

CONTRACTOR TO NOTIFY SUPERINTENDENT IF WORKS TO EXISTING KERB & PAVEMENT IS REQUIRED TO ENSURE ADEQUATE & FREE DRAINING CONNECTION TO EXISTING ROAD

NOTES:
ASSUMED TOPSOIL DEPTH 150mm
ULTIMATE PAVEMENT DEPTHS ARE DETERMINED BY SOIL TESTS TAKEN AT FORMATION LEVEL.
ESA's 12x10⁵
"LIVING RESIDENTIAL" - ACCESS STREET

NOMINAL PAVEMENT
CH 223.370 TO CH 240.000
25mm AC (BCC TYPE 2)
125mm BASE COURSE (CBR 60)
215mm SUB-BASE COURSE (CBR 45)

ESA's 2.5x10⁵
"LIVING RESIDENTIAL" - LOCAL COLLECTOR

NOMINAL PAVEMENT
CH 240.00 TO CH 613.711
40mm AC (BCC TYPE 3)
125mm BASE COURSE (CBR 60)
250mm SUB-BASE COURSE (CBR 45)

REFER INTERSECTION DETAILS FOR LIP OF KERB LEVELS ON DWG No. M2584E_1 R03 - R04

HORIZ. CURVE DATA
V.C.LENGTH (m)
RADIUS OF CURVATURE
TANGENT GRADE (%)
DISTANCE IP-IP

DATUM R.L.129.0

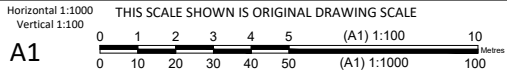
LHS LIP OF KERB LEVELS
RHS LIP OF KERB LEVELS
CUT (-ve) FILL
PAVEMENT LEVELS ALONG CONTROLLINE
SURFACE LEVELS ALONG CONTROLLINE
PEGGED CHAINAGE ALONG CONTROLLINE

LONGITUDINAL SECTION - CASH STREET

("LIVING RESIDENTIAL" - ACCESS STREET CH.0.000 - CH.240.000)
("LIVING RESIDENTIAL" - LOCAL COLLECTOR CH240.000 - END)

NORTH:

SCALE:



APPROVED
FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD

T.M.KINNEY
RPEQ 5087
A.FRASER
RPEQ 5691
J.PAPPAS
RPEQ 6086
S.MARSH
RPEQ 8068

ISSUE:

DESIGNED CDV
DRAWN WN
CHECKED ADF
DATUM: AHD
ISSUE: DETAILS:

RESPONSE TO RFI DATED 2020/05/26
ISSUE FOR OPERATIONAL WORKS APPROVAL

15/06/20
24/04/20
DATE:

BJ
WN
INIT:

TITLE:

ROADWORKS LONGITUDINAL SECTION
CASH STREET

DFC (PROJECT MANAGEMENT) PTY LTD

'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR

DENNIS
FAMILY
CORPORATION

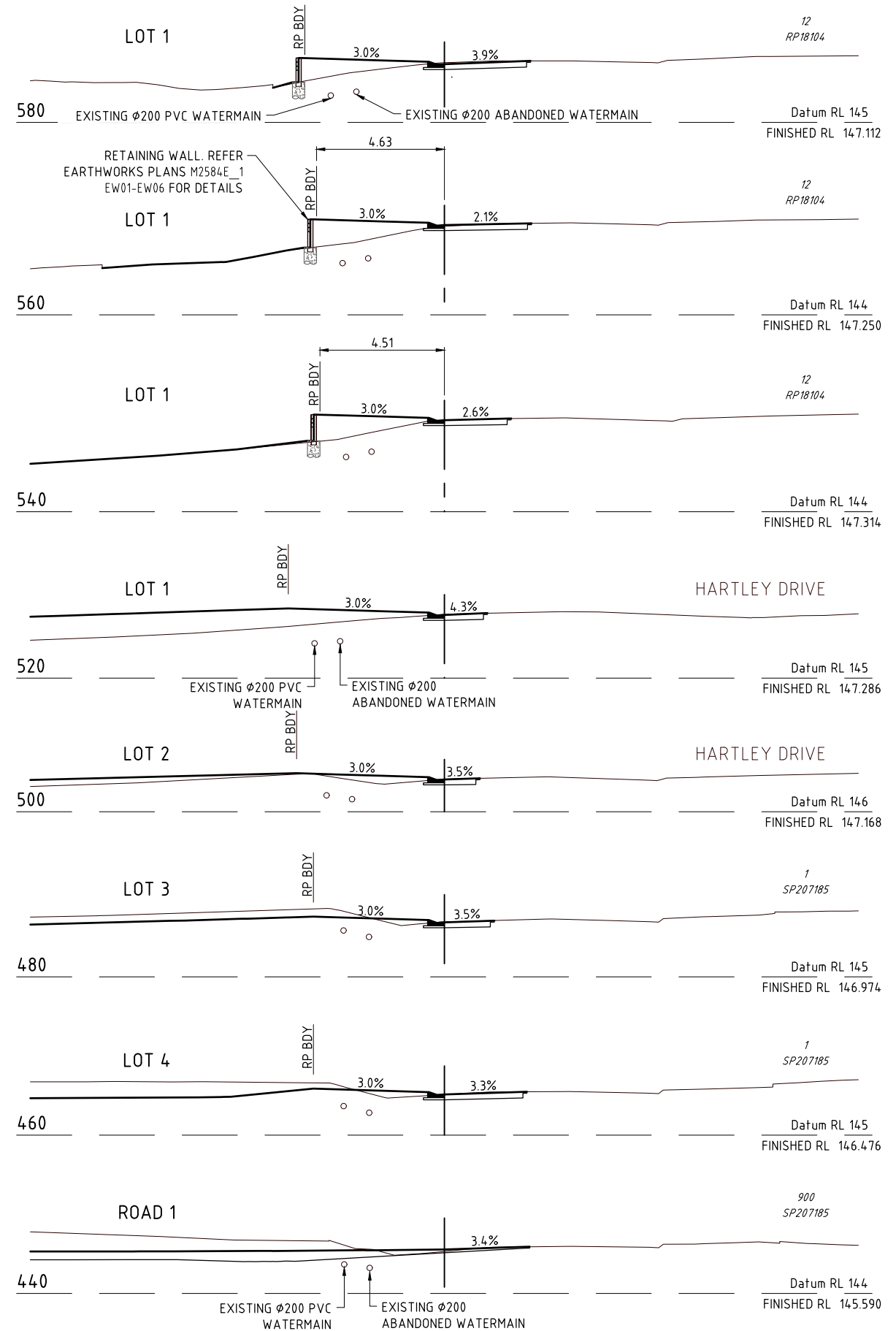
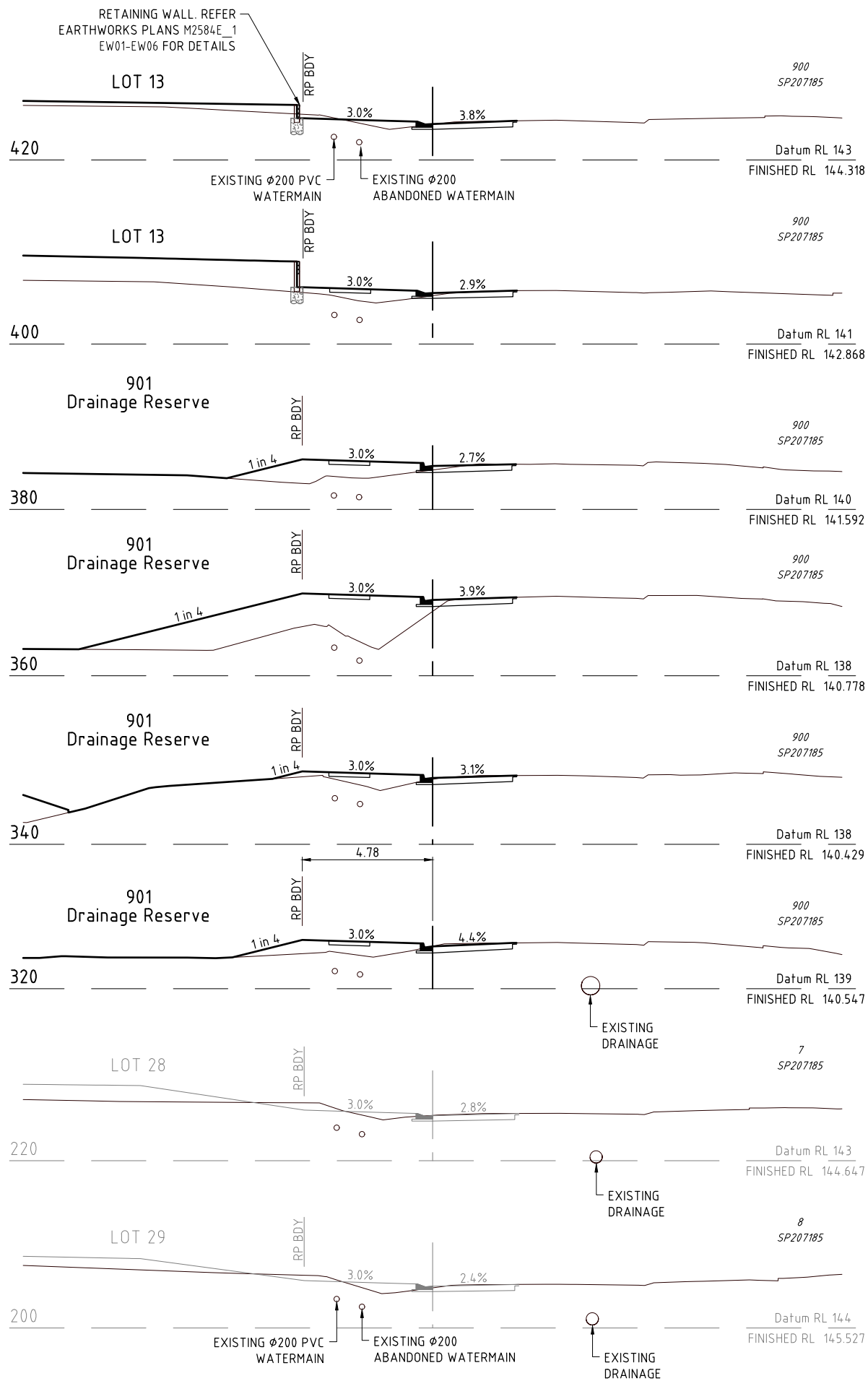
DETAILS:

PROJECT: M2584E_1 R06
LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL
COUNCIL REF: DA/38032/2019/V3RL
FILE NAME: ROADWORKS SECTIONS.DWG



BRISBANE - SUNSHINE COAST - CENTRAL QLD
SUNSHINE COAST
T209, Kon-Tiki Tower 1, 55 Plaza Parade,
Maroochydore Qld 4558
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PLANNERS
URBAN DESIGNERS
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ENGINEERS
LANDSCAPE ARCHITECTS



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ENGINEERS
LANDSCAPE ARCHITECTS

NORTH:

SCALE:

1:100
A1

THIS SCALE SHOWN IS ORIGINAL DRAWING SCALE
0 1 2 3 4 5 (A1) 1:100 10
(A3) 1:200
DO NOT SCALE FROM THIS DRAWING - USE ONLY DIMENSIONS PROVIDED - IF IN DOUBT PLEASE ENQUIRE

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FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD

T.M. KINNEY
RPEQ 5087
A. FRASER
RPEQ 5691
J. PAPPAS
RPEQ 6086
S. MARSH
RPEQ 8068

DESIGNED
DRAWN
CHECKED
DATE

CDV
WN
ADF
AHD

ISSUE:

B
A
A
A

TITLE:

ROADWORKS CROSS SECTIONS
CASH STREET - SHEET 1 of 2
DFC (PROJECT MANAGEMENT) PTY LTD
'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR

15/06/20
24/04/20
DATE

BJ
WN
INIT:

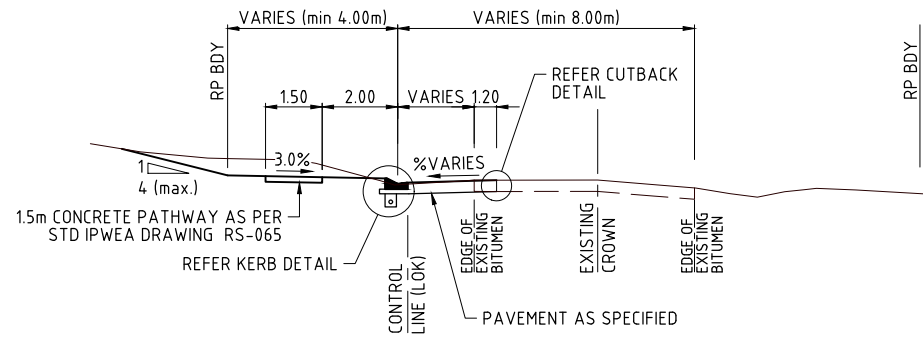


DETAILS:

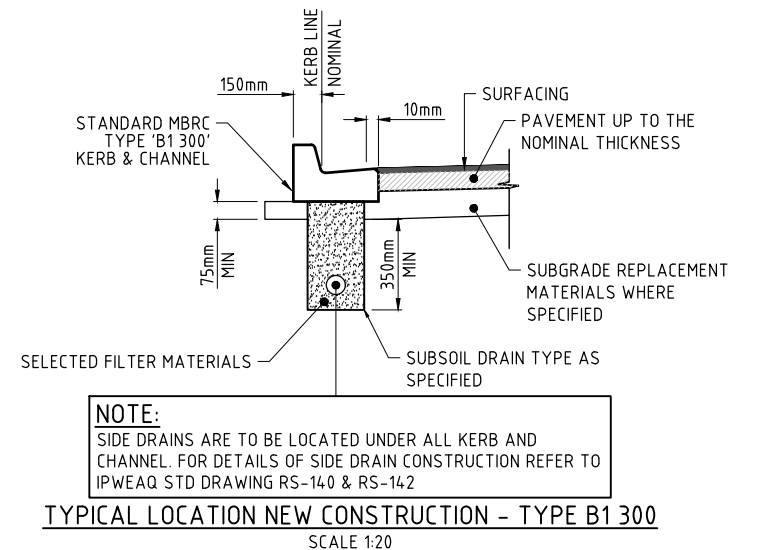
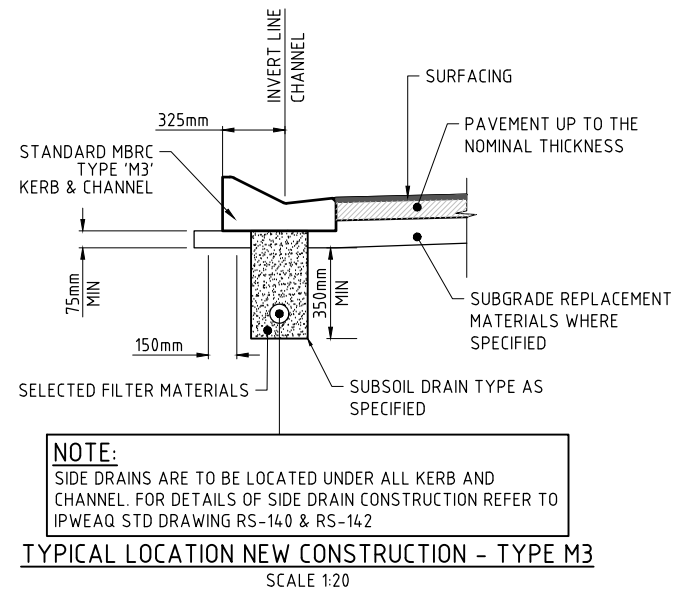
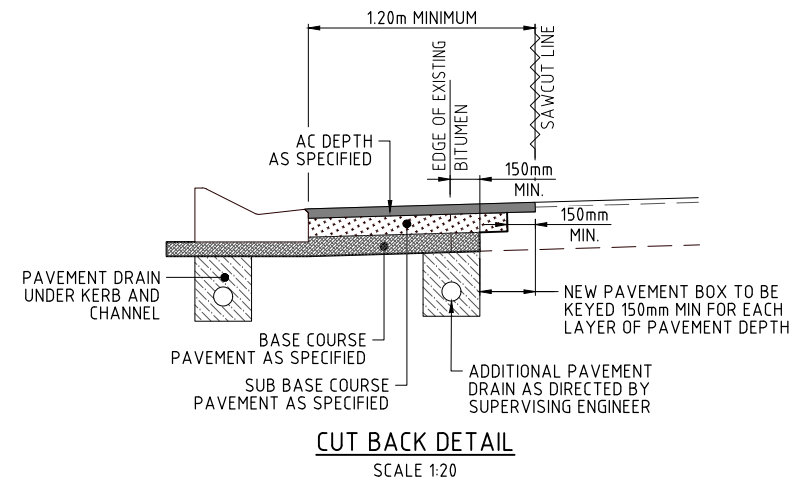
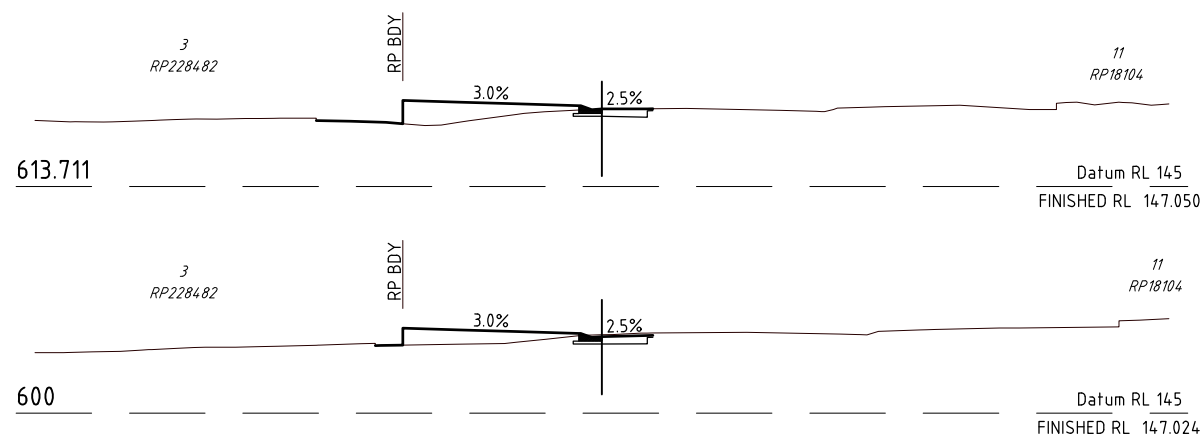
PROJECT: M2584E_1
PLAN: R07
ISSUE: B
LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL
COUNCIL REF: DA/38032/2019/V3RL
FILE NAME: ROADWORKS SECTIONS.DWG



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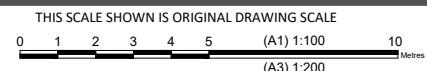
CASH STREET - TYPICAL CROSS SECTION
"LIVING RESIDENTIAL" ACCESS STREET/LOCAL
COLLECTOR ROAD (40km/hr)
SCALE 1:100



NORTH:

SCALE:

1:100
A1



APPROVED	FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD	T.M'KINNEY RPEQ 5087	A.FRASER RPEQ 5691	J.PAPPAS RPEQ 6086	DESIGNED CDV	DRAWN WN	CHECKED ADF	DATUM: AHD	ISSUE: A
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ISSUE:

RESPONSE TO RFI DATED 2020/05/26
ISSUE FOR OPERATIONAL WORKS APPROVAL

TITLE:

ROADWORKS CROSS SECTIONS
CASH STREET - SHEET 2 of 2
DFC (PROJECT MANAGEMENT) PTY LTD
'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR



DETAILS:
PROJECT: M2584E_1
PLAN: R08
ISSUE: B
LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL
COUNCIL REF: DA/38032/2019/V3RL
FILE NAME: ROADWORKS SECTIONS.DWG



BRISBANE - SUNSHINE COAST - CENTRAL QLD
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PLANNERS
URBAN DESIGNERS
SURVEYORS
ENGINEERS
LANDSCAPE ARCHITECTS



NOTES:
ASSUMED TOPSOIL DEPTH 150mm
ULTIMATE PAVEMENT DEPTHS ARE DETERMINED BY SOIL TESTS TAKEN AT FORMATION LEVEL.
ESA's 12x10⁵
"LIVING RESIDENTIAL" - ACCESS STREET

NOMINAL PAVEMENT
CH 0.000 TO CH 102.328
25mm AC (BCC TYPE 2)
125mm BASE COURSE (CBR 60)
215mm SUB-BASE COURSE (CBR 45)

