KALBAR S.T.P.

HYPOCHLORITE TANK REPLACEMENT

CONTRACT No. SOA C1011-045

OPERATION & MAINTENAINCE MANUAL

Developed by:

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CONTRACT No. SOA C1011-045

DOCUMENT CHANGE HISTORY

Revision Control

Version	Author	Issue Purpose	Signature	Date
0	Paul Houston / Rob Miotti	Original Issue	Rob Miotti	29-3-16

Reviewed by

Version	Author	Position	Signature	Date
0	Darren Wedley	Project Manager	Darren Wedley	29-3-16

CONTENTS

1 INTRODUCTION

The site of these works is located at the Kalbar Sewerage Treatment Plant, Heit Road, Kalbar. The purpose of this project was to:

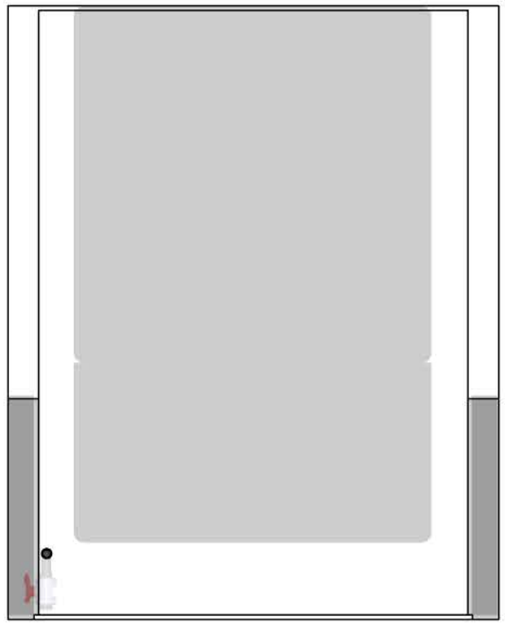
1. Upgrade the Sodium Hyplochlorite Tank & dosing system by installing a 1,500L Tank, to suit the anticipated duty expected over the next 25 years.
2. Bring the storage & dosing facilities into compliance with the current Australian Standards & Codes of Practice.

2 PRODUCT DATA SHEETS

2.1 HDPE TANK & BUND

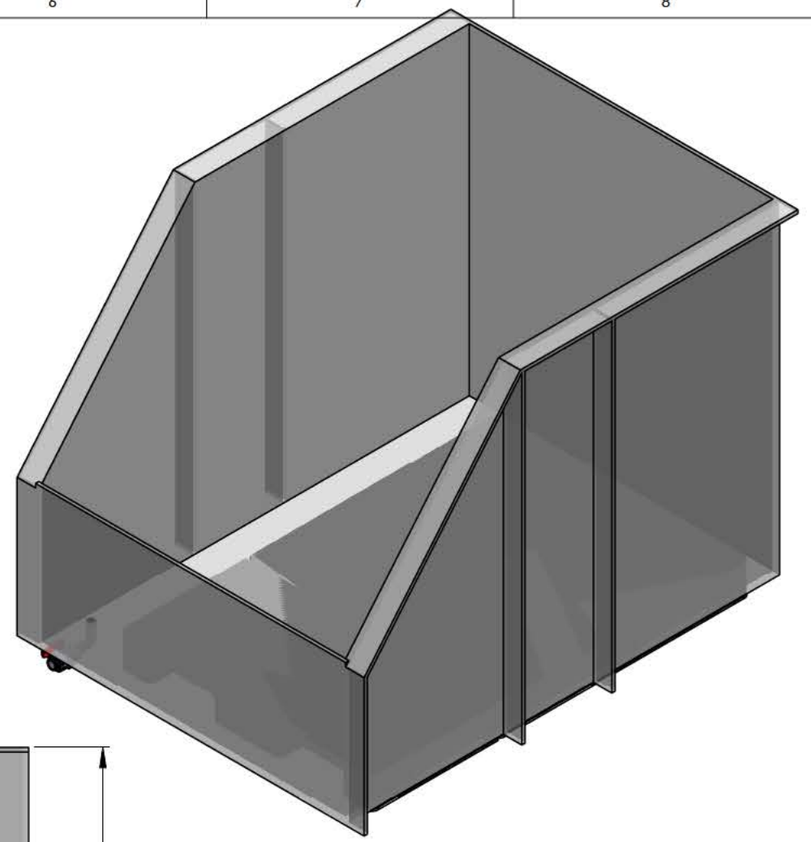
Tank Specification

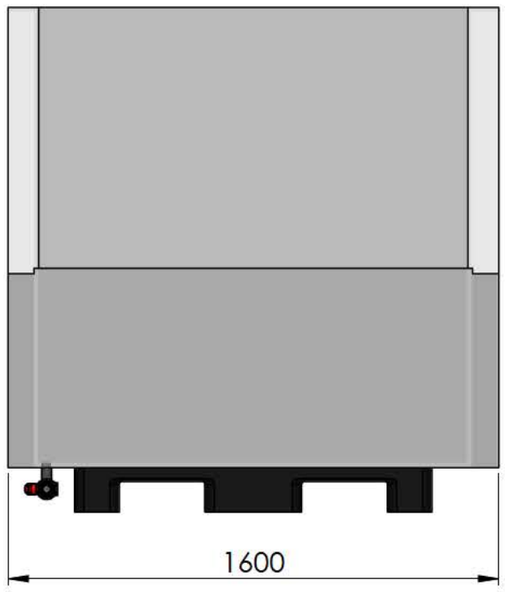
Working Capacity	1,500 L	
Documentation	Design documentation, as-built Drawings up to revision C.	
Engineering standard	DVS 2205, BS EN 12573	
Design criteria	Sodium Hypochlorite at 30°C	
Specific Gravity	1.2	
Dimensions	Tank ID = 1200 mm, Apex Height = 1800 mm, O/A Cylinder Height = 1500 mm Flat Base	
Material	Black HDPE	
Tank Connections	Inlet	DN50 PN16 PE Stub/ BR Galv. Steel AS4087 PN 16
	Outlet	DN50 PN16 PE Stub/ BR Galv. Steel AS4087 PN 16
	Overflow	DN80 PN16 PE Stub/ BR Galv. Steel AS4087 PN 16
	Vent	DN25 PN16 PE Stub/ BR Galv. Steel AS4087 PN 16
	Sight Glass	DN25 Clear PVC with GF Ball Valve
	Tank Identification Plaque	
Testing	Hydrostatic	

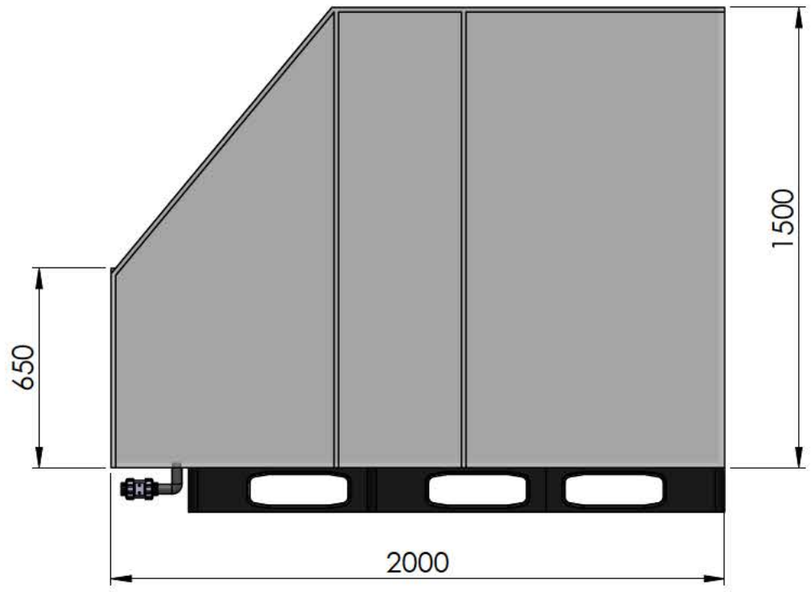


NOTES:

- OUTLET TO BE 32mm PE SDR11 90° ELBOW w/ 1" PVC-U +GF+ BALL VALVE EPDM







REV.	DATE	CHANGES DESCRIPTION	APP.
B	30/06/2015	INCREASED WIDTH	
A	20/03/2015	SUPPLIED FOR APPROVAL	

CAD DRAWING NO MANUAL REVISIONS REQUIRED

DO NOT SCALE

THIRD ANGLE PROJECTION

TOLERANCE +/- 5mm	QTY: 3	MAT: BLK HDPE	REMOVE ALL SHARP EDGES
SHEET: 1 of 3			SCALE: 1:20
DESIGNER: JH			CHECKED: JC
DRAWN BY: JH			PRINT DATE: 30/06/2015

Fusion
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Brisbane 07 3216 6580
Melbourne 03 8601 1192
Sydney 02 9258 1987
info@fusionaus.com
fusionaus.com
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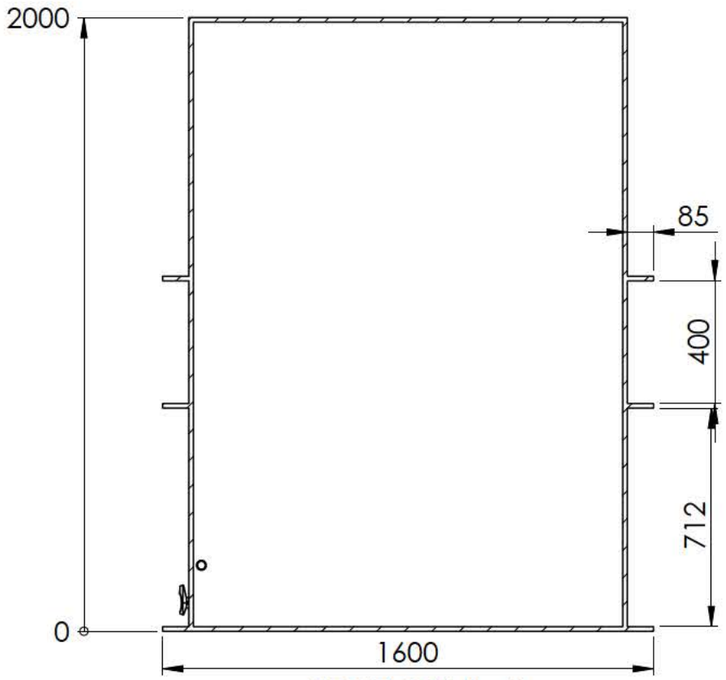
PROJECT: 3x 1650L IBC BUNDS

TITLE: GENERAL ARRANGEMENT

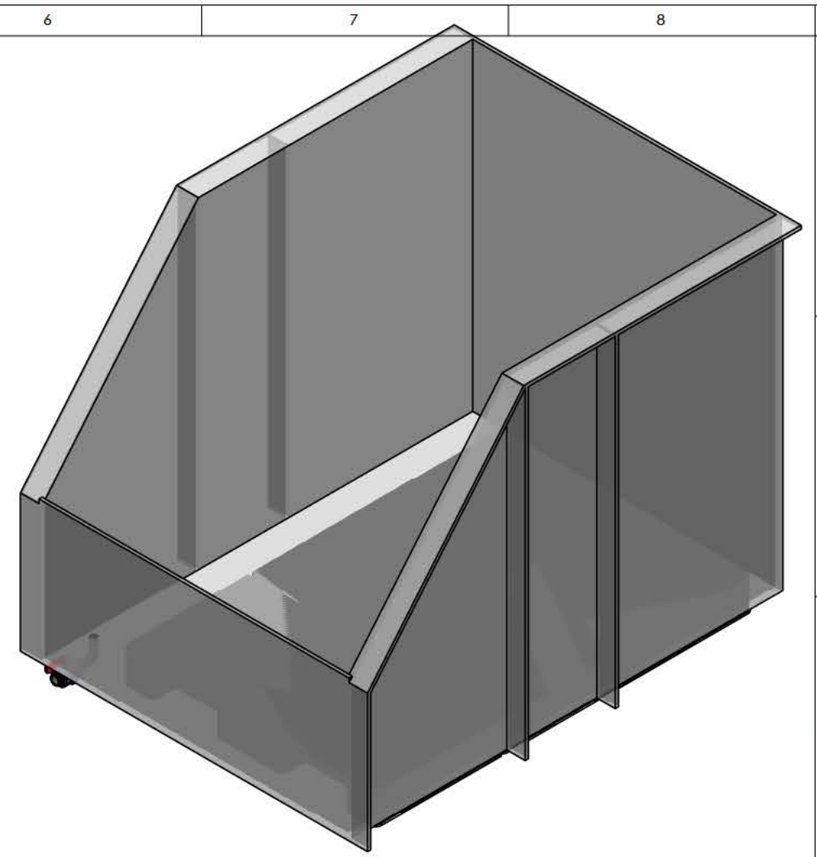
CLIENT: J & P RICHARDSON

DWG: 73XXX-001 REV B

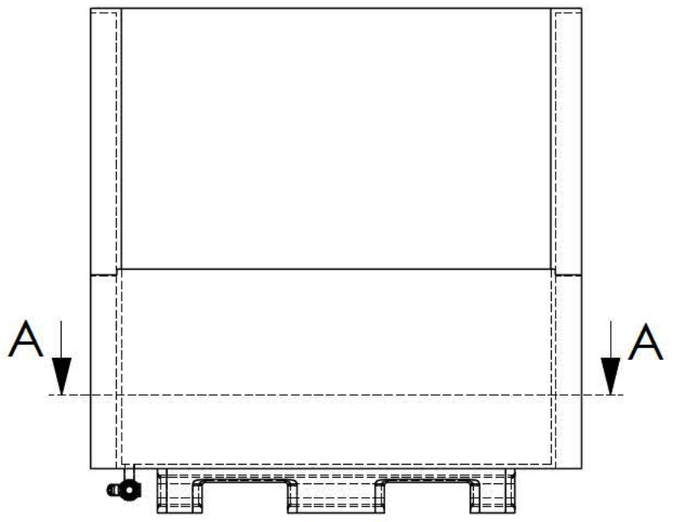
ALL DIMENSIONS IN MILLIMETRES (mm) JOB # PWXXXX



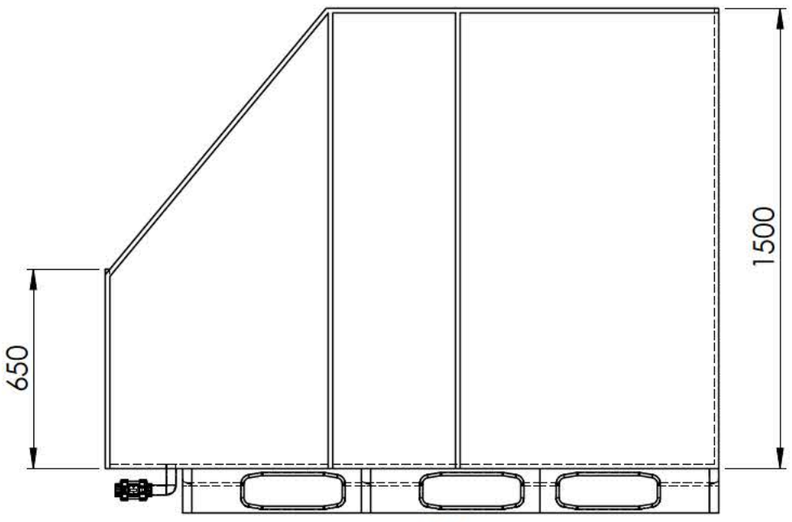
SECTION A-A



3D- View



Front



Side

REV.	DATE	CHANGES DESCRIPTION	APP.
B	30/06/2015	INCREASED WIDTH	
A	20/03/2015	SUPPLIED FOR APPROVAL	

CAD DRAWING NO MANUAL REVISIONS REQUIRED

DO NOT SCALE

THIRD ANGLE PROJECTION

TOLERANCE +/- 5mm	QTY: 3	MAT: BLK HDPE	REMOVE ALL SHARP EDGES
SHEET: 2 of 3			SCALE: 1:20
DESIGNER: JH			CHECKED: JC
DRAWN BY: JH			PRINT DATE: 30/06/2015

