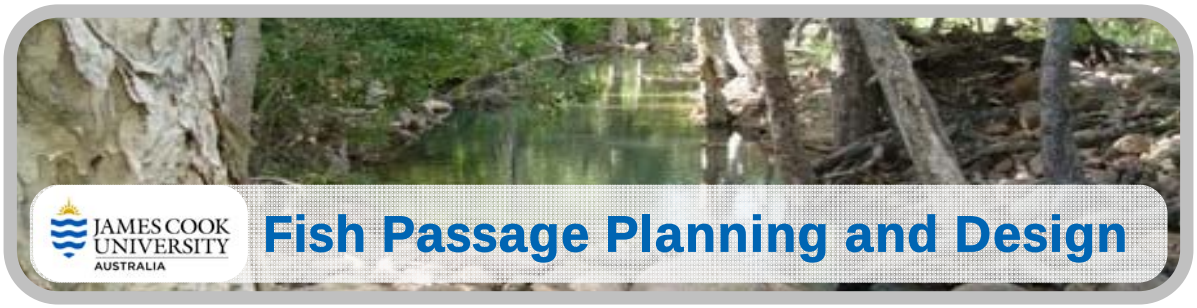


Culvert Fishway Planning and Design Guidelines

Part I – Design Drawings for Fishway Projects

Ross Kapitzke
James Cook University
School of Engineering and Physical Sciences

April 2010 – VER2.0

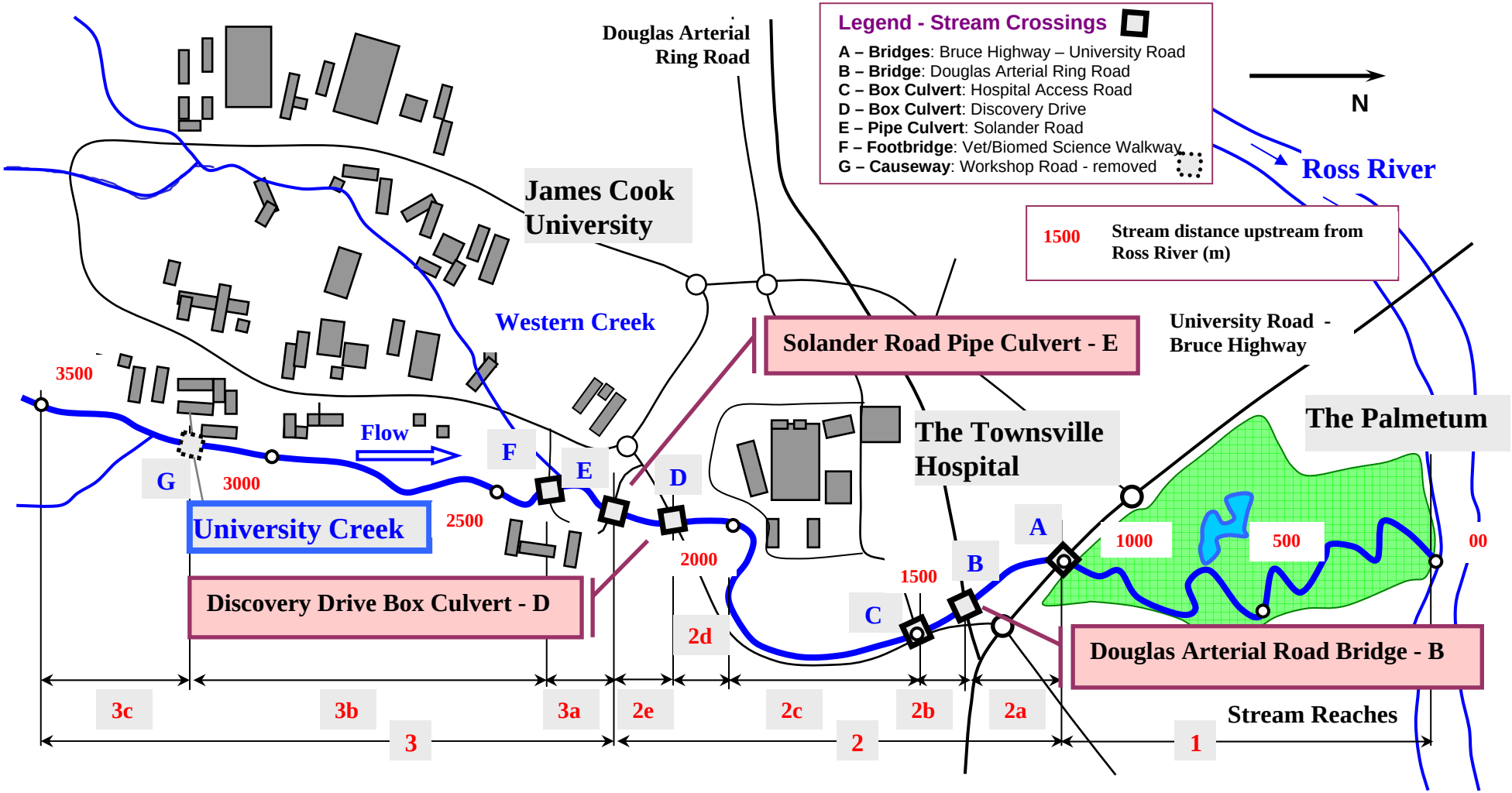
JAMES COOK UNIVERSITY
AUSTRALIA

James Cook University School of Engineering and Physical Sciences
Culvert Fishway Planning and Design Guidelines
Part I – Design Drawings for Fishway Projects

