



**HEALTH (TREATMENT OF SEWAGE AND DISPOSAL OF
EFFLUENT AND LIQUID WASTE) REGULATIONS 1974**

**CONCRETE SEPTIC TANKS
APPROVAL**

This is to certify that the Maddington Concrete Products Septic Tanks:

Model Designation	1520 x 1530mm (MCP S1) 1220 x 1530mm (MCP S2) 1800 x 1830mm (MCP S3) 1800 x 1530mm (MCP S4)
Manufactured by:	Maddington Concrete Products 66 Kelvin Road Maddington WA 6109
DoH Approval Number:	F-AA-31116

is approved by the Chief Health Officer under the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974* for use within Western Australia in accordance with the conditions specified in Schedules 1 and 2.

Date of Issue: **19 February 2025**

Date of Expiry: **19 February 2030**

This approval is valid until 19 February 2030 or until withdrawn by the Chief Health Officer.

Richard Theobald
delegate of
CHIEF HEALTH OFFICER

19/02/2025



SCHEDULE 2: CONDITIONS OF APPROVAL

1. General

- 1.1 Approval is granted in accordance with the drawings submitted and stamped by Department of Health.
- 1.2 No alteration to the design or specification of the the Septic Tanks shall occur without prior approval of the Chief Health Officer.
- 1.3 Any changes to the design or the construction of the Septic Tanks shall be submitted for assessment and approval to the Department of Health before being made commercially available in Western Australia.
- 1.4 Conditions of approval may be varied or withdrawn at the discretion of the Chief Health Officer.
- 1.5 The serviceable life of the Septic Tanks and associated fittings shall be a minimum of 15 years provided it is installed in accordance with manufacture recommendations.
- 1.6 Each Septic Tank shall be permanently and legibly marked on a non-corrosive metal plaque or equivalent, attached on the top external face of the tank adjacent to the inlet fitting with the following information:
 - The brand name of the system;
 - The manufacturer's name or registered trademark;
 - The month and year of manufacture.
 - The capacity in litres
 - Top load limitations and maximum depth of cover
 - The weight of tank
 - Top load limitations and maximum depth of coverAll marking shall be permanent, legible and clearly visible.
- 1.7 The manufacturer shall provide the following information to each Local Government where it is intended to install a Septic Tank in their area once Departmental Approval has been obtained:
 - Statement of serviceable life
 - Quality Assurance Certification
 - Installation Manual
 - Owner's Manual
 - Engineering Drawings and A4 Plans
 - Detailed Specifications
 - Approval documentation from Department of Health WA.

2 Installation and Commissioning

- 2.1 For each installation, an application for approval to install shall be in the form of an application to install an apparatus as required under the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*. Each application for installation shall be made to the Local Government and include full plans and



specifications, a completed *Application to Construct or Install an Apparatus for the Treatment of Sewage* form, and pay all fees as prescribed.

- 2.2 The installation of each Septic Tank shall comply with the installation instructions specified by manufacture and shall comply with minimum clearances from buildings and property boundaries as per Local Government requirements.
- 2.3 The Septic Tanks shall be installed so that the inspection openings of the tank are at (or above) ground level and installation shall be in accordance with the installation instructions specified by the manufacture.
- 2.4 The installer is to certify that the system has been installed in accordance to the installation manual and commissioned in accordance with the conditions of this approval and any additional requirements of the Local Government.
- 2.5 Septic Tanks shall be supplied, constructed and installed in accordance with the design as submitted and accredited by the Department of Health WA.
- 2.6 The manufacturer shall supply with each Septic Tank an Installation manual, which sets out the care, operation, and maintenance and on-going management requirements of the system.

3 On-going Management

- 3.1 The Installation manual prepared by the manufacturer shall contain a plan for the on-going management of the Septic Tank. The plan shall include details of:
 - The treatment process,
 - Procedures to be followed in the event of a system failure,
 - Emergency contact numbers,
 - Maintenance requirements including de-sludging operations.

4 Permitted Uses

- 4.1 These Septic Tanks are approved for underground installations only


Richard Theobald
delegate of
CHIEF HEALTH OFFICER

19 February 2025



Civil & Structural Engineering Consultants



Structural Assessment Report Ref No.: J417-REP-01a

Owner: Maddington Concrete Products (MCP)
Production Facility: 66 Kelvin Road, Maddington WA 6109

SUBJECT: Certification of Septic Tanks MCP S1, S2, S3 and S4

Introduction:

Please be advised that a structural assessment was carried out on the following septic tanks manufactured by MCP at their Maddington production facility:

- Type MCP S1 – 1520mm inside diameter, 1530mm height
- Type MCP S2 – 1220mm inside diameter, 1530mm height
- Type MCP S3 – 1800mm inside diameter, 1830mm height
- Type MCP S4 – 1800mm inside diameter, 1530mm height

This will enable MCP to provide support documentation for their application for certification from the Department of Water.

This office has completed detailed design and assessment of works described in the “Scope of Works” section of this report.

Scope of Works:

- Review the existing septic tank design and documentation.
- Understand the requirements precast concrete septic tanks have to comply with in order to meet the requirements of the Department of Health of Western Australia.
- Perform calculations to ensure the adequateness of the analysed tanks and to make sure they would comply with the requirements of the Department of Health of Western Australia.
- Supervise a leak test performed according to AS/NZ1546.1 at MCP’s manufacturing plant.
- Produce detailed engineering drawings outlining the specifications the analysed tanks have to comply with. Refer to:
 - Structural Details MCP S1 Drawing No.: J19327-01 Rev 0
 - Structural Details MCP S2 Drawing No.: J19327-02 Rev 0
 - Structural Details MCP S3 Drawing No.: J19327-03 Rev 0
 - Structural Details MCP S4 Drawing No.: J19327-04 Rev 0

Structural Integrity:

Structural integrity calculations for all four tank types (MCP S1 to S4) were carried out assuming average soil parameters common in the Perth area. The tanks have been found to be suitable for installation up to the depth specified without incurring excessive lateral earth pressures which could cause them to fail.

Leak Test:

A hydrostatic leak test was previously carried out at the production facility in Maddington between the dates of Friday 11th and Monday 14th September 2015 over a period of 72 hours. The test was carried out by filling



Civil & Structural Engineering Consultants



the tank with water up to the outlet level, in compliance with AS/NZ1546.1 It is confirmed that water level recordings were taken during both visits to the plant.

