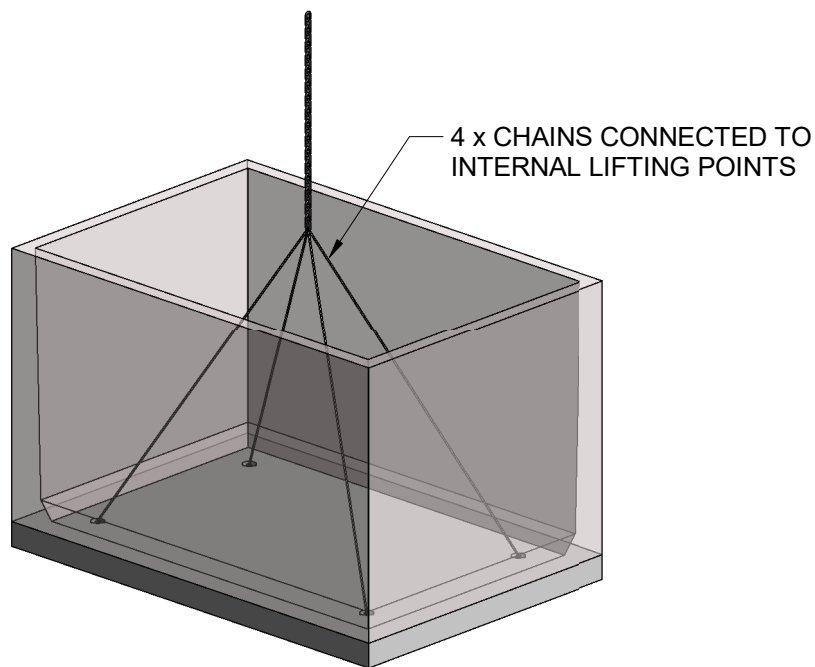
5.8kL TANK LIFTING DIAGRAM



5, 10, 15, 20, 25kL TANK LIFTING DIAGRAM (EXTERNAL POINTS)

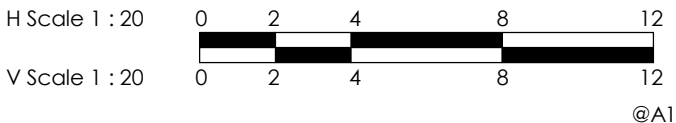


5, 10, 15, 20, 25kL TANK LIFTING DIAGRAM (INTERNAL POINTS)



7, 12kL TANK LIFTING DIAGRAM (INTERNAL POINTS)

0.2	ISSUED FOR CONSTRUCTION	DTA	03/02/20
0.1	FOR REVIEW	DTA	04/11/19
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E / dean.anderson@dtastuct.com.au
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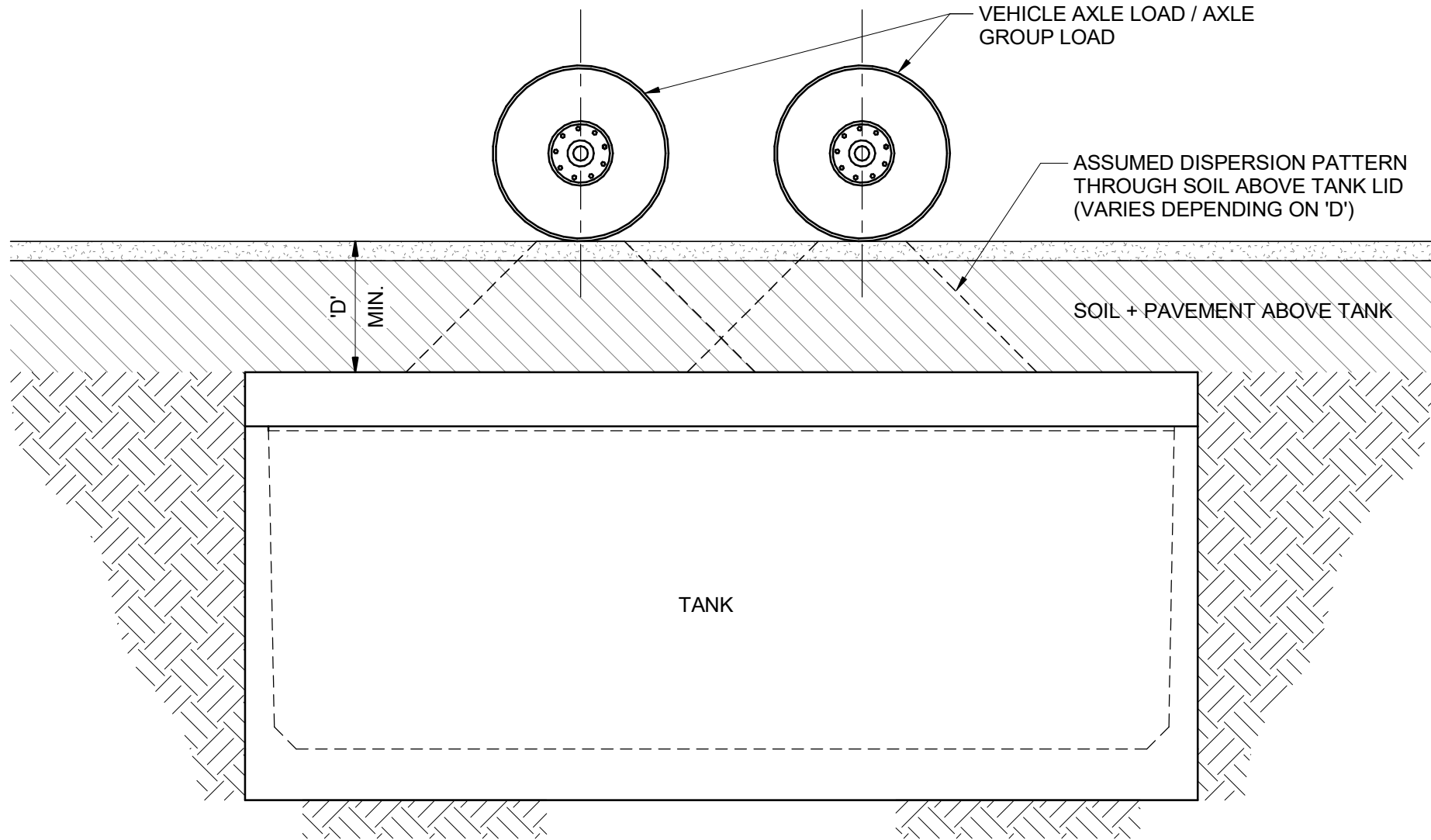