✳ REFER INTERSECTION DETAILS FOR LIP OF KERB LEVELS ON DWG No. M2584E_1 R03

Intersection Road Cash
= CH 0.000 RL 145.741

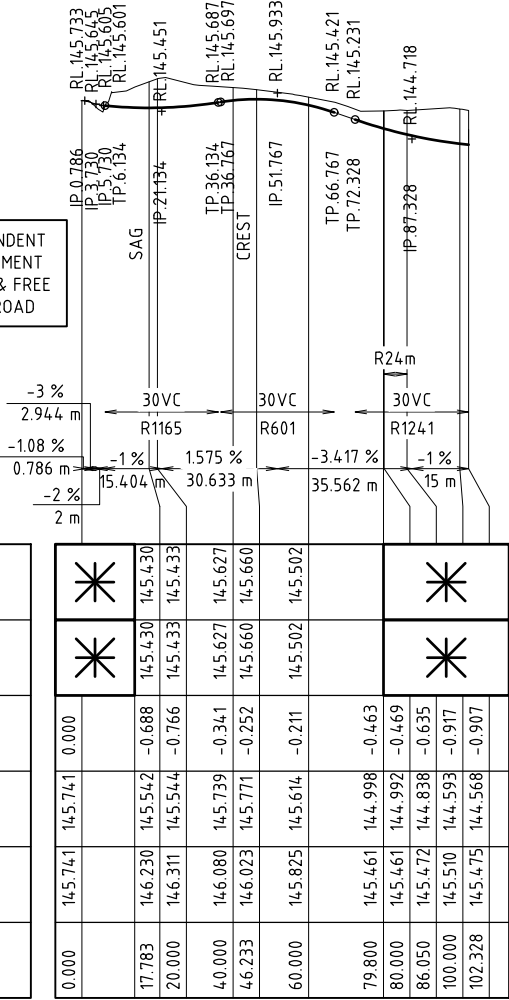
CONTRACTOR TO NOTIFY SUPERINTENDENT IF WORKS TO EXISTING KERB & PAVEMENT IS REQUIRED TO ENSURE ADEQUATE & FREE DRAINING CONNECTION TO EXISTING ROAD

HORIZ. CURVE DATA

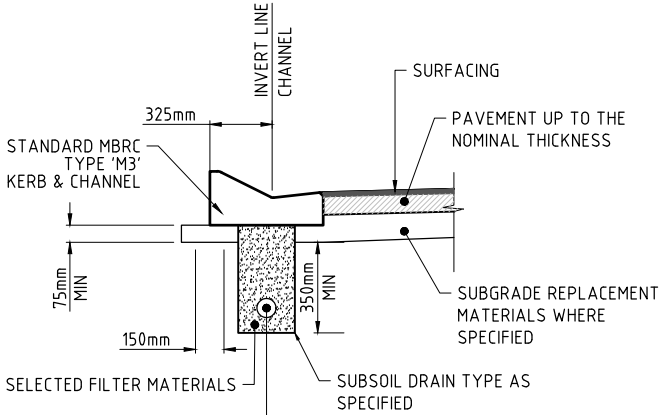
V.C.LENGTH (m)
RADIUS OF CURVATURE
TANGENT GRADE (%)
DISTANCE IP-IP

DATUM R.L.134.0

LHS LIP OF KERB LEVELS
RHS LIP OF KERB LEVELS
CUT (-ve)
FILL
PAVEMENT LEVELS ALONG CONTROLLINE
SURFACE LEVELS ALONG CONTROLLINE
PEGGED CHAINAGE ALONG CONTROLLINE

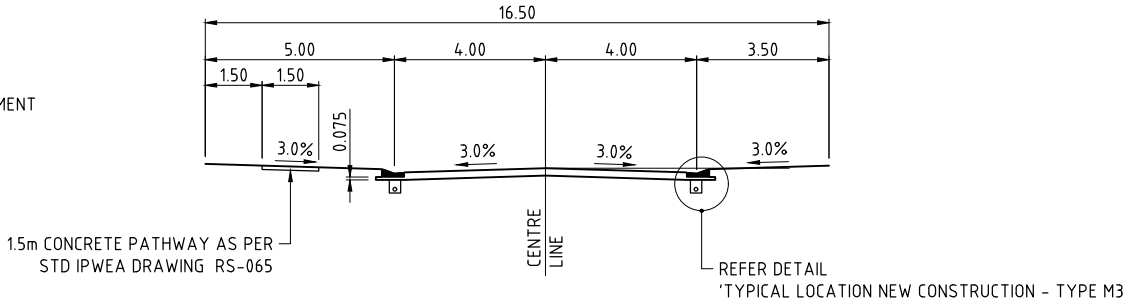


LONGITUDINAL SECTION - ROAD 1 (BANKSIA CLOSE)
("LIVING RESIDENTIAL" - ACCESS STREET CH0.000 - CH.102.328)

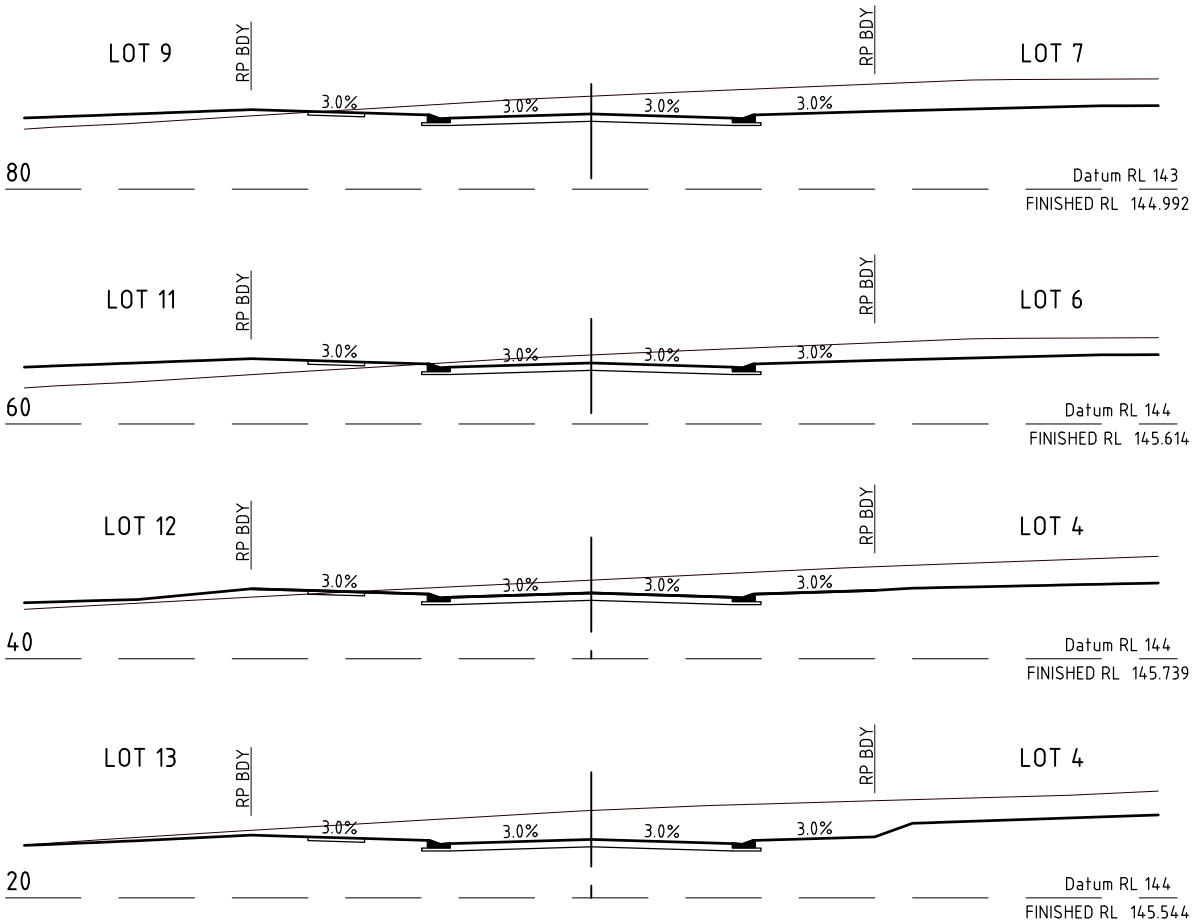


NOTE:
SIDE DRAINS ARE TO BE LOCATED UNDER ALL KERB AND CHANNEL. FOR DETAILS OF SIDE DRAIN CONSTRUCTION REFER TO IPWEAQ STD DRAWING RS-140 & RS-142

TYPICAL LOCATION NEW CONSTRUCTION - TYPE M3
SCALE 1:20

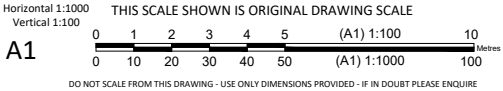


CH0.000 to CH.102.328
TYPICAL CROSS SECTION - TYPE M3
(TYPE M3 - RESIDENTIAL ROAD 1)
SCALE 1: 100



NORTH:

SCALE:



ISSUE:

TITLE:

APPROVED
FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD

DESIGNED: CDV
DRAWN: WN
CHECKED: ADF
DATE: 15/06/20
INIT: BJ WN

ROADWORKS LONGITUDINAL AND CROSS SECTIONS - ROAD 1 (BANKSIA CLOSE)
DFC (PROJECT MANAGEMENT) PTY LTD
'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR

DENNIS FAMILY CORPORATION



DETAILS:
PROJECT: M2584E_1 R09
PLAN: B
LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL
COUNCIL REF: DA/38032/2019/V3RL
FILE NAME: ROADWORKS SECTIONS.DWG



BRISBANE - SUNSHINE COAST - CENTRAL QLD
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PLANNERS
URBAN DESIGNERS
SURVEYORS
ENGINEERS
LANDSCAPE ARCHITECTS

NOTES:
ASSUMED TOPSOIL DEPTH 150mm
ULTIMATE PAVEMENT DEPTHS ARE DETERMINED BY SOIL TESTS TAKEN AT FORMATION LEVEL.
ESA's 2.5x10⁵
"LIVING RESIDENTIAL" - LOCAL COLLECTOR

NOMINAL PAVEMENT
CH 0.000 TO CH 89.139
25mm AC (BCC TYPE 2)
125mm BASE COURSE (CBR 60)
250mm SUB-BASE COURSE (CBR 45)

ESA's 1.2x10⁵
"LIVING RESIDENTIAL" - ACCESS STREET

NOMINAL PAVEMENT
CH 89.139 TO CH 128.447
25mm AC (BCC TYPE 2)
125mm BASE COURSE (CBR 60)
215mm SUB-BASE COURSE (CBR 45)

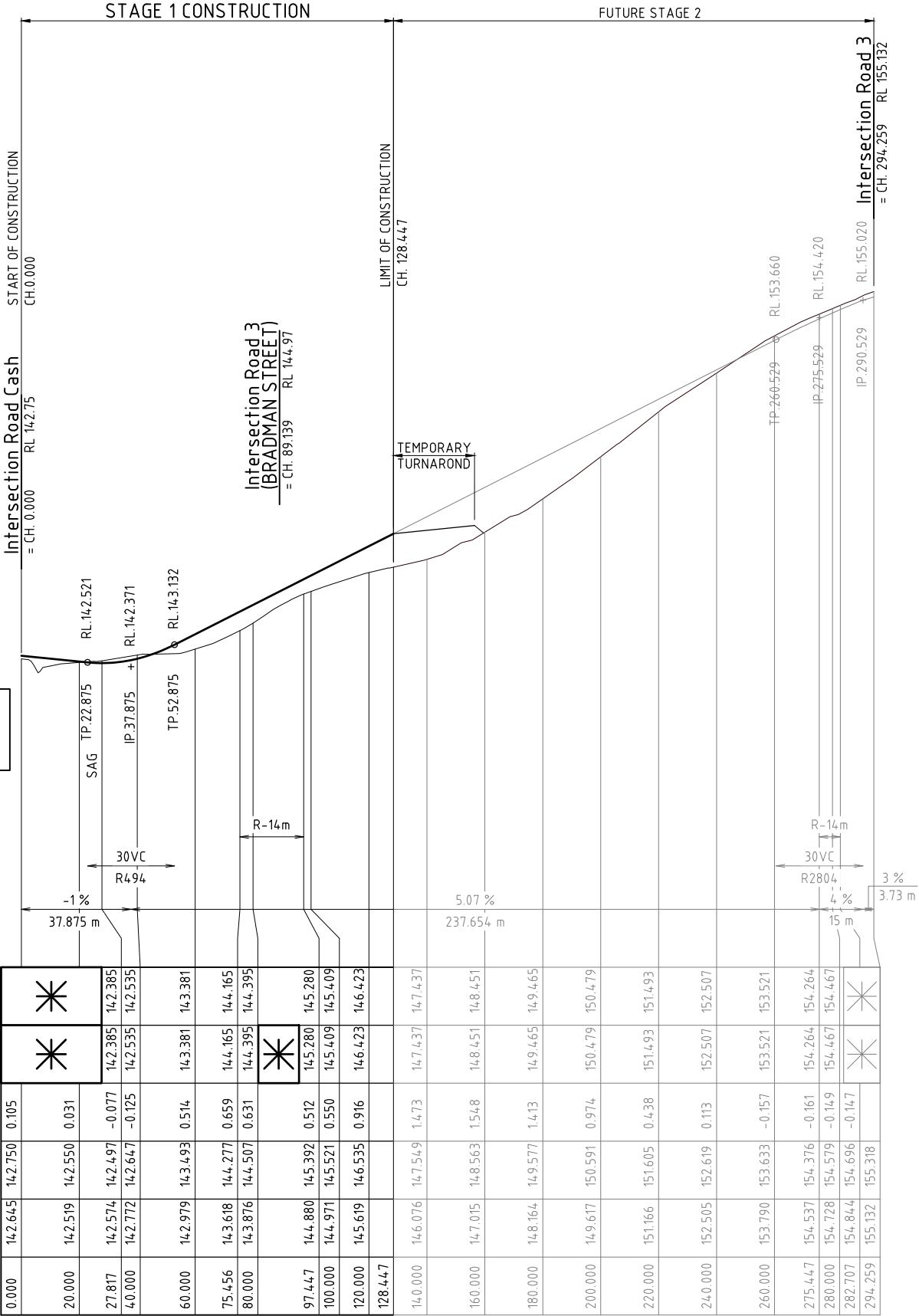
REFER INTERSECTION DETAILS FOR LIP OF KERB LEVELS ON DWG No. M2584E_1 R04

CONTRACTOR TO NOTIFY SUPERINTENDENT IF WORKS TO EXISTING KERB & PAVEMENT IS REQUIRED TO ENSURE ADEQUATE & FREE DRAINING CONNECTION TO EXISTING ROAD

HORIZ. CURVE DATA
V.C.LENGTH (m)
RADIUS OF CURVATURE
TANGENT GRADE (%)
DISTANCE IP-IP

DATUM R.L.132.0

LHS LIP OF KERB LEVELS
RHS LIP OF KERB LEVELS
CUT (-ve)
FILL
PAVEMENT LEVELS ALONG CONTROLLINE
SURFACE LEVELS ALONG CONTROLLINE
PEGGED CHAINAGE ALONG CONTROLLINE



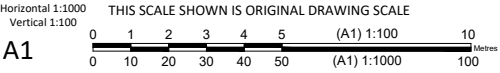
LONGITUDINAL SECTION - ROAD 2 (FLINDERS STREET)

("LIVING RESIDENTIAL" - LOCAL COLLECTOR CH.0.000 - 89.139)
("LIVING RESIDENTIAL" - ACCESS STREET CH.89.139 - END)



NORTH:

SCALE:



ISSUE:

TITLE:

APPROVED
T.M. KINNEY
RPEQ 5087
A. FRASER
RPEQ 5691
J. PAPPAS
RPEQ 6086
S. MARSH
RPEQ 8068

DESIGNED
CDV
DRAWN
WN
CHECKED
ADF
DATE: AHD
ISSUE: DETAILS:

RESPONSE TO RFI DATED 2020/05/26
ISSUE FOR OPERATIONAL WORKS APPROVAL

15/06/20
24/04/20

BJ
WN

INIT:

ROADWORKS LONGITUDINAL SECTION
ROAD 2 (FLINDERS STREET)

DFC (PROJECT MANAGEMENT) PTY LTD

'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR

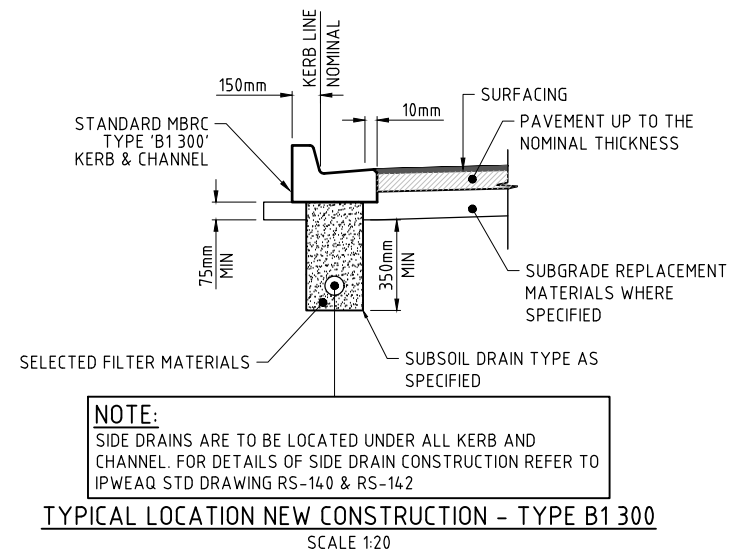
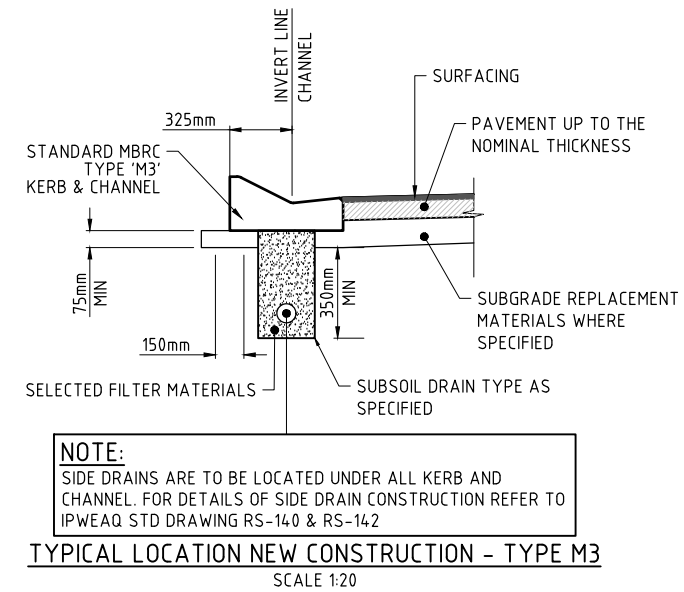
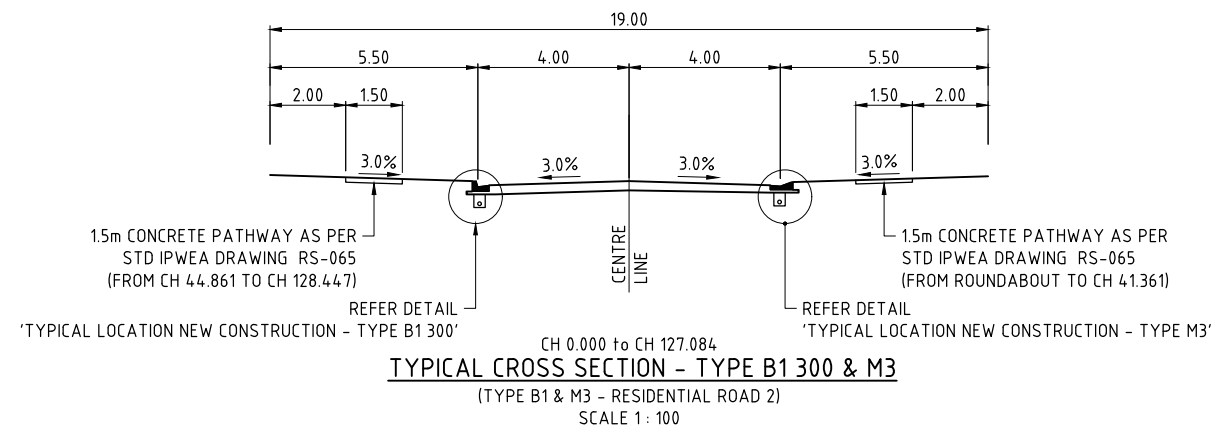
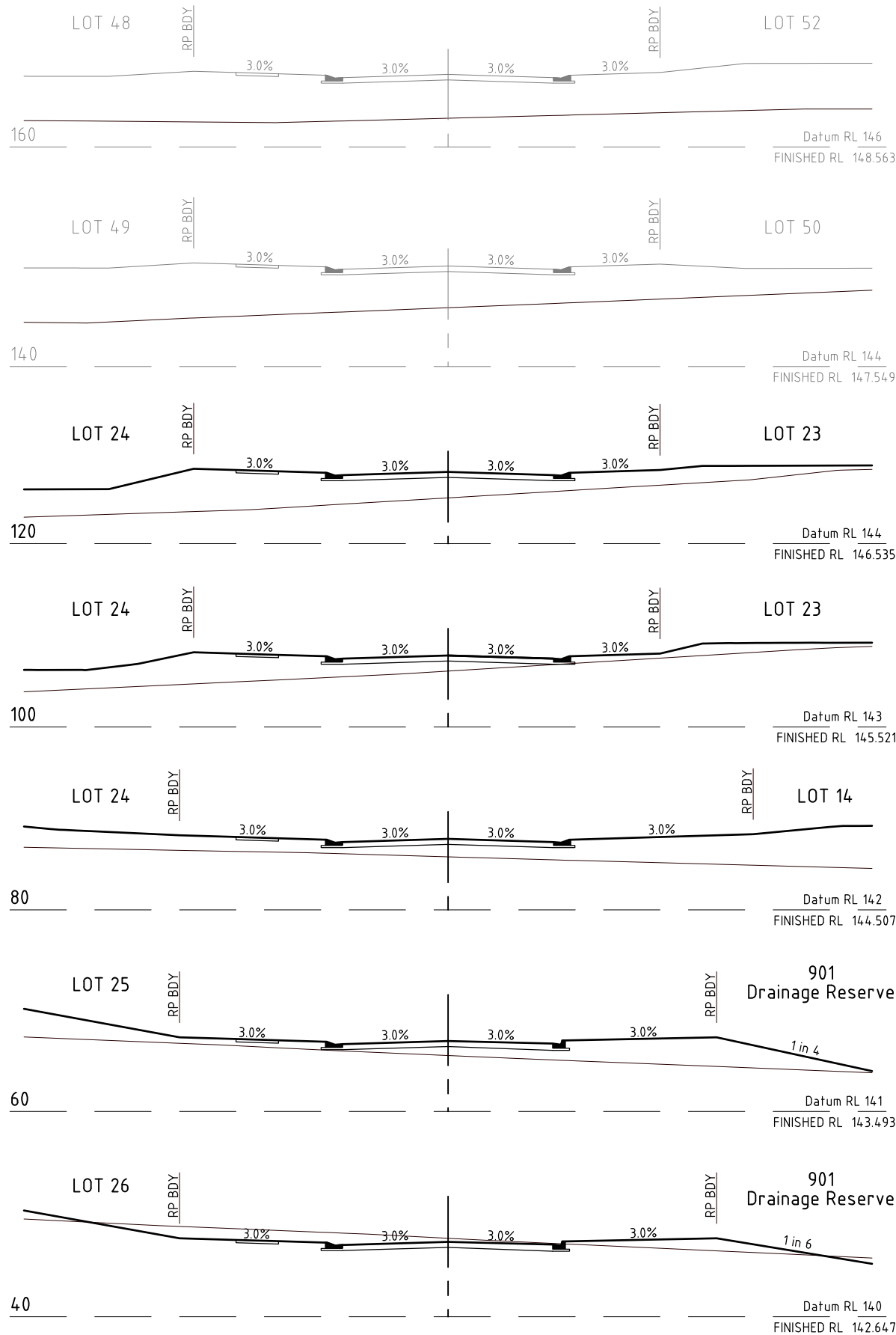