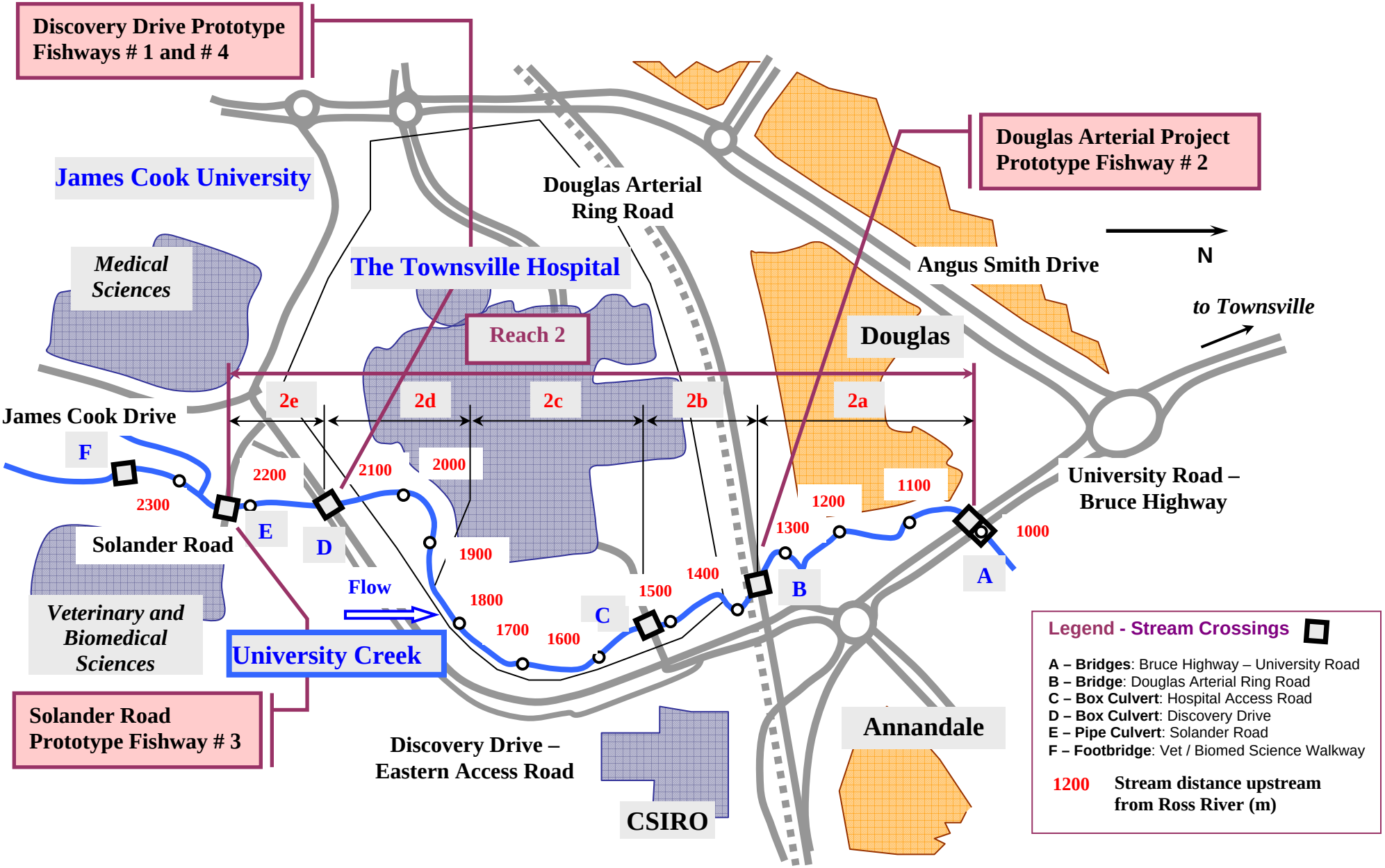
Contents

APPENDIX I1 – UNIVERSITY CREEK PROTOTYPE CULVERT FISHWAYS

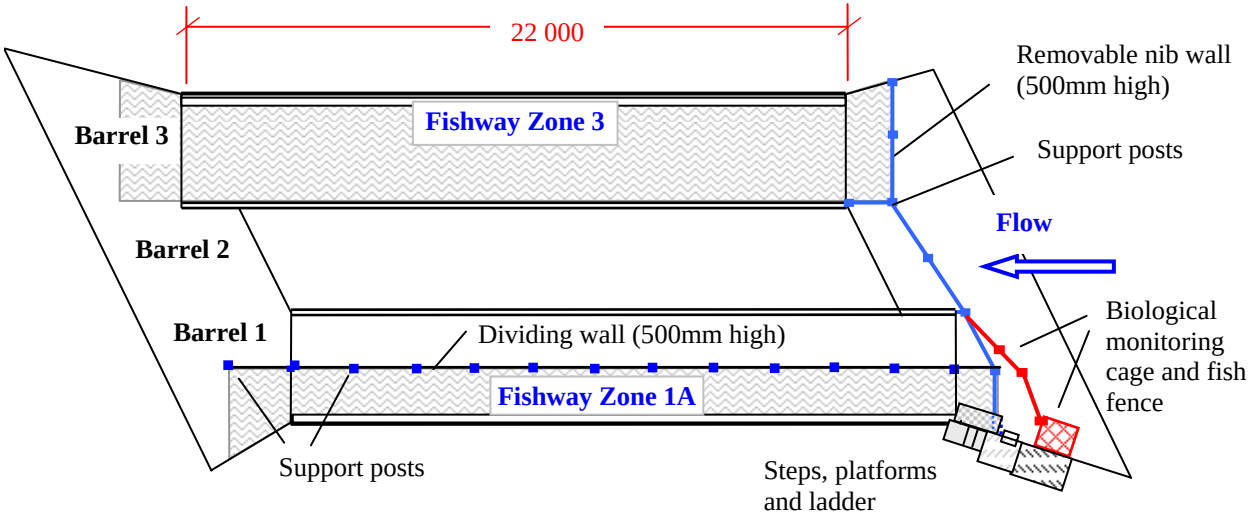
Drawing	Title
University Creek Reaches, Crossings and Prototype Fishways	
	University Creek Prototype Fishways – Creek Reaches and Crossings
	University Creek Prototype Fishways – Reach 2 Crossings and Fishways
Discovery Drive Prototype Fishway # 1 and Prototype Fishway # 4	
	University Creek Discovery Drive box culvert fishways – General arrangement
	Discovery Drive box culvert – Prototype Fishway # 1 – Offset Baffle fishway
	Discovery Drive box culvert – Prototype Fishway # 4 – Corner "EL" Baffle fishway
Douglas Arterial Project Prototype Fishway # 2	
	University Creek Douglas Arterial Project crossing – Layout plan
	Douglas Arterial Project diversion drain and rock ramps – General arrangement
	Douglas Arterial Project bridge crossing – Elevation
	Douglas Arterial Project – Prototype Fishway # 2 – Rock ramp layout
	Douglas Arterial Project – Prototype Fishway # 2 – Rock ramp details
Solander Road Prototype Fishway # 3	
	University Creek Solander Road pipe culvert – Prototype Fishway # 3 – Plan
	Solander Road pipe culvert – Prototype Fishway # 3 – Long section
	Solander Road pipe culvert – Prototype Fishway # 3 – Rock ramp detail
	Solander Road pipe culvert – Prototype Fishway # 3 – Pipe and apron fishways
	Solander Road pipe culvert – Prototype Fishway # 3 – Offset Baffle fishway
	Solander Road pipe culvert – Prototype Fishway # 3 – Corner "Quad" Baffle fishway
Notes	These are prototype facilities in which the baffle fishway devices are constructed of light duty materials to suit adaptation and performance evaluation, and which include provisions for monitoring and access that will not normally be incorporated into field installations of culvert fishway facilities
	These drawings have been prepared specifically for use on the University Creek prototype fishways. They are not standard drawings and the designs are not necessarily applicable to other locations. Users should make their own site-specific evaluation and design arrangements and should seek specialist input on fish passage design as required.