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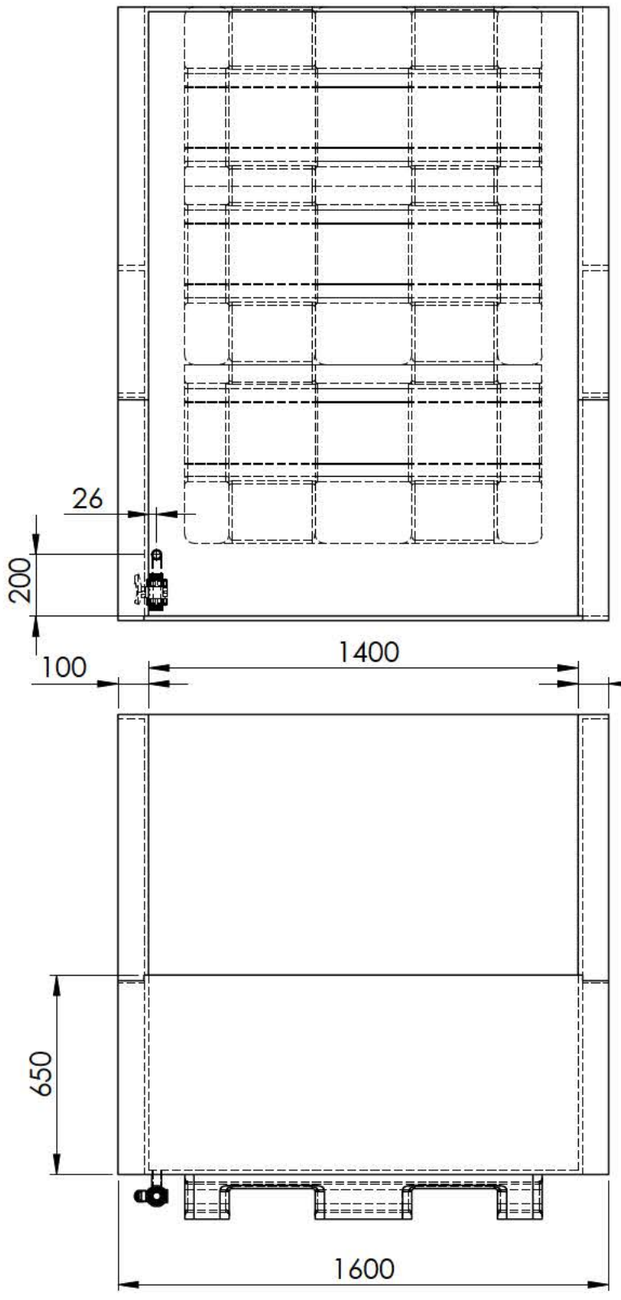
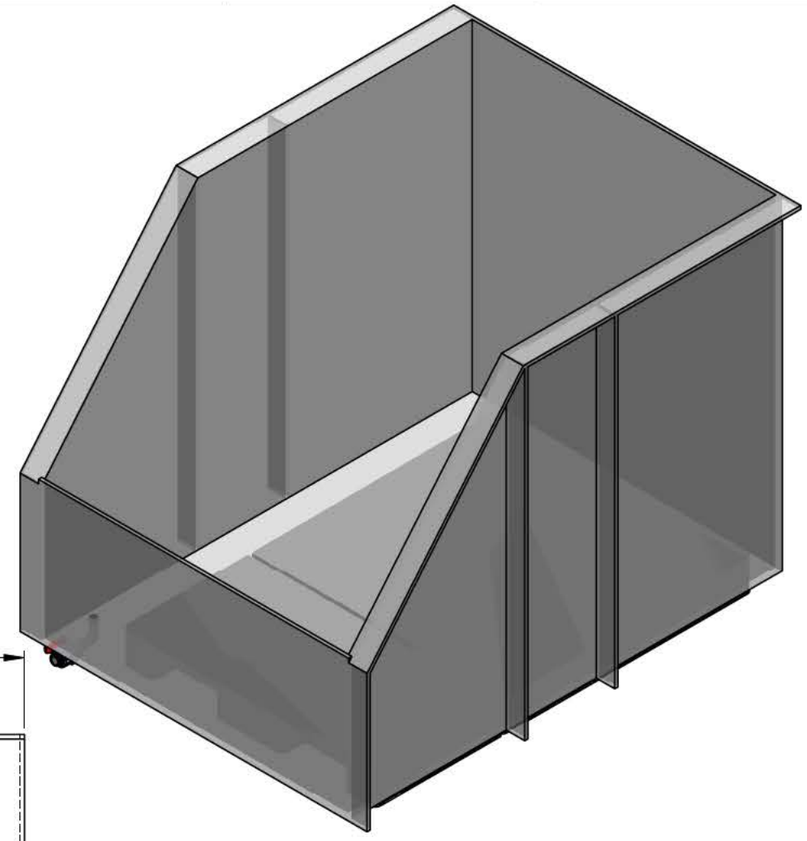
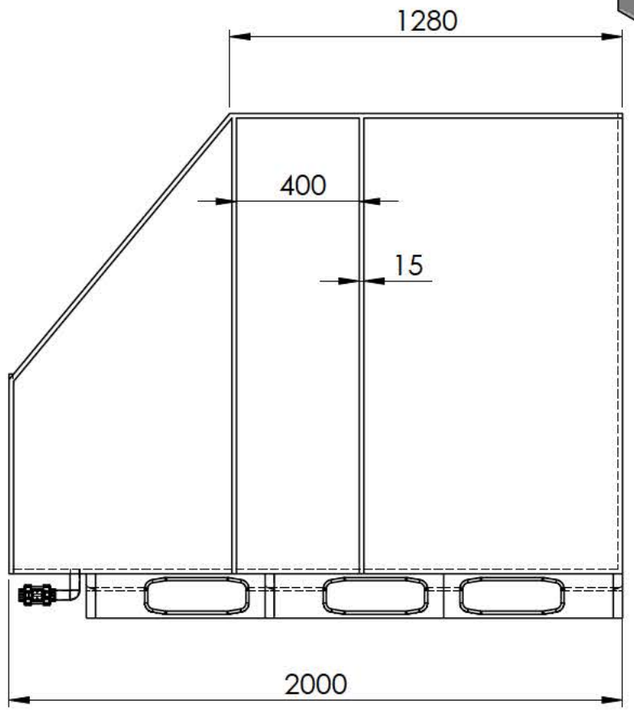
PROJECT	3x 1650L IBC BUNDS
TITLE	DETAILED VIEWS
CLIENT	J & P RICHARDSON
DWG	73XXX-002
REV	B
	ALL DIMENSIONS IN MILLIMETRES (mm)
	JOB # PWXXXX







REV.	DATE	CHANGES DESCRIPTION	APP.
B	30/06/2015	INCREASED WIDTH	
A	20/03/2015	SUPPLIED FOR APPROVAL	

CAD DRAWING NO MANUAL REVISIONS REQUIRED

DO NOT SCALE

THIRD ANGLE PROJECTION

TOLERANCE +/- 5mm	QTY: 3	MAT: BLK HDPE	REMOVE ALL SHARP EDGES
SHEET: 3 of 3			SCALE: 1:20
DESIGNER: JH			CHECKED: JC
DRAWN BY: JH			PRINT DATE: 30/06/2015

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Melbourne 03 8601 1192
Sydney 02 9258 1987
info@fusionaus.com
fusionaus.com
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PROJECT	3x 1650L IBC BUNDS
TITLE	DETAILED VIEWS 2
CLIENT	J & P RICHARDSON
DWG	73XXX-003 REV B
	ALL DIMENSIONS IN MILLIMETRES (mm) JOB # PWXXXX

2.2 DOSING PUMP INSTRUCTIONS

Grundfos DDA Dosing Pump

1. From the main operating screen, rotate the dial until the "Setup" icon is selected and press the dial.
2. From the setup screen, rotate the dial until "Analogue Scaling" is selected and press the dial.
3. In this section the operator can modify the analogue scaling values.
   Basic settings that are required for the system to operate correctly are,
   - Analogue range = 4 – 20 mA (Do not modify).
   - Analogue Zero (4mA = 0% Dose rate in L/H) = 0L/Hr (Do not modify).
   - Analogue Maximum (20mA = 100% Dose rate in L/H) = Operator adjustable dosing rate.
4. After the required changes are made, rotate the dial until the "Home" icon is selected and press the dial. Now you should be back at the main operating display.

Grundfos DDI Dosing Pump

"Start/Stop"

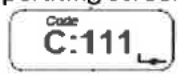
- Use this button to start or stop the pump.
- Error signals can be acknowledged by pressing the "Start/Stop" button.

Use the "Menu/Info" button to switch between the operating modes.

Use the "Down" and "Up" buttons to change values in the display.

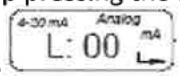
1. From the main operating screen, press and hold the "Menu" button 

for 3 Seconds.

   Now Code C:111 

will be displayed on the screen, press "Menu" button to accept password.

2. From the setup screen, keep pressing the Menu button 

until the "Weighting of Current" input is displayed. 

3. From the "Weighting of Current" screen, press the "Start/Stop" button 

to select the value minimum analogue input value (this value should always be 4 mA - <u>Do not modify</u>).

   Press the Stop/Start button 

to progress through the parameter.

4. This screen sets the minimum flow rate in L/Hr for the minimum analogue value set in the previous step (this value should always be 0 L/H - <u>Do not modify</u>). Press the Stop/Start button 

to progress through the parameter.

5. This screen sets the maximum analogue input value (this value should always be 20 mA - <u>Do not modify</u>). Press the Stop/Start button 

to progress through the parameter.

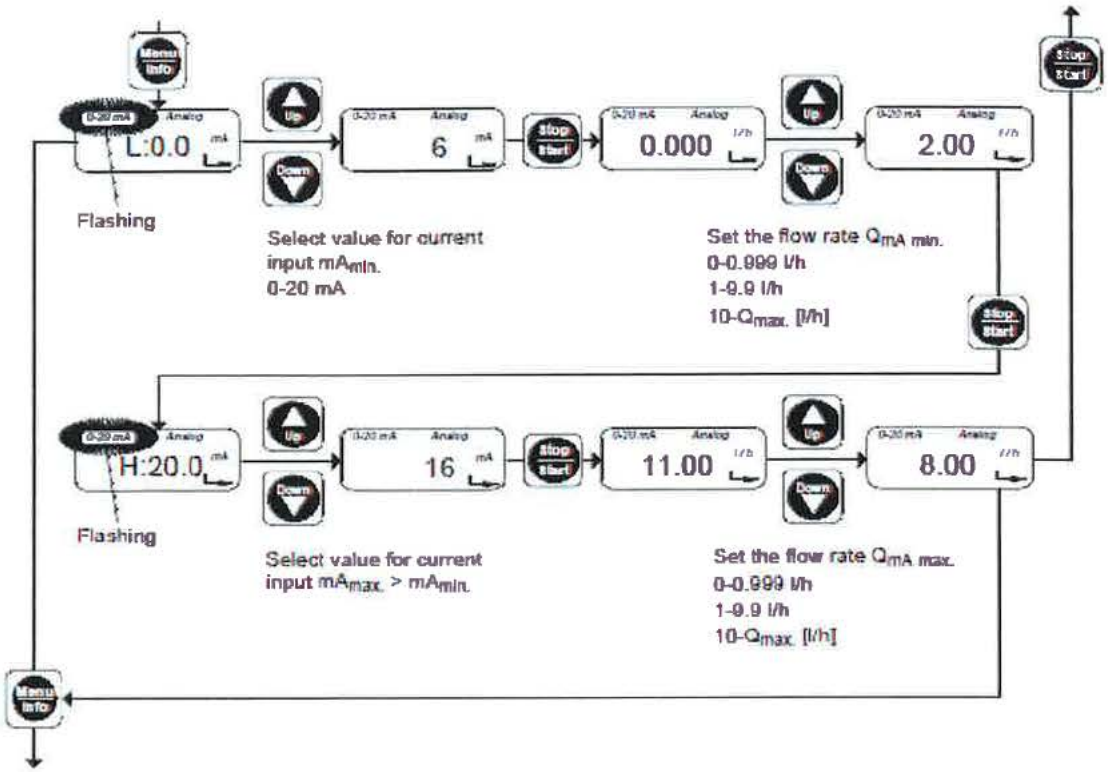
6. This screen sets the maximum flow rate in L/Hr for the maximum analogue value (20mA) which was set in the previous step, this set point is the operator adjustable dosing rate.

   By pressing the "Down" and "Up" buttons 

the dosing rate can be changed to the required concentration.

   Press the Stop/Start button 

to confirm the setting and close the second function level and to return to the main operating display.


Menu Info
0-20 mA Analog
L:0.0 mA
Flashing
Up
Down
0-20 mA Analog
6 mA
Stop Start
0-20 mA Analog
0.000 l/h
Up
Down
0-20 mA Analog
2.00 l/h
Stop Start
Select value for current input $mA_{min.}$
0-20 mA
Set the flow rate $Q_{mA\ min.}$
0-0.999 l/h
1-9.9 l/h
10-$Q_{max.}$ [l/h]
0-20 mA Analog
H:20.0 mA
Flashing
Up
Down
0-20 mA Analog
16 mA
Stop Start
0-20 mA Analog
11.00 l/h
Up
Down
0-20 mA Analog
8.00 l/h
Select value for current input $mA_{max.} > mA_{min.}$
Set the flow rate $Q_{mA\ max.}$
0-0.999 l/h
1-9.9 l/h
10-$Q_{max.}$ [l/h]
Menu Info

Grundfos DDA Pump Parameter Setup

Site	**Kalbar STP**				
Pump	**Hypo Dosing**				
Serial No.					
Product No.	**97722862**				
Type Key	**DDA 7.5-16 FCM-PV/T/C-F-31U2U2IG**				
Menu		**Setting**		Intial	Date
SETUP					
Language	English	✓			
Operation m	Manual				
	Pulse				
	Analog	✓	4-20mA		
	Batch				
	Dosing Timer Cycle				
	Dosing Timer Week				

Analog scaling		**Input value [mA]**	**Dosing flow**		
		≤ 4.0	0		
		≥ 20.0	1.016945085		
FlowControl active*		✓			
FlowControl	Delay	Short			
		Medium	✓		
		Long			
	Sensitivity	Short			
		Medium	✓		
		Long			
Pressure monitoring*		✓			
	Min Pressure	✓			
	Max Pressure	✓	7 Bar		
Display	Units	Met.	✓		
		US gallons			
	Contrast	58%			
	Additional Display	Default Display			
		Dosed Volume			
		Actual Flow			
		Backpressure	✓		
Inputs/Outputs					
	Relay 1	Alarm	✓		
		Warning			
		Stroke signal			
		Pump Dosing			
		Pulse Input			
		Bus Control			
		Contact Type	NC		
	Relay 2	Alarm			
		Warning			
		Stroke signal			
		Pump Dosing	✓		
		Pulse Input			
		Bus Control			
		Contact Type	NO		
	External stop	NO	✓		
		NC			
	Empty signal	NO	✓		
		NC			
	Low-level signal	NO	✓		
		NC			

Pump Speed L/hr = (Required Dose Rate 'mg/L' * Water Flow 'L/s' * 3600)/(Batch Concentration '%'* Specific Gravity (1.16) *10 000)

Required Dose Rate	5	mg/L
Max Flow Rate	8.3333	L/s
Batch Concentration	12.5	% Weight/Volume
Specific Gravity	1.18	
Max Pump Cap	7.5	L/Hr
Pump Speed L/hr	1.016945085	@20mA
Max Pump Percent	13.5592678	@20mA

Flow Dose Rate Check

Current Flow Meter	1.8	L/s	
Dose Rate	0.219661017	L/Hr	0.22

Linear Check

%	mA	Rate		
0	4	0.000	L/Hr	0
25	8	0.254	L/Hr	0.243
50	12	0.508	L/Hr	0.499
75	16	0.763	L/Hr	0.754
100	20	1.017	L/Hr	1.01

3 CERTIFICATION FORMS

Version 3 – March 2013

Form 15—Compliance Certificate for building Design or Specification

NOTE	**This is to be used for the purposes of section 10 of the *Building Act 1975* and/or section 46 of the *Building Regulation 2006*.** **RESTRICTION: A building certifier (class B) can only give a compliance certificate about whether building work complies with the BCA or a provision of the QDC. A building certifier (Class B) can not give a certificate regarding QDC boundary clearance and site cover provisions.**
1. Property description **This section need only be completed if details of street address and property description are applicable.** **EG. In the case of (standard/generic) pool design/shell manufacture and/or patio and carport systems this section may not be applicable.** The description must identify all land the subject of the application. The lot & plan details (eg. SP / RP) are shown on title documents or a rates notice. If the plan is not registered by title, provide previous lot and plan details.	Street address *(include no., street, suburb / locality & postcode)* Waste Water Treatment Plant, Treatment Plant Road GATTON QLD Postcode 4343 Lot & plan details *(attach list if necessary)* In which local government area is the land situated? Gatton Shire Council
2. Description of component/s certified Clearly describe the extent of work covered by this certificate, e.g. all structural aspects of the steel roof beams.	Footings & Slab
3. Basis of certification Detail the basis for giving the certificate and the extent to which tests, specifications, rules, standards, codes of practice and other publications, were relied upon.	Current Australian Standards Engineering Principles Building Code of Australia

Date received		Reference Number/s	

The *Building Act 1975* is administered by the Department of Housing and Public Works

Queensland Government

4. Reference documentation
Clearly identify any relevant documentation, e.g. numbered structural engineering plans.

Structural Engineering Plans by Icon Consulting Engineers P/L Ref No 1505-03 sheets 01 to 03 Issue B

5. Building certifier reference number

Building certifier reference number

6. Competent person details
A competent person for building work, means a person who is assessed by the building certifier for the work as competent to practise in an aspect of the building and specification design, of the building work because of the individual's skill, experience and qualifications in the aspect. The competent person must also be registered or licensed under a law applying in the State to practice the aspect.