DETAILS:
PROJECT: M2584E_1
PLAN: R10
ISSUE: B
LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL
COUNCIL REF: DA/38032/2019/V3RL
FILE NAME: ROADWORKS SECTIONS.DWG



BRISBANE - SUNSHINE COAST - CENTRAL QLD
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URBAN DESIGNERS
SURVEYORS
ENGINEERS
LANDSCAPE ARCHITECTS



NOTES:
ASSUMED TOPSOIL DEPTH 150mm

ULTIMATE PAVEMENT DEPTHS ARE DETERMINED BY SOIL TESTS TAKEN AT FORMATION LEVEL.

ESA's 1.2x10⁵
"LIVING RESIDENTIAL" - ACCESS STREET

NOMINAL PAVEMENT
CH 832.814 TO CH 961.944
25mm AC (BCC TYPE 2)
125mm BASE COURSE (CBR 60)
215mm SUB-BASE COURSE (CBR 45)

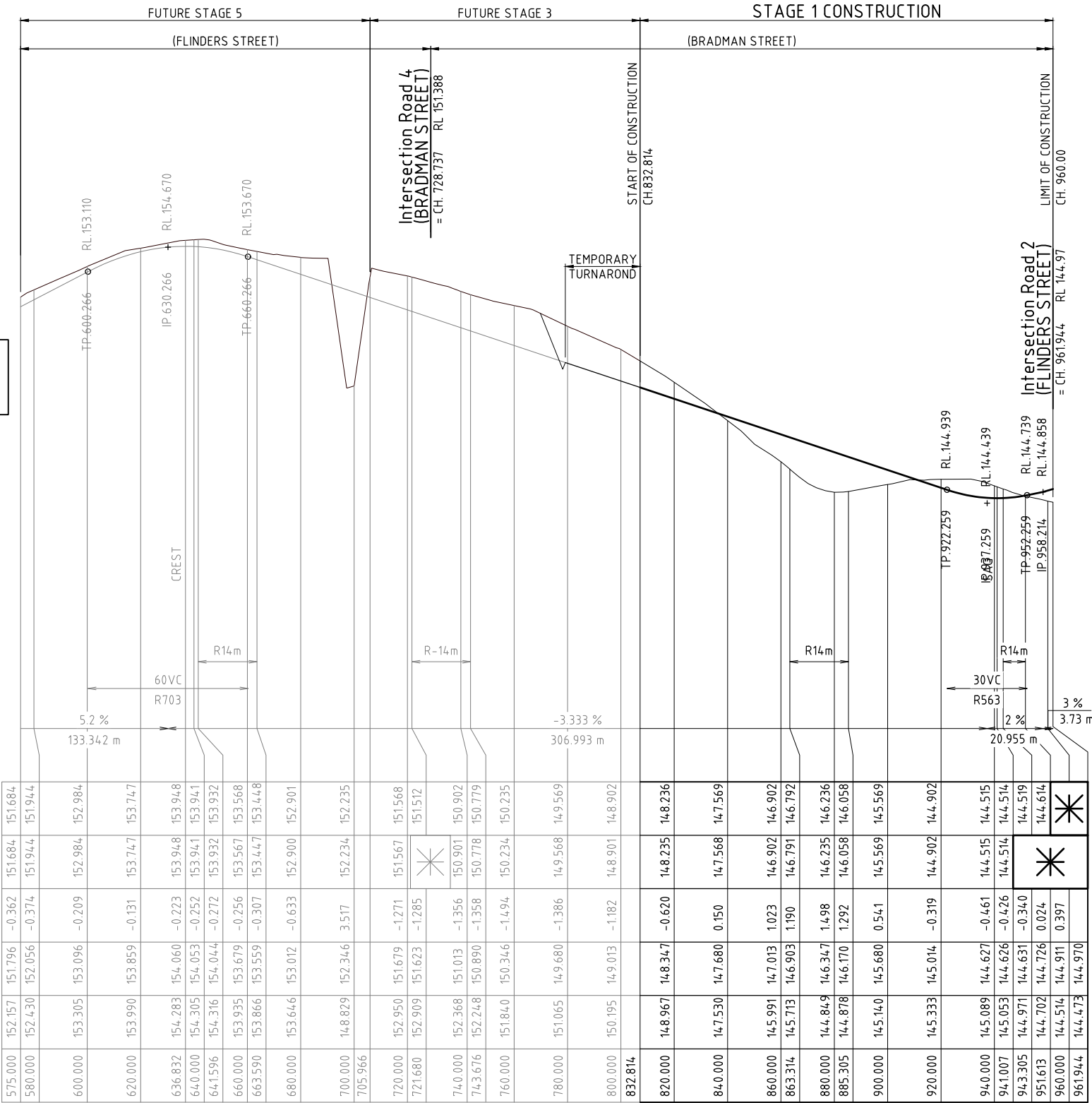
REFER INTERSECTION DETAILS
FOR LIP OF KERB LEVELS ON
DWG No. M2584E_1 R04

CONTRACTOR TO NOTIFY SUPERINTENDENT IF WORKS TO EXISTING KERB & PAVEMENT IS REQUIRED TO ENSURE ADEQUATE & FREE DRAINING CONNECTION TO EXISTING ROAD

HORIZ. CURVE DATA
V.C.LENGTH (m)
RADIUS OF CURVATURE
TANGENT GRADE (%)
DISTANCE IP-IP

DATUM R.L.134.0

LHS LIP OF KERB LEVELS
RHS LIP OF KERB LEVELS
CUT (-ve) FILL
PAVEMENT LEVELS ALONG CONTROLLINE
SURFACE LEVELS ALONG CONTROLLINE
PEGGED CHAINAGE ALONG CONTROLLINE

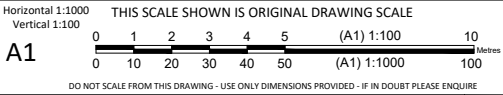


LONGITUDINAL SECTION - ROAD 3 (BRADMAN STREET & FLINDERS STREET)
("LIVING RESIDENTIAL" - ACCESS STREET CH.832.814 - END)



NORTH:

SCALE:



ISSUE:

TITLE:

APPROVED	T.M. KINNEY RPEQ 5087	A. FRASER RPEQ 5691	J. PAPPAS RPEQ 6086	DESIGNED	CDV
CHECKED	S. MARSH RPEQ 8068			DRAWN	WN
DATUM:	AHD			CHECKED	ADF
ISSUE:				DATUM:	AHD

PROJECT:	M2584E_1	PLAN:	R12	ISSUE:	B
LOCAL AUTHORITY REF:	MORETON BAY REGIONAL COUNCIL				
COUNCIL REF:	DA/38032/2019/V3RL				
FILE NAME:	ROADWORKS SECTIONS.DWG				

ROADWORKS LONGITUDINAL SECTION
ROAD 3 (BRADMAN & FLINDERS STREETS)
DFC (PROJECT MANAGEMENT) PTY LTD

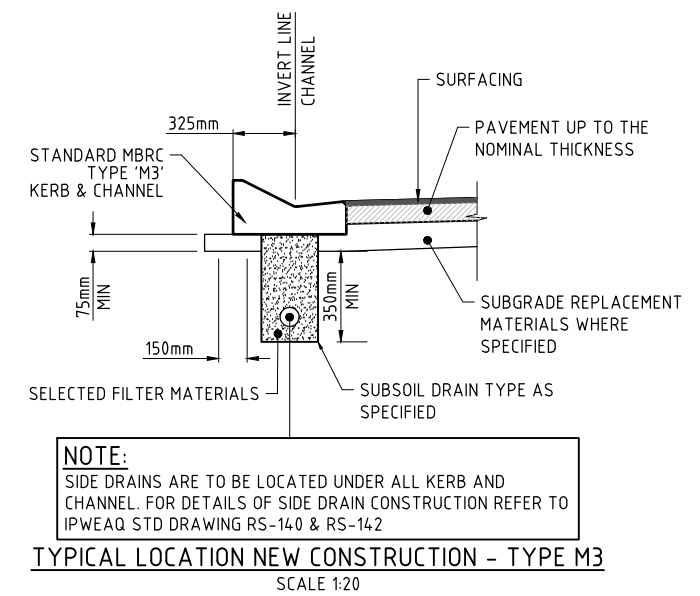
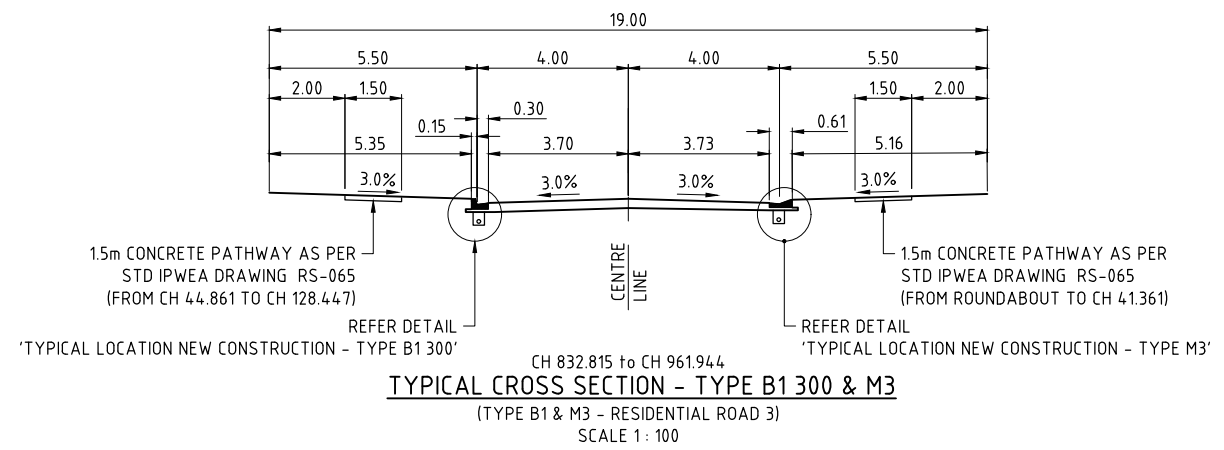
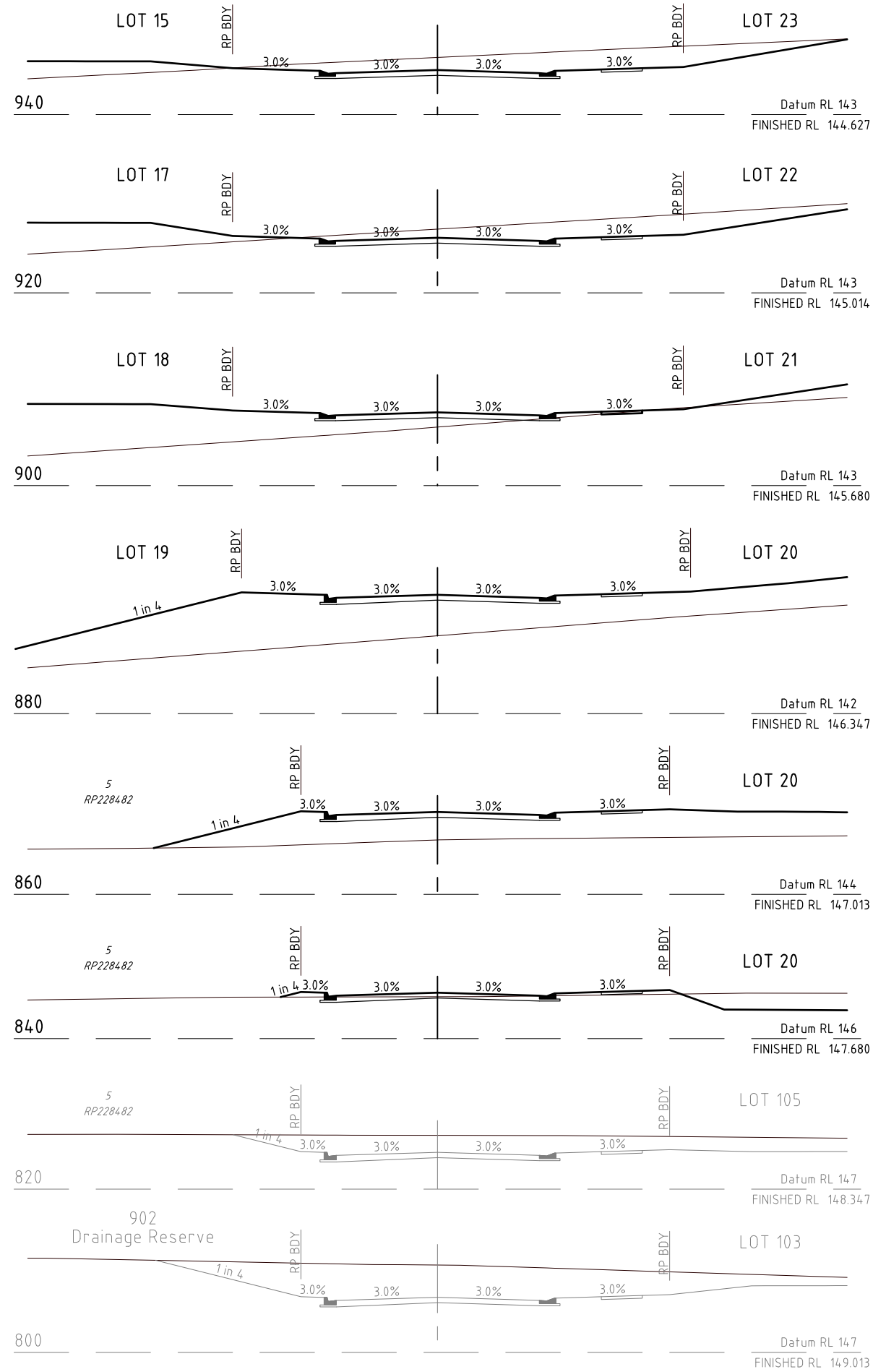
'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR

DENNIS FAMILY CORPORATION



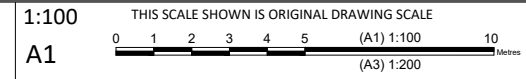
BRISBANE - SUNSHINE COAST - CENTRAL QLD
SUNSHINE COAST
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PLANNERS
URBAN DESIGNERS
SURVEYORS
ENGINEERS
LANDSCAPE ARCHITECTS



NORTH:

SCALE:



ISSUE:

TITLE:



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URBAN CONSULTANTS

BRISBANE - SUNSHINE COAST - CENTRAL QLD

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PLANNERS
URBAN DESIGNERS
SURVEYORS
ENGINEERS
LANDSCAPE ARCHITECTS

APPROVED		☐ T. McKINNEY RPEQ 5087	☒ A. FRASER RPEQ 5691	☐ J. PAPPAS RPEQ 6086
FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD				

DESIGNED	CDV
DRAWN	WN
CHECKED	ADF
DATUM	AHD

ISSUE	B
DETAILS	RESPONSE TO RFI DATED 2020/05/26 ISSUE FOR OPERATIONAL WORKS APPROVAL

DATE	15/06/20
INIT	BJ

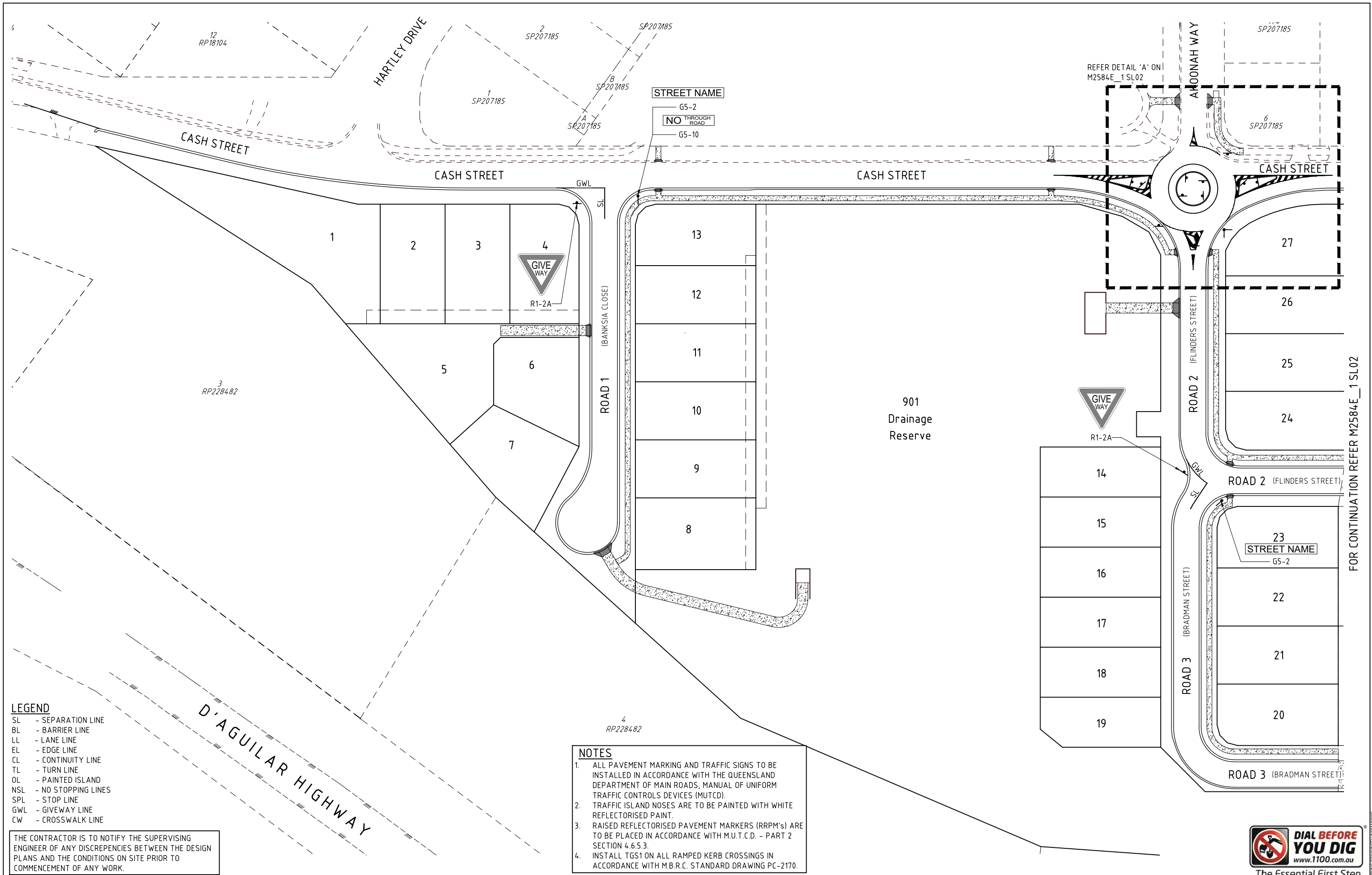
**ROADWORKS CROSS SECTIONS
ROAD 3 (BRADMAN STREET)**

DFC (PROJECT MANAGEMENT) PTY LTD

'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR



PROJECT:	M2584E_1	PLAN:	R13	ISSUE:	B
LOCAL AUTHORITY REF:	MORETON BAY REGIONAL COUNCIL				
COUNCIL REF:	DA/38032/2019/V3RL				
FILE NAME:	ROADWORKS SECTIONS.DWG				