University Creek Prototype Fishways – Creek Reaches and Crossings

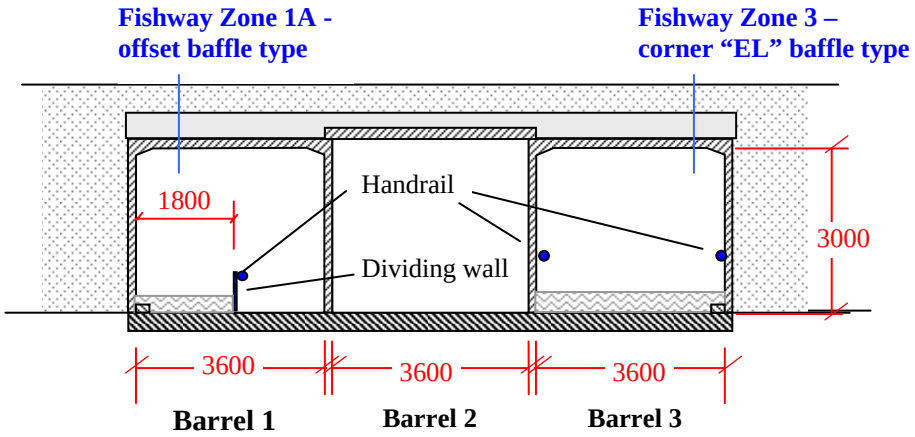


University Creek Prototype Fishways – Reach 2 Crossings and Fishways

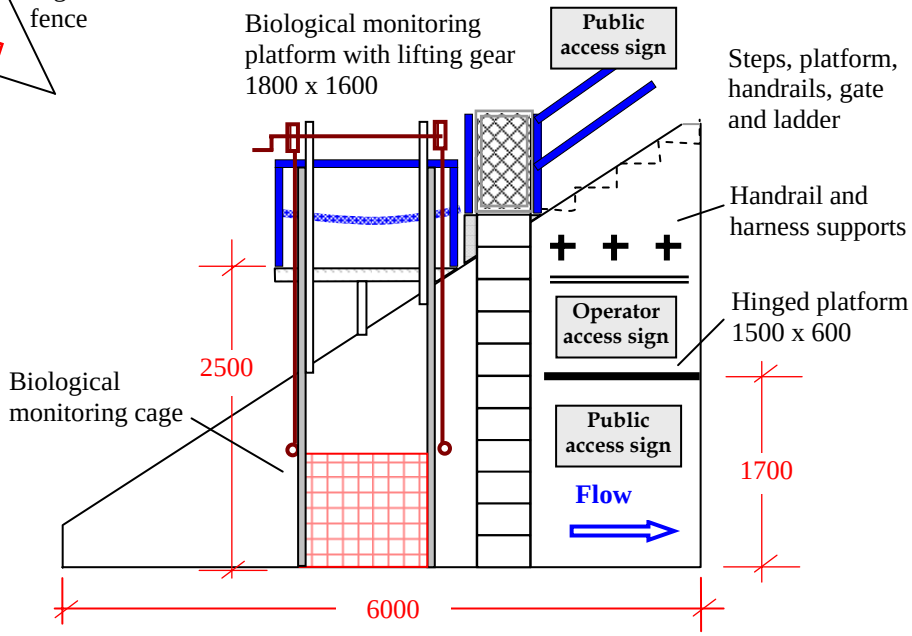


Culvert Plan View

This is a prototype facility in which the baffle fishway devices are constructed of light duty materials to suit adaptation and performance evaluation, and which includes provisions for monitoring and access that will not normally be incorporated into field installations of culvert fishway facilities