The tanks have been found to have successfully passed the hydrostatic leak test, conforming to Australian Standards, and have been declared safe and suitable for usage. Please refer to the figure attachments for visual proof of this.

NB: Water leak test was carried out on an MCP S3 Septic Tank. A leak test was not carried out for the other septic tanks being made to the same thickness, reinforcement, clear-cover and material properties.

Reperforming the leak test for recertification is considered unnecessary since the specifications for the septic tanks and manufacturing process have not altered.

Concrete Batch Reports:

This office has reviewed the batch reports and dosage formula reports and can confirm that the data required to assess and predict the strength properties of the concrete has been properly logged. Detailed proof of this can be found in the Appendix section at the end of this report.

If this office can be of any further assistance please do not hesitate to make contact.

Assessment and certification by: Joe Arena CPEng BE MIEAust NPER 24918

Signed:

A handwritten signature in blue ink that reads 'Joe Arena CPEng'.

Dated: Thursday, January 30, 2020

Date: 29 January 2020
 Plant: R.B.
 Address: MADDINGTON CONCRETE
 City:
 Telephone:



Dosage Formula

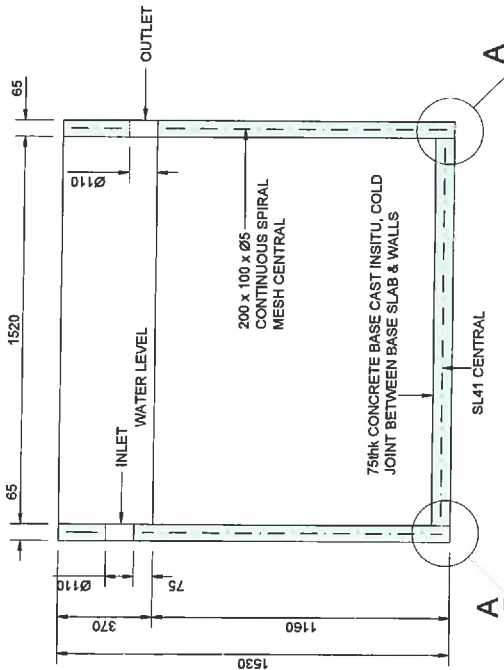
CODE LNR septic tanks

Description: Slump
 RCIKStrength:
 Exposure class:
 Aggregate max. diameter: 0.00
 Granulometric curves:
 W/C/cement ratio: 0.346
 Product code:
 Time limit for concrete use:
 Certificate/Certifying:

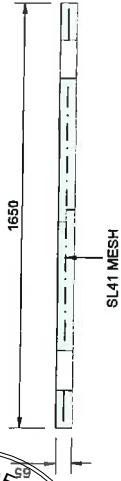
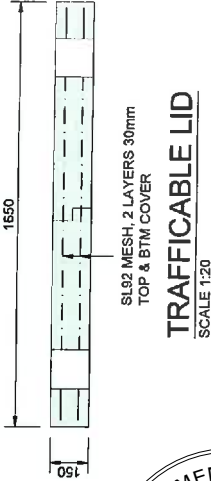
Overlaid No:
 Tolerance %: 2.0
 Description:

Mixing time for 1 m³ (sec): 0 + 0 (sec) x m³
 Partial opening discharge time for 1 m³ (sec): 0 + 0 (sec) x m³
 Total opening discharge time for 1 m³ (sec): 0 + 0 (sec) x m³
 Closed-Partial opening time (sec): 0.0
 Partial-Total opening time (sec): 0.0
 Step opening pause time (sec): 0.0

Component	Description	Quantity	UoM	SW
14	14	650	Kg	1
5mm	5mm	250	Kg	1
SAND 1	SAND 1	500	Kg	1
SAND 2	SAND 2	600	Kg	1
cem 1	Cement 2	350	Kg	1
ADD 1	Additive 1	1.2	L	1
ADD 2	Additive 2	0.5	L	1
WATER	Water	121	L	1
Formula Total weight:				2472.7



1520mm DIAMETER TANK (MCP S1)
SCALE 1:20



STRUCTURAL:

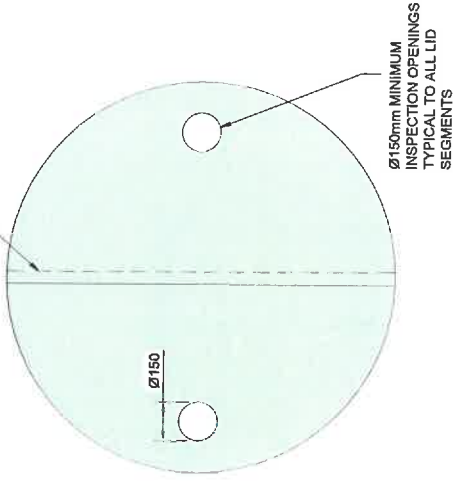
- S1. STRUCTURAL LOAD HAS BEEN DESIGNED FOR THE FOLLOWING LOADS:
 - PERMANENT LOAD OF STRUCTURE AS SHOWN ON DRAWINGS
 - SUPERIMPOSED LIVE LOAD (TRAFFICABLE LID ONLY) TANDEM-AXLE SINGLE TYRES
 - SOIL DENSITY 20kN/m³
- S2. SEPTIC TANK LID TYPE STL1 IS A TRAFFICABLE LID AND IS STRUCTURALLY DESIGNED TO BE INSTALLED AT NO DEEPER THAN 300mm BELOW GROUND LEVEL.
- S3. SEPTIC TANK LID TYPE STL2 IS A NON-TRAFFICABLE LID AND IS STRUCTURALLY DESIGNED TO BE INSTALLED AT GROUND LEVEL.