Model
TANK INSTALLATION NOTES &
SPECIFICATIONS

APPROVED FOR CONSTRUCTION		
Scale:	1 : 20 @ A1.	Sheet Size: A1
Drawn:	DTA	THE DESIGNS AND PLANS REPRESENTED ON THIS DRAWING ARE NOT TO BE REPRODUCED IN WHOLE OR PART WITHOUT CONSENT OF DTA STRUCTURAL ENGINEERING PTY LTD. ALL DIMENSIONS TO BE VERIFIED ON SITE. REPORT ANY DISCREPANCIES TO THE ENGINEER. DO NOT SCALE OFF DRAWINGS.
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RPEQ:	Dean Anderson (RPEQ 21536)	
Drawing Title:		
GENERIC LIFTING DETAILS		
Drawing Number:	1355-G-EN-02	Rev: 0.2

VEHICLE LOADING CONSIDERATIONS

1. TANK HAS BEEN DESIGNED FOR BELOW GROUND USE IN CONTROLLED TRAFFIC CONDITIONS FOR THE AXLE LIMITS SHOWN IN THE TABLE BELOW.
2. ALL HEAVY VEHICLE LOADS ARE ASSUMED TO BE WITHIN THE GROSS VEHICLE MASS (GVM) AND AXLE MASS LIMITS PRESCRIBED BY THE QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS (SEE TABLE BELOW).
3. IT IS THE CLIENT'S RESPONSIBILITY TO ENSURE THAT THE VEHICLE LOAD LIMITS ARE NOT EXCEEDED, THROUGH CLEAR SIGNAGE OR OTHER MEANS.
4. WHERE IT CANNOT BE GUARANTEED THAT THE AXLE LOAD LIMITS SHOWN IN THE TABLE BELOW WILL NOT BE EXCEEDED, TANKS MUST BE DESIGNED FOR SM1600 LOADS TO AS5100 (SPECIFICALLY W80). SM1600 IS DERIVED FROM THE BRIDGE CODE (AS5100.2) AND DESCRIBES A SERIES OF LOADS THAT REPRESENTS DIFFERENT DESIGN CASES SUCH AS A STATIONARY WHEEL (W80), A SINGLE AXLE GROUP (A160), A MOVING TRAFFIC LOAD (M1600) AND A STATIONARY TRAFFIC LOAD (S1600). WHEN THE TANK LID IS SPECIFIED FOR COMPLIANCE WITH LOAD CASES DERIVED FROM THE BRIDGE CODE (eg. W80), IT IS IMPORTANT TO KNOW THAT THE LOAD FACTORS FOR ULTIMATE LIMIT STATE DESIGN MUST BE INCREASED IN ACCORANCE WITH AS5100 (1.8 AS OPPOSED TO 1.5). THIS WILL POTENTIALLY RESULT IN THE REQUIREMENT FOR ADDITIONAL LID REINFORCEMENT OR THICKENING OF THE LID.
5. REFER TO ENGINEER FOR QUERIES RELATED TO VEHICLE LOADING OR SPECIFIC QUERIES RELATED TO COMPLIANCE WITH AS5100.
6. WHEEL LOADS ARE ASSUMED TO BE DISPERSED THROUGH A MINIMUM SOIL COVER DEPTH "D" (SEE ADJACENT TABLE).
7. REFER TO MINIMUM AND MAXIMUM SOIL COVER DEPTHS SHOWN IN THE TABLES ON DRAWING 1355-G-EN-01 AS REQUIRED FOR ANTI-BUOYANCY
8. WHERE SOIL DEPTH ABOVE TANK NEEDS TO BE SHALLOWER THAN SHOWN IN THE TABLE BELOW, SEEK ENGINEER'S ADVICE ABOUT ALTERNATE LID DESIGNS.
9. WHERE THE TANK IS TO BE INSTALLED BENEATH A BASEMENT SLAB, THE HYDROSTATIC PRESSURES ON THE TANK MUST BE CONSIDERED. CONTACT AUSTRALIAN TANKS (ATQ) FOR ADVICE. FURTHER ADVICE IS GIVEN ON DRAWING 1355-G-EN-01.
10. ALL TANK LIDS ARE DESIGNED TO SUPPORT CLASS D RATED ACCESS COVERS AND GRATES. THIS CORRESPONDS TO A NOMINAL WHEEL LOAD OF 8,000kg (W80), SERVICEABILITY DESIGN LOAD OF 140kN AND AN ULTIMATE LIMIT STATE DESIGN LOAD OF 210kN.
11. VEHICLE LOADS APPLIED TO ACCESS COVERS ARE ASSUMED TO BE DIRECTLY BE SUPPORTED BY THE CONCRETE RISER ELEMENTS. AUSTRALIAN TANK RISERS ARE DESIGNED TO SUPPORT THE ACCESS COVER LOADS MENTIONED IN NOTE 10. RISER ELEMENTS ARE IN TURN SUPPORTED DIRECTLY BY TANK LIDS.
12. ENSURE LID IS FULLY INSTALLED PRIOR TO COMMENCING BACKFILLING WORKS. ENSURE THAT EQUIPMENT AND PLANT USED IN BACKFILLING IS ADEQUATELY REVIEWED AS TO NOT OVERLOAD THE WALLS OR LID OF THE TANK.