If no relevant law requires the individual to be licensed or registered to be able to give the help, the certifier must assess the individual as having appropriate experience, qualifications or skills to be able to give the help.

If the chief executive issues any guidelines for assessing a competent person, the building certifier must use the guidelines when assessing the person.

Name (*in full*)
Scott Duncan Wilson Fairley

Company name (*if applicable*)
Icon Consulting Engineers Pty. Ltd.

Contact person
Scott Fairley

Phone no. *business hours*
(07) 5559 2445

Mobile no.

Fax no.
(07) 5559 2446

Email address
info@i-con.com.au

Postal address
PO Box 196
West Burleigh Qld Postcode 4219

Licence or registration number (*if applicable*)
RPEQ – 8423

7. Signature of competent person
This certificate must be signed by the individual assessed by the building certifier as competent.

Signature

Date
24/08/2015

Version 4 – March 2013

Form 16—Inspection Certificate / Aspect Certificate / QBSA Licensee Aspect Certificate

NOTE

This form is to be used for the purposes of section 10(c) and 239 of the *Building Act 1975* and/or sections 32, 35B, 43, 44 and 47 of the *Building Regulation 2006*.

1. Indicate the type of certificate

The stages of assessable building work are listed in section 24 of the *Building Regulation 2006* or as conditioned by the building certifier.

An aspect of building work is part of a stage (e.g. waterproofing).

☐ **Inspection Certificate** for

☐ Stage of building work (for single detached class 1a or class 10 building or structure)

(indicate the stage) _____

■ Aspect of building work

(indicate the aspect) Piers, Footings & Slab

☐ **QBSA Licensee Aspect Certificate**

Scope of the work

Scope of the work covered by the licence class under the *Queensland Building Services Authority Regulation 2003* for the aspect being certified, e.g. scope of work for a waterproofing licence is "installing waterproofing materials or systems for preventing moisture penetration". An aspect being certified may include "wet area sealing to showers".

2. Property description

The description must identify all land the subject of the application.

The lot & plan details (eg. SP / RP) are shown on title documents or a rates notice. If the plan is not registered by title, provide previous lot and plan details.

Street address *(Include no., street, suburb / locality & postcode)*

Heit Road

Kalbar QLD 4309

Lot & plan details *(Attach list if necessary)*

In which local government area is the land situated?

Scenic Rim Regional Council

3. Building/structure description

Building/structure description	Class of building / structure
Water Tank Slab	10a

LOCAL GOVERNMENT USE ONLY

DATE RECEIVED		REFERENCE NUMBER/S	

4. Description of component/s certified

Clearly describe the extent of work covered by this certificate, e.g. all structural aspects of the steel roof beams.

Piers, Footings & Slab (excavation & reinforcement) 08/10/2015

5. Basis of certification

Detail the basis for giving the certificate and the extent to which tests, specifications, rules, standards, codes of practice and other publications, were relied upon.

Visual Inspection

Building Code of Australia

Current Australian Standards

Engineering Principles

6. Reference documentation

Clearly identify any relevant documentation, e.g. numbered structural engineering plans.

Structural Engineering Plans by Queensland Urban Utilities – Kalbar S.T.P. Heit Road Hypochlorite Tank Installation

Dwg. No.: 486/5/5-0304-205 (Amendment O – 11/15)

Dwg. No.: 486/5/5-0304-206 (Amendment O – 11/15)

Dwg. No.: 486/5/5-0304-207 (Amendment O – 11/15)

7. Building certifier reference number and development approval number

Building certifier reference number

Development approval number

8. Building Certifier, competent person or QBSA licensee details

A **competent person** must be assessed as competent before carrying out the inspection.

The builder for the work cannot give a stage certificate of inspection.

A competent person is assessed by the building certifier for the work as competent to practice in an aspect of the building and specification design, because of the individual's skill, experience and qualifications. The competent person must be registered or licensed under a law applying in the State to practice the aspect.

If no relevant law requires the individual to be licensed or registered, the certifier must assess the individual as having appropriate experience, qualifications or skills to be able to give the help.

If the chief executive issues any guidelines for assessing a competent person, the building certifier must use the guidelines when assessing the person.

Name (*in full*)

Scott Duncan Wilson Fairley

Company name (*if applicable*)

Icon Consulting Engineers Pty. Ltd.

Contact person

Scott Fairley

Phone no. *business hours*

(07) 5559 2445

Mobile no.

0420 527 273

Fax no.

(07) 5559 2446

Email address

info@i-con.com.au

Postal address

PO Box 196

West Burleigh Qld Postcode 4219

Licence or registration number (*if applicable*)

RPEQ – 8423

9. Signature of building certifier, competent person or QBSA licensee

Note: A building certifier must sign this form for temporary swimming pool fencing under section 4 of Schedule 1 of QDC MP 3.4.

Signature

Date

30/11/2015

Version 3 – March 2013

Form 15—Compliance Certificate for building Design or Specification

NOTE	**This is to be used for the purposes of section 10 of the *Building Act 1975* and/or section 46 of the *Building Regulation 2006*.** **RESTRICTION: A building certifier (class B) can only give a compliance certificate about whether building work complies with the BCA or a provision of the QDC. A building certifier (Class B) can not give a certificate regarding QDC boundary clearance and site cover provisions.**
1. Property description **This section need only be completed if details of street address and property description are applicable.** **EG. In the case of (standard/generic) pool design/shell manufacture and/or patio and carport systems this section may not be applicable.** The description must identify all land the subject of the application. The lot & plan details (eg. SP / RP) are shown on title documents or a rates notice. If the plan is not registered by title, provide previous lot and plan details.	Street address *(include no., street, suburb / locality & postcode)* Postcode Lot & plan details *(attach list if necessary)* In which local government area is the land situated?
2. Description of component/s certified Clearly describe the extent of work covered by this certificate, e.g. all structural aspects of the steel roof beams.	**Totalspan/Spanbild standard cold formed steel single flat roof carport** **3 x 6 m, up to 4.2 m high.** **Wind loading: Region: A (V_R = 45 m/s), B (V_R = 51 m/s), C (V_R = Fc * 66)** **Terrain cat. 2 or 3, Cpn = -1.0/-0.8, Importance level 2** **Standard cladding tested for BCA LHL requirements** **Footings/slab designed for class S & M and 100kPa bearing capacity**
3. Basis of certification Detail the basis for giving the certificate and the extent to which tests, specifications, rules, standards, codes of practice and other publications, were relied upon.	**Current Australian Standards and Regulations:** **BCA 2014 including close 3.10.1 & 3.11.** **AS 1170.0, 1 & 2: 2002/2011 (loading)** **AS/NZS 4600:2005 (cold formed steel design), AS 4100 (steel structures)** **AS 3600 (concrete structures), AS2870 (footings), AS 3566.1 (Screws)**
4. Reference documentation Clearly identify any relevant documentation, e.g. numbered structural engineering plans.	**Totalspan/Spanbild standard drawing No. 1 TSFCP-AUS reviewed by** **Stan T Olech**

LOCAL GOVERNMENT USE ONLY

Date received		Reference Number/s	

5. Building certifier reference number

Building certifier reference number

6. Competent person details

A competent person for building work, means a person who is assessed by the building certifier for the work as competent to practise in an aspect of the building and specification design, of the building work because of the individual's skill, experience and qualifications in the aspect. The competent person must also be registered or licensed under a law applying in the State to practice the aspect.

If no relevant law requires the individual to be licensed or registered to be able to give the help, the certifier must assess the individual as having appropriate experience, qualifications or skills to be able to give the help.

If the chief executive issues any guidelines for assessing a competent person, the building certifier must use the guidelines when assessing the person.

Name (*in full*)
Stan Theodore Olech

Company name (*if applicable*)
Vermont Consultants

Contact person
S T Olech

Phone no. *business hours*
(07) 3264 8409

Mobile no.

Fax no.

Email address
vermont7@bigpond.com

Postal address
P O Box 533
Albany Creek Postcode **4035**

Licence or registration number (*if applicable*)
RPEQ 2426

7. Signature of competent person

This certificate must be signed by the individual assessed by the building certifier as competent.

Signature

Date
1/07/2014

(This certificate is valid to 30/06/2015)

4 TEST REPORTS

J. & P. RICHARDSON INDUSTRIES PTY. LTD.

A.B.N. 23 001 952 325 Lic. No. 756

ELECTRICAL CONTRACTORS and ENGINEERS

TELEPHONE: 3271 2911 (All hours) 114 CAMPBELL AVENUE - WACOL, BRISBANE Q 4076

DOCKET No. Y 1876

CUSTOMER: Q.U.U	DAY: Thursday	JOB NUMBER W (C) N H O M S I: 8 9 8 7 5
ADDRESS: Kalbar	DATE: 14/1/16	WORK START TIME
	EMP. No. 103	NORMAL

FIRE ANT INSPECTION CONDUCTED ☐ SOIL MOVED FROM JOB SITE TO:

I have carried out the work listed & I confirm it complies with Good Work Practices, Our Quality Goals & to Customer's Satisfaction.

H	P					h	m

TEST BEFORE TOUCHING

- terminate dosing pump gpo and box
- installation rcd c/o for dosing pump gpo
- hand dig and expose water pipe for connection
- measure covers
- install signal splitter for flow meter
  dosing pump gpo phase-earth >250MΩ
  earth 0.02Ω

REPORT PROMPTLY ANY CONDITION LIABLE TO CAUSE AN ACCIDENT REMEMBER YOU ARE RESPONSIBLE FOR YOUR SAFETY

TIME CLOCK

0, 6m, 12m, 18m, 24m, 30m, 36m, 42m, 48m, 54m — 10 UNITS PER HR.

Customer's Authorisation for live work:

Customer's Signature

Employee Signature: [signature]

ENT BY:

Refer to Customer Copy for General Terms and Conditions of Supply

					HRS. : MIN.	UNITS
WORK	W	0630 To 1430	To	To	8 : –	80
TRAVEL	T	To	To	To	:	
		SERVICE CALL -	APP BY - [initials]	ENDORSEE - [signature]		
		CALL OUT -	COST SECTION -	SERVICE FOLLOW UP	CA	SS

Have you driven a truck over 12t GVM today?
Yes ☐ Fill out your Driver Fatigue Form

CERTIFICATE OF TESTING & SAFETY

I certify that the electrical work listed has been tested in accordance with the prescribed procedure and that such work complies in every respect with the requirements of the Electrical Safety Regulation 2013. The electrical equipment listed to the extent that it is affected by the above electrical work, is electrically safe.

Electrical Licence No: 10384[illegible]

Signature of Electrical Worker: [signature]

Form No. F1024/4 November 15

J. & P. RICHARDSON INDUSTRIES PTY LTD
Electrical Contractors & Engineers

Queensland Urban Utilities

Lockyer Valley STPs and Kalbar STP

Hypo Tanks Replacement

C1011-045

Commissioning Report

Location: Kalbar STP

Date: 10.02.2016

Job: C89875

J. & P. Richardson Industries Pty Ltd
114 Campbell Avenue, Wacol Qld 4076
Phone: (07) 3271 2911 Fax: (07) 3271 3623
Email: jpr@jpr.com.au

1 Site Detail

Site Name	KALBAR STP
Site Identifier(s)	

2 Hardware

Equipment	Type	Serial No.	Comments Pass/Fail
Flowmeter	PROMAG 50	FC027C20000	
Dosing Pump			
Hypochlorite Tank	FUSION	PW2150C	
DDA 7.5-16 FUM-PV/T/C-F-31U2U21G			
SERIAL No.	A977228621000039APP112	09	

3 Bund Test

Description	Start Time/Date	End Time/Date	Check	Comments Pass/Fail
Fill bund to high level and record level and time/date. (Bund must remain full for 24hrs)	16.11.15	18.11.15	P.SMITH	✓
Bund remained at full mark.	16.11.15	18.11.15	P.SMITH	✓

4 Hardware Setup

4.1 Flowmeter

Parameter	Description	Setting	Comments Pass/Fail
Zero	4-20mA Zero Setting	0L/s	✓
Span	4-20mA Span Setting	8.3333 L/s	✓

4.2 Dosing Pump

Parameter	Description	Setting	Comments Pass/Fail
Zero	4-20mA Zero Setting	0L/hr	✓
Span	4-20mA Span Setting	1.01 L/hr	✓
	Required Dose Rate	5mg/L	✓

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Email: jpr@jpr.com.au

5 Functional Test

Step	Description	Check / Value	Comments Pass/Fail
1	Simulate flow to 0L/s – Dosing pump at 0L/hr	0	✓
2	Simulate flow to 25% of span – Dosing pump at 25% of L/hr	0.243	✓
3	Simulate flow to 50% of span – Dosing pump at 50% of L/hr	0.499	✓
4	Simulate flow to 75% of span – Dosing pump at 75% of L/hr	0.754	✓
5	Simulate flow to 100% of span – Dosing pump at 100% of L/hr	1.01	✓
6	Remove simulation and confirm flow rate to dosing pump ratio correct.	1.0L/SEC FLOW .22L/HR DOSE	✓
7	Confirm effluent chlorine residual is correct.	0.25mg/L	✓

Site commissioned by (JPR)

Name: Ben van den Ende

Signature: Ben van den Ende

Date: 10/2/16

Test Sheet checked by NCS Project Officer

Name:.....

Signature:.....

Date: 10.2.16.