FOUNDATIONS:

- F1. ENSURE EXCAVATIONS ARE STABLE AND PROTECT SURROUNDING PROPERTIES AND SERVICES FROM ADVERSE EFFECTS OF GROUND WORKS.
- F2. PROVIDE TEMPORARY WORKS AS REQUIRED. PROVIDE SHORING CERTIFIED BY A SUITABLY QUALIFIED STRUCTURAL ENGINEER TO ALL DEEP EXCAVATIONS WHERE REQUIRED.
- F3. MCP SEPTIC TANKS ARE NOT TO BE INSTALLED WHERE THEY WILL BE SUBJECTED TO GROUNDWATER OR ANY OTHER FORM OF FLOTATION UNLESS ADDITIONAL MEASURES ARE TAKEN TO ANCHOR THEM DOWN.
- F4. ENSURE TANK FOUNDATIONS ARE LEVEL AND PROVIDE A SAFE WORKING BEARING CAPACITY OF 50kPa.
- F5. ON CLAY SITES PROVIDE LEVEL SAND PAD SUB-BASE AS FOLLOWS:
 - CLASS 'A': NOT REQUIRED
 - CLASS 'S': 300mm THICK
 - CLASS 'M': 450mm THICK
 - CLASS 'H': 600mm THICK

CONCRETE:

- C1. WORKMANSHIP AND MATERIALS TO COMPLY WITH AS3600, AS2870, AS3610, AS1379, AS1478, AS3582, AS5100.5 AND AS3972. FOR LIQUID RETAINING STRUCTURES ALSO COMPLY WITH AS3735.
- C2. WET CONCRETE TO BE UNIFORM, HOMOGENEOUS, COHESIVE AND ABLE TO WORK READILY INTO CORNERS AND AROUND REINFORCEMENT COMPLETELY FILLING FORMWORK WITHOUT SEGREGATION. EXCESS FREEWATER ON SURFACE, LOSS OF MATERIAL OR CONTAMINATION, FINISHED CONCRETE TO BE DURABLE, DENSE, HOMOGENEOUS MASS COMPLETELY FILLING FORMWORK, EMBEDDING REINFORCEMENT AND TENDONS, AND FREE OF STONE POCKETS, OR UNIFORM COLOUR AND TEXTURE WITH LOW PERMEABILITY AND ADEQUATE BUT NOT EXCESSIVE STRENGTH FOR GRADE.
- C4. REVIEW LOCATION OF EMBEDDED ITEM TO MINIMIZE POSSIBLE ZONES OF POOR COMPACTION THAT MAY COMPROMISE STRUCTURAL INTEGRITY.
- C5. SLUMP TO BE AS REQUIRED FOR PLACEMENT (EG PUMPING, ETC), COMPACTION AND FINISHING USE SUPERPLASTICISERS AND HIGH RANGE WATER REDUCERS TO AS1478 TO ACHIEVE ADEQUATE WORKABILITY
- C6. DO NOT ADD WATER TO CONCRETE ONCE TRUCK HAS LEFT BATCHING PLANT.
- C7. COMMENCE CURING OF CONCRETE TO AS3600 AS SOON AS POSSIBLE AFTER PLACING AND FINISHING OR STRIPPING, AND WITHIN ONE HOUR. ENSURE EXPOSED SURFACES ARE NOT RETAINED. ACCEPTABLE METHODS OF CURING INCLUDE:
 - RETENTION OF FORMWORK
 - PONDING OR CONTINUOUS SPRINKLING WATER (MOIST CURING)
 - AN IMPERMEABLE MEMBRANE (USE WHITE OR LIGHT COLOURED PLASTIC IN HOT CONDITIONS), SEAL AROUND EDGES
 - AN ABSORPTIVE COVER KEPT CONTINUOUSLY WET AND COVERED BY IMPERMEABLE MEMBRANE
- C8. COVER IS CLEAR DISTANCE BETWEEN ANY REINFORCEMENT (INCLUDING LIGATURES, TIE WIRE, ETC) AND OUTSIDE SURFACE OF STRUCTURAL CONCRETE.
- C9. COVER MUST NOT BE LESS THAN SPECIFIED.

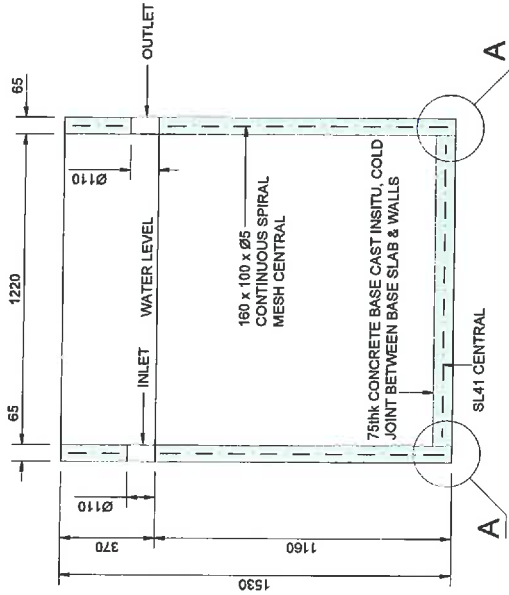


REINFORCEMENT:

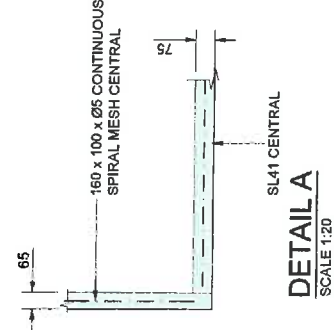
- R1. SYMBOLS ON DRAWING FOR GRADE AND TYPE OF REINFORCEMENT ARE AS FOLLOWS:
 - SL: DENOTES HARD DRAWN WIRE GRADE 500 SQUARE REINFORCING MESH CLASS L TO AS4671.
 - REINFORCEMENT TO BE CLEAN, FREE OF LOOSE MILL SCALE, RUST, OIL, GREASE, MUD OR OTHER MATERIAL THAT MIGHT REDUCE BOND BETWEEN REINFORCEMENT AND CONCRETE.
 - R3. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SET REINFORCEMENT OUT AT EQUAL CENTRES IF SPACING IS NOT NOMINATED.
 - R4. SECURE REINFORCEMENT IN POSITION AGAINST DISPLACEMENT AND MAINTAIN SPECIFIED CLEAR CONCRETE COVER TO REINFORCEMENT (INCLUDING FITMENTS) BY APPROVED CHAIRS/SPACERS, LIGATURES OR TIES AT 800mm MAXIMUM CENTRES EACH WAY UNO. PROVIDE ADEQUATE SUPPORT TO PREVENT DISPLACEMENT OF REINFORCEMENT BY WORKMEN OR EQUIPMENT DURING CONCRETE PLACEMENT.