BRISBANE - SUNSHINE COAST - CENTRAL QLD

SUNSHINE COAST
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Maroochydore Qld 4558
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JFP URBAN CONSULTANTS PTY. LTD. A.C.N. 050 414 045

PLANNERS

URBAN DESIGNERS

SURVEYORS

ENGINEERS

LANDSCAPE ARCHITECTS

NORTH:



SCALE:

1:500

A1

THIS SCALE SHOWN IS ORIGINAL DRAWING SCALE

0 5 10 15 20 25 (A1) 1:500 50

(A3) 1:1000

DO NOT SCALE FROM THIS DRAWING - USE ONLY DIMENSIONS PROVIDED - IF IN DOUBT PLEASE ENQUIRE

APPROVED



FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD

T.M. KINNEY
RPEQ 5087

A. FRASER
RPEQ 5691

J. PAPPAS
RPEQ 6086

DESIGNED CDV

DRAWN WN

CHECKED ADF

DATUM: AHD

ISSUE:

B

RESPONSE TO RFI DATED 2020/05/26
ISSUE FOR OPERATIONAL WORKS APPROVAL

15/06/20
24/04/20

BJ
WN

DATE: INIT:

TITLE:

SIGNS AND LINEMARKING PLAN
SHHET 1 of 2

DFC (PROJECT MANAGEMENT) PTY LTD

'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR

DETAILS:

PROJECT: M2584E_1

PLAN: SL01

ISSUE: B

LOCAL AUTHORITY REF:
MORETON BAY REGIONAL COUNCIL

COUNCIL REF:
DA/38032/2019/V3RL

FILE NAME: LINEMARKING.DWG



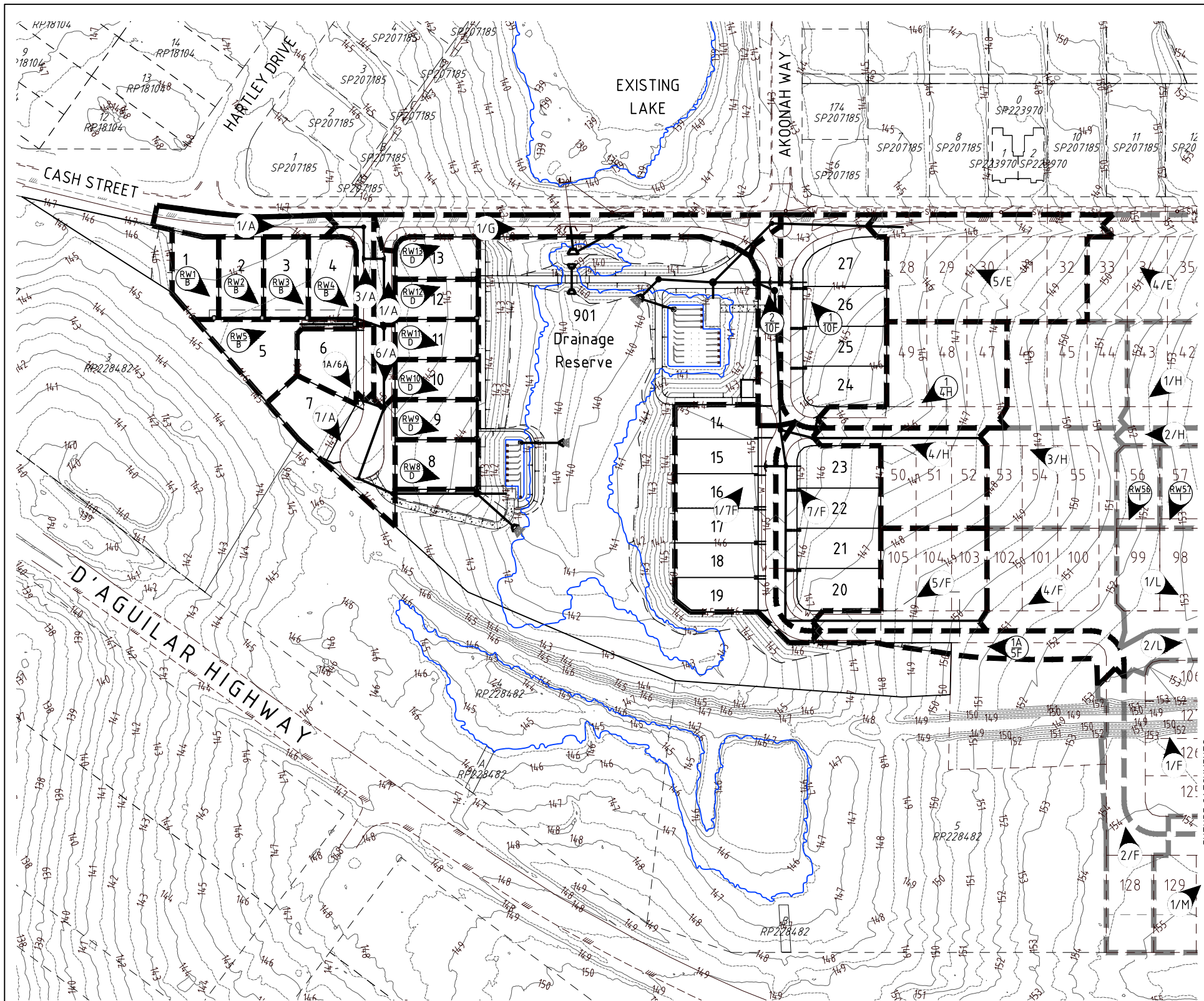
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The Essential First Step

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CATCHMENT NAME	CATCHMENT AREA (ha)	RUNOFF COEFF MINOR	RUNOFF COEFF MAJOR
1/A	0.069	0.88	1.00
3/A	0.046	0.88	1.00
4/A	0.031	0.88	1.00
RW1/B	0.066	0.91	1.00
RW2/B	0.067	0.91	1.00
RW3/B	0.067	0.91	1.00
RW13/D	0.063	0.91	1.00
RW12/D	0.060	0.91	1.00
RW11/D	0.060	0.91	1.00
RW10/D	0.060	0.91	1.00
RW9/D	0.060	0.91	1.00
RW8/D	0.074	0.91	1.00
RW4/B	0.070	0.91	1.00
1A/6A	0.087	0.88	1.00
6/A	0.030	0.88	1.00
7/A	0.172	0.88	1.00
RW5/C	0.102	0.91	1.00
1/O	0.026	0.88	1.00
1A/20	0.070	0.88	1.00
2/O	0.713	0.88	1.00
RW87/K	0.060	0.91	1.00
RW86/K	0.060	0.91	1.00
RW85/K	0.060	0.91	1.00
RW84/K	0.053	0.91	1.00
RW83/K	0.053	0.91	1.00
RW82/K	0.053	0.91	1.00
RW81/K	0.064	0.91	1.00
RW79/K	0.061	0.91	1.00
RW70/Q	0.125	0.91	1.00
RW71/Q	0.095	0.91	1.00
RW72/Q	0.083	0.91	1.00
RW74/Q	0.069	0.91	1.00
1/J	0.193	0.88	1.00
2/J	0.055	0.88	1.00
1/L	0.307	0.88	1.00
2/L	0.210	0.88	1.00
1/P	0.459	0.88	1.00
2/P	0.074	0.88	1.00
1A/3J	0.244	0.88	1.00
3/J	0.044	0.88	1.00
5/J	0.120	0.88	1.00
1A/3L	0.291	0.88	1.00
3/L	0.250	0.88	1.00
1A/4L	0.442	0.88	1.00
1B/4L	0.379	0.88	1.00
1A/6J	0.131	0.88	1.00
1/M	0.267	0.88	1.00
2/M	0.237	0.88	1.00
1A/3M	0.361	0.88	1.00
3/M	0.228	0.88	1.00
4/M	0.213	0.88	1.00

LEGEND:

FINISHED CONTOURS

PROPOSED STORMWATER DRAINAGE

PROPOSED CATCHMENT BOUNDARIES

CATCHMENT NUMBERS

PROPOSED Q100 LINE

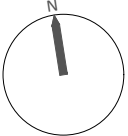
CATCHMENT NAME	CATCHMENT AREA (ha)	RUNOFF COEFF MINOR	RUNOFF COEFF MAJOR
5/M	0.380	0.88	1.00
1/N	0.409	0.88	1.00
2/N	0.070	0.88	1.00
1A/7M	0.199	0.88	1.00
1B/7M	0.091	0.88	1.00
RW60/I	0.060	0.91	1.00
RW59/I	0.060	0.91	1.00
RW58/I	0.060	0.91	1.00
RW57/I	0.060	0.91	1.00
RW56/I	0.064	0.91	1.00
1/F	0.315	0.88	1.00
2/F	0.171	0.88	1.00
4/F	0.247	0.88	1.00
1A/5F	0.127	0.88	1.00
5/F	0.217	0.88	1.00
7/F	0.333	0.88	1.00
1/7F	0.386	0.88	1.00
1/E	0.334	0.88	1.00
2/E	0.062	0.88	1.00
1/H	0.239	0.88	1.00
2/H	0.069	0.88	1.00
1A/3E	0.041	0.88	1.00
4/E	0.308	0.88	1.00
5/E	0.399	0.88	1.00
1A/3H	0.230	0.88	1.00
3/H	0.236	0.88	1.00
1A/4H	0.253	0.88	1.00
4/H	0.211	0.88	1.00
1/10F	0.372	0.88	1.00
2/10F	0.082	0.88	1.00
1/G	0.171	0.88	1.00



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LANDSCAPE ARCHITECTS

NORTH:



SCALE:

1:1000

A1

THIS SCALE SHOWN IS ORIGINAL DRAWING SCALE

0 10 20 30 40 50 100 Metres

(A1) 1:1000

(A3) 1:2000

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APPROVED

FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD

T.M. KINNEY RPEQ 5087

A. FRASER RPEQ 5691

J. PAPPAS RPEQ 6086

S. MARSH RPEQ 8068

DESIGNED CDV

DRAWN WN

CHECKED ADF

DATUM: AHD

ISSUE: B

ISSUE:

RESPONSE TO RFI DATED 2020/05/26

ISSUE FOR OPERATIONAL WORKS APPROVAL

DATE: 15/06/20

DATE: 24/04/20

BJ WN

INIT:

TITLE:

DRAINAGE CATCHMENT PLAN

DFC (PROJECT MANAGEMENT) PTY LTD

'ARCHERS WAY' ESTATE - STAGE 1

AT 22-80 CASH STREET, D'AGUILAR



DETAILS:

PROJECT: M2584E_1

PLAN: D01

ISSUE: B

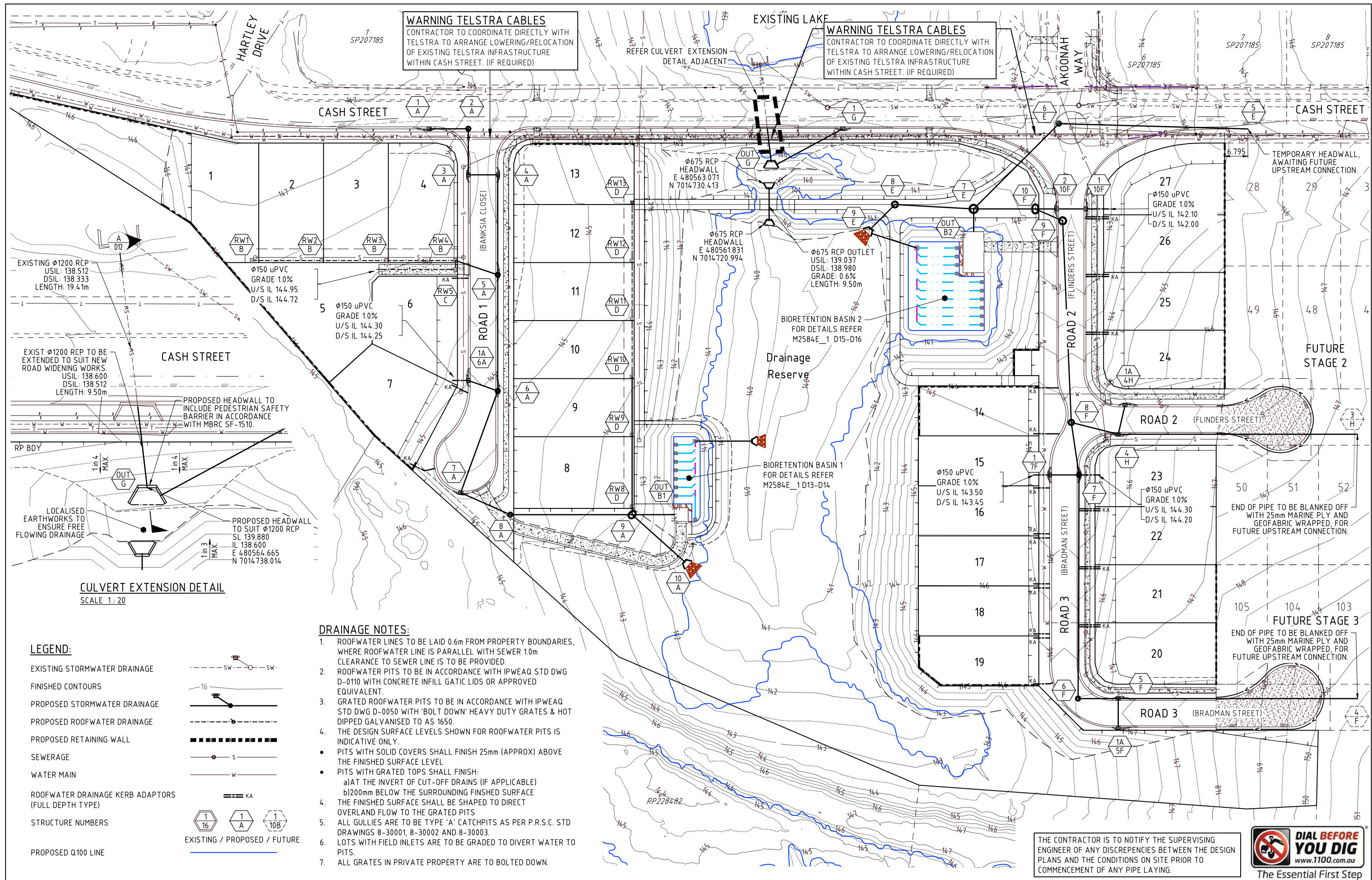
LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL

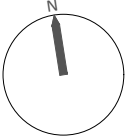
COUNCIL REF: DA/38032/2019/V3RL

FILE NAME: DRAINAGE.DWG



The Essential First Step



 JFP URBAN CONSULTANTS	BRISBANE - SUNSHINE COAST - CENTRAL QLD SUNSHINE COAST T209, Kon-Tiki Tower 1, 55 Plaza Parade, Maroochydore Qld 4558 P 07 5450 3900 W www.jfp.com.au JFP URBAN CONSULTANTS PTY. LTD. A.C.N. 050 414 045	PLANNERS URBAN DESIGNERS SURVEYORS ENGINEERS LANDSCAPE ARCHITECTS	NORTH: 	SCALE: 1:500 A1	THIS SCALE SHOWN IS ORIGINAL DRAWING SCALE 0 5 10 15 20 25 30 35 40 45 50 (A1) 1:500 (A3) 1:1000 DO NOT SCALE FROM THIS DRAWING - USE ONLY DIMENSIONS PROVIDED - IF IN DOUBT PLEASE ENQUIRE	ISSUE: B A	DESIGNED: CDV DRAWN: WVN CHECKED: ADF DATE: 15/06/20 INIT: BJ	TITLE: DRAINAGE LAYOUT PLAN	DETAILS: PROJECT: M2584E_1 PLAN: D02 ISSUE: B LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL COUNCIL REF: DA/38032/2019/V3RL FILE NAME: DRAINAGE.DWG
				APPROVED:  FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD	T.M. KINNEY RPEQ 5087 S. MARSH RPEQ 8068	A. FRASER RPEQ 5691 J. PAPAS RPEQ 6086	RESPONSE TO RFI DATED 2020/05/26 ISSUE FOR OPERATIONAL WORKS APPROVAL DATE: 24/04/20 INIT: WVN	DFC (PROJECT MANAGEMENT) PTY LTD 'ARCHERS WAY' ESTATE - STAGE 1 AT 22-80 CASH STREET, D'AGUILAR	

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STRUCTURE NAME
STRUCTURE DESCRIPTION

Fire Ant Movement Controls

To prevent the spread of fire ants, the Queensland Government has implemented controls that apply to individuals and commercial operators, to restrict the movement of materials that could carry fire ants including soil, turf, potted plants, mulch, baled hay or straw, animal manures, mining or quarry products.

Penalties apply for non-compliance with the movement controls. If you are unsure of your obligations under the Biosecurity Act 2014 contact the relevant Queensland State Government Department.

PIPE SIZE (mm) AND PIPE CLASS	375(3)	375(3)	375(3)	375(3)	450(3)	450(3)	450(3)	450(2)	900 x 450 (RCBC)
PIPE GRADE %	5.00%	3.00%	0.40%	0.40%	1.00%	1.00%	1.00%	4.32%	0.40%
PIPE SLOPE 1 in X	20.00	33.33	250.01	250.00	100.00	100.00	100.00	23.14	250.00
FULL PIPE FLOW VELOCITY (m/s)	0.33	0.33	0.54	0.68	1.66	1.67	2.08	3.83	1.61
PART FULL FLOW VELOCITY (m/s)	2.23								
DATUM	RL 131.0								
WATER LEVEL IN STRUCTURE	145.625	145.625	145.625	145.625	145.625	145.625	145.625	145.625	145.625
HYDRAULIC GRADE LEVEL	145.373	145.151	145.141	145.135	145.109	145.099	145.057	145.004	144.764
PIPE FLOW (Cumecs)	0.037	0.037	0.059	0.075	0.264	0.265	0.331	0.331	0.482
PIPE CAPACITY AT GRADE (Cumecs)	0.392	0.303	0.111	0.111	0.285	0.285	0.285	0.592	0.556
DEPTH TO INVERT	1.055	1.101	1.160	1.174	1.194	1.228	1.249	1.287	1.330
INVERT LEVEL OF DRAIN	144.569	144.524	144.465	144.450	144.425	144.400	144.375	144.298	144.244
DESIGN SURFACE LEVEL	144.625	144.625	144.625	144.625	144.625	144.625	144.625	144.625	144.625
STRUCTURE SETOUT CO-ORDINATES	E480466.525	E480477.975	E480476.145	E480475.688	E480474.566	E480474.566	E480474.566	E480474.566	E480474.566
RUNNING CHAINAGE	0.000	11.498	13.485	24.983	8.595	33.578	29.297	62.875	34.001

LINE

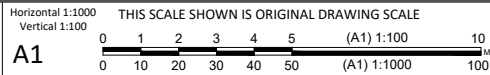
A

B

D

NORTH:

SCALE:



APPROVED	☐ T.M. KINNEY RPEQ 5087	☒ A. FRASER RPEQ 5691	☐ J. PAPPAS RPEQ 6086	DESIGNED	CDV
CHECKED	☐ S. MARSH RPEQ 8068	☐	☐	DRAWN	WN
DATUM:	AHD			CHECKED	ADF
FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD				DATUM:	AHD

ISSUE:

B	RESPONSE TO RFI DATED 2020/05/26 ISSUE FOR OPERATIONAL WORKS APPROVAL
DATE:	15/06/20 24/04/20
INIT:	CDV WN
ISSUE:	DETAILS:

TITLE:

DRAINAGE LONGITUDINAL SECTIONS LINES A, B & D
DFC (PROJECT MANAGEMENT) PTY LTD
'ARCHERS WAY' ESTATE - STAGE 1 AT 22-80 CASH STREET, D'AGUILAR



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REFERENCE POINT LOCATION FOR STORMWATER DRAINAGE STRUCTURES

STRUCTURE TYPE	HORIZONTAL REFERENCE LOCATION (STRUCTURE SETOUT CO-ORDINATES)	VERTICAL REFERENCE LEVEL
MANHOLE AND ROOFWATER PIT	 € MAIN SHAFT	FINISHED SURFACE LEVEL - MANHOLE/PIT COVER
KERB INLET LIP IN LINE (DS-063)	 CENTRE OF GULLY CHAMBER	LIP OF KERB
FIELD INLET AND ROOFWATER PIT	 CENTRE OF GULLY CHAMBER	TOP OF GRATE OR COVER
HEADWALL	 € OF HEADWALL (END OF OUTLET PIPE)	INVERT OF OUTLET PIPE.