By operator

J. & P. Richardson Industries Pty Ltd
114 Campbell Avenue, Wacol Qld 4076
Phone: (07) 3271 2911 Fax: (07) 3271 3623
Email: jpr@jpr.com.au

5 "AS CONSTRUCTED" DRAWINGS

QUEENSLAND Urban Utilities

KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE TANK
INSTALLATION

SITE COVER SHEET - CIVIL / STRUCTURAL

DRAWING No.	Rev	DRAWING TITLE	Remarks
486/5/5-0304-201	A	DRAWING INDEX	AS CONSTRUCTED
486/5/5-0304-202	A	OVERALL SITE WORKS LAYOUT	AS CONSTRUCTED
486/5/5-0304-203	A	SITE LAYOUT	AS CONSTRUCTED
486/5/5-0304-204	A	TOTALSPAN CARPORT DETAILS	AS CONSTRUCTED
486/5/5-0304-205	A	CONCRETE SLAB DETAILS	AS CONSTRUCTED
486/5/5-0304-206	A	CONCRETE SLAB DETAILS	AS CONSTRUCTED
486/5/5-0304-207	A	CONCRETE SLAB DETAILS	AS CONSTRUCTED
486/5/5-0304-208	A	MISCELLANEOUS COMPONENTS	AS CONSTRUCTED
486/5/5-0304-209			
486/5/5-0304-210			
486/5/5-0304-211			
486/5/5-0304-212			
486/5/5-0304-213			
486/5/5-0304-214			
486/5/5-0304-215			

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: R Miotti DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
INDUSTRIES PTY LTD
ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 952 325
114 CAMPBELL AVE WACOL QLD 4076
PH. (07) 3271 2911
FAX. (07) 3271 3823
EMAIL. jpr@jpr.com.au

JPR Project No.: P15-C89875

NAME SIGNATURE DATE

QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND Urban Utilities

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	2.16	AS CONSTRUCTED	P.H.	P.H.		P.H.
O	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	P. HOUSTON	20-7-15
DRAFTING CHECK	P. HOUSTON	DESIGN R.P.E.Q. No.	DATE
CAD FILE	550304201-A.DWG	ORIGINAL SIGNED BY	
Q.U.U. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

APPROVED BY	SIGNATURE	DATE
CONSTRUCTION MANAGER	SIGNATURE	DATE

ASSET/PROJECT: KALBAR S.T.P. HEIT ROAD HYPOCHLORITE TANK INSTALLATION

DRAWING TITLE: DRAWING INDEX

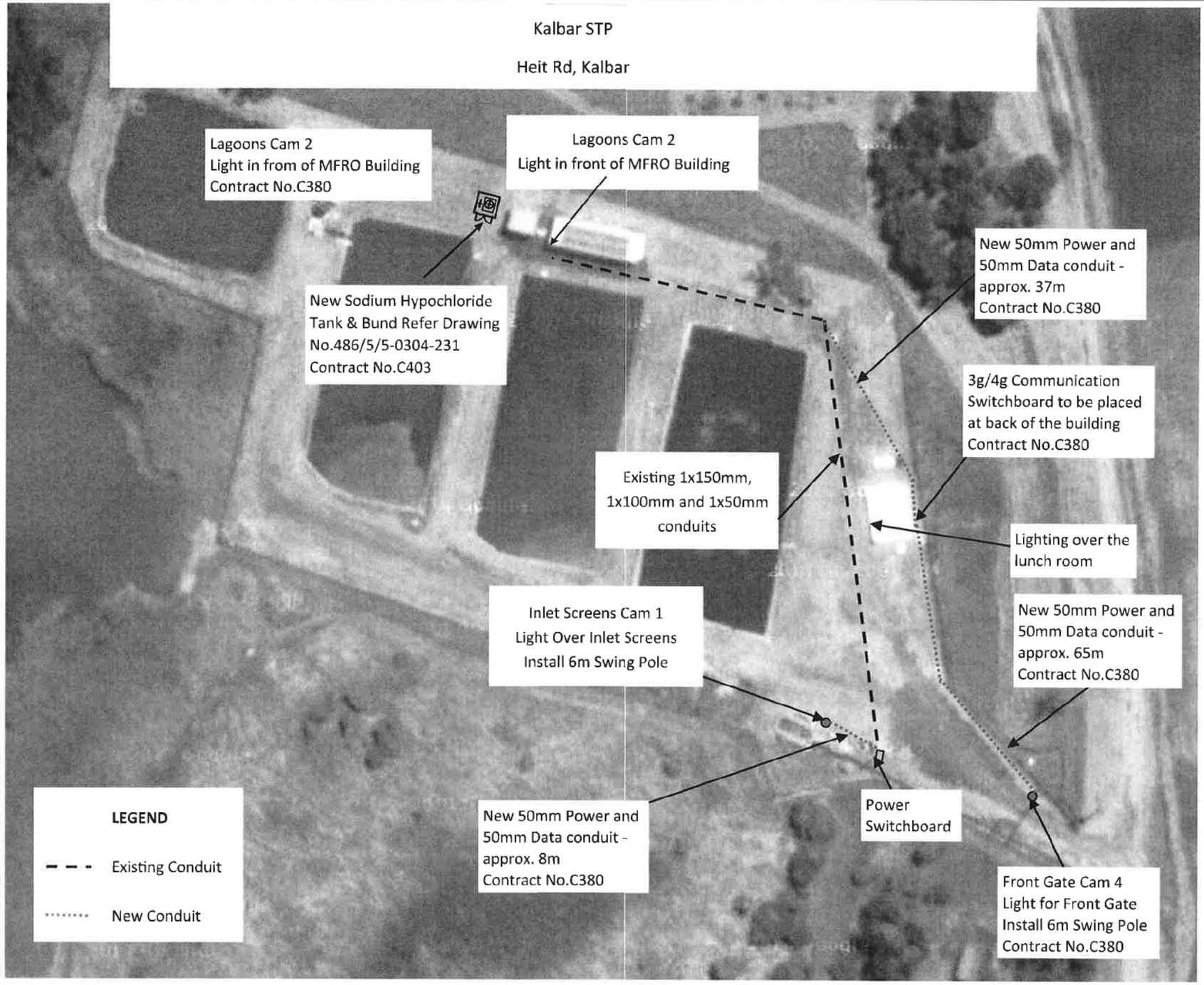
SHEET No. 1 OF 8

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-201

AMEND. A

Kalbar STP

Heit Rd, Kalbar



N

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
INDUSTRIES PTY LTD
ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 932 325
114 CAMPBELL AVE MACOL QLD 4076
PH. (07) 3271 2911
FAX. (07) 3271 3623
EMAIL. jpr@jpr.com.au

JPR Project No.: P15-C89875

NAME SIGNATURE DATE

QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND UrbanUtilities

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	SPEQ NO.	APPROVED
A	2.16	AS CONSTRUCTED	P.H.	P.H.		P.H.
O	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING
DESIGN W.O. No.
CONSTRUCTION W.O. No.
FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	P. HOUSTON	20-7-15
DRAFTING CHECK	P. HOUSTON	DESIGN R.P.E.Q. No. DATE	
CAD FILE	560304202-A.DWG	ORIGINAL SIGNED BY	
Q.U.U. FILE No.		DESIGN CHECK R.P.E.Q. No. DATE	

APPROVED BY SIGNATURE DATE

CONSTRUCTION MANAGER SIGNATURE DATE

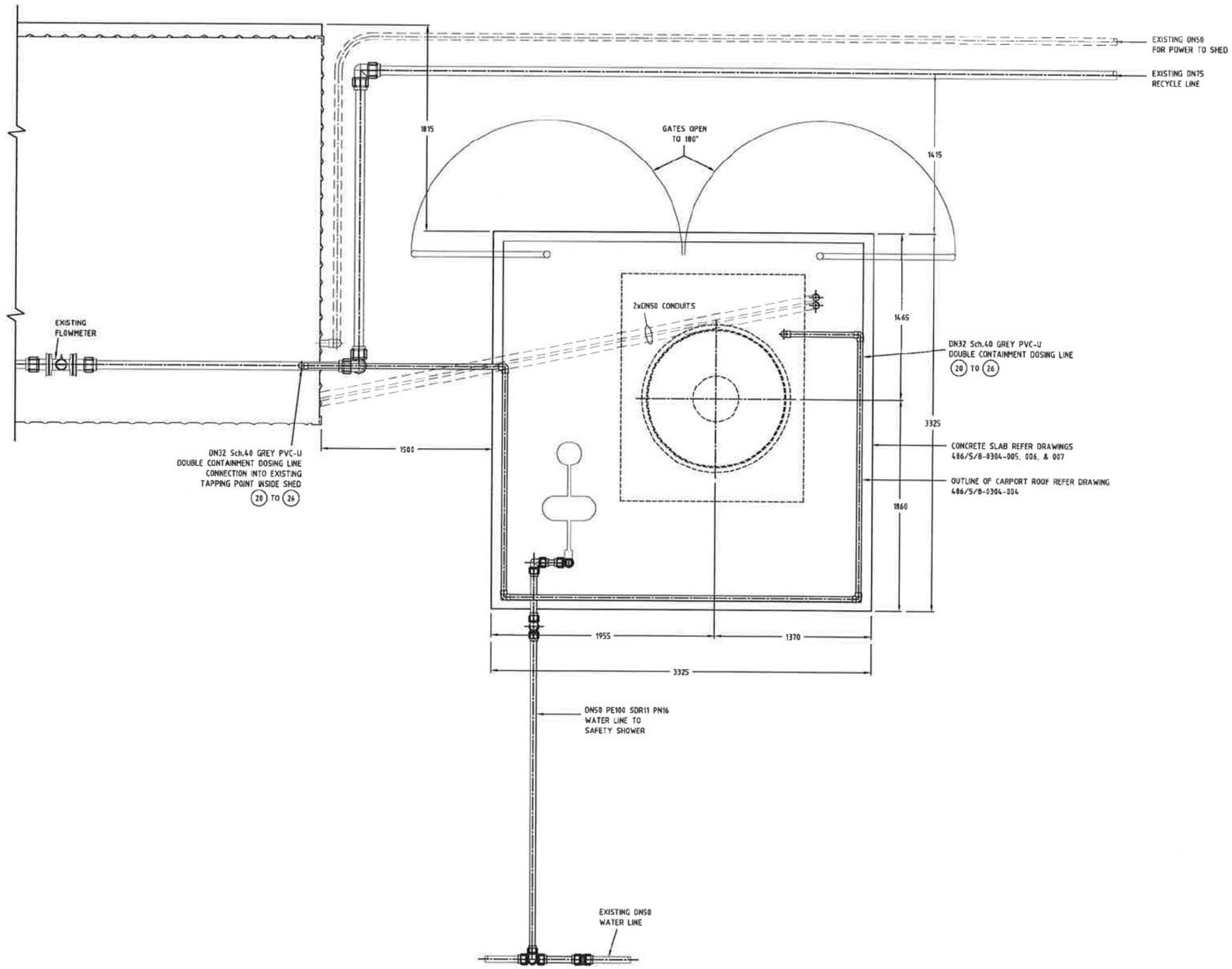
ASSET/PROJECT KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE
TANK INSTALLATION

DRAWING TITLE
OVERALL SITE WORKS
LAYOUT

SHEET No. 2 OF 8

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-202

AMEND. A



AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
INDUSTRIES PTY LTD
ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 952 325
114 CAMPBELL AVE WACOL QLD 4076
PH (07) 3271 2911
FAX (07) 3271 3623
EMAIL jpr@jpr.com.au

JPR Project No.: P15-C89875

NAME SIGNATURE DATE

QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND UrbanUtilities

SCALE 1:20 (A1 SHEET) 0.2 0 0.2 0.4 0.6 0.8 1.0 SCALE OF METERS

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	2.16	AS CONSTRUCTED	P.H.	P.H.		P.H.
0	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING
DESIGN W.O. No.
CONSTRUCTION W.O. No.
FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	P. HOUSTON	20-7-15
DRAFTING CHECK	P. HOUSTON	DESIGN R.P.E.Q. No. DATE	
CAD FILE	56304203-A.DWG	ORIGINAL SIGNED BY	
Q.U.U. FILE No.		DESIGN CHECK R.P.E.Q. No. DATE	

APPROVED BY SIGNATURE DATE

CONSTRUCTION MANAGER SIGNATURE DATE

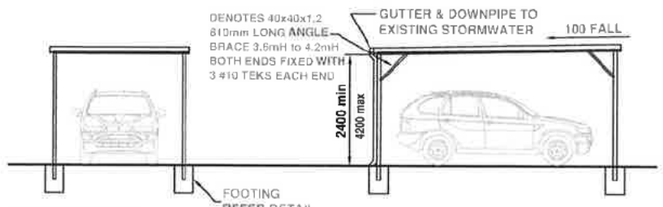
ASSET/PROJECT KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE
TANK INSTALLATION

DRAWING TITLE
SITE LAYOUT

SHEET No. 3 OF 8

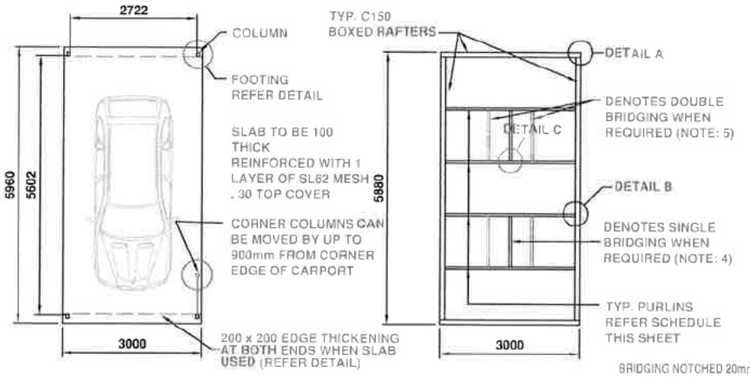
QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-203

AMEND. A



FRONT ELEVATION
1:100

SIDE ELEVATION
1:100



SLAB/FOOTING LAYOUT
1:100

FRAMING PLAN
1:100

SCREW AMOUNTS PER CONNECTION
(FOR CONNECTION OF RHS TO SLEEVE)

N2/N3	N4/C1/C2
4 x #12 TEKS	8 x #12 TEKS

PURLIN SCHEDULE

1. ALL PURLINS TO BE SINGLE 80x40 CRIMPED C'S U.N.O.
2. NUMBER OF PURLINS. ALL HEIGHTS:

   N2 *4 PURLINS
   N3/C1 **4 PURLINS
   N4/C2 **7 PURLINS

3. ALL PURLINS TO BE EVENLY SPACED FROM EDGE OF RAFTERS.
4. * DENOTES 1 ROW OF BRIDGING. REFER FRAMING PLAN FOR DETAILS.
5. ** DENOTES 2 ROWS OF BRIDGING. REFER FRAMING PLAN FOR DETAILS

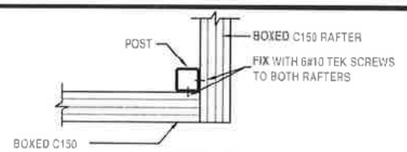
COLUMNS: - SHALL BE G450 SHS:

	N2 & N3	C1 & C2
2.4m & 3.0m:	75x75x2.0	75x75x2.0
3.6m:	75x75x2.0	75x75x2.5
4.2m:	75x75x2.5	75x75x2.5

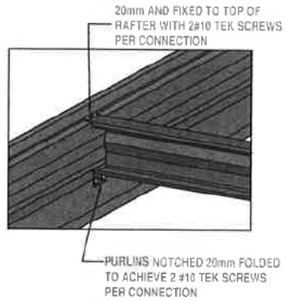
RAFTER SCHEDULE

N2	N3/C1	N4/C2
B150 75	B150 10	B150 15

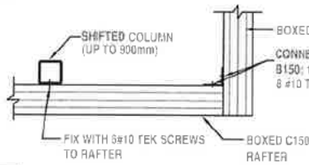
B150 75 BOXED C150 0.75 B.M.T
B150 10 BOXED C150 1.0 B.M.T
B150 15 BOXED C150 1.5 B.M.T



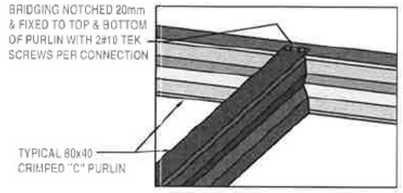
DETAIL A



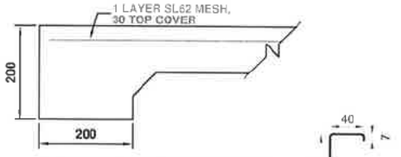
DETAIL B



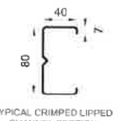
SHIFTED COLUMN CONNECTION



DETAIL C

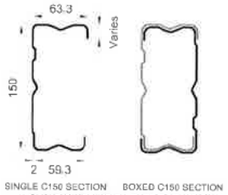


EDGE THICKENING DETAIL



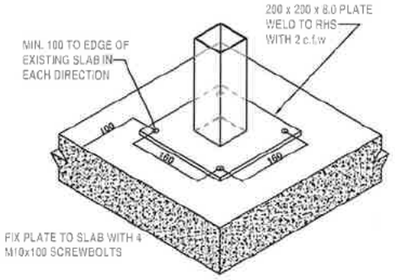
TYPICAL CRIMPED LIPPED
CHANNEL SECTION
(0.75 B.M.T)

80 x 40 SECTION

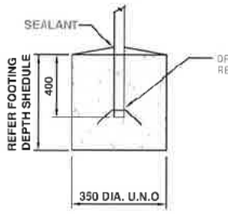


SINGLE C150 SECTION BOXED C150 SECTION

C150/B150 SECTION



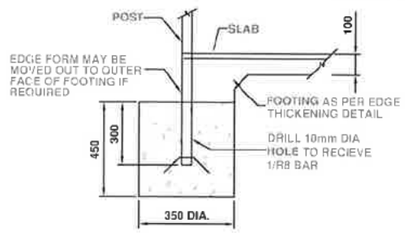
ALTERNATIVE OPTION
COLUMN FIXING TO
EXISTING SLAB



LEG CAST INTO FOOTING

FOOTING DEPTH SHEDULE

DENSE SAND OR FIRM / STIFF CLAY		LOOSE SAND OR SOFT CLAY (<75kPa BEARING CAPACITY)	
N2	600mm DEEP	N2	1200mm DEEP DIA.450mm
N3:C1	600mm DEEP	N3:C1	1200mm DEEP DIA.600mm
N4:C2	600mm DEEP	N4:C2	N/A



PREFERRED OPTION
LEG CAST INTO FOOTING
WITH SLAB ONTOP

GENERAL NOTES

1. DRAWINGS SHALL NOT BE SCALED FOR ANY FABRICATION OR ERECTION DETAILS.
2. AT SETOUT, DIAGONALS MUST BE CAREFULLY CHECKED TO ENSURE BUILDING IS SQUARE.