<p>20:100 SCALE (NOT DRAWING) - IF IN DOUBT ASK!!!</p> <p>PROJECT: SEPTIC TANK CERTIFICATION DESIGN AND SUPPORT</p> <p>Structural Certification by: Joe Arena CPENG P/Eng. MIEAust NPER 24918</p> <p>Signed: <i>[Signature]</i></p>		<p>CLIENT: DEPARTMENT OF HEALTH</p> <p>DWG No.: J19327.01-DWVG-S01</p> <p>Rev: 0</p>												
<p>ARENA CLAUSON ENGINEERING GROUP Suite 7, 1074 Hwy 91, West Perth, WA, 6005 Phone: 08 9255 1000 Website: www.arenaclauson.com.au</p>		<p>TITLE: STRUCTURAL DETAILS MCP S1</p>												
<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DRN</th> <th>ENG</th> <th>CHK</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>28.01.20</td> <td>ISSUED FOR CONSTRUCTION</td> <td>NK</td> <td>JAR</td> <td>JAR</td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	DRN	ENG	CHK	0	28.01.20	ISSUED FOR CONSTRUCTION	NK	JAR	JAR		
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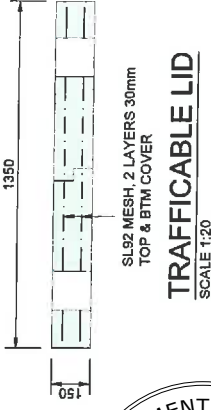
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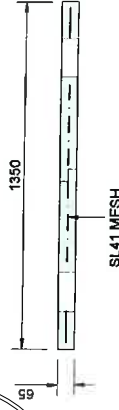
1220mm DIAMETER TANK (MCP S2)
SCALE 1:20



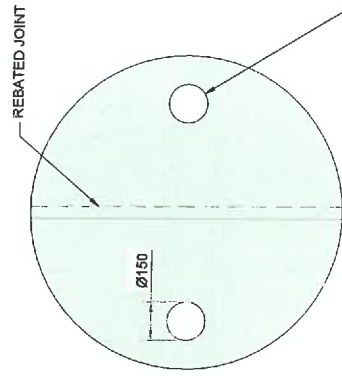
DETAIL A
SCALE 1:20



TRAFFICABLE LID
SCALE 1:20



NON-TRAFFICABLE LID
SCALE 1:20



Ø150mm MINIMUM INSPECTION OPENINGS TYPICAL TO ALL LID SEGMENTS

1350mm DIAMETER SPLIT TWO PIECE LID
SCALE 1:20



STRUCTURAL

- S1. STRUCTURAL LOAD HAS BEEN DESIGNED FOR THE FOLLOWING LOADS:
 - PERMANENT LOAD OF STRUCTURE AS SHOWN ON DRAWINGS
 - SUPERIMPOSED LIVE LOAD (TRAFFICABLE LID ONLY) TANDEM-AXLE SINGLE TYRES - SOIL DENSITY 20kN/m³
- S2. SEPTIC TANK LID TYPE STL1 IS A TRAFFICABLE LID AND IS STRUCTURALLY DESIGNED TO BE INSTALLED AT NO DEEPER THAN 300mm BELOW GROUND LEVEL.
- S3. SEPTIC TANK LID TYPE STL2 IS A NON-TRAFFICABLE LID AND IS STRUCTURALLY DESIGNED TO BE INSTALLED AT GROUND LEVEL.

FOUNDATIONS:

- F1. ENSURE EXCAVATIONS ARE STABLE AND PROTECT SURROUNDING PROPERTIES AND SERVICES FROM ADVERSE EFFECTS OF GROUND WORKS.
- F2. PROVIDE TEMPORARY WORKS AS REQUIRED. PROVIDE SHORING CERTIFIED BY A SUITABLY QUALIFIED STRUCTURAL ENGINEER TO ALL DEEP EXCAVATIONS WHERE REQUIRED.
- F3. MCP SEPTIC TANKS ARE NOT TO BE INSTALLED WHERE THEY WILL BE SUBJECTED TO GROUNDWATER OR ANY OTHER FORM OF FLOTATION UNLESS ADDITIONAL MEASURES ARE TAKEN TO ANCHOR THEM DOWN.
- F4. ENSURE TANK FOUNDATIONS ARE LEVEL AND PROVIDE A SAFE WORKING BEARING CAPACITY OF 50kPa.
- F5. ON CLAY SITES PROVIDE LEVEL SAND PAD SUB-BASE AS FOLLOWS:
 - CLASS 'A': NOT REQUIRED
 - CLASS 'S': 300mm THICK
 - CLASS 'M': 450mm THICK
 - CLASS 'H': 600mm THICK

REINFORCEMENT:

- R1. SAND PAD TO BE WELL COMPACTED IN 150mm LAYERS TO ACHIEVE MINIMUM 7 BLOWS/300mm PENETRATION WITH STANDARD PERTH PENETROMETER
- R2. REINFORCEMENT TO BE CLEAN, FREE OF LOOSE MILL SCALE, RUST, OIL, GREASE, MUD OR OTHER MATERIAL THAT MIGHT REDUCE BOND BETWEEN REINFORCEMENT AND CONCRETE.
- R3. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SET REINFORCEMENT OUT AT EQUAL CENTRES IF SPACING IS NOT NOMINATED.
- R4. SECURE REINFORCEMENT IN POSITION AGAINST DISPLACEMENT AND MAINTAIN SPECIFIED CLEAR CONCRETE COVER TO REINFORCEMENT (INCLUDING FITTINGS) BY APPROVED CHAIRS/SPACERS. LIGATURES OR TIES AT 800mm MAXIMUM CENTRES EACH WAY UNO. PROVIDE ADEQUATE SUPPORT TO PREVENT DISPLACEMENT OF REINFORCEMENT BY WORKMEN OR EQUIPMENT DURING CONCRETE PLACEMENT.
- R5. SYMBOLS ON DRAWING FOR GRADE AND TYPE OF REINFORCEMENT ARE AS FOLLOWS:
 - SL: DENOTES HARD DRAWN WIRE GRADE 500 SQUARE REINFORCING MESH CLASS L TO AS4671.
 - M: MATERIAL THAT MIGHT REDUCE BOND BETWEEN REINFORCEMENT AND CONCRETE.
 - R: REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SET REINFORCEMENT OUT AT EQUAL CENTRES IF SPACING IS NOT NOMINATED.
 - S: CLEAR CONCRETE COVER TO REINFORCEMENT (INCLUDING FITTINGS) BY APPROVED CHAIRS/SPACERS. LIGATURES OR TIES AT 800mm MAXIMUM CENTRES EACH WAY UNO. PROVIDE ADEQUATE SUPPORT TO PREVENT DISPLACEMENT OF REINFORCEMENT BY WORKMEN OR EQUIPMENT DURING CONCRETE PLACEMENT.