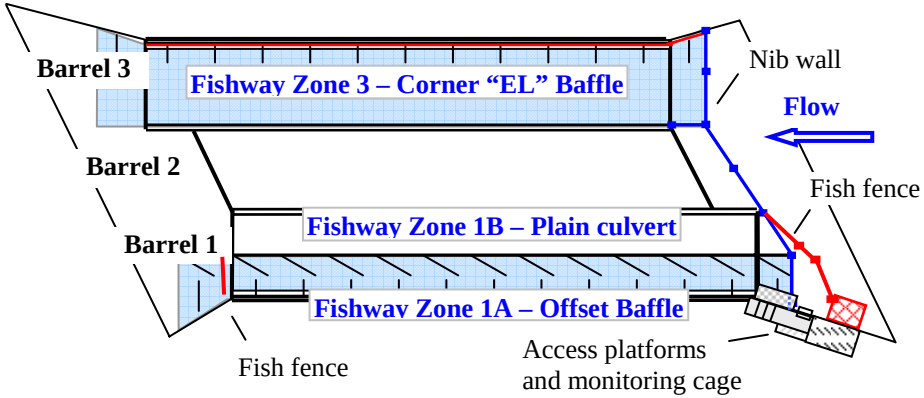
Culvert Section



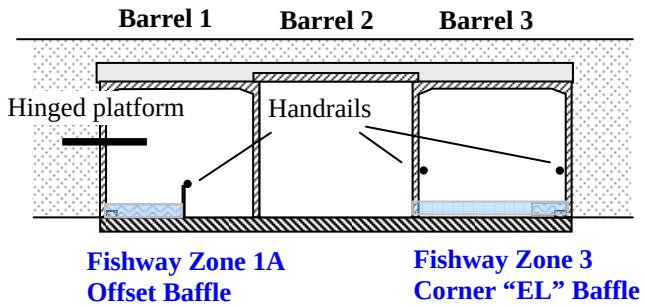
Wingwall Elevation

University Creek Discovery Drive Box Culvert Fishways – General Arrangement Plan, Section and Elevation

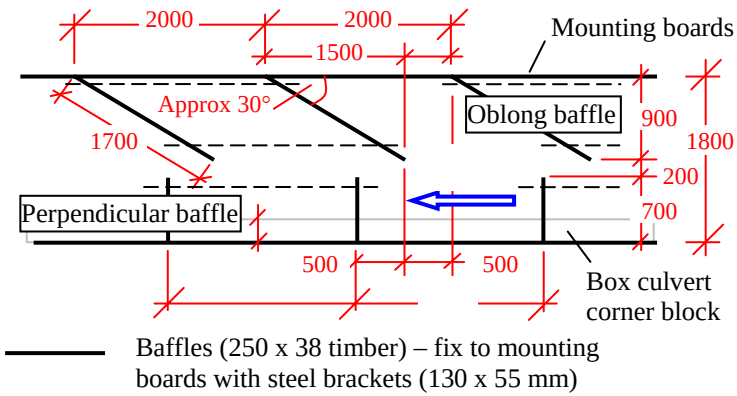
University Creek Discovery Drive Culvert Fishway –



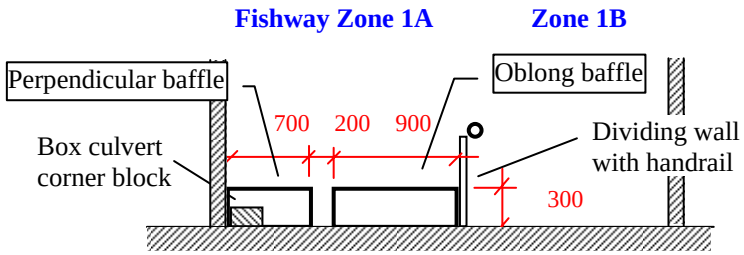
Culvert Plan showing Fishway Zones and Monitoring Facilities