LOADINGS

1. THESE DESIGNS ARE BASED ON LEVEL OF IMPORTANCE FACTOR OF 2 AS STIPULATED IN AS/NZS 1170.0.
2. STRUCTURE IS DESIGNED USING AS1170.2 : 2002 - Cpi max = 1.0
3. WIND CLASSIFICATION IN ACCORDANCE WITH AS 4055 : 2006. EQUIVALENT WIND CLASSIFICATION

   N2 Vs = 28m/s, Vu = 40m/s
   N3/C1 Vs = 32m/s, Vu = 50m/s
   N4/C2 Vs = 39m/s, Vu = 61m/s

4. ROOF LIVE LOAD: - 0.25 kPa GENERALLY IN ACCORDANCE WITH AS/NZS 1170.1

CONCRETE

1. SLAB / FOOTING DESIGN'S ARE APPROPRIATE TO 'A', 'S' & M SITES.
2. SERVICES OF AN EXPERIENCED CONSULTING ENGINEER SHOULD BE ENGAGED TO ADVICE ON SUITABILITY OF SOIL CONDITIONS.
3. CONCRETE SHALL HAVE MAXIMUM AGGREGATE SIZE OF 20mm. SLUMP OF 80+-20 AND ULTIMATE COMPRESSION STRENGTH AT 28 DAYS OF 20 MPa.
4. CONCRETE SHALL BE PLACED IN ONE CONTINUOUS OPERATION AND BE COMPACTED BY EXTERNAL VIBRATION OR HAND TAMPING.
5. FOOTING EXCAVATIONS SHALL BE THOROUGHLY CLEANED OF ALL LOOSE MATERIAL BEFORE PLACING CONCRETE.
6. FOUNDING MATERIAL SHALL HAVE SAFE BEARING CAPACITY OF 100 kPa.
7. POUR SLAB ON 50mm COMPACTED SAND AND 200um POLYTHENE WATERPROOF MEMBRANE (LAPPED 200 AND SEALED WITH APPROPRIATE TAPE). - OPTIONAL BUT RECOMMENDED.

STEELWORK

1. ALL STRUCTURAL FRAMING MEMBERS SHALL BE G550 - G450 GRADE STEEL U.N.O. AND ALL CLEATS SHALL BE G450 GRADE STEEL GALVANISED TO MIN Z200. POSTS SHALL BE G450, REFER DRAWING.
2. ROOF SHEETING SHALL BE G550 GRADE STEEL PROTECTED WITH ZINCALUME AZ150. ROOF SHEETING CAN BE REPLACED WITH CLEAR ROOF 2400GSM PANEL FIXED TO MANUFACTURERS SPECIFICATIONS. A HIGHER GSM RATE MAY BE REQUIRED FOR SNOW AREA'S.
3. PURLINS & BRIDGING TO BE EX. 80x40 LIPPED CRIMPED CHANNELS 0.75 B.M.T.
4. CLADDING SHEET IS TO BE FIXED AS FOLLOWS:-
   7 RIB 0.35 B.M.T:
   N2 & N3 - FIXED WITH #12x35 TEKS AT RAFTERS WITH 1 SCREW EVERY RIB AND ALTERNATE RIBS FOR ALL INTERMEDIATE PURLINS.
   N4, C1 & C2 - FIXED AT CENTRE OF EACH PAN WITH M6.2-14 x 25mm TEKS AND 25mm DIA. BONDED CYCLONE WASHERS INTO ALL PURLINS.
   CORRUGATED 0.42 B.M.T:
   N2 & N3 - FIXED WITH #12x35 TEKS AT EVERY SECOND CREST TO ALL PURLINS.
   N4, C1 & C2 - FIXED WITH M6.2 14 x 55mm TEKS AND 25mm DIA. BONDED CYCLONE WASHERS AT EVERY SECOND CREST TO ALL PURLINS.
5. NOTCH PURLINS AND FIX TO RAFTERS WITH 2#10 TEKS PER FLANGE EACH END.
6. SCREWS CONNECTING STRUCTURAL MEMBERS TO BE WAFERTEKS No. 10 U.N.O MANUFACTURED BY DEUTSCHER (OR EQUIVALENT) WITH MIN. EDGE DISTANCE OF 9mm AND MIN. PITCH OF 12mm.
7. RIDGES, BARGES AND ALL PENETRATIONS TO BE FLASHED WITH 0.4mm ZINCALUME FINISHED STEEL.
8. GUTTER AND DOWNPIPES TO BE FITTED AND DISCHARGED TO EXISTING STORMWATER SYSTEM. SPLICE GUTTER AT CENTRE OF BUILDING. PROVIDE TWO SCREWS INTO EACH WEB AND SEAL WITH SILICONE.
9. STEELWORK SHALL ALL COMPLY WITH THE REQUIREMENTS OF:-
   AS/NZS 1170.0, 1 & 2 : 2002 LOADING CODES
   AS 4100 STEEL STRUCTURE CODES
   AS/NZS 4600 : 2005 COLD FORMED STEEL STRUCTURE CODE
   AS 1562 DESIGN AND INSTALLATION OF METAL ROOFING
   AS 1111 1112 METRIC HEXAGON COMMERCIAL BOLTS AND SCREWS
   AS 2313 GUIDE TO THE PROTECTION OF IRON AND STEEL
   AS 3566 SELF DRILLING SCREWS FOR BUILDING & CONSTRUCTION INDS

ISSUED: JUNE 2008

VERMONT CONSULTANTS
Structural Consulting Engineers
PHONE: (07) 3264 8409, (07) 3122 2030
FAX: (07) 3264 2028
ADDRESS: 7 DOWNEY CT, ALBANY CREEK QLD 4035
P.O. BOX 533, ALBANY CREEK QLD 4035

I certify that buildings erected in accordance with these drawings will comply with the Building Code of Australia.

S T Olech
RPEQ 2426, CPEng 351935, EC16945, CC4000X

TOTALSPAN
VERSATILE BUILDINGS (AUSTRALIA) Pty Ltd
74 Platinum St Crestmead
Brisbane QLD 4132
PH: (07) 3827 8000 FAX: (07) 3803 2315

STEEL FRAMED BUILDINGS

N3/C1 V_{ult}=57 m/s

SINGLE FLAT ROOF CARPORT

JOB No. TSFCP-AUS
DRAWING No. 1 of 1
REVISION SUFFIX

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: R Miotti DATE: 17-2-16
NAME of SIGNATORY: ROBERT MIOTTI
RPEQ No. or LICENCE: C19972
COMPANY NAME: J & P RICHARDSON Ind.
START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
INDUSTRIES PTY LTD
ELECTRICAL CONTRACTORS AND ENGINEERS
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114 CAMPBELL AVE WACOL QLD 4076
PH. (07) 3271 2911
FAX. (07) 3271 3623
EMAIL. jpr@jpr.com.au

JPR Project No.: P15-C89875

NAME SIGNATURE DATE
QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND UrbanUtilities

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	2.16	AS CONSTRUCTED	P.H.	P.H.		P.H.
0	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( ) | Q.U.U. FILE No.

DRAFTED	P. HOUSTON				
DRAFTING CHECK	P. HOUSTON				
DESIGN	Stan Olech	2426	1-7-14		
CAD FILE	550304204-A.DWG				
ORIGINAL SIGNED BY					
DESIGN CHECK		R.P.E.Q. No.	DATE	CONSTRUCTION MANAGER	SIGNATURE DATE

APPROVED BY SIGNATURE DATE

ASSET/PROJECT: KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE
TANK INSTALLATION

DRAWING TITLE: TOTALSPAN CARPORT DETAILS

SHEET No. 4 OF 6
QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-204
AMEND. A

ENGINEERING DOCUMENTS FOR PROPOSED WASTE WATER TREATMENT PLANT – TANK SLABS KALBAR

CLIENT: J & P RICHARDSON INDUSTRIES PTY LTD

GENERAL NOTES:

1. ALL STRUCTURAL DRAWINGS ARE PRELIMINARY UNLESS SIGNED IN TITLE BLOCK.
2. ALL STRUCTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ARCHITECT/DESIGNER'S AND OTHER CONSULTANTS DRAWINGS. ANY DISCREPANCIES TO BE REFERRED TO THE ENGINEER IN WRITING.
3. ALL SITE INSPECTIONS TO BE PERFORMED BY THE ENGINEER MUST BE BOOKED 24 HOURS PRIOR TO INSPECTION TIME.
4. ALL DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION AND/OR FABRICATION.
5. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE STRUCTURAL DRAWINGS.
6. DURING CONSTRUCTION THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND ENSURING THAT NO CONSTRUCTION LOADS OVER STRESS ANY ELEMENTS OF THE STRUCTURE. IF UNSURE CONTACT ENGINEER FOR ADVICE.
7. THE STRUCTURAL ELEMENTS HAVE BEEN DESIGNED TO CARRY THE FOLLOWING LIVE LOADS:

INTERNAL FLOORS -	1.5kPa / 1.8kN
BALCONIES LESS THAN 1000mm ABOVE GROUND -	1.5kPa / 1.8kN / 1.5kN/m ALONG EDGE
BALCONY FLOORS 1000mm OR GREATER ABOVE GROUND -	2.0kPa / 1.8kN / 1.5kN/m ALONG EDGE
STAIRS AND LANDINGS -	2.0kPa / 2.7kN
NON HABITABLE ROOF SPACES -	0.5kPa / 1.4kN

8. ALL WORKMANSHIP AND MATERIALS TO BE IN ACCORDANCE WITH THE RELEVANT CURRENT AUSTRALIAN STANDARD CODES, BCA AND LOCAL STATUTORY AUTHORITY REQUIREMENTS.
9. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE. (U.N.O)
10. OTHER THAN FOR THE PURPOSES AND SUBJECT TO THE CONDITIONS OF COPYRIGHT ACT, NO PART OF THESE DRAWINGS MAY BE REPRODUCED OR COPIED IN ANY FORM WITH PRIOR WRITTEN APPROVAL.

CONCRETE BLOCK MASONRY NOTES:

1. ALL CONCRETE BLOCK MASONRY WORKMANSHIP AND MATERIALS TO BE IN ACCORDANCE WITH THE RELEVANT CURRENT AUSTRALIAN STANDARD CODES AS3700 & OTHERS INCLUDED THEREIN.
2. ALL CONCRETE MASONRY UNITS SHALL HAVE MINIMUM CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH OF Fuc=15MPa.
3. MORTAR SHALL BE MIXED IN THE PROPORTIONS 1:1:6 CEMENT:HYDRATED LIME:MORTAR SAND BY VOLUME OR M3. MORTAR WITH HIGHER EXPOSURES SUCH AS WITHIN 1km OF A COASTLINE OR IN AGGRESSIVE SOILS SHALL BE MIXED IN THE PROPORTIONS 1:0.25:3 ADDITIVES SHALL NOT BE USED WITHOUT APPROVAL BY ENGINEER.
4. GROUT FOR CORE FILLING SHALL BE IN ACCORDANCE WITH AS1379. STRENGTH=20MPa. MAXIMUM AGGREGATE SIZE IS 7mm, MAXIMUM SLUMP 200mm AND RODDED INTO PLACE WHERE NECESSARY TO ACHIEVE COMPACTION.
5. ALL CORE FILLED MASONRY SHALL BE LAID WITH A BASE COURSE OF 'CLEAN-OUT' BLOCKS TO FACILITATE CLEANING OF EXCESS MORTAR. THE MAXIMUM HEIGHT OF CORE FILL PLACED AT ANY ONE TIME IS 2400mm.
6. CONTROL JOINTS TO BE PLACED AT 6000mm MAXIMUM CENTRES (U.N.O), USING CONTROL TYPE BLOCKS. REFER TO MANUFACTURES SPECIFICATIONS.
7. REINFORCING IS TO BE PLACED CENTRALLY (U.N.O. IE RETAINING WALL SITUATIONS).

FOUNDATION AND FOOTING/SLAB NOTES:

1. REFER TO GEOTECHNICAL REPORT PREPARED REFERENCED ON FOOTING / SLAB PLANS FOR GEOTECHNICAL RECOMMENDATIONS.
2. RETAIN AN EXPERIENCED ENGINEER TO INSPECT THE FOOTINGS/FOUNDATIONS TO CONFIRM ADEQUACY PRIOR TO PLACEMENT OF REINFORCING AND CONCRETE.
3. ALL EARTHWORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH AS3798-2007. ALL TOP SOIL INCLUDING ORGANIC MATERIAL TO BE CLEARED FROM BUILDING AREA BEFORE CONSTRUCTION STARTS. FILL PLACED AFTER THE ISSUE OF THE GEOTECHNICAL REPORT SHOULD BE CERTIFIED TO A LEVEL 1, IN ACCORDANCE WITH (AS3798-2007), AND BE DEEMED CONTROLLED FILL IN ACCORDANCE WITH (AS2870-1996) BY A RECOGNISED GEOTECHNICAL ENGINEER. FILL TO BE NON REACTIVE AND COMPACTED IN 150mm LAYERS AND COMPACTED TO ACHIEVE A MINIMUM OF 95% MAXIMUM DRY DENSITY. BASED ON STANDARD COMPACTION TESTS.
4. THE FOOTING RECOMMENDATIONS GIVEN ARE IN ACCORDANCE WITH AS2870 (INCLUDING AMENDMENTS) AND AR BASED ON THE GEOTECHNICAL REPORT. THE RECOMMENDATIONS HAVE PROVEN SATISFACTORY IN PERFORMANCE UNDER 'NORMAL CONDITIONS' ON SIMILAR SOILS. REFER AS2870 SECTION 1.3.3 FOR THE DEFINITION OF 'ABNORMAL CONDITIONS'. ALTERNATIVE FOOTING TYPES MAY BE SUITABLE AND DETAILS WILL BE PROVIDED IF REQUESTED. DETAILS OF OTHER PROPOSED OR EXISTING STRUCTURES NOT EVIDENT ON THE PLANS SUPPLIED (E.G POOLS, RETAINING WALLS, SEWERS MAINS, TREES ETC.) AND CLOSE TO THE PROPOSED DWELLING WILL NEED TO BROUGHT TO OUR ATTENTION SO THAT THE DESIGN CAN ADDRESS THE LIMITING FACTORS ASSOCIATED WITH THE PROXIMITY OF THE OTHER STRUCTURES.
5. SITE DRAINAGE PROTECTING THE SOIL FROM EXCESSIVE WETTING IS VERY IMPORTANT AND ALL STORM WATER RUNOFF MUST BE DIRECTED AWAY FROM THE FOOTINGS. SLOPING CONCRETE OR BITUMEN PAVING AWAY FROM THE HOUSE IS ALSO RECOMMENDED. GARDENS, LARGE TREES AND SHRUBS MUST BE KEPT AWAY FROM THE FOOTINGS. SEEPAGE WATER OCCURRING ON SLOPING OR EXCAVATED SITES MUST BE PREVENTED FROM REACHING FOOTINGS BY THE CONSTRUCTION OF CUTOFF DRAIN(S). REFER AS2870 APPENDIX B FOR FURTHER INFORMATION REGARDING MAINTENANCE.
6. MINOR CRACKING MAY OCCUR AS A RESULT OF FACTORS NOT ASSOCIATED WITH SOIL MOVEMENTS. CONTROL JOINTS IN BRICKWORK AND BETWEEN DIFFERENT EXTERNAL MATERIALS ARE OF SIGNIFICANT ADVANTAGE IN REDUCING CRACKING AND MUST BE INCORPORATED WHEREVER POSSIBLE.
7. ALL DRAINAGE TRENCHES MUST BE CONSTRUCTED A MINIMUM OF 1200mm FROM THE OUTSIDE EDGE OF THE FOOTING. IF SITE RESTRICTIONS MAKE THIS IMPOSSIBLE, ADDITIONAL DEPTH BY WAY OF PIERS WILL BE REQUIRED UNDER THE FOOTINGS WITHIN 1200mm OF DRAINAGE TRENCHES.
8. AREAS OF MODERATLEY, HIGHLY AND EXTREMELY REACTIVE SOILS, (M, H AND E CLASS SITE CLASSIFICATIONS) IT IS RECOMMENDED THAT FLEXIBLE SEWER JOINTING IS USED.
9. FOOTING CONCRETE STRENGTH TO BE 25MPa. COVER TO FOOTING REINFORCING STEEL IS 40mm. REINFORCING STEEL IS TO BE SUPPORTED IN ITS CORRECT POSITION BY APPROVED PLASTIC CHAIRS AND/OR SPACERS. THE LAP LENGTH OF BAR SPLICES SHALL BE NOT LESS THAN 500mm. AT T AND L INTERSECTIONS THE BARS SHALL BE CONTINUED ACROSS THE FULL WIDTH OF THE INTERSECTION. AT L INTERSECTIONS, ONE OUTER BAR SHALL BE BENT AND CONTINUED FOR 500mm OR A BENT CORNER BAR 500mm LONG EACH LEG SHALL BE PROVIDED AT ALL LEVELS OF FOOTING REINFORCING.
10. CONCRETE MUST BE POURED AS CLOSE AS POSSIBLE TO ITS FINAL POSITION, PENCIL VIBRATED AND CURED FOR AT LEAST SEVEN DAYS BY CONTINUOUS WETTING OR BY A SUITABLE CURING COMPOUND.
11. SLAB CONCRETE STRENGTH TO BE 25 MPa AND TO BE REINFORCED WITH 1 LAYER OF MESH PLACED 30mm FROM TOP FACE AND SUPPORTED ON BAR CHAIRS AT 1000mm CENTRES IN BOTH DIRECTIONS. IN AREAS WHERE CERAMIC FLOOR TILES ARE USED WE RECOMMEND THE USE OF A FLEXIBLE BEDDING COMPOUND UNDER THE TILES. VAPOUR BARRIER IS TO BE PLACED UNDER ENTIRE SLAB.

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: [signature] DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
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EMAIL. jpr@jpr.com.au

JPR Project No.: P15-C89875

NAME SIGNATURE DATE

QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND UrbanUtilities

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O	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	Scott Fairley 8423 24-8-15			
DRAFTING CHECK	P. HOUSTON	DESIGN	R.P.E.Q. No.	DATE	APPROVED BY SIGNATURE DATE
CAD FILE	59304205-A.DWG	ORIGINAL SIGNED BY			
Q.U.U. FILE No.		DESIGN CHECK	R.P.E.Q. No.	DATE	CONSTRUCTION MANAGER SIGNATURE DATE

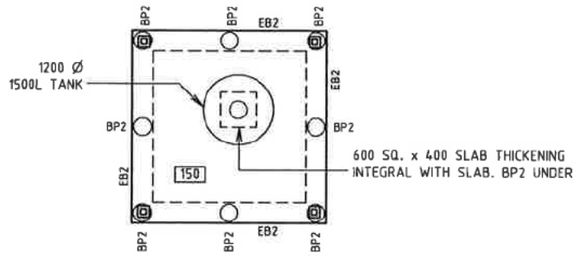
ASSET/PROJECT: KALBAR S.T.P. HEIT ROAD HYPOCHLORITE TANK INSTALLATION

DRAWING TITLE: CONCRETE SLAB DETAILS

SHEET No. 5 OF 8

QUEENSLAND URBAN UTILITIES DRAWING No.: 486/5/5-0304-205

AMEND.: A



FOOTING/SLAB PLAN - KALBAR

SCALE 1:50 (A3)

REFER TO SITE INVESTIGATION BY: DOUGLAS PARTNERS PROJECT No. 79887.00

FOUNDATION NOTE:
FOUNDING MATERIAL - STIFF NATURAL SILTY CLAY
ALLOWABLE BEARING CAPACITY - 100kPa

LEGEND

MARK	DESCRIPTION
BP1 ○	450 Ø BORED PIER FOUNDED MIN. 200 INTO STIFF NATURAL GROUND. REINFORCE WITH 5-N12 BARS, R6 SPIRAL LIG, 200 PITCH WHERE PIER DEPTH EXCEEDS 1800. OMIT PIERS WHERE FOOTINGS ARE ALREADY FOUNDED INTO STIFF NATURAL GROUND.
BP2 ○	300 Ø BORED PIER FOUNDED MIN. 200 INTO STIFF NATURAL GROUND. REINFORCE WITH 4-N12 BARS, R6 SPIRAL LIG, 200 PITCH WHERE PIER DEPTH EXCEEDS 1500. OMIT PIERS WHERE FOOTINGS ARE ALREADY FOUNDED INTO STIFF NATURAL GROUND.
150	DENOTES SLAB THICKNESS (I.E. 150mm)

NOTE:

1) THIS DESIGN DOES NOT TAKE INTO ACCOUNT TREES, OVERLAND FLOWS, POTENTIAL FLOODING, ANY UNDERGROUND INFRASTRUCTURE (UNLESS SHOWN). IF ANY OF THESE AFFECT THIS SITE, PLEASE CONTACT ENGINEER FOR AN ALTERNATE DESIGN.

2) BUILDER TO CONFIRM DEPTHS AND LOCATIONS OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION.

3) IF NEW STRUCTURE UNDERMINES OR SURCHARGES ANY EXISTING FOOTINGS OR STRUCTURES, BUILDER TO CONTACT ENGINEER FOR ADVICE

SCALE 1:50 (A1 SHEET U.N.O.) 0 0.5 1.0 / 0.25 0.25 0.75 SCALE OF METERS

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	2.16	AS CONSTRUCTED	P.H.	P.H.		P.H.
0	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	Scott Fairley 8423 24-6-15	
DRAFTING CHECK	P. HOUSTON	DESIGN R.P.E.Q. No. DATE	APPROVED BY SIGNATURE DATE
CAD FILE	550304206-A.DWG	ORIGINAL SIGNED BY	
Q.U.U. FILE No.		DESIGN CHECK R.P.E.Q. No. DATE	CONSTRUCTION MANAGER SIGNATURE DATE

ASSET/PROJECT: KALBAR S.T.P. HEIT ROAD HYPOCHLORITE TANK INSTALLATION

DRAWING TITLE: CONCRETE SLAB DETAILS

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: R Miotti DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
INDUSTRIES PTY LTD
ELECTRICAL CONTRACTORS AND ENGINEERS
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EMAIL. jpr@jpr.com.au

JPR Project No.: P15-C89875

NAME SIGNATURE DATE

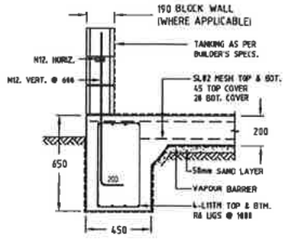
QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND UrbanUtilities

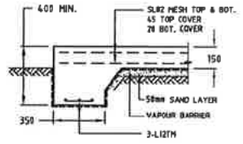
SHEET No. 6 OF 6

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-206

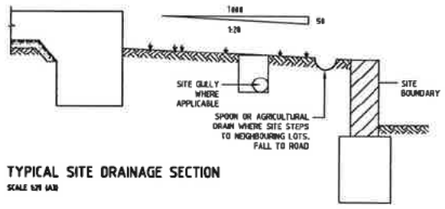
AMEND. A



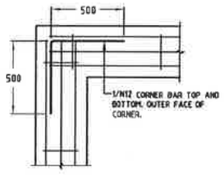
EDGE BEAM - EB1
SCALE 1:20 (A3)



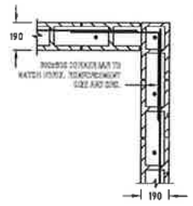
EDGE BEAM - EB2
SCALE 1:20 (A3)



TYPICAL SITE DRAINAGE SECTION
SCALE 1:20 (A3)



FOOTING CORNER DETAIL
SCALE 1:20 (A3)



TYPICAL BLOCK CORNER DETAIL
SCALE 1:20 (A3)

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
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EMAIL. jpr@jpr.com.au

JPR Project No.: P15-C89875

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QUEENSLAND UrbanUtilities

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0	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING
DESIGN W.O. No.
CONSTRUCTION W.O. No.
FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	Scott Fairley	8423	24-8-15	
DRAFTING CHECK	P. HOUSTON	DESIGN	R.P.E.Q. No.	DATE	APPROVED BY SIGNATURE DATE
CAD FILE	550364207-A.DWG	ORIGINAL SIGNED BY			
Q.U.U. FILE No.		DESIGN CHECK	R.P.E.Q. No.	DATE	CONSTRUCTION MANAGER SIGNATURE DATE

ASSET/PROJECT KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE
TANK INSTALLATION

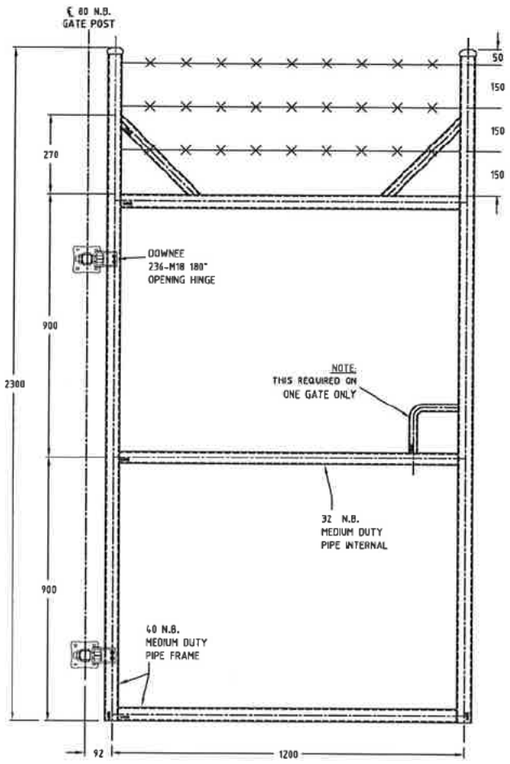
DRAWING TITLE
CONCRETE SLAB DETAILS

SHEET No. 7 OF 8

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-207

AMEND. A

NOTE:
TO BE CONSTRUCTED IN ACCORDANCE WITH QUEENSLAND URBAN UTILITIES DRAWING No.s 468/5/7 0217-001 & 002



DETAIL 1/231
SCALE 1:10

BUND ACCESS GATES
No. REQUIRED: 2
FINISH: HOT DIP GALV.

SCALE 1:10 U.N.O. (A1 SHEET) — SCALE OF METERS 0.1 0 0.1 0.2 0.3 0.4 0.5

AS CONSTRUCTED

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FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	P. HOUSTON 20-7-15	
DRAFTING CHECK	P. HOUSTON	DESIGN R.P.E.Q. No. DATE	APPROVED BY SIGNATURE DATE
CAD FILE	560304208-A.DWG	ORIGINAL SIGNED BY	
Q.U.U. FILE No.		DESIGN CHECK R.P.E.Q. No. DATE	CONSTRUCTION MANAGER SIGNATURE DATE

ASSET/PROJECT: **KALBAR S.T.P. HEIT ROAD HYPOCHLORITE TANK INSTALLATION**

DRAWING TITLE: **MISCELLANEOUS COMPONENTS**

AS CONSTRUCTED DETAILS

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NAME of SIGNATORY: ROBERT MIOTTI
RPEQ No. or LICENCE: C19972
COMPANY NAME: J & P RICHARDSON Ind.
START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
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JPR Project No.: P15-CB9875

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SHEET No. 8 OF 8
QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-208
AMEND. A

QUEENSLAND UrbanUtilities

KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE TANK INSTALLATION

SITE COVER SHEET - MECHANICAL

DRAWING No.	Rev	DRAWING TITLE	Remarks
486/5/5-0304-230	A	DRAWING INDEX	AS CONSTRUCTED
486/5/5-0304-231	A	1,500L TANK & BUND PIPEWORK LAYOUT	AS CONSTRUCTED
486/5/5-0304-232	A	1,500L TANK & BUND PIPEWORK LAYOUT	AS CONSTRUCTED
486/5/5-0304-233	A	1,500L TANK DETAILS	AS CONSTRUCTED
486/5/5-0304-234	A	MATERIAL LIST	AS CONSTRUCTED
486/5/5-0304-235			
486/5/5-0304-236			
486/5/5-0304-237			
486/5/5-0304-238			
486/5/5-0304-239			
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486/5/5-0304-241			
486/5/5-0304-242			
486/5/5-0304-243			
486/5/5-0304-244			
486/5/5-0304-245			

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SIGNED: R Miotti DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
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0	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	P. HOUSTON 20-7-15	
DRAFTING CHECK	P. HOUSTON	DESIGN R.P.E.Q. No. DATE	APPROVED BY SIGNATURE DATE
CAD FILE	55030420-A.DWG	ORIGINAL SIGNED BY	
Q.U.U. FILE No.		DESIGN CHECK R.P.E.Q. No. DATE	CONSTRUCTION MANAGER SIGNATURE DATE