CONCRETE:

- C1. WORKMANSHIP AND MATERIALS TO COMPLY WITH AS3600, AS2870, AS3610, AS1379, AS1478, AS5882, AS5100.5 AND AS3972. FOR LIQUID RETAINING STRUCTURES ALSO COMPLY WITH AS3735.
- C2. WET CONCRETE TO BE UNIFORM, HOMOGENEOUS, COHESIVE AND ABLE TO WORK READILY INTO CORNERS AND AROUND REINFORCEMENT COMPLETELY FILLING FORMWORK WITHOUT SEGREGATION, EXCESS FREEWATER ON SURFACE, LOSS OF MATERIAL OR CONTAMINATION.
- C3. FINISHED CONCRETE TO BE DURABLE, DENSE, HOMOGENEOUS MASS COMPLETELY FILLING FORMWORK, EMBEDDING REINFORCEMENT AND TENDONS, AND FREE OF STONE POCKETS, OR UNIFORM COLOUR AND TEXTURE WITH LOW PERMEABILITY AND ADEQUATE BUT NOT EXCESSIVE STRENGTH FOR GRADE.
- C4. REVIEW LOCATION OF EMBEDDED ITEM TO MINIMIZE POSSIBLE ZONES OF POOR COMPACTION THAT MAY COMPROMISE STRUCTURAL INTEGRITY.
- C5. SLUMP TO BE AS REQUIRED FOR PLACEMENT (EG PUMPING, ETC), COMPACTION AND FINISHING USE SUPERPLASTICISERS AND HIGH RANGE WATER REDUCERS TO AS1478 TO ACHIEVE ADEQUATE WORKABILITY
- C6. DO NOT ADD WATER TO CONCRETE ONCE TRUCK HAS LEFT BATCHING PLANT.
- C7. COMMENCE CURING OF CONCRETE TO AS3600 AS SOON AS POSSIBLE AFTER PLACING AND FINISHING OR STRIPPING, AND WITHIN ONE HOUR. ENSURE EXPOSED SURFACES ARE NOT STAINED. ACCEPTABLE METHODS OF CURING INCLUDE:
 - RETENTION OF FORMWORK
 - PONDING OR CONTINUOUS SPRINKLING WATER (MOIST CURING)
 - AN IMPERMEABLE MEMBRANE (USE WHITE OR LIGHT COLOURED PLASTIC IN HOT CONDITIONS), SEAL AROUND EDGES
 - AN ABSORPTIVE COVER KEPT CONTINUOUSLY WET AND COVERED BY IMPERMEABLE MEMBRANE
- C8. COVER IS CLEAR DISTANCE BETWEEN ANY REINFORCEMENT (INCLUDING LIGATURES, TIE WIRE, ETC) AND OUTSIDE SURFACE OF STRUCTURAL CONCRETE.
- C9. COVER MUST NOT BE LESS THAN SPECIFIED.

ARENA CLAUSON
ENGINEERING GROUP
Suite 7, 1078 Hwy 26, Wood Perth WA 6005
Phone: 08 9255 1157 Email: info@arenaclauson.com.au
Website: www.arenaclauson.com.au

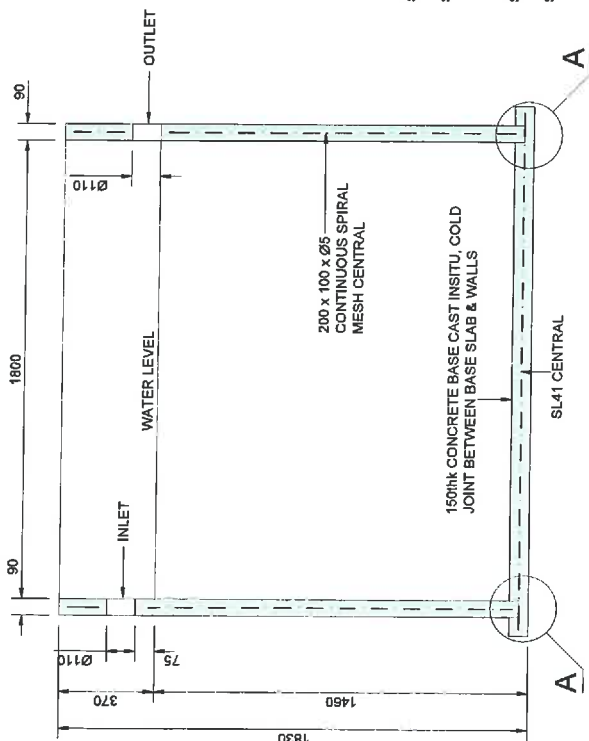
DO NOT SCALE FROM DRAWING... IF IN DOUBT, ASK!!!
Structural Certification by:
Joe Arena CPEng 5/E, MIEAust NPER 24913
Signed: *Joe Arena*

PROJECT: SEPTIC TANK CERTIFICATION DESIGN AND SUPPORT
TITLE: STRUCTURAL DETAILS MCP S2

CLIENT:	DEPARTMENT OF HEALTH
DWG No:	J19327.01-DWG-S02
Rev:	0

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REV	DATE	ISSUED FOR CONSTRUCTION	DESCRIPTION	DRN	ENG	CHK
0	29.01.20	NK	JAR	JAR		