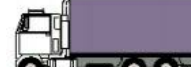
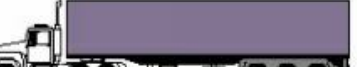


NOTE:
SIZE AND SHAPE OF DISTRIBUTION RECTANGLE ONTO LID CALCULATED IN ACCORDANCE WITH AS5100.2 - 7.12 "DISTRIBUTION PATTERN OF TRAFFIC LOADS THROUGH FILL"

MINIMUM SOIL/PAVEMENT DEPTH ABOVE TANK

TANK SIZE	'D' min. (mm)
3.0 kL ROUND - (2kL GREASE ARRESTOR)	300
5.0 kL ROUND	300
5.8 kL SQUARE - (3,4.5kL GREASE ARRESTORS)	300
7.0 kL RECTANGULAR	300
10.0 kL ROUND - (6kL GREASE ARRESTOR)	300
12.0 kL RECTANGULAR	300
15.0 kL ROUND - (8, 10kL GREASE ARRESTORS)	300
20.0 kL ROUND	300
25.0 kL ROUND - (10, 16kL GREASE ARRESTORS)	300

VEHICLE AXLE LOADS USED IN DESIGN

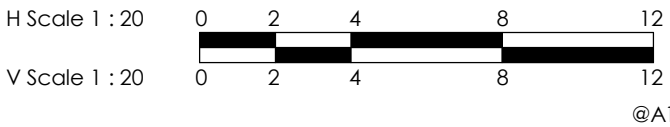
VEHICLE TYPE	STEER AXLE LOAD (t)	SOLID AXLE LOAD (t)	TANDEM AXLE LOAD (t)	TRI-AXLE LOAD (t)
2 x AXLE RIGID TRUCK 	6.0	9.0	-	-
3 x AXLE RIGID TRUCK 	6.0	-	16.5	-
4 x AXLE RIGID TWIN STEER 	11.0	-	16.5	-
6 x AXLE SEMI-TRAILER 	6.0	-	16.5	20.0

NOTES:

- AXLE MASS LIMITS HAVE BEEN DERIVED FROM THE QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS (TMR) DOCUMENT TITLED 'AXLE MASS LIMITS IN QUEENSLAND COMPARISON TABLE'.
- AXLE MASS LIMITS ARE IN ACCORDANCE WITH 'REGULATION' LIMITS. FOR HIGHER AXLE LIMITS, SUCH AS THOSE LISTED AS 'HML' OR 'NHVAS', SEE ENGINEER FOR INFORMATION.

APPROVED FOR CONSTRUCTION

0.2	ISSUED FOR CONSTRUCTION	DTA	03/02/20
0.1	FOR REVIEW	DTA	04/11/19
Issue	Description	Issued By	Date



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Model
TANK INSTALLATION NOTES & SPECIFICATIONS

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RPEQ:	Dean Anderson (RPEQ 21536)		
Drawing Title:			
VEHICLE LOADING		Drawing Number:	Rev:
		1355-G-EN-03	0.2