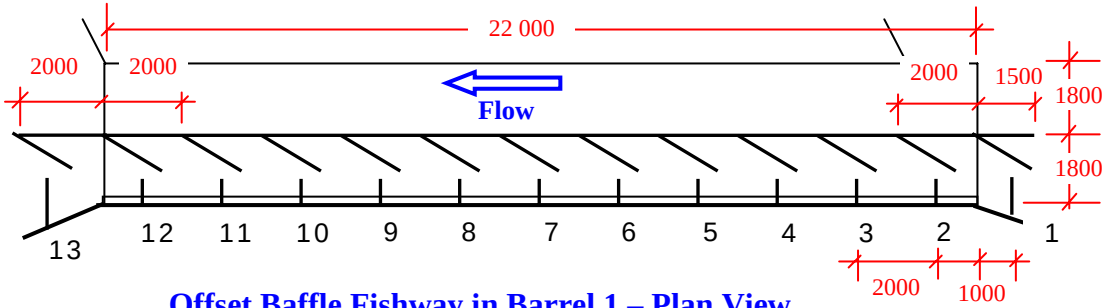
Culvert Section showing Fishway Zones



Offset Baffle Detail



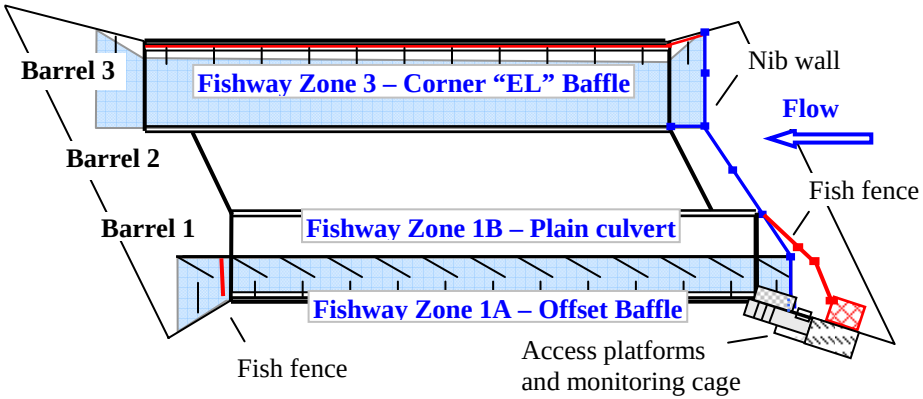
Offset Baffle Fishway – Barrel 1 looking downstream



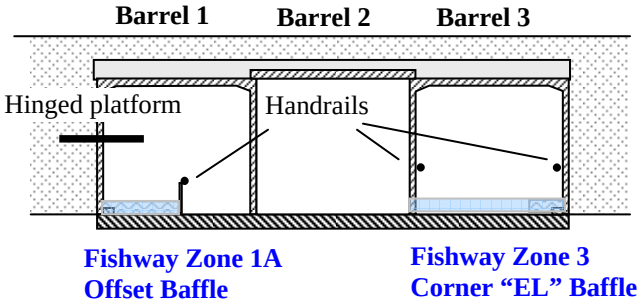
Offset Baffle Fishway in Barrel 1 – Plan View

This is a prototype facility in which the baffle fishway devices are constructed of light duty materials to suit adaptation and performance evaluation, and which includes provisions for monitoring and access that will not normally be incorporated into field installations of culvert fishway facilities

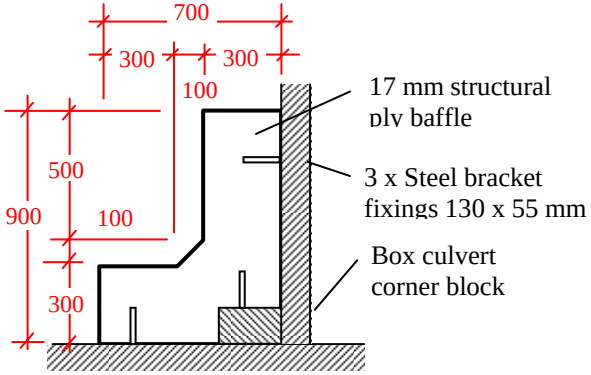
Discovery Drive box culvert – Prototype Fishway # 1 – Offset Baffle configuration



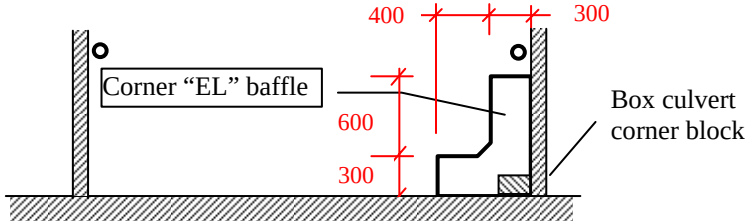
Culvert Plan showing Fishway Zones and Monitoring Facilities