1800mm DIAMETER TANK (MCP S3)
SCALE 1:20

- CONCRETE:**
- C1. WORKMANSHIP AND MATERIALS TO COMPLY WITH AS3600, AS2870, AS3610, AS1379, AS1478, AS3582, AS5100.5 AND AS3972. FOR LIQUID RETAINING STRUCTURES ALSO COMPLY WITH AS3735.
 - C2. WET CONCRETE TO BE UNIFORM, HOMOGENEOUS, COHESIVE AND ABLE TO WORK READILY INTO CORNERS AND AROUND REINFORCEMENT COMPLETELY FILLING FORMWORK WITHOUT SEGREGATION, EXCESS FREEWATER ON SURFACE, LOSS OF MATERIAL OR CONTAMINATION.
 - C3. FINISHED CONCRETE TO BE DURABLE, DENSE, HOMOGENEOUS MASS COMPLETELY FILLING FORMWORK, EMBEDDING REINFORCEMENT AND TENDONS, AND FREE OF STONE POCKETS, OR UNIFORM COLOUR AND TEXTURE WITH LOW PERMEABILITY AND ADEQUATE BUT NOT EXCESSIVE STRENGTH FOR GRADE.
 - C4. REVIEW LOCATION OF EMBEDDED ITEM TO MINIMIZE POSSIBLE ZONES OF POOR COMPACTION THAT MAY COMPROMISE STRUCTURAL INTEGRITY.
 - C5. SLUMP TO BE AS REQUIRED FOR PLACEMENT (EG PUMPING), ETC). COMPACTION AND FINISHING USE SUPERPLASTICISERS AND HIGH RANGE WATER REDUCERS TO AS1478 TO ACHIEVE ADEQUATE WORKABILITY.
 - C6. DO NOT ADD WATER TO CONCRETE ONCE TRUCK HAS LEFT BATCHING PLANT.
 - C7. COMMENCE CURING OF CONCRETE TO AS3600 AS SOON AS POSSIBLE AFTER PLACING AND STAINED. ACCEPTABLE METHODS OF CURING INCLUDE:
 - RETENTION OF FORMWORK
 - PONDING OR CONTINUOUS SPRINKLING WATER (MOIST CURING)
 - AN IMPERMEABLE MEMBRANE (USE WHITE OR LIGHT COLOURED PLASTIC IN HOT CONDITIONS), SEAL AROUND EDGES
 - AN ABSORPTIVE COVER KEPT CONTINUOUSLY WET AND COVERED BY IMPERMEABLE MEMBRANE
 - C8. COVER IS CLEAR DISTANCE BETWEEN ANY REINFORCEMENT (INCLUDING LIGATURES, TIE WIRE, ETC) AND OUTSIDE SURFACE OF STRUCTURAL CONCRETE.
 - C9. COVER MUST NOT BE LESS THAN SPECIFIED.

STRUCTURAL

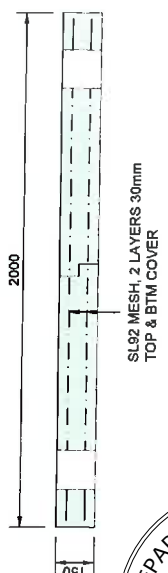
- S1. STRUCTURAL LOAD HAS BEEN DESIGNED FOR THE FOLLOWING LOADS:
 - PERMANENT LOAD OF STRUCTURE AS SHOWN ON DRAWINGS
 - SUPERIMPOSED LIVE LOAD (TRAFFICABLE LID ONLY) TANDEM-AXLE SINGLE TYRES
 - SOIL DENSITY 20kN/m³
- S2. SEPTIC TANK LID TYPE STL1 IS A TRAFFICABLE LID AND IS STRUCTURALLY DESIGNED TO BE INSTALLED AT NO DEEPER THAN 300mm BELOW GROUND LEVEL.
- S3. SEPTIC TANK LID TYPE STL2 IS A NON-TRAFFICABLE LID AND IS STRUCTURALLY DESIGNED TO BE INSTALLED AT GROUND LEVEL.

FOUNDATIONS:

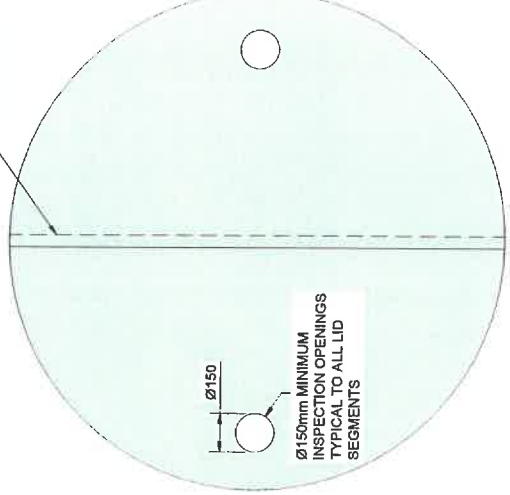
- F1. ENSURE EXCAVATIONS ARE STABLE AND PROTECT SURROUNDING PROPERTIES AND SERVICES FROM ADVERSE EFFECTS OF GROUND WORKS
- F2. PROVIDE TEMPORARY WORKS AS REQUIRED. PROVIDE SHORING CERTIFIED BY A SUITABLY QUALIFIED STRUCTURAL ENGINEER TO ALL DEEP EXCAVATIONS WHERE REQUIRED.
- F3. MCP SEPTIC TANKS ARE NOT TO BE INSTALLED WHERE THEY WILL BE SUBJECTED TO GROUNDWATER OR ANY OTHER FORM OF FLOTATION UNLESS ADDITIONAL MEASURES ARE TAKEN TO ANCHOR THEM DOWN.
- F4. ENSURE TANK FOUNDATIONS ARE LEVEL AND PROVIDE A SAFE WORKING BEARING CAPACITY OF 50kPa.
- F5. ON CLAY SITES PROVIDE LEVEL SAND PAD SUB-BASE AS FOLLOWS:
 - CLASS 'A': NOT REQUIRED
 - CLASS 'S': 300mm THICK
 - CLASS 'M': 450mm THICK
 - CLASS 'H': 600mm THICK

REINFORCEMENT:

- R1. SYMBOLS ON DRAWING FOR GRADE AND TYPE OF REINFORCEMENT ARE AS FOLLOWS:
 - SL: DENOTES HARD DRAWN WIRE GRADE 500 SQUARE REINFORCING MESH CLASS L TO AS4671.
 - MATERIAL THAT MIGHT REDUCE BOND BETWEEN REINFORCEMENT AND CONCRETE.
 - REINFORCEMENT IS REPRESENTED DIAGONALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SET REINFORCEMENT OUT AT EQUAL CENTRES IF SPACING IS NOT NOMINATED.
 - SECURE REINFORCEMENT IN POSITION AGAINST DISPLACEMENT AND MAINTAIN SPECIFIED CLEAR CONCRETE COVER TO REINFORCEMENT (INCLUDING FITMENTS) BY APPROVED CHAIRS/SPACERS, LIGATURES OR TIES AT 800mm MAXIMUM CENTRES EACH WAY UNO. PROVIDE ADEQUATE SUPPORT TO PREVENT DISPLACEMENT OF REINFORCEMENT BY WORKMEN OR EQUIPMENT DURING CONCRETE PLACEMENT.
- R2. - SL: DENOTES HARD DRAWN WIRE GRADE 500 SQUARE REINFORCING MESH CLASS L TO AS4671.
- R3. REINFORCEMENT IS REPRESENTED DIAGONALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SET REINFORCEMENT OUT AT EQUAL CENTRES IF SPACING IS NOT NOMINATED.
- R4. SECURE REINFORCEMENT IN POSITION AGAINST DISPLACEMENT AND MAINTAIN SPECIFIED CLEAR CONCRETE COVER TO REINFORCEMENT (INCLUDING FITMENTS) BY APPROVED CHAIRS/SPACERS, LIGATURES OR TIES AT 800mm MAXIMUM CENTRES EACH WAY UNO. PROVIDE ADEQUATE SUPPORT TO PREVENT DISPLACEMENT OF REINFORCEMENT BY WORKMEN OR EQUIPMENT DURING CONCRETE PLACEMENT.



TRAFFICABLE LID (STL1)
SCALE 1:20
INSTALLED NO DEEPER THAN 300mm BELOW GROUND



2000mm DIAMETER SPLIT TWO PIECE LID
SCALE 1:20

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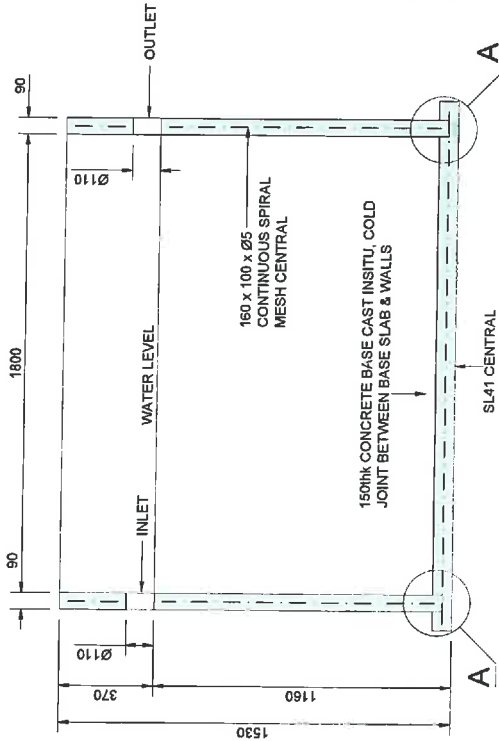
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Structural Certification by:
Joe Arena CPeng M.E. MIEAust NPER 24918
Signed: *Joe Arena*

PROJECT: SEPTIC TANK CERTIFICATION DESIGN AND SUPPORT
TITLE: STRUCTURAL DETAILS MCP S3

CLIENT: DEPARTMENT OF HEALTH
DWS No.: J19327.01-DWG-S03
Rev: 0

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1800mm DIAMETER TANK (MCP S4)
SCALE 1:20

- CONCRETE:**
- C1. WORKMANSHIP AND MATERIALS TO COMPLY WITH AS3600, AS2870, AS3610, AS1379, AS1478, AS3582, AS3100.5 AND AS3972. FOR LIQUID RETAINING STRUCTURES ALSO COMPLY WITH AS3735.
 - C2. WET CONCRETE TO BE UNIFORM, HOMOGENEOUS, COHESIVE AND ABLE TO WORK READILY INTO CORNERS AND AROUND REINFORCEMENT COMPLETELY FILLING FORMWORK WITHOUT SEGREGATION, EXCESS FREENOTE ON SURFACE, LOSS OF MATERIAL OR CONTAMINATION.
 - C3. FINISHED CONCRETE TO BE DURABLE, DENSE, HOMOGENEOUS MASS COMPLETELY FILLING FORMWORK, EMBEDDING REINFORCEMENT AND TENDONS, AND FREE OF STONE POCKETS, OR UNIFORM COLOUR AND TEXTURE WITH LOW PERMEABILITY AND ADEQUATE BUT NOT EXCESSIVE STRENGTH FOR GRADE.
 - C4. REVIEW LOCATION OF EMBEDDED ITEM TO MINIMIZE POSSIBLE ZONES OF POOR COMPACTION THAT MAY COMPROMISE STRUCTURAL INTEGRITY.
 - C5. SLUMP TO BE AS REQUIRED FOR PLACEMENT (EG PUMPING, ETC). COMPACTION AND FINISHING USE SUPERPLASTICISERS AND HIGH RANGE WATER REDUCERS TO AS1478 TO ACHIEVE ADEQUATE WORKABILITY.
 - C6. DO NOT ADD WATER TO CONCRETE ONCE TRUCK HAS LEFT BATCHING PLANT.
 - C7. COMMENCE CURING OF CONCRETE TO AS3600 AS SOON AS POSSIBLE AFTER PLACING AND FINISHING OR STRIPPING, AND WITHIN ONE HOUR. ENSURE EXPOSED SURFACES ARE NOT STAINED. ACCEPTABLE METHODS OF CURING INCLUDE:
 - RETENTION OF FORMWORK
 - PONDING OR CONTINUOUS SPRINKLING WATER (MOIST CURING)
 - AN IMPERMEABLE MEMBRANE (USE WHITE OR LIGHT COLOURED PLASTIC IN HOT CONDITIONS), SEAL AROUND EDGES
 - AN ABSORPTIVE COVER KEPT CONTINUOUSLY WET AND COVERED BY IMPERMEABLE MEMBRANE
 - C8. COVER IS CLEAR DISTANCE BETWEEN ANY REINFORCEMENT (INCLUDING LIGATURES, TIE WIRE, ETC) AND OUTSIDE SURFACE OF STRUCTURAL CONCRETE.
 - C9. COVER MUST NOT BE LESS THAN SPECIFIED.