GENERAL NOTES

1. READ STRUCTURAL DRAWINGS IN CONJUNCTION WITH OTHER CONSULTANT'S DRAWINGS, SPECIFICATIONS AND OTHER WRITTEN INSTRUCTIONS. REFER ALL DISCREPANCIES TO THE ENGINEER.
2. VERIFY ALL DIMENSIONS RELEVANT TO THE MANUFACTURE OF TANKS AND SETTING OUT ON AND OFF SITE WORK BEFORE CONSTRUCTION AND/OR FABRICATION IS COMMENCED.
3. DO NOT SCALE THE DRAWINGS UNLESS NOTED OTHERWISE.
4. MAINTAIN ALL STRUCTURES INCLUDING NEIGHBOURING STRUCTURES IN A STABLE CONDITION DURING CONSTRUCTION.
5. COMPLY WITH THE RELEVANT CURRENT AUSTRALIAN STANDARD CODES AND THE LOCAL STATUTORY AUTHORITIES REGULATIONS EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS. COMPLY WITH THE REQUIREMENTS OF THE WORKPLACE HEALTH AND SAFETY ACT (QLD). ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
6. NO RESPONSIBILITY IS TAKEN FOR THE INTERACTION OF TANKS WITH EXISTING INFRASTRUCTURE AND SERVICES. THE INSTALLING CONTRACTOR IS TO ENSURE THAT THE TANKS DO NOT DAMAGE OR APPLY LOAD TO EXISTING SERVICES.
7. ALL PROPRIETARY ITEMS MUST BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.
8. HANDRAILS AND FIXINGS SHALL BE DESIGNED AND INSTALLED TO RESIST LOADS TO AS1170 WITH STRUCTURAL ENGINEERING CERTIFICATION SUPPLIED BY THE MANUFACTURER.
9. INTERIOR OF PRECAST TANK TO BE LINED USING APPROVED WATERPROOFING AGENT ACCORDING TO PRECAST MANUFACTURERS SPECIFICATION (IF REQUIRED).
10. CONSTRUCTION DRAWINGS MUST BE READ IN CONJUNCTION WITH THE CONSTRUCTION NOTES AND DETAILS ON THE STANDARD DRAWINGS FOR EACH VARIANT.
11. THE DESIGN REPRESENTED ON THE STRUCTURAL DRAWINGS FOR EAC PRODUCT IS NOT VALID UNLESS PERIODIC INSPECTIONS BY THE CERTIFYING PARTY IS CARRIED OUT TO ENSURE THAT TANKS ARE BUILT IN ACCORDANCE WITH THE REQUIREMENTS SET OUT IN THESE DRAWINGS.

DESIGN NOTES

1. THE STRUCTURAL COMPONENTS DETAILED ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE RELEVANT STANDARDS AUSTRALIA CODES AND THE BUILDING CODE OF AUSTRALIA.
2. TANKS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE PORTLAND CEMENT ASSOCIATION MANUALS 'CIRCULAR CONCRETE TANKS' AND 'RECTANGULAR CONCRETE TANKS' AND ALSO IN ACCORDANCE WITH AS3600 'CONCRETE STRUCTURES CODE' AND AS3755 'LIQUID RETAINING STRUCTURES' CODE.
3. TANKS HAVE BEEN DESIGNED FOR BELOW GROUND ENVIRONMENTS WITH NON-AGGRESSIVE AND NON-SALINE SOILS. FOR OTHER CONDITIONS CONTACT ENGINEER FOR ADVICE.
4. TANKS HAVE BEEN DESIGNED FOR ABOVE-GROUND USE IN SUB-TROPICAL REGIONS WHERE THE OUTSIDE TEMPERATURE CAN BE EXPECTED TO REACH A MAXIMUM OF 30 DEGREES CELCIUS HIGHER THAN THE INTERNAL TANK TEMPERATURE ONLY.
NOTE: TANK EXTERIOR SHALL NOT BE PAINTED WITH DARK COLOURS.
5. TANK IS APPROVED FOR DOMESTIC SEWAGE APPLICATIONS WHERE THE CONTENTS WILL NOT BE DISTURBED (eg. DUE TO DROPS), WHERE ADEQUATE VENTILATION IS PROVIDED TO PREVENT THE BUILD-UP OF GASEOUS HYDROGEN SULPHIDE WITHIN THE TANK AND WHERE APPROPRIATE COATINGS ARE USED INTERNALLY.
6. TANKS HAVE BEEN DESIGNED TO WITHSTAND VEHICLE LOADING. THE TERM "RESTRICTED TRAFFIC" REFERS TO CONTROLLED TRAFFIC CONDITIONS WHERE THE HEAVIEST VEHICLE SUPPORTED AS ASSUMED TO BE WITHIN THE GROSS VEHICLE MASS (GVM) AND AXLE MASS LIMITS PRESCRIBED BY QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS. CURRENT TANK DESIGN IS BASED ON THE AXLE MASS LIMITS SHOWN IN THE TABLE ON DRAWING 1355-G-EN-03.
7. REFER TO TABLE ON DRAWING 1355-G-EN-01 FOR MINIMUM SOIL/PAVEMENT COVER OVER TANKS FOR ANTI-FLOTATION. WHETHER ANTI-FLOTATION REQUIREMENTS APPLY TO THE SPECIFIC TANK APPLICATION SHOULD BE CONFIRMED BY THE CLIENT AND CLIENT'S ENGINEER.
8. WHEEL LOADS ARE ASSUMED TO BE DISPERSED THROUGH MINIMUM SOIL/PAVEMENT DEPTHS AS SHOWN ON THE TABLE AND NOTES ON 1355-G-EN-03.
9. REFER TO TABLE ON DRAWING 1355-G-EN-01 FOR MAXIMUM SOIL/PAVEMENT DEPTH ABOVE TANKS.
10. NO SURCHARGE LOADS SHALL BE PERMITTED WITHIN A DISTANCE EQUAL TO THE OVERALL HEIGHT OF THE TANK UNTIL THE LID HAS BEEN INSTALLED.
11. WHERE THE TANK IS TO BE INSTALLED BENEATH A BASEMENT SLAB, THE HYDROSTATIC PRESSURES ON THE TANK MUST BE CONSIDERED. CONTACT AUSTRALIAN TANKS (ATQ) FOR ADVICE. FURTHER ADVICE IS GIVEN ON DRAWING 1355-G-EN-01.