The Essential First Step

DETAILS:	PROJECT:	PLAN:	ISSUE:
M2584E_1	D03	B	
LOCAL AUTHORITY REF:	MORETON BAY REGIONAL COUNCIL		
COUNCIL REF:	DA/38032/2019/V3RL		
FILE NAME:	DRAINAGE SECTIONS.DWG		

Fire Ant Movement Controls

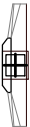
To prevent the spread of fire ants, the Queensland Government has implemented controls that apply to individuals and commercial operators, to restrict the movement of materials that could carry fire ants including soil, turf, potted plants, mulch, baled hay or straw, animal manures, mining or quarry products.

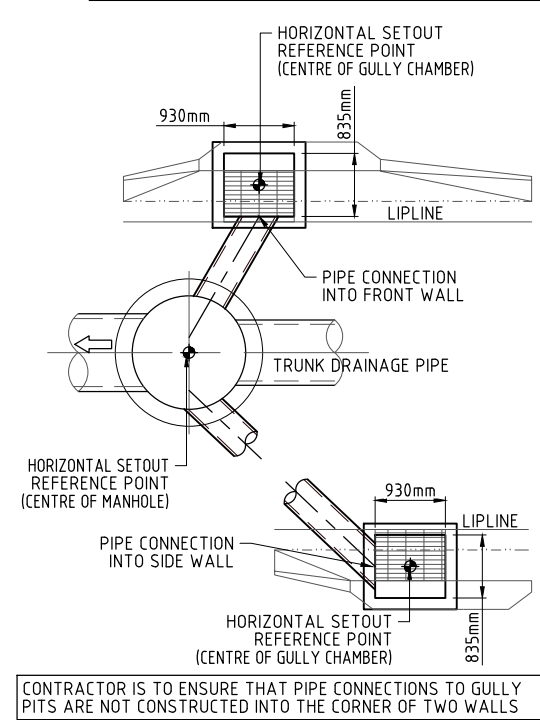
Penalties apply for non-compliance with the movement controls. If you are unsure of your obligations under the Biosecurity Act 2014 contact the relevant Queensland State Government Department.

WATER LEVEL IN STRUCTURE
HYDRAULIC GRADE LEVEL
PIPE FLOW (Cumecs)
PIPE CAPACITY AT GRADE (Cumecs)
DEPTH TO INVERT
INVERT LEVEL OF DRAIN
DESIGN SURFACE LEVEL
STRUCTURE SETOUT CO-ORDINATES
RUNNING CHAINAGE

LINE	F
------	---

5FC6A

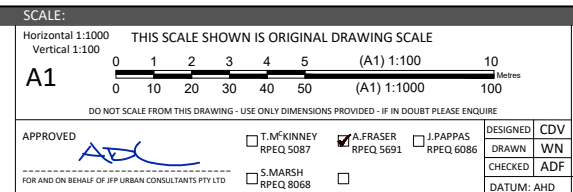
REFERENCE POINT LOCATION FOR STORMWATER DRAINAGE STRUCTURES		
STRUCTURE TYPE	HORIZONTAL REFERENCE LOCATION (STRUCTURE SETOUT CO-ORDINATES)	VERTICAL REFERENCE LEVEL
MANHOLE AND ROOFWATER PIT	 ℄ MAIN SHAFT	FINISHED SURFACE LEVEL - MANHOLE/PIT COVER
TYPE 'A' GULLY PIT, LIP IN LINE	 CENTRE OF GULLY	LIP OF KERB
FIELD INLET AND ROOFWATER PIT	 CENTRE OF GULLY	TOP OF GRATE OR COVER
HEADWALL	 ℄ OF HEADWALL (END OF OUTLET PIPE)	INVERT OF OUTLET PIPE.



GULLY PIT PIPE CONNECTION DETAIL
SCALE: NTS

NOTE: GRATED LIDS TO BE
DEPRESSED 50mm BELOW
FINISHED SURFACE LEVEL

REFER B3602EA2_3 D12 FOR ALLOWABLE
STORMWATER PIPE CONSTRUCTION
EQUIPMENT LOAD TABLE



ISSUE:	
B A	RESPONSE TO RFI DATED 2020/05/26 ISSUE FOR OPERATIONAL WORKS APPROVAL
ISSUE:	DETAILS:

15/06/20	CDV
24/04/20	WN
DATE:	INIT

TITLE: DRAINAGE LONGITUDINAL SECTIONS
LINES F, 5F, C & 6A
DFC (PROJECT MANAGEMENT) PTY LTD
'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR

DETAILS:		
PROJECT:	PLAN:	ISSUE:
M2584E_1	D04	B
LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL		
COUNCIL REF: DA/38032/2019/V3RL		
FILE NAME: DRAINAGE SECTIONS.DWG		

STRUCTURE NAME
STRUCTURE DESCRIPTION

Fire Ant Movement Controls

To prevent the spread of fire ants, the Queensland Government has implemented controls that apply to individuals and commercial operators, to restrict the movement of materials that could carry fire ants including soil, turf, potted plants, mulch, baled hay or straw, animal manures, mining or quarry products.

Penalties apply for non-compliance with the movement controls. If you are unsure of your obligations under the Biosecurity Act 2014 contact the relevant Queensland State Government Department.

PIPE SIZE (mm)	375(3)
AND PIPE CLASS	
PIPE GRADE %	1.14%
PIPE SLOPE 1 in X	87.37
FULL PIPE FLOW VELOCITY (m/s)	0.85
PART FULL FLOW VELOCITY (m/s)	
DATUM	RL 135.0

WATER LEVEL IN STRUCTURE
HYDRAULIC GRADE LEVEL
PIPE FLOW (Cumecs)
PIPE CAPACITY AT GRADE (Cumecs)
DEPTH TO INVERT
INVERT LEVEL OF DRAIN
DESIGN SURFACE LEVEL
STRUCTURE SETOUT CO-ORDINATES
RUNNING CHAINAGE

LINE 4H

1A/4H	IPWEA ON-GRADE GULLY	2.4m LINTEL Type M3 K&C	14.5.078	14.5.078	14.4.920	0.094	0.187	1.331	14.4.041	14.5.371	8.824
4/H											8.824

1/7F	IPWEA SAG GULLY	2.4m LINTEL Type M3 K&C	14.3.924	14.3.924	14.3.699	0.169	0.180	2.001	14.2.598	14.4.599	8.596
7/F	IPWEA SAG GULLY	2.4m LINTEL Type M3 K&C ON 1050mm DIA MANHOLE			14.3.669			2.035	14.2.564		

1/G	IPWEA SAG GULLY	2.4m LINTEL Type B1(300) K&C	139.757	139.757	139.481	0.091	0.265	1.424	139.106	14.0.530	22.113
OUT/G	OUTLET TO PROPOSED HEADWALL EXTENSION				138.751			0.710	138.600		22.113

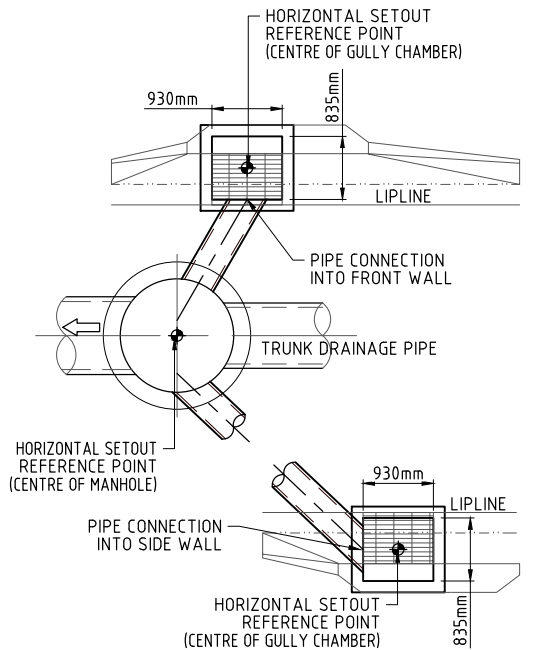
9A	STD MBRC MANHOLE	1100mm DIAMETER	14.1.590	14.1.590	14.1.507	0.110	0.124	2.164	14.1.232	14.0.760	12.350
OUT/B1	OUTLET TO PROPOSED SEDIMENT FOREBAY (BASIN 1)				14.1.445			-0.200	14.1.170		12.350

7E	STD MBRC MANHOLE	1100mm DIAMETER	14.1.841	14.1.841	14.1.173	0.410	0.453	1.348	14.0.563	14.0.780	6.605
OUT/B2	OUTLET TO PROPOSED SEDIMENT FOREBAY (BASIN 2)				14.0.984			0.250	14.0.530		6.605

1/10F	IPWEA SAG GULLY	3.6m LINTEL Type M3 K&C	14.1.976	14.1.976	14.1.607	0.282	0.848	1.585	14.0.885	14.2.470	8.565
2/10F	IPWEA SAG GULLY	2.4m LINTEL Type B1 (300) K&C			14.1.590			1.726	14.0.735		8.565
10/F	STD IPWEA MANHOLE	1500mm DIAMETER EXT 900			14.1.552	0.314	0.406	1.746	14.0.715		6.232

REFERENCE POINT LOCATION FOR STORMWATER DRAINAGE STRUCTURES

STRUCTURE TYPE	HORIZONTAL REFERENCE LOCATION (STRUCTURE SETOUT CO-ORDINATES)	VERTICAL REFERENCE LEVEL
MANHOLE AND ROOFWATER PIT	℄ MAIN SHAFT	FINISHED SURFACE LEVEL - MANHOLE/PIT COVER
TYPE 'A' GULLY PIT, LIP IN LINE	CENTRE OF GULLY	LIP OF KERB
FIELD INLET AND ROOFWATER PIT	CENTRE OF GULLY	TOP OF GRATE OR COVER
HEADWALL	℄ OF HEADWALL (END OF OUTLET PIPE)	INVERT OF OUTLET PIPE.



CONTRACTOR IS TO ENSURE THAT PIPE CONNECTIONS TO GULLY PITS ARE NOT CONSTRUCTED INTO THE CORNER OF TWO WALLS

GULLY PIT PIPE CONNECTION DETAIL

SCALE: NTS

NOTE: GRATED LIDS TO BE DEPRESSED 50mm BELOW FINISHED SURFACE LEVEL

REFER B3602EA2_3 D12 FOR ALLOWABLE STORMWATER PIPE CONSTRUCTION EQUIPMENT LOAD TABLE

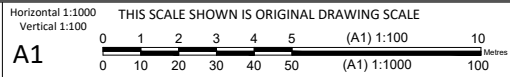


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SURVEYORS
ENGINEERS
LANDSCAPE ARCHITECTS

NORTH:

SCALE:



APPROVED	T.M. KINNEY RPEQ 5087	A. FRASER RPEQ 5691	J. PAPPAS RPEQ 6086	DESIGNED	CDV
CHECKED	S. MARSH RPEQ 8068			DRAWN	WN
DATUM:	AHD			CHECKED	ADF
ISSUE:				DATUM:	AHD

ISSUE:

B	RESPONSE TO RFI DATED 2020/05/26	15/06/20	CDV
A	ISSUE FOR OPERATIONAL WORKS APPROVAL	24/04/20	WN
		DATE:	INIT:

TITLE:

DRAINAGE LONGITUDINAL SECTIONS
LINES 4H, 10F, G, B1 & B2
DFC (PROJECT MANAGEMENT) PTY LTD
'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR



DETAILS:
PROJECT: M2584E_1
PLAN: D06
ISSUE: B
LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL
COUNCIL REF: DA/38032/2019/V3RL
FILE NAME: DRAINAGE SECTIONS.DWG

LOCATION					TIME		SUB-CATCHMENT RUNOFF						INLET DESIGN						DRAIN DESIGN												HEADLOSSES										PART FULL			DESIGN LEVELS									
DESIGN ARI	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT	Sub-Catchment TIME OF CONC.	RAINFALL INTENSITY	10Yr RUNOFF CO-EFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF (C x A)	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW ROAD CAPACITY	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No.	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C x A)	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS (CLASS)	FLOW VELOCITY	TIME OF FLOW IN REACH	STRUCTURE CHART No.	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCT. HEADLOSS	LAT. HEADLOSS CO-EFFICIENT	LAT. PIPE STRUCT. HEADLOSS	W.S.E CO-EFFICIENT	CHANGE IN W.S.E	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L x Sf)	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	UPSTREAM H.G.L	LAT. H.G.L	W.S.E.	SURFACE OR K&C INVERT LEVEL	STRUCTURE No.		
YRS					%	min	mm/h		ha	ha	ha	l/s	l/s	%	l/s	l/s	l/s	l/s		min	mm/h	ha	l/s	l/s	l/s	l/s	m	%	mm	m/s	min			m		m		m	%	m	m	m	m/s	m	m	m	m	m					
10 100	1/A	1/A to 2/A	1/A	ROAD/VERGE		5.00 5.00	216 329						0.88 1.00	0.069	0.061 0.069	0.061 0.069	37 63	37 FLOW WIDTH 0.837	7.25 (0.000 3 month)	862 (0.000 3 month)	1	5.00 5.00	216 329	0.061 0.069	63		37 (Pipe flow= Grate flow)	11.498	5.00	375(2)	0.33	0.19		Qg 0.037 Qo 0.037 Do 375 CHRT 32: Vo2/2gDo 0.01 H/Do 0.00 Kg side flow 10.42 end flow 7.34 Part full downstream pipe	0.006	1.00	0.252		Upstream HGL 145.670 pipe obv 145.670 Set Kp to 1	1.00 5.625 below outlet	0.252	0.04	0.005	0.078	2.23		145.670 145.095	145.373 145.151	145.625		145.625	146.435	1/A
10 100	2/A	2/A to 3/A	1/A	MH												4.1					5.19 5.19	213 324	0.061 0.069	62	1724 (Pipe flow= Sum upstr atten flows)	26 37	13.485	3.00	375(2)	0.33	0.22		Qo 0.037 Do 375 CHART 51 H 59 Do 375 theta 89 r/Do 155 Du 375 Du/Do 1.00 Kd 180 K'w 0.30 Vu 0.33 WSE 0.01 Ku 180 Kw 2.10	0.006	1.80	0.010			2.10	0.012	0.04	0.006			145.036 144.631	145.141 145.135	145.151		145.153	145.821	2/A		
10 100	3/A	3/A to 4/A	1/A,3/A	ROAD/VERGE		5.00 5.00	216 329						0.88 1.00	0.046	0.040 0.046	0.040 0.046	24 42	24 FLOW WIDTH 0.000	0.00 (0.000 3 month)	282 (0.000 3 month)	135.111	24	0		5.41 5.41	210 319	0.101 0.115	102		59 8.595	0.40	375(2)	0.54	0.14		Qg 0.023 Qo 0.059 Do 375 Angle 89 Chart 47 S/Do 2.5 chartdeg Du/Do 1.00 K0 1.92 K0.5 2.12 Qu/Do 0.61 Cg 0.84 K 2.09 S/Do 2.5 K0 1.92 K0.5 2.12 K 2.09 S/Do 2.0 K0 2.44 K0.5 2.40 K 2.41	0.015	1.76	0.026		Interp val for S/Do 2.41 K 2.15 CHART 46 S/Do 2.5 K0 1.82 K0.5 1.71 K 1.73 S/Do 2.0 K0 2.04 K0.5 1.92 K 1.94 Interp val for S/Do 2.41 Ku 1.76	2.15 0.032	0.12	0.010			144.611 144.577	145.109 145.099	145.135		145.141	145.515	3/A
10 100	4/A	4/A to 5/A	1/A,3/A,4/A	ROAD/VERGE		5.00 5.00	216 329						0.88 1.00	0.031	0.027 0.031	0.027 0.031	16 29	16 FLOW WIDTH 0.000	0.00 (0.000 3 month)	282 (0.000 3 month)	135.111	16	0		5.55 5.55	209 315	0.128 0.146	128		75 29.297	0.40	375(2)	0.68	0.49		Qg 0.016 Qo 0.075 Do 375 Angle 90 Chart 47 S/Do 2.5 chartdeg Du/Do 1.00 K0 1.92 K0.5 2.12 Qu/Do 0.61 Cg 0.84 K 2.09 S/Do 2.5 K0 1.92 K0.5 2.12 K 2.02 S/Do 2.0 K0 2.44 K0.5 2.40 K 2.02	0.024	1.78	0.042		Interp val for S/Do 2.47 K 2.05 CHART 46 S/Do 2.5 K0 1.82 K0.5 1.71 K 1.76 S/Do 2.0 K0 2.04 K0.5 1.92 K 1.98 Interp val for S/Do 2.47 Ku 1.78	2.05 0.049	0.18	0.053			144.556 144.439	145.057 145.004	145.099		145.106	145.430	4/A
10 100	RW1/B	RW1/B to RW2/B	RW1/B	ALLOT		5.00 5.00	216 329						0.91 1.00	0.066	0.060 0.066	0.060 0.066	36 60	36 FLOW WIDTH 0.117	2.00 (0.000 3 month)	63 535.15	36	0	RW2/B	5.00 5.00	216 329	0.060 0.066	60		36 20.400	1.00	225(U)	0.79	0.34		Qg 0.036 Qo 0.036 Do 225 CHRT 32: Vo2/2gDo 0.13 H/Do 156 Kg side flow 3.74 end flow 3.16	0.032	3.74	0.119			3.74	0.119	0.32	0.065			145.754 145.550	146.130 146.065	146.249		146.249	146.579	RW1/B
10 100	RW2/B	RW2/B to RW3/B	RW1/B,RW2/B	ALLOT		5.00 5.00	216 329						0.91 1.00	0.067	0.061 0.067	0.061 0.067	37 61	37 FLOW WIDTH 0.118	2.00 (0.000 3 month)	63 535.15	37	0	RW3/B	5.34 5.34	211 320	0.121 0.133	118		71 19.000	1.00	225(U)	1.55	0.20		Qg 0.036 Qo 0.071 Do 225 CHART 33 Angle 1 S/Do 2.5 Du/Do 1.00 Qg/Qo 0.50 K 152 S/Do 3.22 cor -0.17 Ku 135 Kw 135	0.122	1.35	0.165			1.35	0.165	1.23	0.234			145.530 145.340	145.900 145.666	146.065		146.065	146.343	RW2/B
10 100	RW3/B	RW3/B to RW4/B	RW1/B,RW2/B,RW3/B	ALLOT		5.00 5.00	216 329						0.91 1.00	0.067	0.061 0.067	0.061 0.067	37 61	37 FLOW WIDTH 0.118	2.00 (0.000 3 month)	63 535.15	37	0	RW4/B	5.54 5.54	209 316	0.182 0.200	176		106 20.260	1.00	300(U)	1.45	0.23		Qg 0.035 Qo 0.106 Do 300 CHART 33 Angle 1 S/Do 2.5 Du/Do 0.75 Qg/Qo 0.34 K 0.52 S/Do 2.07 cor 0.11 Ku 0.63 Kw 0.63	0.107	0.63	0.068			0.63	0.068	0.80	0.161			145.340 145.137	145.598 145.437	145.666		145.666	146.172	RW3/B
10 100	RW13/D	RW13/D to RW12/D	RW13/D	ALLOT		5.00 5.00	216 329						0.91 1.00	0.063	0.057 0.063	0.057 0.063	34 57	34 FLOW WIDTH 0.115	0.50 (0.000 3 month)	63 535.15	34	0		5.00 5.00	216 329	0.057 0.063	58		34 17.000	1.00	225(U)	0.75	0.28		Qg 0.034 Qo 0.034 Do 225 CHRT 32: Vo2/2gDo 0.12 H/Do 0.65 Kg side flow 5.68 end flow 4.43	0.029	5.68	0.162			5.68	0.162	0.29	0.049			143.672 143.502	143.829 143.780	143.991		143.991	144.277	RW13/D
10 100	RW12/D	RW12/D to RW11/D	RW13/D,RW12/D	ALLOT		5.00 5.00	216 329						0.91 1.00	0.060	0.055 0.060	0.055 0.060	33 55	33 FLOW WIDTH 0.113	0.50 (0.000 3 month)	63 535.15	33	0	RW13/D	5.28 5.28	212 322	0.112 0.123	110		66 16.999	1.06	225(U)	1.44	0.20		Qg 0.032 Qo 0.066 Do 225 CHART 33 Angle 1 S/Do 2.5 Du/Do 1.00 Qg/Qo 0.49 K 150 S/Do 2.23 cor 0.10 Ku 160 Kw 160	0.106	1.60	0.169			1.60	0.169	1.06	0.181			143.482 143.301	143.611 143.430	143.780		143.780	144.652	RW12/D
10 100	RW11/D	RW11/D to RW10/D	RW13/D,RW12/D,RW11/D	ALLOT		5.00 5.00	216 329						0.91 1.00	0.060	0.055 0.060	0.055 0.060	33 55	33 FLOW WIDTH 0.113	0.50 (0.000 3 month)	63 535.15	33	0	RW10/D	5.48 5.48	209 317	0.167 0.183	161		97 17.000	1.56	300(U)	1.33	0.21		Qg 0.032 Qo 0.097 Do 300 CHART 33 Angle 1 S/Do 2.5 Du/Do 0.75 Qg/Qo 0.33 K 0.50 S/Do 1.29 cor 0.46 Ku 0.96 Kw 0.96	0.090	0.96	0.086			0.96	0.086	0.67	0.114	0.179	2.17	143.344 143.078	143.344 143.194	143.430		143.430	144.455	RW11/D
10 100	RW10/D	RW10/D to RW9/D	RW13/D,RW12/D,RW11/D,RW10/D	ALLOT		5.00 5.00	216 329						0.91 1.00	0.060	0.055 0.060	0.055 0.060	33 55	33 FLOW WIDTH 0.113																																			