STRUCTURAL:

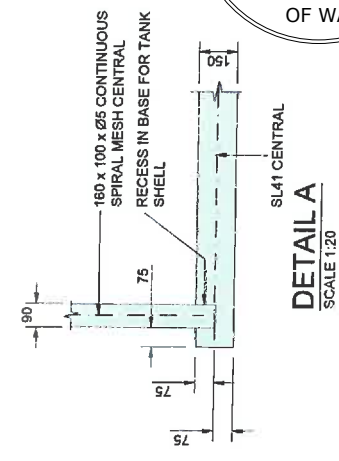
- S1. STRUCTURAL LOAD HAS BEEN DESIGNED FOR THE FOLLOWING LOADS:
 - PERMANENT LOAD OF STRUCTURE AS SHOWN ON DRAWINGS
 - SUPERIMPOSED LIVE LOAD (TRAFFICABLE LID ONLY) TANDEM-AXLE SINGLE TYRES
 - SOIL DENSITY 20kN/m³
- S2. SEPTIC TANK LID TYPE STL1 IS A TRAFFICABLE LID AND IS STRUCTURALLY DESIGNED TO BE INSTALLED AT NO DEEPER THAN 300mm BELOW GROUND LEVEL.
- S3. SEPTIC TANK LID TYPE STL2 IS A NON-TRAFFICABLE LID AND IS STRUCTURALLY DESIGNED TO BE INSTALLED AT GROUND LEVEL.

FOUNDATIONS:

- F1. ENSURE EXCAVATIONS ARE STABLE AND PROTECT SURROUNDING PROPERTIES AND SERVICES FROM ADVERSE EFFECTS OF GROUND WORKS.
- F2. PROVIDE TEMPORARY WORKS AS REQUIRED. PROVIDE SHORING CERTIFIED BY A SUITABLY QUALIFIED STRUCTURAL ENGINEER TO ALL DEEP EXCAVATIONS WHERE REQUIRED.
- F3. MCP SEPTIC TANKS ARE NOT TO BE INSTALLED WHERE THEY WILL BE SUBJECT TO GROUNDWATER OR ANY OTHER FORM OF FLOTATION UNLESS ADDITIONAL MEASURES ARE TAKEN TO ANCHOR THEM DOWN.
- F4. ENSURE TANK FOUNDATIONS ARE LEVEL AND PROVIDE A SAFE WORKING BEARING CAPACITY OF 50kPa.
- F5. ON CLAY SITES PROVIDE LEVEL SAND PAD SUB-BASE AS FOLLOWS:
 - CLASS 'A': NOT REQUIRED
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REINFORCEMENT:

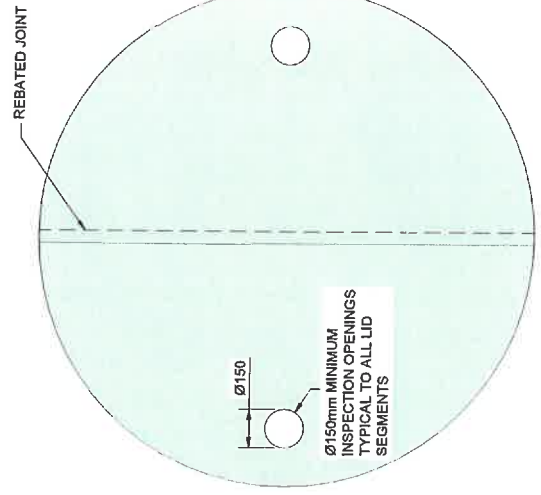
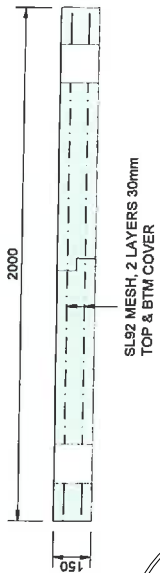
- R1. SYMBOLS ON DRAWING FOR GRADE AND TYPE OF REINFORCEMENT ARE AS FOLLOWS:
 - SL: DENOTES HARD DRAWN WIRE GRADE 500 SQUARE REINFORCING MESH CLASS L TO AS4671
 - REINFORCEMENT TO BE CLEAN, FREE OF LOOSE MILL SCALE, RUST, OIL, GREASE, MUD OR OTHER MATERIAL THAT MIGHT REDUCE BOND BETWEEN REINFORCEMENT AND CONCRETE.
 - REINFORCEMENT IS REPRESENTED DIAGONALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SET REINFORCEMENT OUT AT EQUAL CENTRES IF SPACING IS NOT NOMINATED.
 - R4. CLEAR CONCRETE COVER TO REINFORCEMENT (INCLUDING FITMENTS) BY APPROVED CHAIRS SPACERS, LIGATURES OR TIES AT 600mm MAXIMUM CENTRES EACH WAY UNO. PROVIDE ADEQUATE SUPPORT TO PREVENT DISPLACEMENT OF REINFORCEMENT BY WORKMEN OR EQUIPMENT DURING CONCRETE PLACEMENT.



DETAIL A
SCALE 1:20



TRAFFICABLE LID (STL1)
SCALE 1:20
INSTALLED NO DEEPER THAN 300mm BELOW GROUND



**2000mm DIAMETER SPLIT TWO
PIECE LID**
SCALE 1:20

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REV	DATE	DESCRIPTION	CHK	ENG	JAR	JAR
0	29.01.20	ISSUED FOR CONSTRUCTION	NIK	JAR	JAR	JAR

PROJECT: SEPTIC TANK CERTIFICATION DESIGN AND SUPPORT
TITLE: STRUCTURAL DETAILS MCP S4
CLIENT: DEPARTMENT OF HEALTH
DWG No: J19327.01-DWG-S04
Rev: 0

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