CHEMICAL ANCHORS

1. ALL CHEMICAL ANCHORS SHALL BE RAMSET "CHEMSET REO 502" EPOXY SERIES OR HILTI "HIT - RE 500 INJECTION ADHESIVE" OR POWERS "POWER-FAST PRO EPOXY INJECTION SYSTEM" OR APPROVED EQUIVALENT. ALL PREPARATION AND APPLICATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURERS SPECIFICATION.

CORE HOLES

1. CORE HOLES IN WALLS SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED ON ENGINEERING DRAWINGS FOR EACH TANK TYPE.
2. CUT BARS SHALL BE PRIMED WITH ZINGA 'ZINGASPRAY' WITH A DRY FILM THICKNESS OF 120µm IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

LIFTING

1. REFER TO SPECIFIC DETAILS ON DRAWING 1355-G-EN-02.

FIBRE REINFORCEMENT

1. POLYMER FIBRE-REINFORCED CONCRETE WALLS ARE SEPARATELY CERTIFIED BY FIBRECON QLD PTY LTD.
2. FIBRE DOSAGE SHOWN ON THE STRUCTURAL DRAWINGS IS SPECIFIED BY FIBRECON.
3. REFER TO FIBRECON FOR ANY TEST CERTIFICATES OR OTHER REPORTS PERTAINING TO THE MECHANICAL PROPERTIES OF THE FIBRES.

CONCRETE NOTES

1. COMPLY WITH AS3600 CONCRETE STRUCTURES.
2. DESIGN AND CONSTRUCT FORMWORK IN ACCORDANCE WITH AS3610.1.
3. PROVIDE QUALITY OF FINISHES OF FORMED SURFACES IN ACCORDANCE WITH AS3610.1 AND AS FOLLOWS ON DRAWINGS:
 - a. EXPOSED SURFACES: CLASS 3
 - b. CONCEALED SURFACES: CLASS 4
 - c. IN CONTACT WITH GROUND: CLASS 5
4. THE LISTED SIZE OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES. PROVIDE CHAMFERS, FILLETS REGLETS AND DRIP GROOVES AS SHOWN ON THE STRUCTURAL DRAWINGS.
5. DO NOT MAKE ANY PENETRATIONS OR CHASES OR EMBED ANY ITEMS OTHER THAN THOSE SHOWN IN THE STRUCTURAL DRAWINGS WITHOUT APPROVAL OF THE ENGINEER.
6. FORM CONSTRUCTION JOINTS ONLY WHERE APPROVED BY THE ENGINEER.
7. REINFORCEMENT SYMBOLS:
 - a. "S" DENOTES GRADE 250S HOT ROLLED DEFORMED BAR TO AS 4671
 - b. "R" DENOTES GRADE 250R HOT ROLLED PLAIN BAR TO AS4671
 - c. "W" DENOTES HARD-DRAWN PLAIN WIRE TO AS 4671
 - d. "RF" & "L" DENOTES HARD-DRAWN RIBBED WIRE FABRIC TO AS 4671
 - e. "N" DENOTES GRADE 500N HOT ROLLED DEFORMED BAR TO AS 4671
 - f. THE NUMBER FOLLOWING THE BAR SYMBOL IS THE BAR DIAMETER IN mm.
8. MINIMUM COVER (mm) TO ALL REINFORCEMENT INCLUDING FITMENTS SHALL BE AS FOLLOWS, U.N.O.:

ELEMENT	COVER (mm)
TANK BASES WITH EXPOSURE CLASS 'B2'	35
TANK LIDS	35

9. MINIMUM REINFORCEMENT LAP LENGTHS:

REINFORCING LAP SCHEDULE							
BAR Ø	FOOTING LAP		BEAM LAP		SLAB LAP	WALL LAP	COLUMN LAP
	BOTTOM	TOP	BOTTOM	TOP			
N12	500	650	500	650	500	500	500
N16	750	1000	750	1000	750	750	750
N20	1000	1300	1000	1300	1000	1000	1000
N24	1250	1600	1250	1600	1250	1250	1250
N28	1500	1950	1500	1950	1500	1500	1500
N32	1800	2300	1800	2300	1800	1800	1800
N36	2100	2700	2100	2700	2100	2100	2100
N40	2450	3150	2450	3150	2450	2450	2450