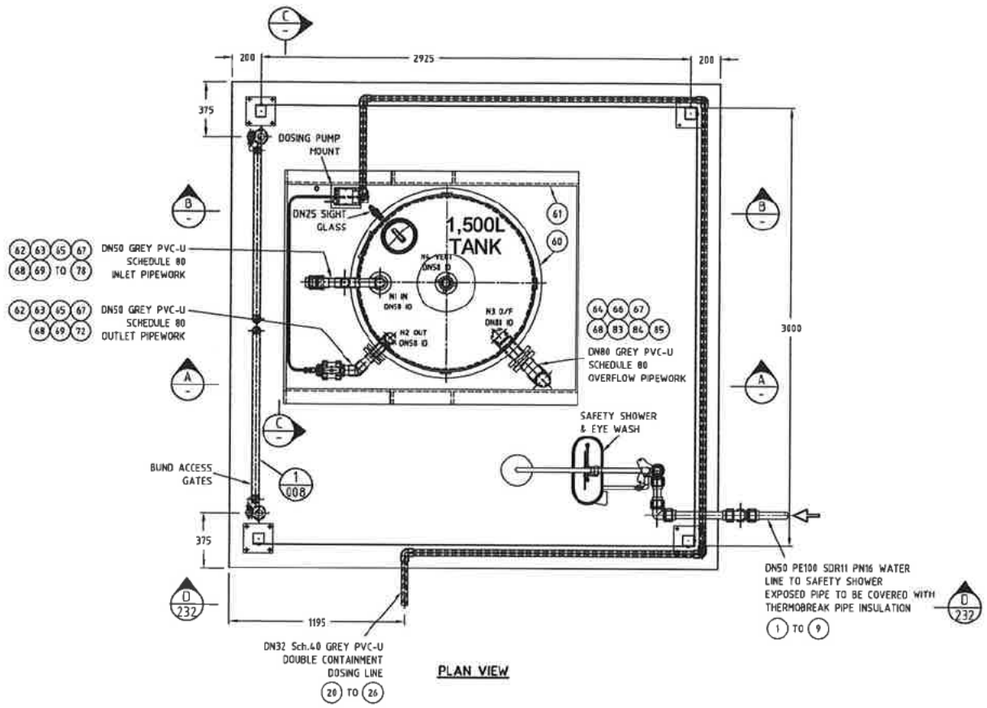
ASSET/PROJECT: KALBAR S.T.P. HEIT ROAD HYPOCHLORITE TANK INSTALLATION

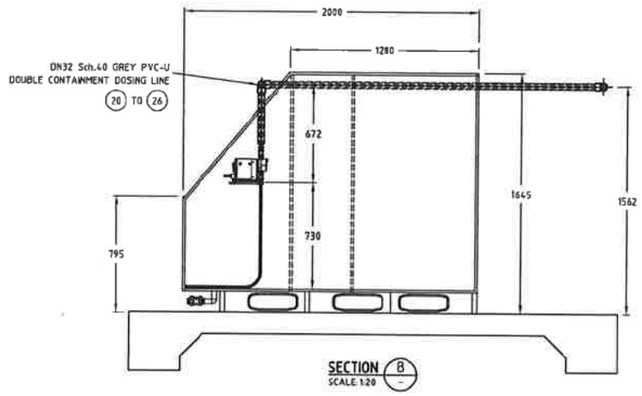
DRAWING TITLE: DRAWING INDEX

SHEET No. 1 OF 5

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-230

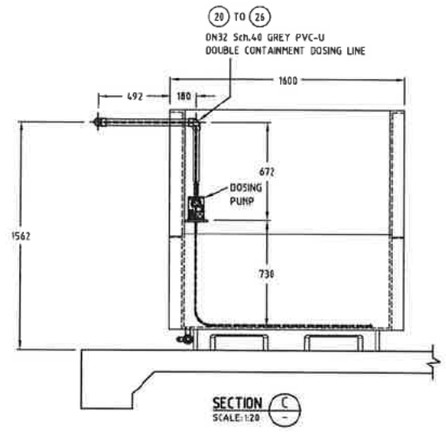
AMEND. A





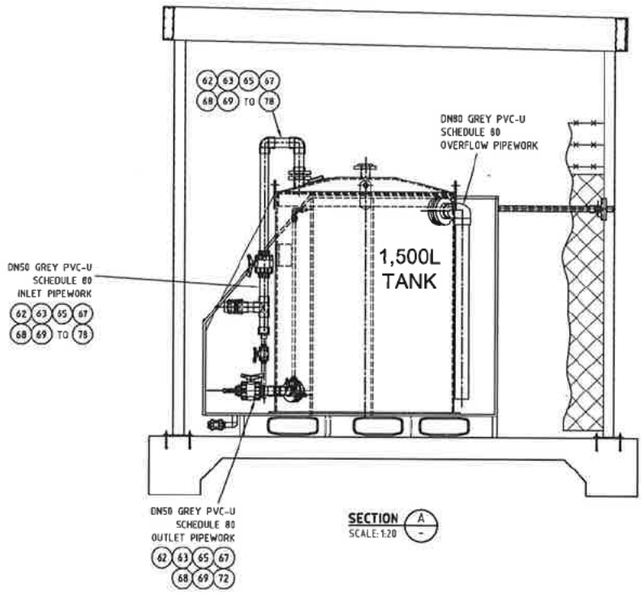
SECTION B
SCALE 1:20

DOSING PUMP PIPEWORK
TANK NOT SHOWN FOR CLARITY



SECTION C
SCALE 1:20

DOSING PUMP PIPEWORK
TANK NOT SHOWN FOR CLARITY



SECTION A
SCALE 1:20

SCALE 1:20 U.N.O. (A1 SHEET)
0.2 0 0.2 0.4 0.6 0.8 1.0
SCALE OF METERS

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO	APPROVED
A	2.16	AS CONSTRUCTED	P.H.	P.H.		P.H.
0	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING
DESIGN W.O. No.
CONSTRUCTION W.O. No.
FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	P. HOUSTON	20-7-15
DRAFTING CHECK	P. HOUSTON	DESIGN R.P.E.Q. No. DATE	
CAD FILE	550304231-A.DWG	ORIGINAL SIGNED BY	
Q.U.U. FILE No.		DESIGN CHECK R.P.E.Q. No. DATE	

APPROVED BY SIGNATURE DATE

CONSTRUCTION MANAGER SIGNATURE DATE

ASSET/PROJECT: KALBAR S.T.P. HEIT ROAD HYPOCHLORITE TANK INSTALLATION

DRAWING TITLE: 1,500L TANK & BUND PIPEWORK LAYOUT

SHEET No. 2 OF 5

QUEENSLAND URBAN UTILITIES DRAWING No.: 486/5/5-0304-231

AMEND.: A

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

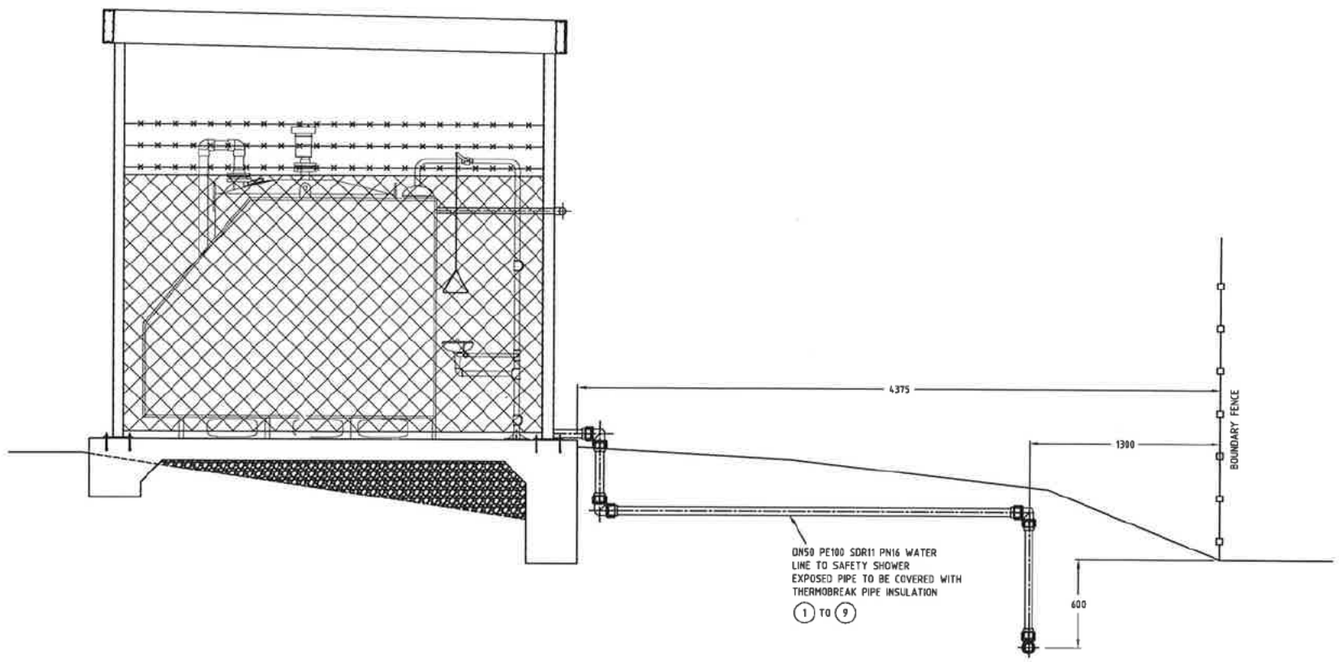
J. & P. RICHARDSON
INDUSTRIES PTY LTD
ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 952 325
114 CAMPBELL AVE WACOL QLD 4076
PH. (07) 3271 2911
FAX. (07) 3271 3623
EMAIL. jpr@jpr.com.au

JPR Project No.: P15-C89875

NAME SIGNATURE DATE

QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND UrbanUtilities



SECTION (D 231)
SCALE 1:20

SCALE 1:20 U.N.O. (A1 SHEET)
0.2 0 0.2 0.4 0.6 0.8 1.0
SCALE OF METERS

AS CONSTRUCTED

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: R Miotti DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

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JPR Project No.: P15-C89875

NAME SIGNATURE DATE

QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND Urban Utilities

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	2.16	AS CONSTRUCTED	P.H.	P.H.		P.H.
O	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING
DESIGN W.O. No.
CONSTRUCTION W.O. No.
FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	P. HOUSTON	20-7-15
DRAFTING CHECK	P. HOUSTON	DESIGN R.P.E.Q. No. DATE	APPROVED BY SIGNATURE DATE
CAD FILE	580304232-A.DWG	ORIGINAL SIGNED BY	
Q.U.U. FILE No.		DESIGN CHECK R.P.E.Q. No. DATE	CONSTRUCTION MANAGER SIGNATURE DATE

ASSET/PROJECT: KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE
TANK INSTALLATION

DRAWING TITLE: 1,500L TANK & BUND PIPEWORK LAYOUT

SHEET No. 3 OF 5

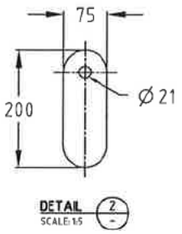
QUEENSLAND URBAN UTILITIES DRAWING No.: 486/5/5-0304-232

AMEND.: A

TANK FITTINGS					
NOZZLE	SIZE	SERVICE	DESCRIPTION	ORIENTATION	RADIUS FROM CENTRE OR HEIGHT (mm)
N1	DN50 (63mm)	INLET	63mm PE STUB FLANGE w/ GALV STEEL B/RING TABLE D	90º	R=450
N2	DN50 (63mm)	OUTLET	63mm PE STUB FLANGE w/ GALV STEEL B/RING TABLE D	45º	H=150
N3	DN80 (90mm)	OVERFLOW	90mm PE STUB FLANGE w/ GALV STEEL B/RING TABLE D	315º	H=1385
N4	DN50 (63mm)	VENT	63mm PE STUB FLANGE w/ GALV STEEL B/RING TABLE D	CENTRE	R=0
N5	250mm	INSPECTION HATCH	250 THREADED INSPECTION HATCH	180º	R=450
NP	220x160	NAME PLATE	STANDARD FUSION NAMEPLATE	115º	H=1000
N6	DN25	SIGHT GLASS	2x 20mm ADAPTORS, CLEAR PVC WITH GF BALL VALVE	135º	H=120, H=1375

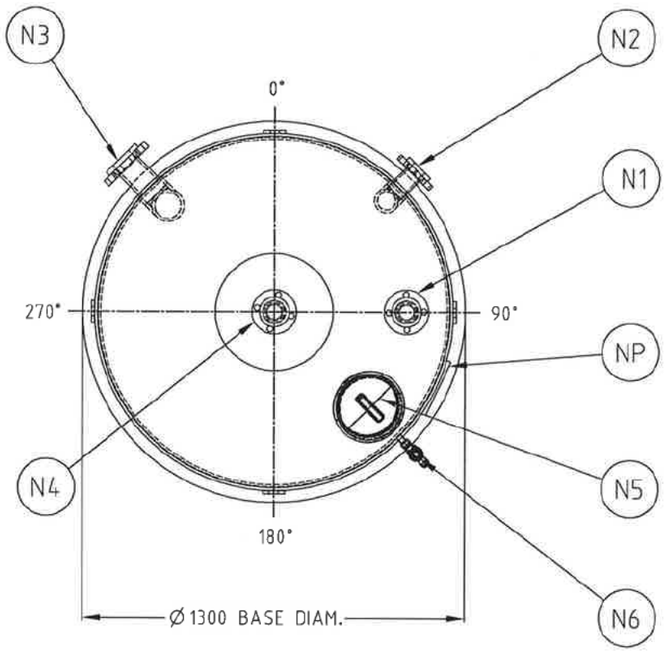
NOZZLE SIZE	PROJECTION (mm)
DN15-DN50 (20mm - 63mm)	80mm
DN65 - DN100 (75 - 110mm)	100mm
DN125 - DN200 (140 - 225mm)	150mm
DN250 (250mm) AND ABOVE	200mm

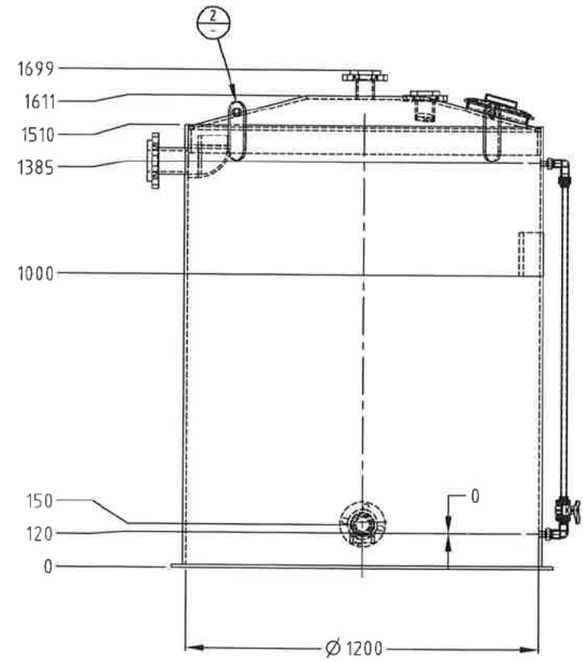
TANK DESIGN DETAILS	
DATE OF MANUFACTURE	AUGUST 2015
MATERIAL OF CONSTRUCTION	HDPE
TANK No.	PW2150 C
DESIGN STANDARD	DVS 2205
DESIGN PRESSURE	ATMOSPHERIC
DESIGN TEMPERATURE	30° C
DESIGN DENSITY OF LIQUIDS	1.2
CHEMICAL REDUCTION FACTOR	1.9
TANK DESIGN CAPACITY	1,500 L
DESIGN CONTENTS	SODIUM HYPOCHLORITE 12.5% w/v
DESIGN LOCATION	KALBAR, QLD



DETAIL (2) SCALE: 1:5

TANK LIFTING LUG
MATERIAL: 10mm THICK HDPE
QTY: 4





AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
INDUSTRIES PTY LTD
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EMAIL. jpr@jpr.com.au

JPR Project No.: P15-C89875

NAME SIGNATURE DATE

QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND Urban Utilities

SCALE 1:20 U.N.O. (A1 SHEET) 0.2 0 0.2 0.4 0.6 0.8 1.0 SCALE OF METERS

SCALE 1:5 (A1 SHEET) 0.05 0 0.05 0.1 0.15 0.2 0.25 SCALE OF METERS

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	2.16	AS CONSTRUCTED	P.H.	P.H.		P.H.
O	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	P. HOUSTON	P. HOUSTON	20-7-15	
DRAFTING CHECK	P. HOUSTON	DESIGN	R.P.E.Q. No. DATE	APPROVED BY SIGNATURE DATE
CAD FILE	560304233-A.DWG	ORIGINAL SIGNED BY		
Q.U.U. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE	CONSTRUCTION MANAGER SIGNATURE DATE

ASSET/PROJECT: KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE
TANK INSTALLATION

DRAWING TITLE: 1,500L TANK DETAILS

SHEET No. 4 OF 5

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-233

AMEND. A

SAFETY SHOWER

Item No.	Qty	Make & Number
1	10m	DN32 PE100 SDR11 PN16 PIPE
2	4	DN32 POLY COMPRESSION 90deg. ELBOW
3	2	DN32 POLY COMPRESSION COUPLING
4	2	DN32 POLY COMPRESSION TO DN25 COPPER FEMALE ADAPTER
5	2	DN25 BSP BRASS TEE
6	2	DN25 BSP BRASS NIPPLE
7	1	DN25 BSP BRASS BALL VALVE
8	1	DN25 COPPER COMPRESSION UNION
9	1	DN25 BSP BRASS 90deg. ELBOW
10	1	DN25 TO DN15 COPPER COMPRESSION FITTING
11	3m	DN25 COPPER TUBE
12	3m	DN15 COPPER TUBE