LOCATION					TIME			SUB-CATCHMENT RUNOFF						INLET DESIGN						DRAIN DESIGN												HEADLOSSES												PART FULL				DESIGN LEVELS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
DESIGN ARI	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT	Sub-Catchment Time of Conc.	Rainfall Intensity	10yr Runoff Co-Efficient	Co-Efficient of Runoff	Sub-Catchment Area	Equivalent Area	Sum of (C x A)	Sub-Catchment Discharge	Flow in K&C (inc. Bypass)	Road Grade at Inlet	Minor Flow Road Capacity	Inlet Type	Flow into Inlet	Bypass Flow	Bypass Structure No.	Critical Time of Conc.	Rainfall Intensity	Total (C x A)	Major Total Flow	Major Surface Flow Capacity	Major Surface Flow	Pipe Flow	Reach Length	Pipe Grade	Pipe / Box Dimensions (Class)	Flow Velocity	Time of Flow in Reach	Structure Chart No.	Structure Ratios for 'K' Value Calculations	Velocity Head	U/S Headloss Coefficient	U/S Pipe Struct. Headloss	Lat. Headloss Co-Efficient	Lat. Pipe Struct. Headloss	W.S.E Co-Efficient	Change in W.S.E	Pipe Friction Slope	Pipe Friction Headloss (L x Sf)	Depth	Velocity	Obvert Levels	Drain Section H.G.L	Upstream H.G.L	Lat. H.G.L	W.S.E.	Surface or K&C Invert Level	Structure No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
yrs					%	min	mm/h			ha	ha	ha	l/s	l/s	%	l/s	l/s	l/s	l/s	l/s	1A/3H	min	mm/h	l/s	l/s	l/s	l/s	m	%	mm	m/s	min			m		m		m	m	%	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m



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LOCATION				TIME			SUB-CATCHMENT RUNOFF						INLET DESIGN						DRAIN DESIGN												HEADLOSSES										PART FULL				DESIGN LEVELS							
DESIGN ARI	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY	10yr RUNOFF CO-EFFICIENT	CO-EFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF (C x A)	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW ROAD CAPACITY	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No.	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C x A)	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS (CLASS)	FLOW VELOCITY	TIME OF FLOW IN REACH	STRUCTURE CHART No.	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCT. HEADLOSS	LAT. HEADLOSS CO-EFFICIENT	LAT. PIPE STRUCT. HEADLOSS	W/S-E CO-EFFICIENT	CHANGE IN W.S.E	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L x Sf)	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	UPSTREAM H.G.L	LAT. H.G.L	W.S.E.	SURFACE OR K&C INVERT LEVEL	STRUCTURE No.
Yr's					%	min	mm/h			ha	ha	ha	L/s	L/s	%	L/s		L/s	L/s		min	mm/h	ha	L/s	L/s	L/s	L/s	m	%	mm	m/s	min			m		m		m		%	m	m	m/s	m	m	m	m	m	m		
10 100	6/E	6/E to 7/E	1/E,2/E,1A/3E,4/E,5/E	MH													41				12.02 12.02	156 236	1.007 1.144	750	1921 (Pipe flow=	387 Sum upstr	363 atten flows)	35.336 0.50	450(2)	2.28	0.26		Qo 0.363 Do 450 Flow 5/E made eqv grate flow CHRT 32: Vo2/2gDo 0.59 H/Do 1.31 Kg side flow 2.76 end flow 2.51 K vals above for stepped pipes as grate flow grate flow decreased by 0.363 from 5/E	0.265	1.73	0.458	CHART 51 H 835 Du 400 Du/Do 0.89 Kd 1.13 K'w 0.25 Vu 2.89 WSE 0.57 Ku 1.73 Kw 2.14 K vals step pipes as pipe flow Ku 1.73 Kw 2.14	2.14 0.565 1.63 0.575	141.210 14.1033	141.798 14.1223	142.256	142.363	142.579	6/E								
10 100	1A/4H	1A/4H to 4/H	1A/4H	ROAD/ALLOT		10.00 10.00	168 254		0.88 1.00	0.253	0.222 0.253	0.222 0.253	104 178	139 FLOW WIDTH 1.773	5.80 (0.000 3 month)	771 (0.000 3 month)	1	94	45	1/10F	10.00 10.00	168 254	0.222 0.253	179		94 (Pipe flow=	8.824 Grate flow)	1.14	375(2)	0.85	0.15		Qg 0.094 Qo 0.094 Do 375 CHRT 32: Vo2/2gDo 0.10 H/Do 1.35 Kg side flow 4.28 end flow 3.48	0.037	4.28	0.158		4.28	0.158	0.29	0.025		144.416 144.315	144.920 144.895	145.078	145.078	145.456	1A/4H				
10 100	4/H	4/H to 8/F	RW60/L,RW59/L,RW58/L,RW57/L,RW56/L1/H,2/H,1A/3H,3/H,1A/4H,4/H	ROAD/ALLOT		10.00 10.00	168 254		0.88 1.00	0.211	0.185 0.211	0.185 0.211	86 149	111 FLOW WIDTH 1.592	5.80 (0.000 3 month)	771 (0.000 3 month)	1	80	31	7/F	11.10 11.10	161 244	1.366 1.542	1045		539 (Pipe flow=	14.180 Sum upstr	4.56 atten flows)	525(2)	2.41	0.10		Qg 0.076 Qo 0.539 Do 525 Flow 3/H made eqv grate flow Angle 91 Chart 47 S/Do 2.5 chartdeg Du/Do 0.71 K0 2.37 K0.5 2.33 Qu/Do 0.17 Cg 1.29 K 2.32 S/Do 2.5 K0 2.37 K0.5 2.33 K 2.32 S/Do 2.0 K0 2.55 K0.5 2.41 K 2.37 Interp val for S/Do 2.30 Kw 2.34 CHART 46 S/Do 2.5 K0 1.49 K0.5 1.97 K 2.12 S/Do 2.0 K0 1.84 K0.5 2.03 K 2.09 Interp val for S/Do 2.30 Ku 2.10 K vals above for stepped pipes as grate flow grate flow decreased by 0.373 from 3/H Routine 2.24 Join Pipes: Flow 4/H made eqv grate flow CHART 33 Angle 6 S/Do 2.5	0.296	1.66	0.492	1A/4H and 3/H Vel1 0.812 Vel2 2.347 Eq Dia 536 Angle 150 Flow 0.463 Angle 30 Chart 36 S/Do 2.5 chartdeg Du/Do 1.02 K0 1.52 K0.5 1.87 Qu/Do 0.86 Cg 0.35 K 1.64 S/Do 2.5 K0 1.52 K0.5 1.87 K 1.64 S/Do 2.0 K0 1.82 K0.5 2.08 K 1.91 Interp val for S/Do 2.04 Kw 1.88 CHART 35 S/Do 2.5 K0 1.33 K0.5 1.49 K 1.39 S/Do 2.0 K0 1.55 K0.5 1.75 K 1.62 Interp val for S/Do 2.04 Ku 1.60 K vals step pipes as pipe flow Ku 1.60 Kw 1.88 Averaged Ku 1.66 Kw 1.94	1.94	0.573	1.44	0.204	0.286	4.41	144.403 143.756	144.403 143.517	144.895	144.976	145.354	4/H			
10 100	8/F	8/F to 9/F	1/F,2/F,4/F,1A/5F,5/F,8/F,7/F,RW60/L,RW59/L,RW58/L,RW57/L,RW56/L1/H,2/H,1A/3H,3/H,1A/4H,4/H	MH													41				12.40 12.40	154 233	2.945 3.338	2160	1250 (Pipe flow=	975 Sum upstr	1185 atten flows)	59.111 2.30	825(2)	2.15	0.46		Qo 1.185 Do 825 Flow 4/H made eqv grate flow CHART 33 Angle 6 S/Do 2.5	0.236	1.04	0.245	Du/Do 0.64 Qg/Do 0.44 K 0.43 S/Do 1.29 cor 0.61 Ku 1.04 Kw 1.04 K vals above for stepped pipes as grate flow	0.63	0.371	0.430	4.16	142.954 14.1592	142.954 14.1784	143.199	143.199	144.698	8/F					
10 100	9/F	9/F to 10/F	1/F,2/F,4/F,1A/5F,5/F,8/F,7/F,RW60/L,RW59/L,RW58/L,RW57/L,RW56/L1/H,2/H,1A/3H,3/H,1A/4H,4/H	MH													41				12.86 12.86	151 230	2.945 3.338	2133	1109 (Pipe flow=	947 Sum upstr	1185 atten flows)	8.726 0.50	x 600 (RCBC)	1200	1.64	0.09		Qo 1.185 Do 801 Flow 6/E made eqv grate flow CHRT 32: Vo2/2gDo 0.23 H/Do 0.39 Kg side flow 4.84 end flow 4.04 K vals above for stepped pipes as grate flow grate flow decreased by 1.185 from 8/F	0.137	1.55	0.213	CHART 50 Du/Do 1.03 alpha 64 K'w 0.28 Vu 2.22 WSE 0.28 Ku 1.55 Kw 2.05 K vals step pipes as pipe flow Ku 1.55 Kw 2.05	2.05	0.282	0.39	0.034		141.335 14.1291	141.571 14.1537	141.784	141.853	142.438	9/F			
10 100	1/10F	1/10F to 2/10F	1A/10F	ROAD/ALLOT		10.00 10.00	168 254		0.88 1.00	0.372	0.328 0.372	0.328 0.372	153 263	282 FLOW WIDTH 3.103	0.00 (0.000 3 month)	331 (0.000 3 month)	175.111	282	0		10.00 10.00	168 254	0.328 0.372	262		282 (Pipe flow=	8.565 Grate flow)	1.75	600(2)	0.96	0.14		Qg 0.282 Qo 0.282 Do 600 CHRT 32: Vo2/2gDo 0.08 H/Do 0.18 Kg side flow 7.87 end flow 5.96	0.047	7.87	0.369		7.87	0.369	0.19	0.017		141.495 14.1345	141.607 14.1590	141.976	141.976	142.470	1/10F				
10 100	2/10F	2/10F to 10/F	1A/10F,10/F	ROAD/VERGE		5.00 5.00	216 329		0.88 1.00	0.082	0.072 0.082	0.072 0.082	43 75	43 FLOW WIDTH 0.000	0.01 (0.000 3 month)	272 (0.000 3 month)	165.111	43	0		10.14 10.14	167 253	0.400 0.454	319		314 (Pipe flow=	6.232 Sum upstr	0.40 atten flows)	600(2)	1.07	0.10		Qg 0.033 Qo 0.314 Do 600 CHART 33 Angle 0 S/Do 2.5 Du/Do 1.00 Qg/Do 0.11 K 0.53 S/Do 1.43 cor 0.13 Ku 0.66 Kw 0.66	0.058	0.66	0.038		0.66	0.038	0.24	0.015		141.325 14.1300	141.552 14.1537	141.590	141.590	142.461	2/10F				
10 100	10/F	10/F to 7/E	1/F,2/F,4/F,1A/5F,5/F,8/F,7/F,RW60/L,RW59/L,RW58/L,RW57/L,RW56/L1/H,2/H,1A/3H,3/H,1A/4H,4/H,1A/10F,10/F	MH													42				12.95 12.95	151 229	3.345 3.792	2412	453 (Pipe flow=	913 Sum upstr	1499 stream flows)	18.076 0.50	x 600 (RCBC)	1200	2.08	0.14		Qo 1.499 Do 801 Flow 6/E made eqv grate flow CHRT 32: Vo2/2gDo 0.45 H/Do 0.29 Kg side flow 3.77 end flow 3.32 K vals above for stepped pipes as grate flow grate flow decreased by 0.363 from 6/E grate flow decreased by 1.499 from 10/F Routine 2.2 CHART 53 Du/Do 0.9 Qu/Do 0.80 Kw=Ku= 0.38 Combined pipes in line case	0.221	0.91	0.201	Eq Dia 954 Angle 199 Flow 1.499 CHART 50 Du/Do 1.19 alpha 19 K'w 0.21 Vu 2.10 WSE 0.25 Ku 0.91 Kw 1.12	1.12	0.247	0.62	0.113		141.271 14.1181	141.336 14.1223	141.537	141.583	142.482	10/F			
10 100	7/E	7/E to 8/E	1/E,2/E,1A/3E,4/E,5/E,1/F,2/F,4/F,1A/5F,5/F,8/F,7/F,RW60/L,RW59/L,RW58/L,RW57/L,RW56/L1/H,2/H,1A/3H,3/H,1A/4H,4/H,1A/10F,10/F	MH													41				13.09 13.09	150 228	4.352 4.936	3126	138 (Pipe flow=	1264 Sum upstr	1862 stream flows)	23.112 0.50	900(2)	2.83	0.14		Qo 1.862 Do 900 Flow 6/E made eqv grate flow Flow 10/F made eqv grate flow CHRT 32: Vo2/2gDo 0.45 H/Do 0.29 Kg side flow 3.77 end flow 3.32 K vals above for stepped pipes as grate flow grate flow decreased by 0.363 from 6/E grate flow decreased by 1.499 from 10/F Routine 2.2 CHART 53 Du/Do 0.9 Qu/Do 0.80 Kw=Ku= 0.38 Combined pipes in line case	0.408	1.36	0.555	Join Pipes: 6/E and 10/F Vel1 2.978 Vel2 2.284 Eq Dia 913 Angle 167 Flow 1.862 CHART 50 Du/Do 1.01 alpha 0 K'w 0.05 Vu 2.84 WSE 0.17 Ku 0.36 Kw 0.41 Interpolated Ku= 0.37 Kw= 0.39 K vals step pipes as pipe flow Ku 0.37 Kw 0.39 Averaged Ku 1.36 Kw 1.37	1.37	0.561	0.97	0.224		140.400 140.284	140.668 140.444	141.223	141.229	141.911	7/E				
10 100	8/E	8/E to 9/E	1/E,2/E,1A/3E,4/E,5/E,1/F,2/F,4/F,1A/5F,5/F,8/F,7/F,RW60/L,RW59/L,RW58/L,RW57/L,RW56/L1/H,2/H,1A/3H,3/H,1A/4H,4/H,1A/10F,10/F	MH													41				13.23 13.23	149 227	4.352 4.936	3112	138 (Pipe flow=	1250 Sum upstr	1862 stream flows)	10.200 0.40	1050(2)	2.09	0.08		Qo 1.862 Do 1050 CHART 51 H 228 Do 1050 theta 48 r/Do 0.86 Du 900 Du/Do 0.86 Kd 1.05 K'w 0.25 Vu 2.93 WSE 0.34 Ku 1.05 Kw 1.55	0.223	1.05	0.234		155	0.344	0.43	0.044		140.207 140.166	140.210 140.166	140.444	140.554	141.900	8/E				
10 100	9A/B1	9A/B1 to OUT/B1		DRAINAGE RESERVE													41				5.00 5.00	216 329	0.120 0.120	110		110 (Pipe flow set by user)	12.350 6.605	0.50	375(2)	1.00	0.21		Qo 0.110 Do 375 CHRT 32: Vo2/2gDo 0.14 H/Do 0.00 Kg side flow 7.23 end flow 5.64 Part full downstream pipe	0.051	1.00	0.083	Upstream HGL 141.590 below outlet pipe oby 141.607 Set Kp to 1	1.00	0.083	0.39	0.049	0.275	1.27	141.607 141.545	141.507 141.445	141.590	141.590	143.396	9A/B1			
10 100	7E/B2	7E/B2 to OUT/B2		DRAINAGE RESERVE													41				5.00 5.00	216 329	0.449 0.449	410		410 (Pipe flow set by user)	6.605	0.50	600(2)	1.40	0.08		Qo 0.410 Do 600 CHRT 32: Vo2/2gDo 0.16 H/Do 0.00 Kg side flow 6.69 end flow 5.31	0.100	6.69	0.668		6.69	0.668	0.41	0.027	0.454	1.76	141.173 141.140	141.173 140.994	141.841	141.841	141.911	7E/B2			
10 100	6J/B3	6J/B3 to 1/B3		DRAINAGE RESERVE													41				5.00 5.00	216 329	0.372 0.372	340		340 (Pipe flow set by user)	38.349	0.50	600(2)	1.16	0.55		Qo 0.340 Do 600 CHRT 32: Vo2/2gDo 0.11 H/Do 0.00 Kg side flow 7.68 end flow 5.90 Part full downstream pipe	0.069	1.00	0.148	Upstream HGL 144.962 below outlet pipe oby 145.030 Set Kp to 1	1.00														



BRISBANE - SUNSHINE COAST - CENTRAL QLD
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JFP URBAN CONSULTANTS PTY. LTD. A.C.N. 050 414 045

PLANNERS

URBAN DESIGNERS

SURVEYORS

ENGINEERS

LANDSCAPE ARCHITECTS

NORTH:

SCALE:

Horizontal 1:1000
Vertical 1:100

THIS SCALE SHOWN IS ORIGINAL DRAWING SCALE

A1

0 1 2 3 4 5 (A1) 1:100 10
0 10 20 30 40 50 (A1) 1:1000 100

DO NOT SCALE FROM THIS DRAWING - USE ONLY DIMENSIONS PROVIDED - IF IN DOUBT PLEASE ENQUIRE

APPROVED
A1
FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD

☐ T.M.KINNEY RPEQ 5087
☒ A.FRASER RPEQ 5691
☐ J.PAPPAS RPEQ 6086
☐ S.MARSH RPEQ 8068
☐

DESIGNED: CDV
DRAWN: WN
CHECKED: ADF
DATUM: AHD
ISSUE: DETAILS:

ISSUE:

TITLE:

PROJECT: DRAINAGE CALCULATIONS TABLES
SHEET 4 of 4
DFC (PROJECT MANAGEMENT) PTY LTD
'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR

15/06/20
24/04/20

CDV
WN

DATE: INIT:

RESPONSE TO RFI DATED 2020/05/26
ISSUE FOR OPERATIONAL WORKS APPROVAL

DETAILS:

DETAILS:

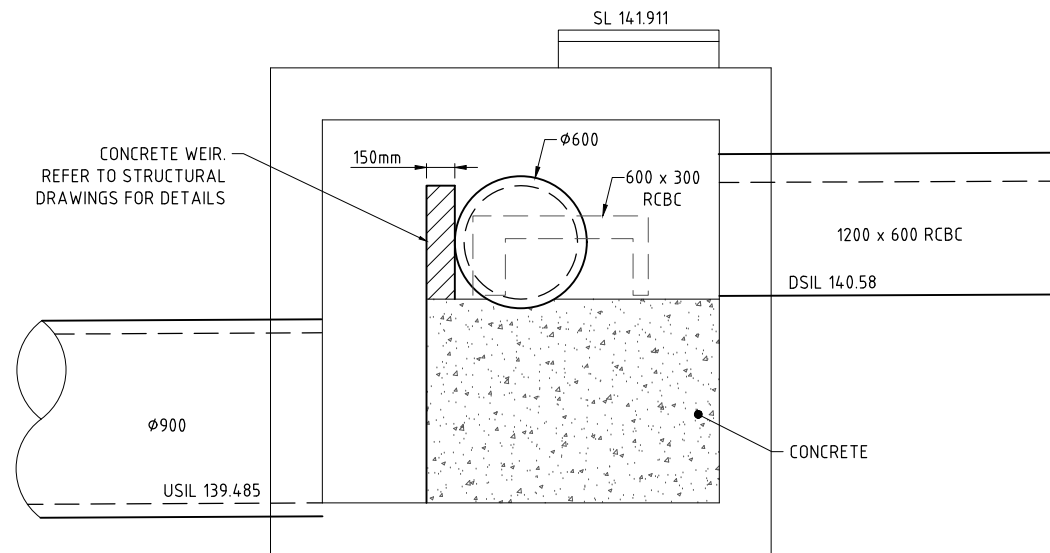
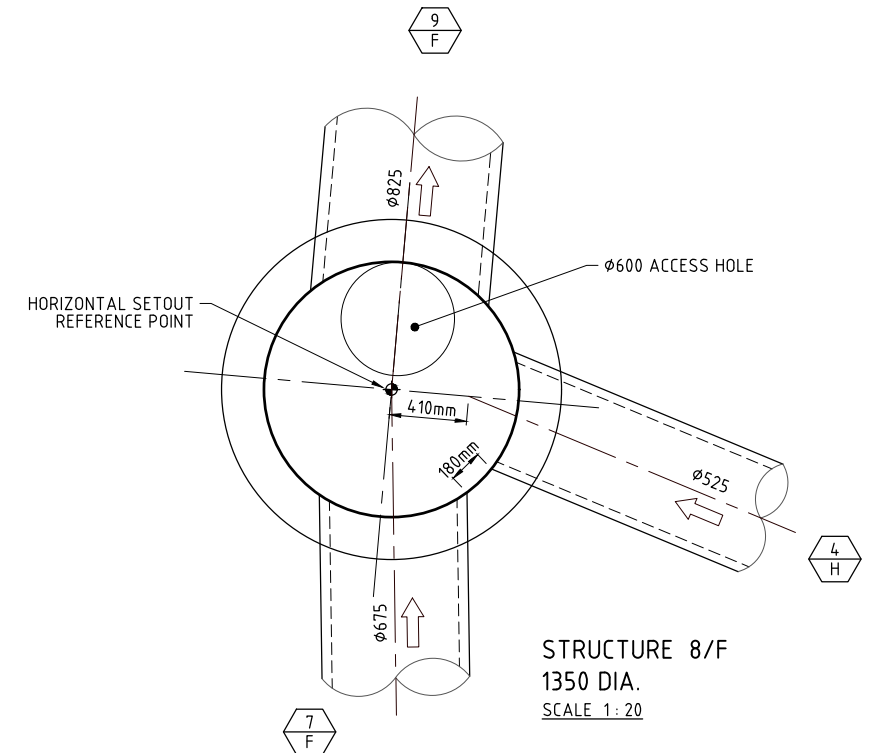
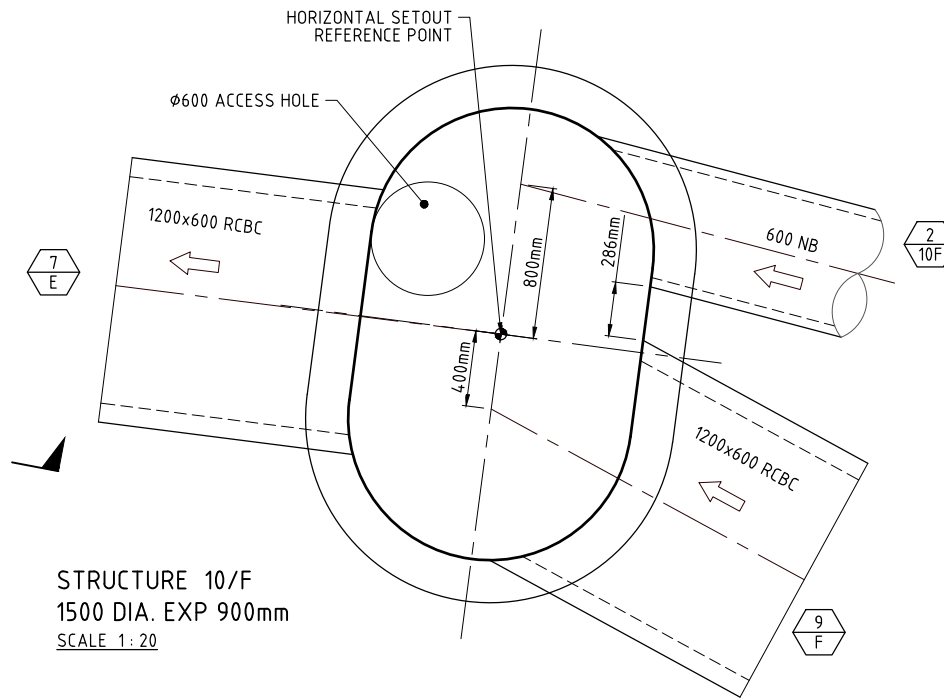
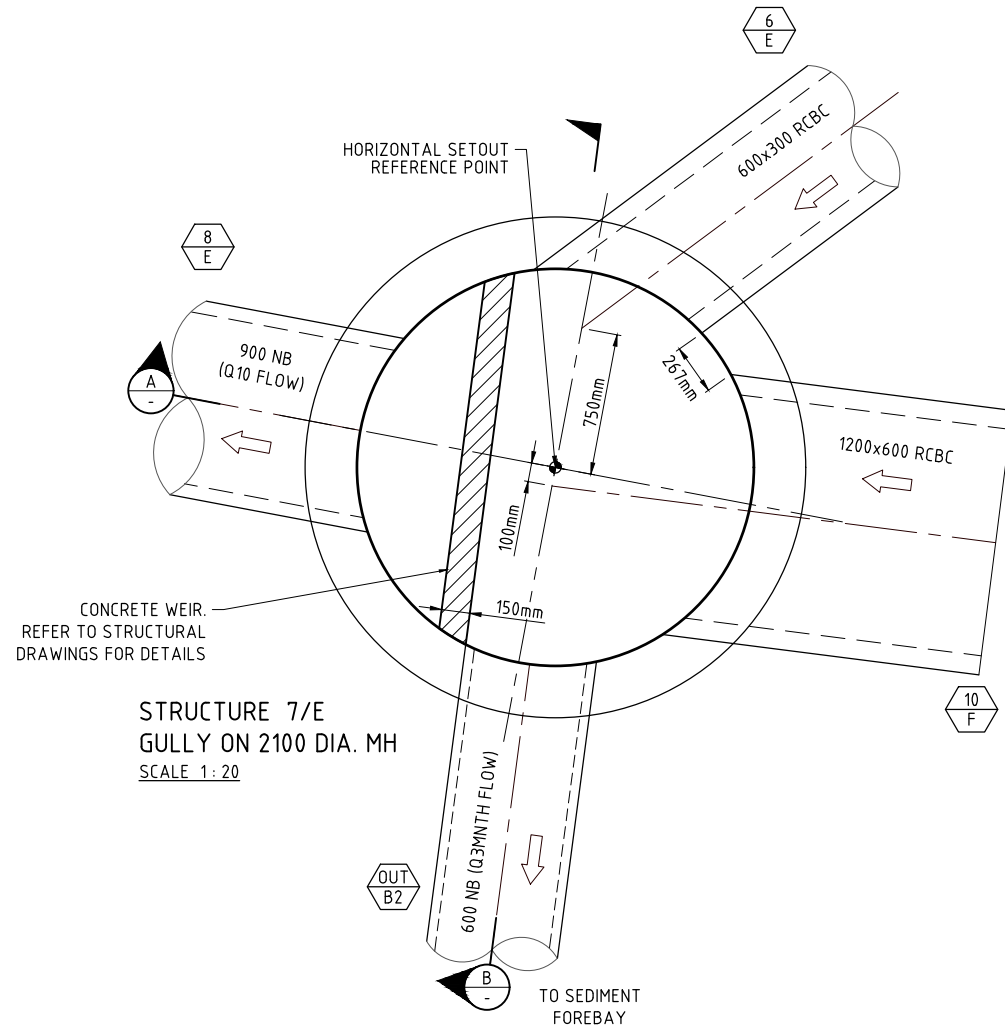
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LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL
COUNCIL REF: DA/38032/2019/V3RL
FILE NAME: DRAINAGE SECTIONS.DWG

PLAN: D10
ISSUE: B

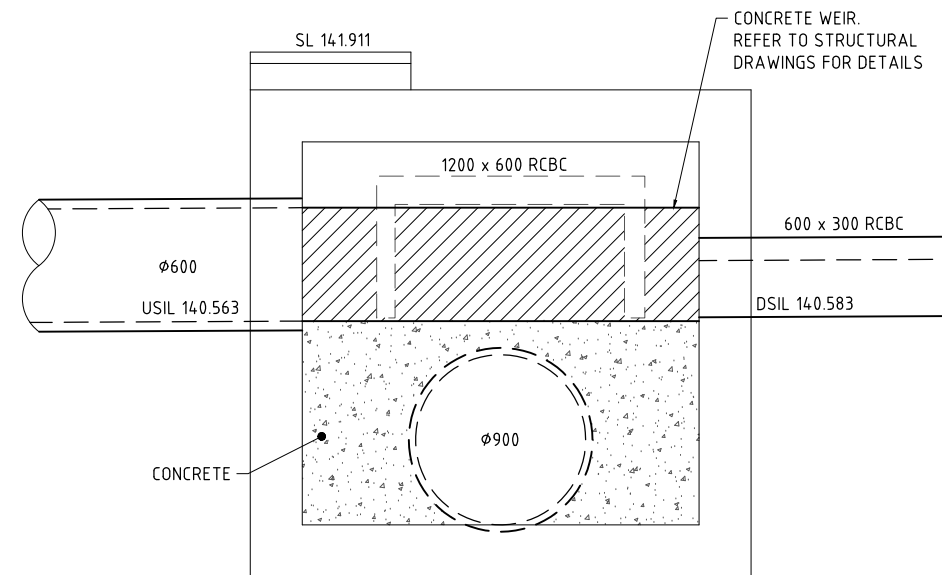
DENNIS FAMILY CORPORATION



The Essential First Step

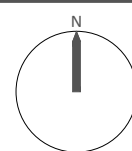


STRUCTURE 7/E
SECTION A-A
SCALE 1:20



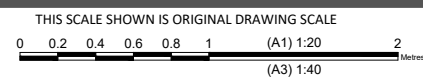
STRUCTURE 7/E
SECTION B-B
SCALE 1:20

NORTH:



SCALE:

1:20
A1



APPROVED

FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD

T.M. KINNEY
RPEQ 5087

S. MARSH
RPEQ 8068

A. FRASER
RPEQ 5691

J. PAPPAS
RPEQ 6086

DESIGNED
CDV

DRAWN
WN

CHECKED
ADF

DATUM: AHD

ISSUE: B

RESPONSE TO RFI DATED 2020/05/26
ISSUE FOR OPERATIONAL WORKS APPROVAL

15/06/20
24/04/20

DATE:

INIT: BJ

INIT: WN

TITLE:

DRAINAGE STRUCTURE DETAILS SHEET 1 OF 2

DFC (PROJECT MANAGEMENT) PTY LTD

'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR



The Essential First Step

DETAILS:

PROJECT: M2584E_1 D11 B

LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL

COUNCIL REF: DA/38032/2019/V3RL

FILE NAME: DRAINAGE DETAILS.DWG



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PLANNERS
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ENGINEERS
LANDSCAPE ARCHITECTS



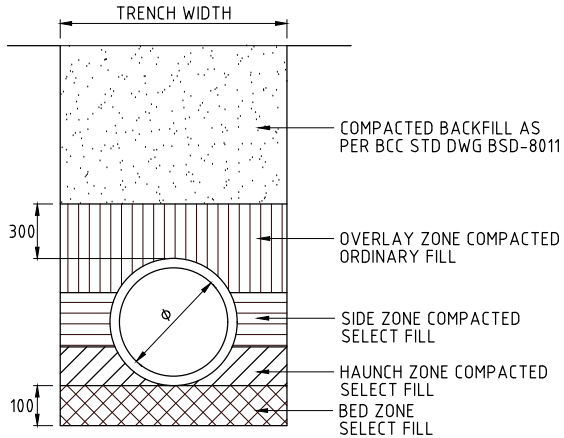
CONSTRUCTION EQUIPMENT	PIPE CLASS	MINIMUM COMPACTION COVER TO PIPE OBVERT							
		Ø375	Ø450	Ø525	Ø600	Ø675	Ø750	Ø825	Ø900
VIBRATORY RAMMER (UP TO 75kg)	2	0.450	0.400	0.400	0.350	0.350	0.300	0.300	0.250
	3	0.300	0.300	0.300	0.250	0.250	0.200	0.200	0.200
VIBRATORY TRENCH ROLLER (UP TO 2t)	2	0.400	0.400	0.350	0.250	0.250	0.200	0.200	0.200
	3	0.250	0.200	0.200	0.200	0.200	0.200	0.200	0.200
VIBRATORY SMOOTH DRUM ROLLER (7t)	2	0.700	0.700	0.650	0.650	0.650	0.600	0.600	0.400
	3	0.450	0.450	0.450	0.350	0.350	0.200	0.200	0.200
VIBRATORY SMOOTH DRUM ROLLER (10t)	2	0.850	0.850	0.800	0.800	0.800	0.750	0.750	0.750
	3	0.550	0.550	0.500	0.500	0.500	0.200	0.200	0.200
EXCAVATOR AND COMPACTION WHEEL (15t)	2	0.700	0.650	0.650	0.650	0.650	0.600	0.600	0.550
	3	0.450	0.450	0.450	0.450	0.450	0.350	0.350	0.250
EXCAVATOR AND COMPACTION WHEEL (25t)	2	1.050	1.000	0.950	0.900	0.900	0.850	0.850	0.750
	3	0.650	0.650	0.650	0.650	0.650	0.600	0.600	0.500
GRADER [CAT120H] (4.5t)	2	0.600	0.600	0.450	0.200	0.200	0.200	0.200	0.200
	3	0.600	0.450	0.450	0.200	0.200	0.200	0.200	0.200
GRADER [CAT140H] (17.0t)	2	0.600	0.600	0.600	0.200	0.200	0.200	0.200	0.200
	3	0.600	0.200	0.200	0.200	0.200	0.200	0.200	0.200
SCRAPER [CAT613C11] (27.2t)	2	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.200
	3	0.600	0.600	0.600	0.600	0.600	0.200	0.200	0.200
SCRAPER [CAT621F] (53.8t)	2	0.700	0.650	0.650	0.650	0.600	0.600	0.600	0.600
	3	0.650	0.600	0.600	0.650	0.600	0.600	0.600	0.600
DOZER [CATD7 G]	2	0.600	0.600	0.600	0.200	0.200	0.200	0.200	0.200
	3	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
DOZER [CATD9 R]	2	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.200
	3	0.600	0.600	0.600	0.600	0.600	0.200	0.200	0.200
EXCAVATOR [CAT315B] (15.8t)	2	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
	3	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
EXCAVATOR [CAT317] (17.3t)	2	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
	3	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
EXCAVATOR [CAT325B] (25.9t)	2	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
	3	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200

TYPE HS2 SUPPORT:

- THE HAUNCH ZONE GOES FROM THE BASE OF THE PIPE TO A HEIGHT OF 0.3m TIMES THE DIAMETER OF THE PIPE (ie TO 3/10 OF THE DIAMETER OF THE PIPE).
- THE HAUNCH ZONE IS COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 90%. (DI=60)
- THE SIDE ZONE GOES FROM THE TOP OF THE HAUNCH ZONE TO A HEIGHT OF 0.7 TIMES THE DIAMETER OF THE PIPE (ie TO 7/10 OF THE DIAMETER OF THE PIPE).
- THE SIDE ZONE IS COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 90%. (DI=60)
- THERE IS A 300mm OVERLAY ZONE OF COMPACTED ORDINARY FILL.

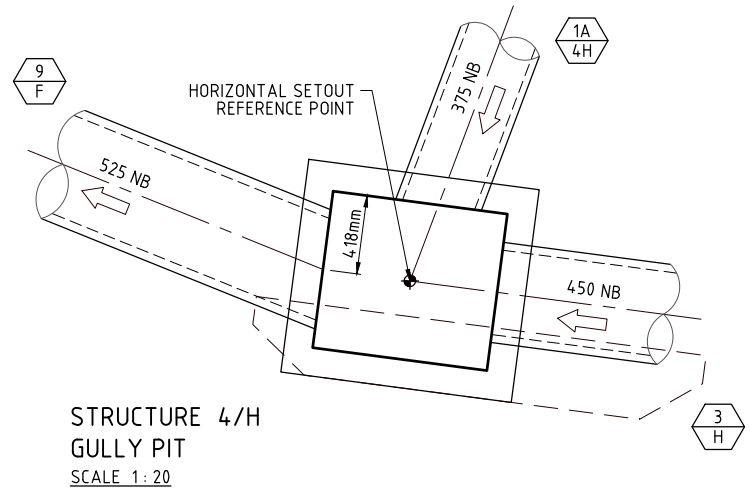
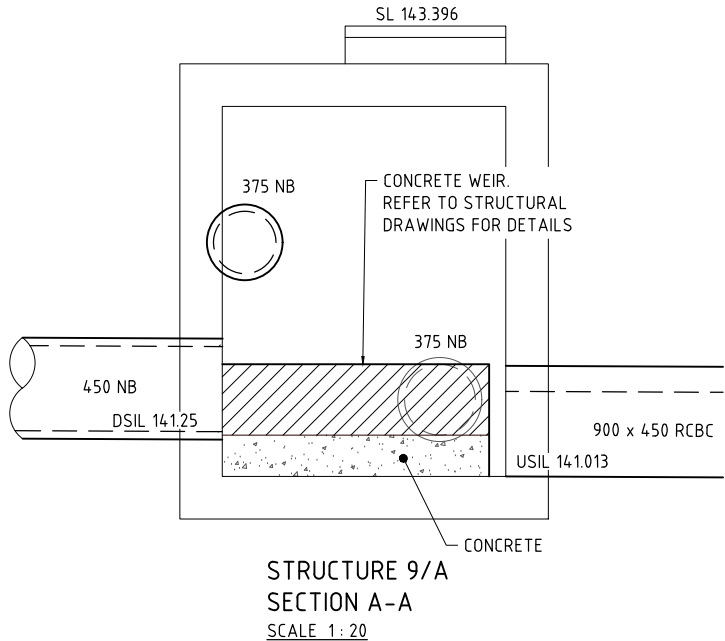
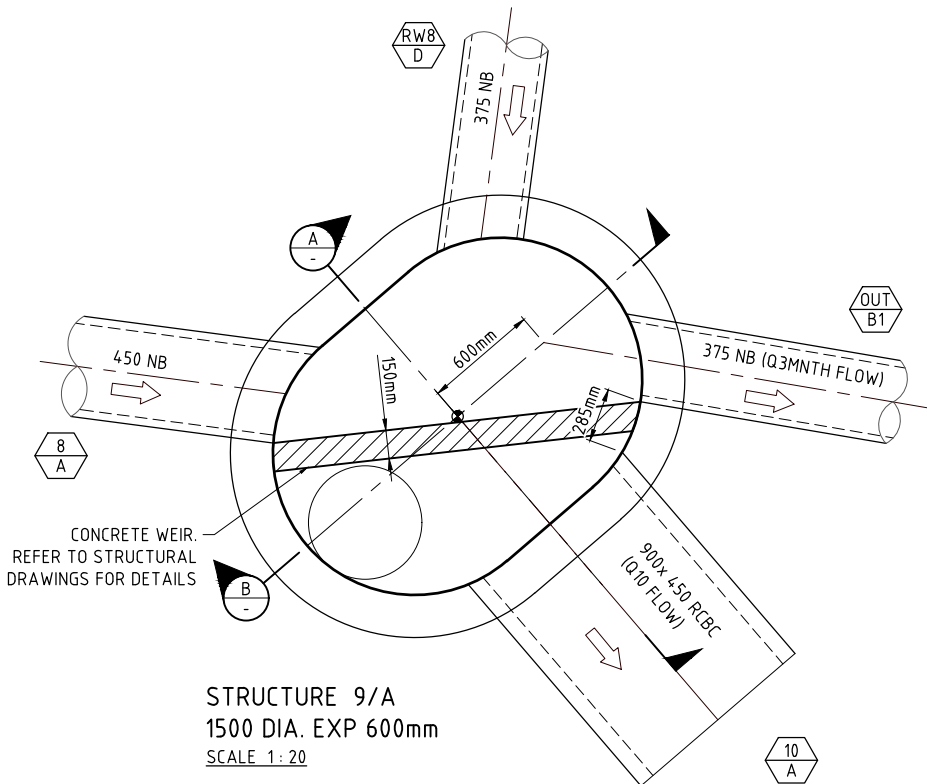
NOTES:

- SOIL TYPE USED FOR THIS TABLE IS CLAYEY SAND. ALL OTHER SOIL TYPES MUST BE REFERRED IMMEDIATELY TO THE SUPERVISING ENGINEER SO MINIMUM COVERS CAN BE CALCULATED.
- INSTALLATION TYPE FOR THIS TABLE IS HS2. (REFER DETAIL)
- ANY CONSTRUCTION EQUIPMENT, INSTALLATION TYPE, PIPE CLASS OR PIPE DIAMETER NOT COVERED IN THIS TABLE SHOULD BE REFERRED ONTO THE SUPERVISING ENGINEER BEFORE ANY CONSTRUCTION COMMENCES
- DISTANCES SHOWN ARE THE ABSOLUTE MINIMUM COMPACTION COVER TO THE OBVERT OF THE STORMWATER PIPE FOR THE NOMINATED MACHINERY. THE CONTRACTOR IS TO ENSURE THAT MACHINES THAT REQUIRE HIGHER COMPACTION COVER ARE KEPT CLEAR OF STORMWATER PIPES AND TRENCHES UNTIL THEIR NECESSARY COMPACTION COVER IS ACHIEVED.
- CONSTRUCTION EQUIPMENT LISTED IN THIS TABLE ARE EXAMPLES ONLY AND EQUIVALENT MACHINERY MAY BE USED.