10. SUPPORT REINFORCEMENT IN ITS CORRECT POSITION DURING CONCRETING BY APPROVED BAR CHAIRS, SPACERS OR SUPPORT BARS SUITABLE FOR THE EXPOSURE CONDITIONS.
11. DO NOT WELD OR SITE BEND REINFORCEMENT UNLESS SHOWN IN THE DRAWINGS OR OTHERWISE SPECIFIED BY THE ENGINEER.
12. LAP REINFORCEMENT MESH BY ONE COMPLETE MESH.
13. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
14. SAMPLE TEST AND ASSESS CONCRETE COMPLIANCE IN ACCORDANCE WITH PROJECT ASSESSMENT OF STRENGTH GRADE TO SECTION 19.1.6 AS3600-2009.
15. THE CONCRETE SHALL BE COMPACTED USING HIGH FREQUENCY VIBRATORS.
16. CURING OF ALL CONCRETE SURFACES SHALL COMMENCE IMMEDIATELY AFTER SURFACES ARE FINISHED BY THE APPLICATION OF ALIPHATIC ALCOHOL AFTER EACH FINISHING OPERATION WHILE WATER SHEEN IS STILL EVIDENT THEN AS SPECIFIED AND SHALL CONTINUE FOR A MINIMUM OF 7 DAYS. CURING METHOD SHALL BE EITHER: CHEMICAL. ADMXTURES SHALL NOT BE USED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
17. CEMENT SHALL BE TYPE NORMAL CLASS PORTLAND CEMENT UNLESS NOTED OTHERWISE.
18. MAXIMUM 56 DAY SHRINKAGE STRAIN WHEN TESTED IN ACCORDANCE WITH AS1012. WATER/CEMENT RATIO SHALL BE A MAXIMUM OF 0.46.
19. MAXIMUM FLYASH CONTENT TO BE 10% MEASURED BY WEIGHT OF CEMENTITIOUS MATERIAL.
20. ALL SLAB SEALANTS SHALL BE SIKAFLEX PRO 2HP POLYURETHANE JOINT SEALANT OR APPROVED EQUIVALENT. SEALANT MUST BE APPLIED STRICTLY TO MANUFACTURERS SPECIFICATIONS WITH REGARD TO JOINT CONFIGURATION, SURFACE PREPARATION, PRIMING, DEBONDING, APPLICATION AND CLEANING.
21. ALL CHEMICAL ANCHORS SHALL BE RAMSET CHEMSET INJECTION 800 SERIES OR HILTI HIT-RE 500 INJECTION ADHESIVE OR APPROVED EQUIVALENT. ALL PREPARATION AND APPLICATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION.
- 22.

TANK INSTALLATION NOTES

BASE PREPARATION

TANK BASE MUST BE FOUNDED ON NATURAL MATERIAL WITH ALLOWABLE BEARING CAPACITY OF 150kPa MIN.

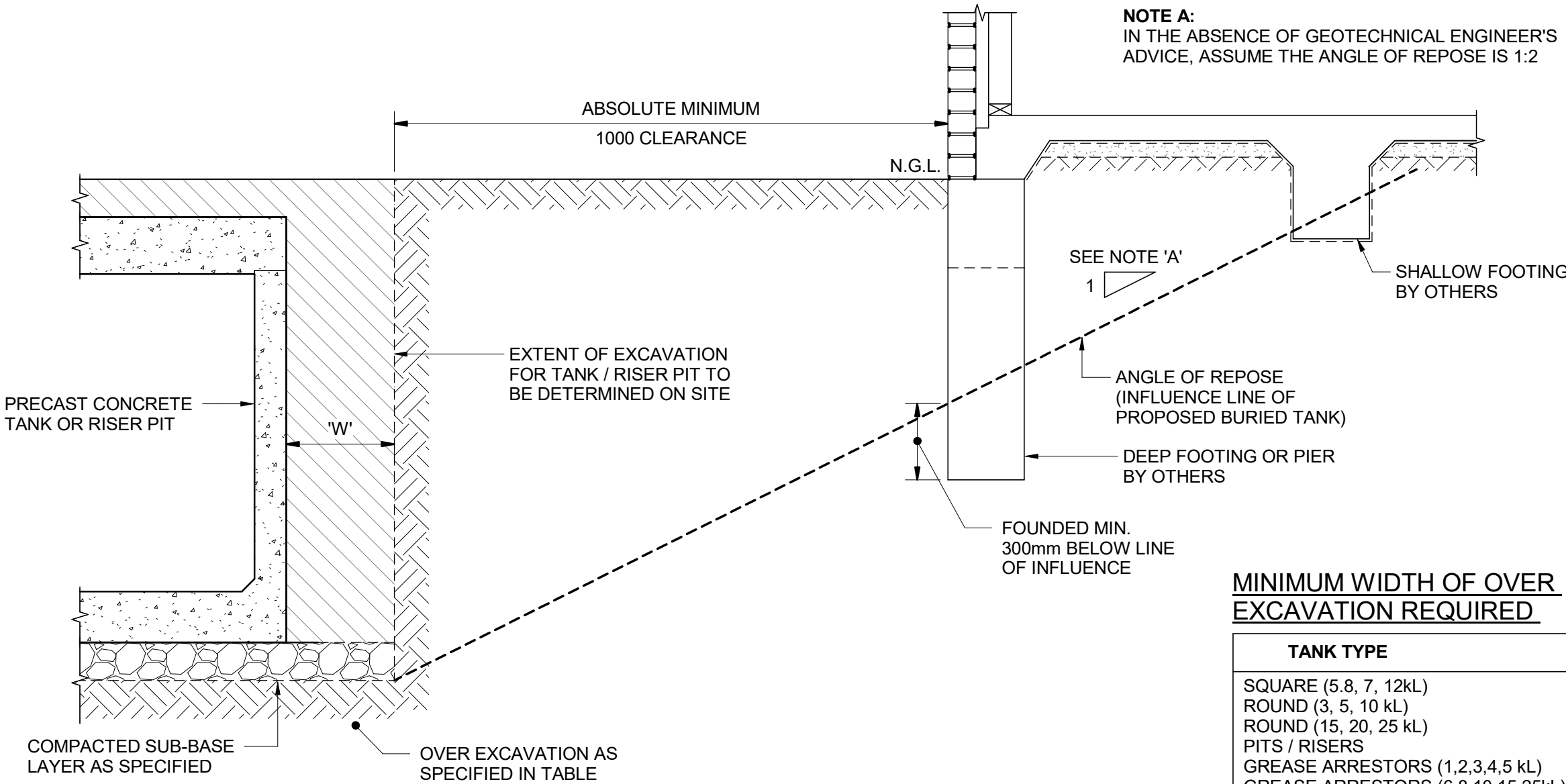
DEPTH OF SOIL COVER (mm)	BASE LAYER THICKNESS (mm) *
<1000	100
1000 - 1500	150
1501 - 2000	200