DOSING LINE FROM BUND

Item No.	Qty	Make & Number
20	1	DN50 - DN15 Sch.40 GREY uPVC REDUCING BUSH
21	2	DN15 Sch.40 GREY uPVC TOE NIPPLE
22	4	GRUNDFOS PVC PIPE CONNECTOR PART No.95712035
23	15m	GRUNDFOS CHEMICAL DELIVER TUBE PART No.96653571
24	12m	DN32 Sch.40 GREY uPVC PIPE
25	12	DN32 Sch.40 GREY uPVC 90deg. ELBOW
26	1	DN32 Sch.40 GREY uPVC 45deg. ELBOW
27	2	DN32 Sch.40 uPVC SOCKET UNION

FLOWMETER

Item No.	Qty	Make & Number
40	2	DN50 Sch.40 WHITE uPVC SOCKET UNION
41	1m	DN50 Sch.40 WHITE uPVC PIPE
42	2	DN50 Sch.40 WHITE uPVC FULL FACE SOCKET FLANGE AS.2129 TABLE D
43	1	DN50 ENDRESS & HAUSER PROMAG W400 FLOWMETER
44	8	M16 x 80 316SS METRIC HEX HEAD BOLTS
45	8	M16 316SS METRIC NUTS
46	16	M16 316SS METRIC FLAT WASHERS
47	2	DN50 3mm VITON RUBBER INSERTION GASKET AS.2129 TABLE D

SODIUM HYPOCHLORITE TANK & BUND PIPEWORK

Item No.	Qty	Make & Number
60	1	FUSION 1,500L HDPE TANK
61	1	FUSION HDPE BUND
62	2	DN50 Sch.80 GREY uPVC FULL FACE SOCKET FLANGE AS.2129 TABLE D
63	2	DN50 3mm VITON RUBBER INSERTION GASKET AS.2129 TABLE D
64	1	DN80 3mm VITON RUBBER INSERTION GASKET AS.2129 TABLE D
65	8	M16 x 100 316SS METRIC HEX HEAD BOLTS
66	4	M16 x 120 316SS METRIC HEX HEAD BOLTS
67	12	M16 316SS METRIC NUTS
68	24	M16 316SS METRIC FLAT WASHERS
69	2.5m	DN50 Sch.80 GREY uPVC PIPE
70	2	DN50 Sch.80 GREY uPVC 90deg. ELBOW
71	1	DN50 Sch.80 GREY uPVC 45deg. ELBOW
72	2	DN50 Sch80. uPVC GEORG FISCHER DOUBLE UNION BALL VALVE c/w VITON SEALS
73	1	DN50 Sch.80 GREY uPVC TEE
74	1	DN50 - DN25 Sch.80 GREY uPVC REDUCING COUPLING
75	1	DN50 Sch.80 GREY uPVC SOCKET/BSP FEMALE ADAPTER
76	1	DN50 POLYPROPYLENE CAMLOCK TYPE F (BSP THREAD)
77	1	DN50 POLYPROPYLENE CAMLOCK DUST CAP TYPE DC
78	1m	DN25 Sch.80 GREY uPVC PIPE
79	1	DN25 Sch80. uPVC GEORG FISCHER DOUBLE UNION BALL VALVE c/w VITON SEALS
80		SPARE
81		SPARE
82		SPARE
83	1	DN80 Sch.80 GREY uPVC FULL FACE SOCKET FLANGE AS.2129 TABLE D
84	1	DN80 Sch.80 GREY uPVC 90deg. ELBOW
85	1.5m	DN80 Sch.80 GREY uPVC PIPE

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: R Miotti DATE: 17-2-16

NAME of SIGNATORY: ROBERT MIOTTI

RPEQ No. or LICENCE: C19972

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
INDUSTRIES PTY LTD
ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 052 325
114 CAMPBELL AVE WACOL QLD 4076
PH. (07) 3271 2911
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EMAIL. jpr@jpr.com.au

JPR Project No.: P15-C89875

NAME SIGNATURE DATE

QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND Urban Utilities

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	2.16	AS CONSTRUCTED	P.H.	P.H.		P.H.
O	11.15	ISSUED FOR CONSTRUCTION	P.H.	P.H.		P.H.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( ) | Q.U.U. FILE No.

DRAFTED P. HOUSTON 20-7-15
DRAFTING CHECK P. HOUSTON
CAD FILE 550304234-A.DWG
ORIGINAL SIGNED BY
DESIGN CHECK R.P.E.Q. No. DATE

P. HOUSTON DESIGN R.P.E.Q. No. DATE
APPROVED BY SIGNATURE DATE
CONSTRUCTION MANAGER SIGNATURE DATE

ASSET/PROJECT: KALBAR S.T.P. HEIT ROAD HYPOCHLORITE TANK INSTALLATION

DRAWING TITLE: MATERIAL LIST

SHEET No. 5 OF 5

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-234

AMEND. A

QUEENSLAND UrbanUtilities

KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE TANK INSTALLATION

SITE COVER SHEET - ELECTRICAL

DRAWING No.	Rev	DRAWING TITLE	Remarks
486/5/5-0304-250	A	DRAWING INDEX	AS CONSTRUCTED
486/5/5-0304-251	A	POWER DISTRIBUTION SCHEMATIC DIAGRAM	AS CONSTRUCTED
486/5/5-0304-252	A	EQUIPMENT & CABLE SCHEDULES	AS CONSTRUCTED
486/5/5-0304-253	A	PIPING & INSTRUMENTATION DIAGRAM	AS CONSTRUCTED
486/5/5-0304-254			
486/5/5-0304-255			
486/5/5-0304-256			
486/5/5-0304-257			
486/5/5-0304-258			
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486/5/5-0304-262			
486/5/5-0304-263			
486/5/5-0304-264			
486/5/5-0304-265			

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: DATE: 30/3/16

NAME of SIGNATORY: JOHN LESTER

RPEQ No. or LICENCE: 12981

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
INDUSTRIES PTY LTD
ELECTRICAL CONTRACTORS AND ENGINEERS
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114 CAMPBELL AVE WACOL QLD 4076
PH. (07) 3271 2911
FAX. (07) 3271 3623
EMAIL. jpr@jpr.com.au

JPR Project No.: E15-C89875

Registered Professional Engineer of Queensland
MR. J. F. LESTER
RPEQ 12981
DIV: ELECTRICAL
Signature: Date: 30/3/16

NAME SIGNATURE DATE
QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND UrbanUtilities

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	3.16	AS CONSTRUCTED	P.H.	R.M.	J.L.	
O	11.15	FOR CONSTRUCTION	P.H.	R.M.	J.L.	R.M.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	L. LE	R. MIOTTI		20-7-25	
DRAFTING CHECK	R. MIOTTI	DESIGN	R.P.E.Q. No.	DATE	APPROVED BY SIGNATURE DATE
CAD FILE	55030450-A.DWG	J. LESTER	12981	27-11-15	
Q.U.U. FILE No.		DESIGN CHECK	R.P.E.Q. No.	DATE	CONSTRUCTION MANAGER SIGNATURE DATE

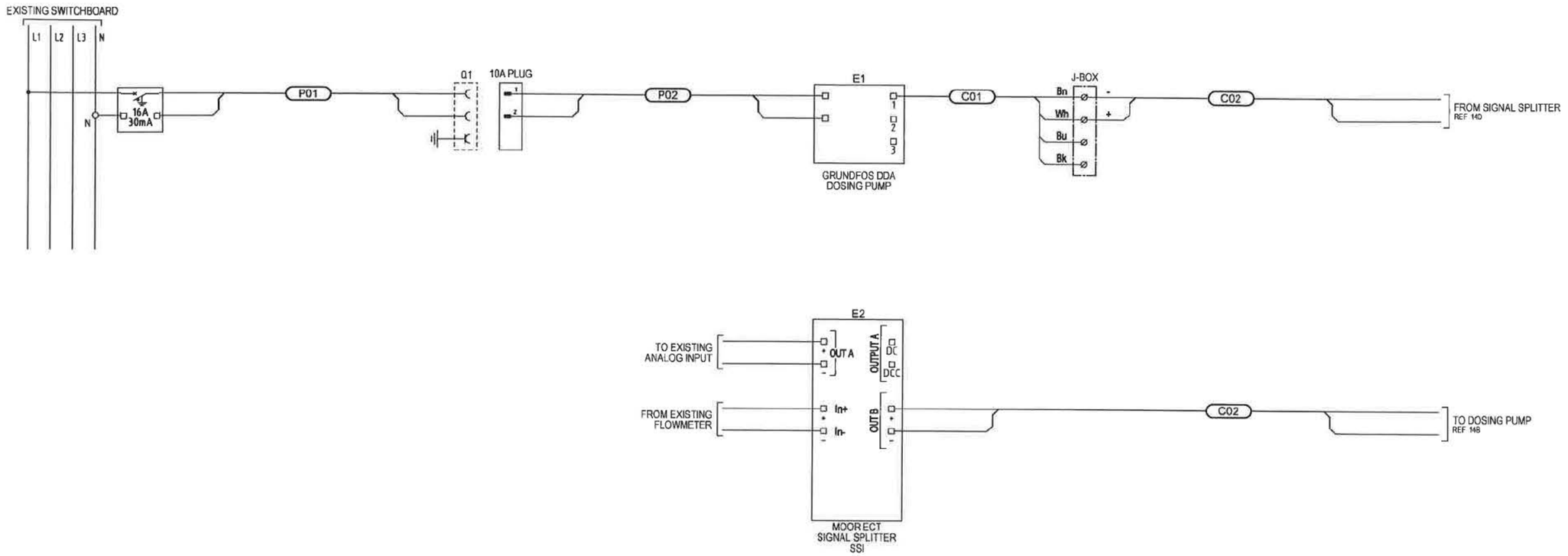
ASSET/PROJECT: KALBAR S.T.P. HEIT ROAD HYPOCHLORITE TANK INSTALLATION

DRAWING TITLE: DRAWING INDEX

SHEET No. 1 OF 4

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-250

AMEND. A



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SIGNED: DATE: 30/3/16

NAME of SIGNATORY: JOHN LESTER

RPEQ No. or LICENCE: 12981

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
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PH. (07) 3271 2511
FAX. (07) 3271 3623
EMAIL. jpr@jpr.com.au

JPR Project No.: E15-C89875

Registered Professional Engineer of Queensland
MR. J. F. LESTER
RPEQ 12981
DIV: ELECTRICAL
Signature: Date: 30/3/16

NAME SIGNATURE DATE
QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND UrbanUtilities

AS CONSTRUCTED

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	3.16	AS CONSTRUCTED	P.H.	R.M.	J.L.	
0	11.15	FOR CONSTRUCTION	P.H.	R.M.	J.L.	R.M.

FUNDING		DRAFTED	L. LE	R. MIOTTI	20-7-15
DESIGN W.O. No.		DRAFTING CHECK	R. MIOTTI	DESIGN	R.P.E.Q. No. 12981 DATE 27-11-16
CONSTRUCTION W.O. No.		CAD FILE	580304251-A.DWG	J. LESTER	
FUNDED BY Q.U.U. (✓) EXTERNAL ( )		Q.U.U. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE

APPROVED BY	SIGNATURE	DATE
CONSTRUCTION MANAGER	SIGNATURE	DATE

ASSET/PROJECT **KALBAR S.T.P.**
HEIT ROAD
HYPOCHLORITE
TANK INSTALLATION

DRAWING TITLE
POWER DISTRIBUTION
SCHEMATIC DIAGRAM

SHEET No. 2 OF 4

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-251

AMEND A

EQUIPMENT SCHEDULE

ITEM	QTY.	DESCRIPTION	MANUFACTURER	MODEL No.	ASSET I.D.
Q1	2	GPO	CLIPSAL		
E1	1	DOSING PUMP	GRUNDFOS	DDA 7.5-16FCM-PV/T/C-31U2U21G MODEL A97722862100003 94P11209	PU-0710-001
E2	1	SIGNAL SPLITTER	MOOR ECT	ECT / 4-20mA	

CABLE SCHEDULE

CABLE No.	STATUS	SIZE	CORES	TYPE	LENGTH (m)	FROM	TO	CABLE FUNCTION
P01	New	2.5mm²	3	PVC / PVC	10	Distribution Board	Gpo	Power
P02	New	1.0mm²	3	PVC Flex	1	Pump	Gpo Plug	Power
C01	Existing	0.5mm²	2 Pair	Moulded Plug	1	Dosing Pump	J-Box	Control
C02	New	0.5mm²	4 Pair	Decron	15	Signal Splitter	Dosing Pump	Control

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	3.16	AS CONSTRUCTED	P.H.	R.M.	J.L.	R.M.
0	11.15	FOR CONSTRUCTION	P.H.	R.M.	J.L.	R.M.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	L. LE	R. MIOTTI	20-7-15	
DRAFTING CHECK	R. MIOTTI	DESIGN	R.P.E.Q. No. 12981 DATE 27-11-15	APPROVED BY SIGNATURE DATE
CAD FILE	S80304252-A.DWG	J. LESTER		
Q.U.U. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE	CONSTRUCTION MANAGER SIGNATURE DATE

Registered Professional Engineer of Queensland
MR. J. F. LESTER
RPEQ 12981
DIV: ELECTRICAL
Signature: _____ Date: 30/3/16

AS CONSTRUCTED

ASSET/PROJECT: KALBAR S.T.P.
HEIT ROAD
HYPOCHLORITE
TANK INSTALLATION

DRAWING TITLE: EQUIPMENT & CABLE SCHEDULES

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: _____ DATE: 30/3/16

NAME of SIGNATORY: JOHN LESTER

RPEQ No. or LICENCE: 12981

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
INDUSTRIES PTY LTD
ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 852 325
114 CAMPBELL AVE WACOL QLD 4076
PH. (07) 3271 2911
FAX. (07) 3271 3623
EMAIL. jpr@jpr.com.au

JPR Project No.: E15-C89875

NAME SIGNATURE DATE

QUEENSLAND URBAN UTILITIES DELEGATE
(AUTHORISED FOR 12 MONTHS FROM DATE SHOWN)

QUEENSLAND UrbanUtilities

SHEET No. 3 OF 4

QUEENSLAND URBAN UTILITIES DRAWING No. 486/5/5-0304-252

AMEND. A

RESERVED FOR PIPING & INSTRUMENTATION DIAGRAM

No.	DATE	AMENDMENT	DRAFTED	DESIGNED	RPEQ NO.	APPROVED
A	3.15	AS CONSTRUCTED	P.H.	R.M.	J.L.	
0	11.15	FOR CONSTRUCTION	P.H.	R.M.	J.L.	R.M.

FUNDING: DESIGN W.O. No. | CONSTRUCTION W.O. No. | FUNDED BY Q.U.U. (✓) EXTERNAL ( )

DRAFTED	L. LE	R. MIOTTI		20-7-15
DRAFTING CHECK	R. MIOTTI	DESIGN	R.P.E.Q. No.	DATE
CAD FILE	59304253-A.DWG	J. LESTER	12981	27-11-15
Q.U.U. FILE No.		DESIGN CHECK	R.P.E.Q. No.	DATE

APPROVED BY SIGNATURE DATE

CONSTRUCTION MANAGER SIGNATURE DATE

Registered Professional Engineer of Queensland
MR. J. F. LESTER
RPEQ 12981
DIV: ELECTRICAL
Signature:_____ Date:_____

AS CONSTRUCTED

ASSET/PROJECT **KALBAR S.T.P.**
HEIT ROAD HYPOCHLORITE TANK INSTALLATION

DRAWING TITLE
PIPING & INSTRUMENTATION DIAGRAM

SHEET No. 4 OF 4

QUEENSLAND URBAN UTILITIES DRAWING No. **486/5/5-0304-253** AMEND. **A**

AS CONSTRUCTED DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNED: DATE:

NAME of SIGNATORY: JOHN LESTER

RPEQ No. or LICENCE: 12981

COMPANY NAME: J & P RICHARDSON Ind.

START DATE: JUNE 2015 FINISH DATE: FEBRUARY 2016

J. & P. RICHARDSON
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