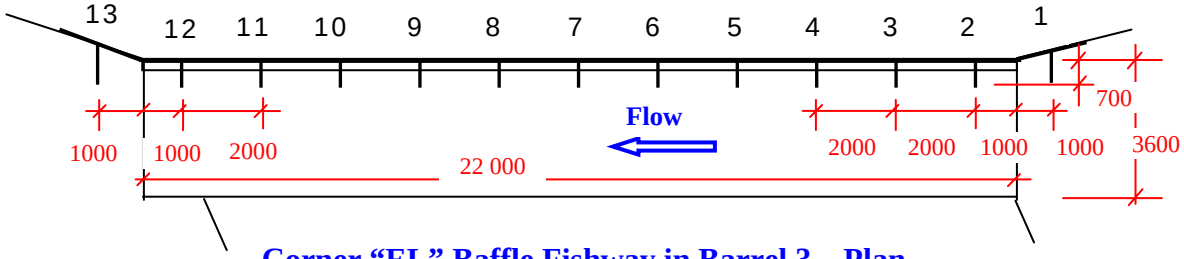
Culvert Section showing Fishway Zones



Corner "EL" Baffle Detail



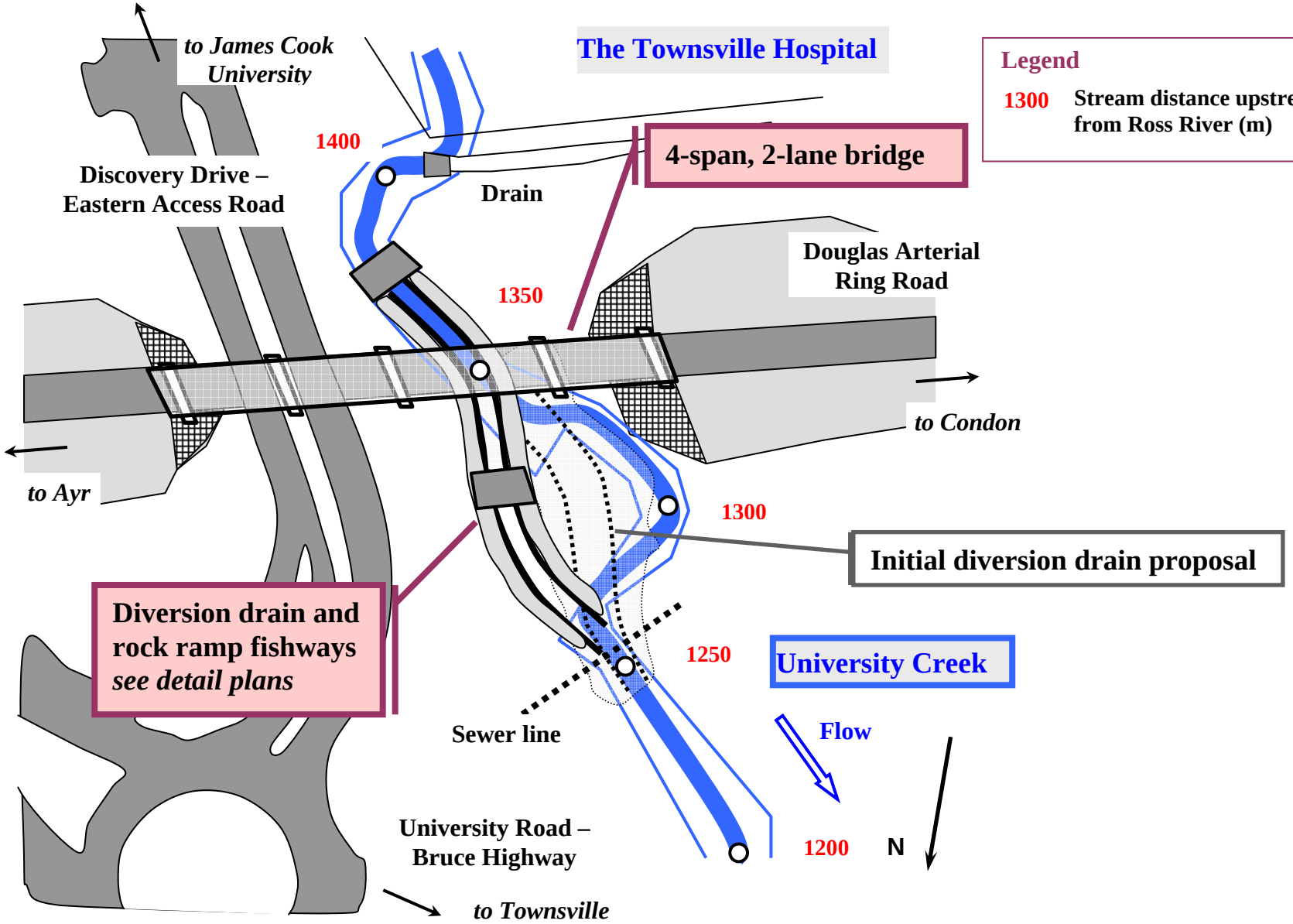
Corner Baffle Fishway – Barrel 3 looking downstream