* FOR FOUNDING TANK ON NATURAL GROUND WITH 150 kPa ALLOWABLE BEARING CAPACITY. ALTERNATIVELY WHERE ALLOWABLE BEARING CAPACITY = 175 kPa, A 100mm THICK BASE LAYER IS ADEQUATE UP TO 2000mm SOIL COVER.

1. THE BASE SLAB IS NOT TO BE FOUNDED ON A CUT/FILL PLATTFORM. BASE SLAB IS TO BE WHOLLY FOUNDED IN EITHER CUT OR FILL. A LEVELLING LAYER / COMPACTED SUB-BASE TO ABOVE MENTIONED DEPTHS TO BE PROVIDED.
2. SUB-BASE TO BE OF COMPACTED SAND / ROAD BASE AT THE BASE OF THE EXCAVATION WITH A MINIMUM CBR40 FOR TANKS SUBJECT TO VEHICLE LOADS, OR CBR15 OTHERWISE.
3. GEOTECHNICAL INVESTIGATION REPORT SPECIFYING THE SITE SOIL CLASSIFICATION AND ALLOWABLE BEARING CAPACITY MUST BE PROVIDED TO AUSTRALIAN TANKS TO VALIDATE THIS DESIGN.
4. WHERE MAXIMUM BEARING CAPACITY SPECIFIED CAN NOT BE ACHIEVED AT TANK BASE LEVEL CONTACT AUSTRALIAN TANKS ENGINEERS FOR SPECIFIC FOUNDATION DESIGN.

BACKFILLING

1. LEVEL 1 SUPERVISION AND TESTING OF FILLING MUST BE UNDERTAKEN WHERE FILLING IS TO SUPPORT BUILDINGS OR PAVEMENTS. THE FILL MATERIAL SHALL BE COMPACTED IN LAYERS NOT MORE THAN 200mm THICK. EACH LAYER SHALL BE COMPACTED TO AT LEAST 98% OF THE MAXIMUM DRY DENSITY AS DEFINED BY THE STANDARD COMPACTION TEST AS1289.
2. WHEN BACKFILLING AROUND AND ADJACENT TO WALLS FOR AREAS NOT DIRECTLY SUBJECT TO AND OUTSIDE THE ZONE OF INFLUENCE FROM VEHICULAR TRAFFIC. UNCONTROLLED FILL COMPRISED OF CLEAN WELL GRADED MATERIAL FREE OF ANY ORGANIC MATTER MAY BE USED AS AN ALTERNATIVE AT THE CLIENT'S DISCRETION.
3. AUSTRALIAN TANKS SUGGEST A SANDY GRANULAR COMPACTABLE, OR SELF-COMPACTABLE MATERIAL.
4. DRAINAGE GRAVEL OR SIMILAR MATERIAL IS PERMITTED SO LONG AS SUITABLE CALCULATIONS HAVE BEEN CARRIED OUT TO CHECK THE REDUCED SHEAR STRENGTH REQUIRED IS SUITABLE FOR ANTI-FLOTATION REQUIREMENTS. (SEEK ENGINEER'S ADVICE).
5. BACKFILLING VARIATIONS IN HEIGHT BETWEEN ON OPPOSITE SIDES OF A WALL SHALL NOT EXCEED 500mm.
6. VIBRATORY TYPE COMPACTION OF BACKFILL AND OVERBURDEN MATERIAL NOT PERMITTED. SEEK AUSTRALIAN TANK ENGINEER'S ADVICE FOR REQUIREMENTS.
7. ENSURE TANK LID IS FULLY INSTALLED AND SEALED PRIOR TO SURCHARGING WALLS OR LID DURING BACKFILL PROCEDURE.



NOTE A:
IN THE ABSENCE OF GEOTECHNICAL ENGINEER'S ADVICE, ASSUME THE ANGLE OF REPOSE IS 1:2

MINIMUM WIDTH OF OVER EXCAVATION REQUIRED

TANK TYPE	WIDTH 'W'
SQUARE (5,8,7,12kL)	250
ROUND (3,5,10kL)	250
ROUND (15,20,25kL)	300
PITS / RISERS	150
GREASE ARRESTORS (1,2,3,4,5kL)	250
GREASE ARRESTORS (6,8,10,15,25kL)	250

NOTE:
PROJECT ENGINEER MUST APPROVE PROPOSED TANK / RISER PIT LOCATION AND EXCAVATION

TANK ADJACENT STRUCTURE DETAIL

SAFETY IN DESIGN HAZARD & RISK REGISTER

Incorporating the Safety Report as per Section 28 of the Occupational Health and Saftey Act 2004.