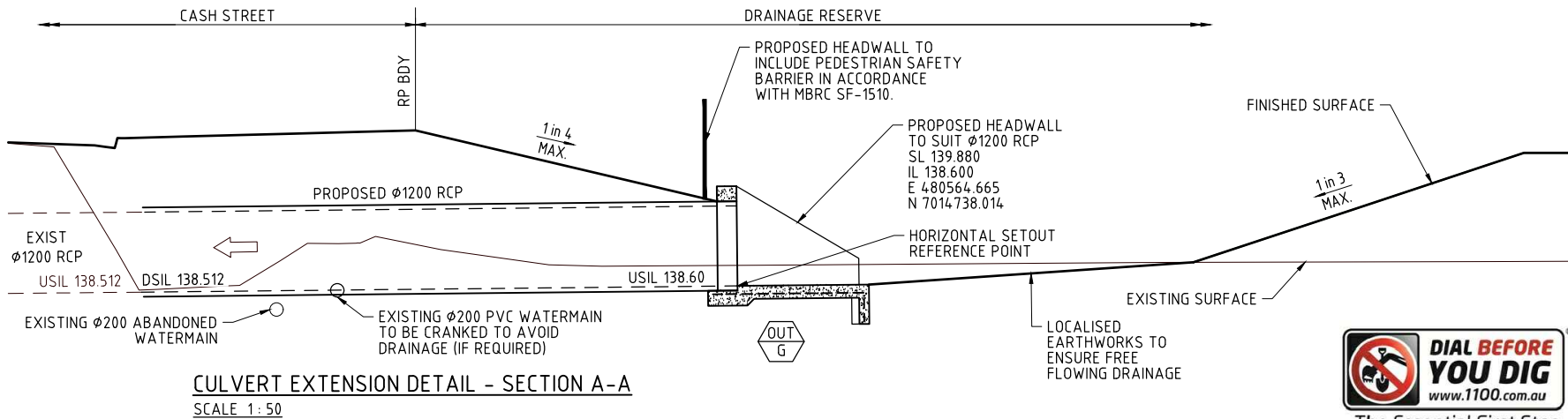
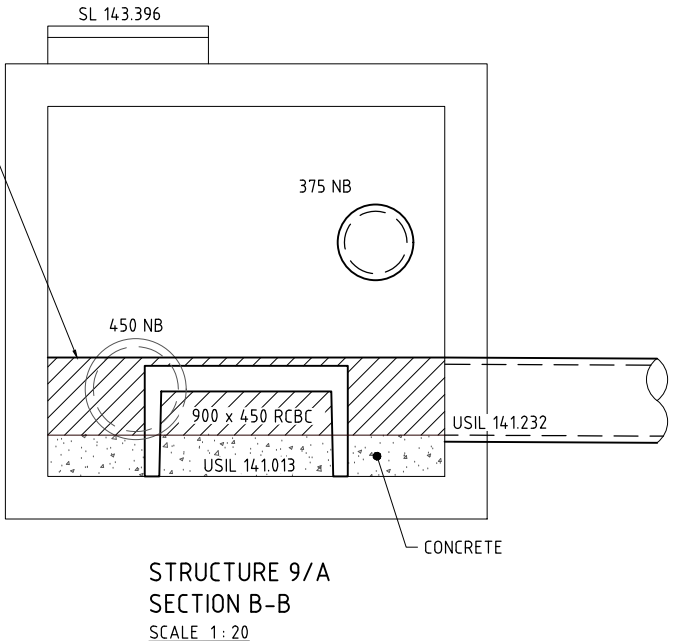


INSTALLATION TYPE HS2

NOTE:
CRACKED PIPES WILL NOT BE ACCEPTED AT 'ON MAINTENANCE' AND IT IS TO BE DEMONSTRATED IN ACCORDANCE WITH COUNCIL STANDARDS THAT THE STORMWATER SYSTEM IS ACCEPTABLE TO COUNCIL WITH REGARD TO CRACKED PIPES. (THE CONTRACTOR IS TO REFER TO SECTION 6.5.1 OF THE SUBDIVISION AND DEVELOPMENT GUIDELINES FOR FURTHER INFORMATION.)

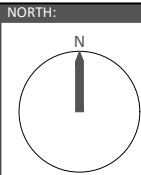


STRUCTURE 4/H
GULLY PIT
SCALE 1:20



BRISBANE - SUNSHINE COAST - CENTRAL QLD
SUNSHINE COAST
T209, Kon-Tiki Tower 1, 55 Plaza Parade,
Maroochydore Qld 4558
P 07 5450 3900 W www.jfpc.com.au
JFP URBAN CONSULTANTS PTY. LTD. A.C.N. 050 414 045

PLANNERS
URBAN DESIGNERS
SURVEYORS
ENGINEERS
LANDSCAPE ARCHITECTS



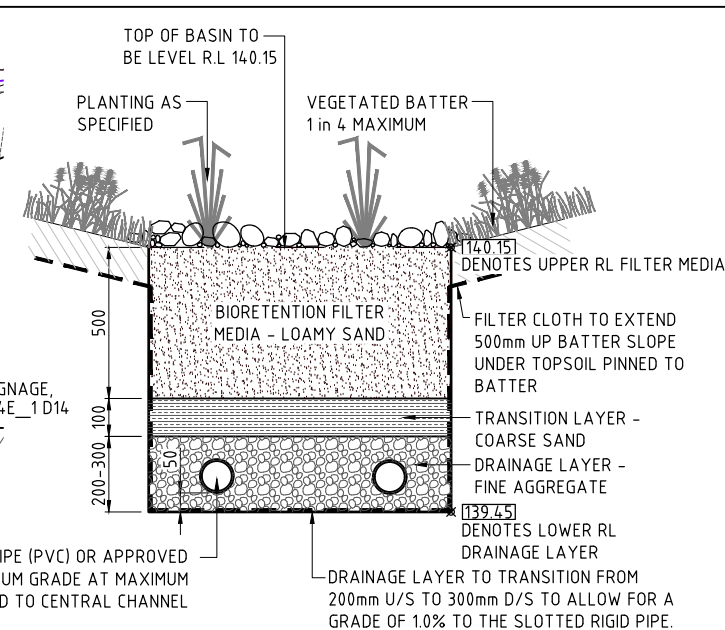
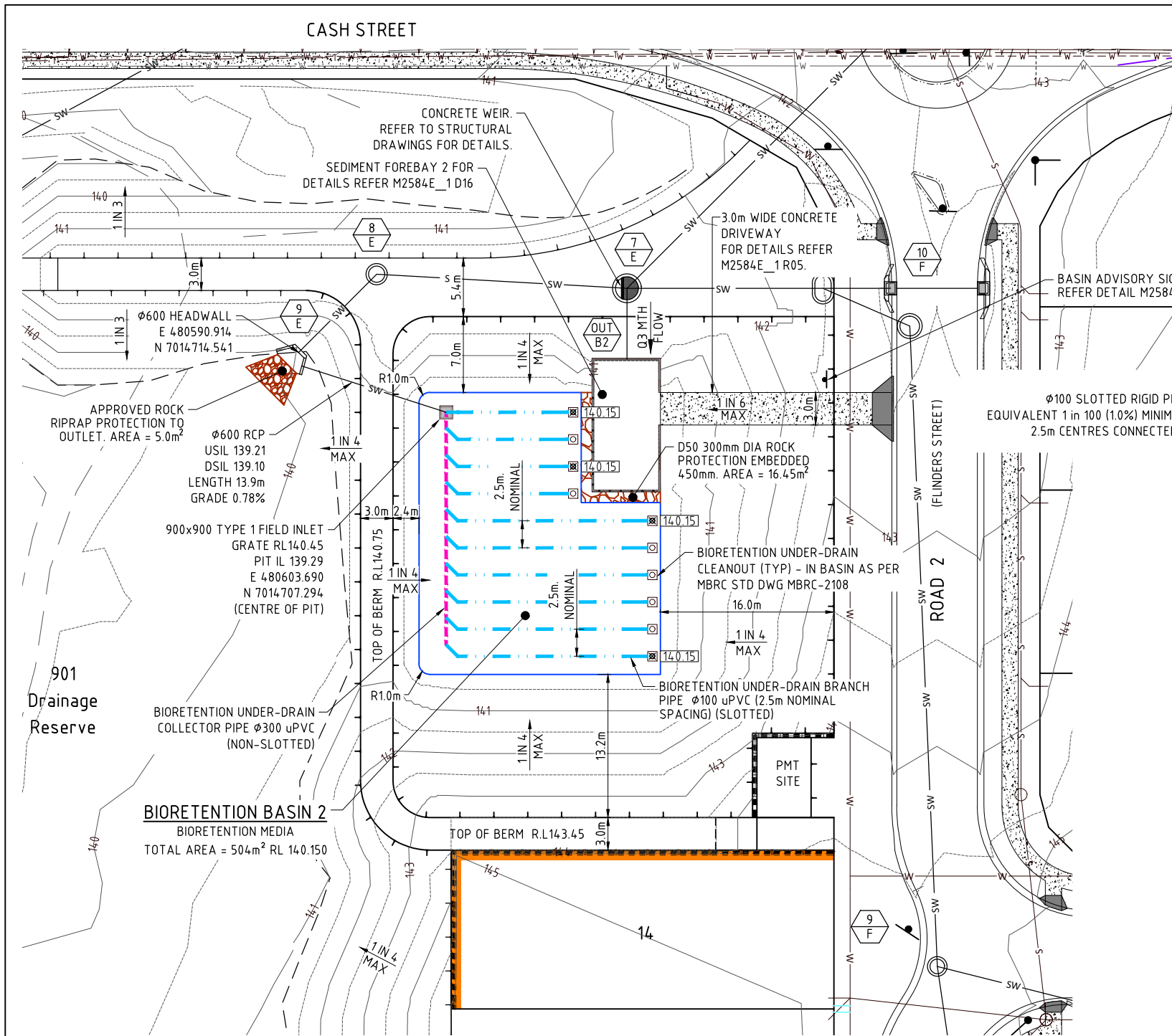
SCALE:
1:20
A1
THIS SCALE SHOWN IS ORIGINAL DRAWING SCALE
0 0.2 0.4 0.6 0.8 1 2
(A1) 1:20
(A3) 1:40
DO NOT SCALE FROM THIS DRAWING - USE ONLY DIMENSIONS PROVIDED - IF IN DOUBT PLEASE ENQUIRE
APPROVED
FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD
T.M. KINNEY RPEQ 5087
A. FRASER RPEQ 5691
J. PAPPAS RPEQ 6086
S. MARSH RPEQ 8068

ISSUE:
B
RESPONSE TO RFI DATED 2020/05/26
ISSUE FOR OPERATIONAL WORKS APPROVAL
DATE: 15/06/20
CDV WN
INIT: 24/04/20

TITLE:
DRAINAGE STRUCTURE DETAILS
SHEET 2 OF 2
DFC (PROJECT MANAGEMENT) PTY LTD
'ARCHERS WAY' ESTATE - STAGE 1
AT 22-80 CASH STREET, D'AGUILAR



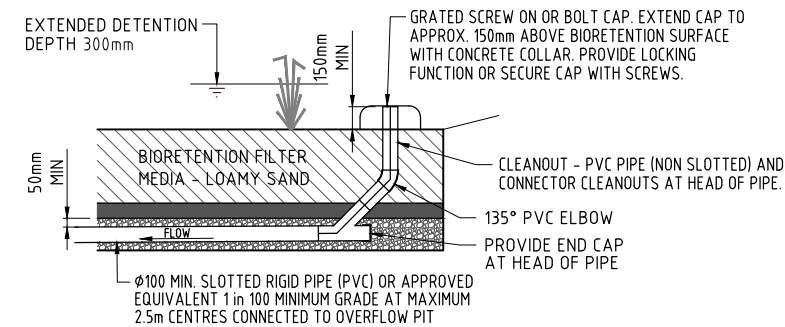
DETAILS:
PROJECT: M2584E_1
PLAN: D12
ISSUE: B
LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL
COUNCIL REF: DA/38032/2019/V3RL
FILE NAME: DRAINAGE DETAILS.DWG



BIORETENTION FILTER MATERIAL DETAIL

NOT TO SCALE

- CONSTRUCTION TOLERANCES AS DOCUMENTED IN THE "WATER SENSITIVE URBAN DESIGN CONSTRUCTION AND ESTABLISHMENT GUIDELINES - SWALES, BIORETENTION SYSTEMS AND WETLANDS" (WATER BY DESIGN) MUST BE ACHIEVED.
- FILTER CLOTH IS NOT TO BE PLACED BETWEEN ANY FILTER LAYERS. FILTER CLOTH IS TO EXTEND 500mm UP BATTER UNDER TOPSOIL PINNED TO BATTER.
- UNDER-DRAIN: SLOTTED RIGID PIPE (uPVC OR SIMILAR TO AS 2439.1) OR APPROVED EQUIVALENT, 1.0% MIN. GRADE. PIPE JOINS SHOULD BE GLUED USING PLUMBING CEMENT. PIPE SHOULD NOT BE INSTALLED WITH A FILTER SOCK AT MAX 2.5m CENTRES.



UNDER-DRAIN CLEANOUT TYPICAL DETAIL

SCALE 1: 25 (REFER TO MBRC STD DWG MBRC-2108)

LEGEND:

- PROPOSED STORMWATER DRAINAGE
- PROPOSED UNDER DRAINAGE
- PROPOSED UNDER DRAINAGE
- PROPOSED UNDER DRAINAGE
- STRUCTURE NUMBERS
- FENCE (REFER LANDSCAPE DRAWINGS)

BIORETENTION MEDIA SPECIFICATION

FILTER MATERIAL SHALL BE GRADED AND CAN BE SILICEOUS OR CALCAREOUS IN ORIGIN. THE FILTER MATERIAL SHALL BE EVENLY PLACED AND LIGHTLY COMPACTED. THE FILTER MATERIAL SHALL COMPLY WITH THE FOLLOWING CRITERIA:

MATERIAL:
SANDY LOAM OR APPROVED EQUIVALENT WITH A HYDRAULIC CONDUCTIVITY OF 180mm/hr AND BE FREE FROM RUBBISH AND DETRITUS MATERIAL.

PARTICLE SIZE:
TYPICAL SOIL COMPOSITION WOULD BE:
CLAY 5-15% (PARTICLE SIZE <0.002mm)
SILT <30% (PARTICLE SIZE 0.002-0.05mm)
SAND 50%-70% (PARTICLE SIZE 0.05mm-2.0mm)
AND APPROVED MATERIAL DOES NOT HAVE TO BE SCREENED TO REMOVE LARGE PARTICLES.

ORGANIC CONTENT:
ACCEPTABLE RANGE BETWEEN 5%-10%, MEASURED IN ACCORDANCE WITH AS1289 4.1.1

pH
6.0 TO 7.5, SILICEOUS MATERIAL MAY BE LOWER.

TRANSITIONAL LAYER
SHALL BE WELL GRADED SAND OR COARSE SAND MATERIAL. THE GRADING OF THE TRANSITIONAL LAYER SHALL COMPLY WITH THE FOLLOWING CRITERIA:

% PASSING 1.4mm 100%
1.0mm 80%
0.7mm 44%
0.5mm 8.4%

THE TRANSITIONAL LAYER SHALL HAVE A HYDRAULIC CONDUCTIVITY OF 180mm/hr

DRAINAGE LAYER:
SHALL BE WELL GRADED COARSE SAND OR SCREENINGS (2mm OR 5mm) AND SHALL HAVE A MINIMUM HYDRAULIC CONDUCTIVITY OF 3600mm/hr.

THE CONTRACTOR IS TO NOTIFY THE SUPERVISING ENGINEER OF ANY DISCREPANCIES BETWEEN THE DESIGN PLANS AND THE CONDITIONS ON SITE PRIOR TO COMMENCEMENT OF ANY PIPE LAYING.

THIS DRAWING TO BE READ IN CONJUNCTION WITH IPWEAQ "WATER BY DESIGN" STANDARD DRAWINGS:

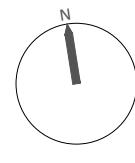
WSUD-001 - "BIORETENTION STANDARD PROFILE OVERFLOW PIT"
WSUD-003 - "STANDARD PROFILE UNDERDRAIN CLEANOUT"
WSUD-005 - "LARGE COARSE SEDIMENT FOREBAY"
WSUD-006 - "BASIN WEIR DETAILS"

PRIOR TO COMMENCEMENT OF WORKS REFER TO VEGETATION MANAGEMENT PLAN, REHABILITATION PLAN AND LANDSCAPE ARCHITECTS PLANS

BIORETENTION 2 UNDER-DRAIN SIZING DESIGN CRITERIA

PIPE REACH	BIORETENTION PROPERTIES					UNDER-DRAIN PIPE SIZING				
	'K _{sat} ' INFILTRATION RATE (mm/hr)	'A' BIORETENTION FILTER AREA (m ²)	'h' EXTENDED DETENTION DEPTH (m)	'd' BIORETENTION FILTER DEPTH (m)	'Q _{max} ' FLOW THROUGH FILTER (l/s)	Q _{SLOTTED} REQUIRED PIPE FLOW (l/s)	PIPE DIAMETER (mm)	PIPE GRADE (%)	PIPE CAPACITY (SINGLE) (l/s)	NUMBER OF PIPES
UNDER-DRAIN SLOTTED BRANCH PIPE	180	504	0.30	0.50	40.3	48.4	100	1.0	6.1	10
UNDER-DRAIN COLLECTOR PIPE	180	504	0.30	0.50	40.3	48.4	300	0.5	80.8	1

NORTH:



SCALE:

1:250

A1

THIS SCALE SHOWN IS ORIGINAL DRAWING SCALE

0 2.5 5 7.5 10 12.5 15 20 25

(A1) 1:250

(A3) 1:500

DO NOT SCALE FROM THIS DRAWING - USE ONLY DIMENSIONS PROVIDED - IF IN DOUBT PLEASE ENQUIRE

APPROVED

FOR AND ON BEHALF OF JFP URBAN CONSULTANTS PTY LTD

T.M. KINNEY RPEQ 5087

A. FRASER RPEQ 5691

L. PAPPAS RPEQ 6086

S. MARSH RPEQ 8068

ISSUE:

DESIGNED CDV

DRAWN WVN

CHECKED ADF

DATUM: AHD

ISSUE: B

RESPONSE TO RFI DATED 2020/05/26

ISSUE FOR OPERATIONAL WORKS APPROVAL

TITLE:

DRAINAGE BIORETENTION PLAN AND DETAILS

BASIN 2

DFC (PROJECT MANAGEMENT) PTY LTD

'ARCHERS WAY' ESTATE - STAGE 1

AT 22-80 CASH STREET, D'AGUILAR

DENNIS FAMILY CORPORATION

DETAILS:

PROJECT: M2584E_1 D15

PLAN: B

ISSUE: B

LOCAL AUTHORITY REF: MORETON BAY REGIONAL COUNCIL

COUNCIL REF: DA/38032/2019/V3RL

FILE NAME: BIORETENTION.DWG