ABNORMAL AND DESIGN RELATED RISKS										TREATMENT						
Item	Project Phase & Element	Hazard	Location / Description	Risk	Residual Risk Manager	Date Reviewed	Severity	Likelihood	Risk Rating	Treatment Options	Severity	Likelihood	Residual Risk	Adopted Treatment	Reason	By Whom
F1	FABRICATION	Collapses of formwork during erection and concrete placement	Fabrication facility	Refer hazard	Australian Tanks	4/11/19	Medium	Low	Low	Ensure erected formwork is adequately secured, stabilised and fastened together. Ensure formwork complies with AS3610.	Medium	Low	Low	Refer treatment options	Most effective / appropriate	Australian Tanks
F2	FABRICATION	Falling into open formwork, entrapment	Fabrication facility	Refer hazard	Australian Tanks	4/11/19	High	Low	Medium	Cover and fence off all foundation excavations prior to reinf / concrete installation	High	Low	Medium	Refer treatment options	Most effective / appropriate	Australian Tanks
F3	FABRICATION	Crnagene of precast elements	Fabrication facility	Refer hazard	Australian Tanks	4/11/19	High	Low	Medium	Ensure all elements have achieved the required concrete strength prior to lifting from formwork. Ensure all safety measures are undertaken when using cranes or other lifting devices to move precast elements.	High	Low	Medium	Refer treatment options	Most effective / appropriate	Australian Tanks
I1	INSTALLATION	Construction loads exceeding capacity of in situ ground	Construction equipment / sloping ground	Refer hazard	Installation Contractor	4/11/19	Medium	Low	Medium	When using construction equipment ensure that surrounding ground is suitable to carry construction equipment / site conditions are suitable	High	Low	Medium	Refer treatment options	Most effective / appropriate	Installation Contractor
I2	INSTALLATION	Neighbour's lots boundary conditions (retaining walls / neighbour's pool / council easements etc)	Within excavation	Refer hazard	Installation Contractor	4/11/19	Medium	Low	Low	Refer to local council for any boundary conditions with regard to exclusion from construction. Review neighbouring lots conditions as required.	Low	Low	Low	Refer treatment options	Most effective / appropriate	Installation Contractor
I3	INSTALLATION	Crnagene of precast tanks and lids into place	Within excavation	Refer hazard	Installation Contractor	4/11/19	High	Medium	High	Install and maintain pool fencing compliant with local authority requirements. Supervise poor swimmers at all times	High	Low	Medium	Refer treatment options	Most effective / appropriate	Installation Contractor
M1	MAINTENANCE	Falling into tank	Tank entrance	Refer hazard	Tank owner / maintenance contractor	4/11/19	Medium	Low	Low	Erecting fall protection devices at manhole location.	Low	Low	Low	Refer treatment options	Most effective / appropriate	Tank owner / maintenance contractor
M2	MAINTENANCE	Entrapment	Inside tank	Refer hazard	Tank owner / maintenance contractor	4/11/19	Medium	Low	Low	Ensure all elements have achieved the required concrete strength prior to lifting from formwork. Ensure all safety measures are undertaken when using cranes or other lifting devices to move precast elements.	Low	Low	Low	Refer treatment options	Most effective / appropriate	Tank owner / maintenance contractor
M3	MAINTENANCE	Drowning	Inside tank	Refer hazard	Tank owner / maintenance contractor	4/11/19	Medium	Low	Low	Do not enter tank with water inside.	Low	Low	Low	Refer treatment options	Most effective / appropriate	Tank owner / maintenance contractor
R1	REFURBISHMENT	Risks as per Maintenance style activities (M1-M3)														
D1	DEMOLITION	NO ABNORMAL AND/ OR DESIGN RELATED HAZARDS IDENTIFIED														

NORMAL RISKS (CONSTRUCTION/ OPERATION/ REFURBSIHMENT/ MAINTENANCE)										TREATMENT						
Item	Project Phase & Element	Hazard	Location / Description	Risk	Residual Risk Manager	Date Reviewed	Severity	Likelihood	Risk Rating	Treatment Options	Severity	Likelihood	Residual Risk	Adopted Treatment	Reason	By Whom
	CONSTRUCTION															
	OPERATIONS															
	MAINTENANCE															
	REFURBISHMENT															
	DEMOLITION															

	High Fatality Major illness Long term disability	Medium Injury/illness causing Short term disability	Low Minor injury/illness
High Certain/nearly certain	H	H	M
Medium Reasonably likely	H	M	L
Low Seldom	M	L	L

3 x 3 Risk Assessment Matrix

DTA
STRUCTURAL
ENGINEERING

M / 0422 189 353
E / dean.anderson@dtastuct.com.au
W / www.dtastruct.com.au



AustralianTanks
— 1300-A-TANKS —
Water and Waste Water Specialists

Model

TANK INSTALLATION NOTES & SPECIFICATIONS

Scale:	As indicated @ A1.	Sheet Size:	A1
Drawn:	DTA	THE DESIGNS AND PLANS REPRESENTED ON THIS DRAWING ARE NOT TO BE REPRODUCED IN WHOLE OR PART WITHOUT CONSENT OF DTA STRUCTURAL ENGINEERING PTY LTD. ALL DIMENSIONS TO BE VERIFIED ON SITE. REPORT ANY DISCREPANCIES TO THE ENGINEER. DO NOT SCALE OFF DRAWINGS.	
Checked:	DTA		
RPEQ:	Dean Anderson (RPEQ 21536)		
Drawing Title:			
GENERIC ENGINEERING NOTES		Drawing Number:	Rev:
		1355-G-EN-04	0.2