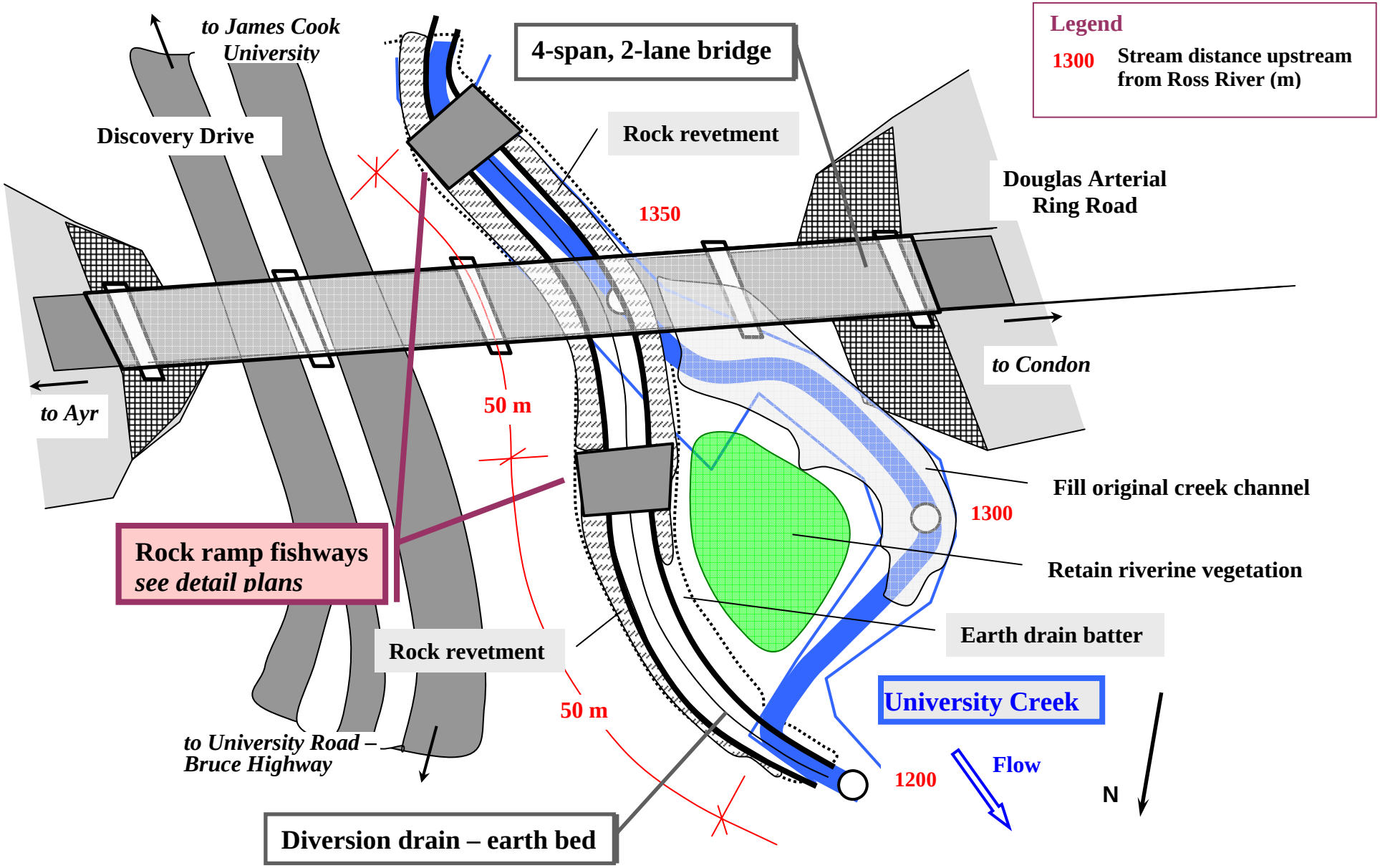
Corner "EL" Baffle Fishway in Barrel 3 – Plan

This is a prototype facility in which the baffle fishway devices are constructed of light duty materials to suit adaptation and performance evaluation, and which includes provisions for monitoring and access that will not normally be incorporated into field installations of culvert fishway facilities

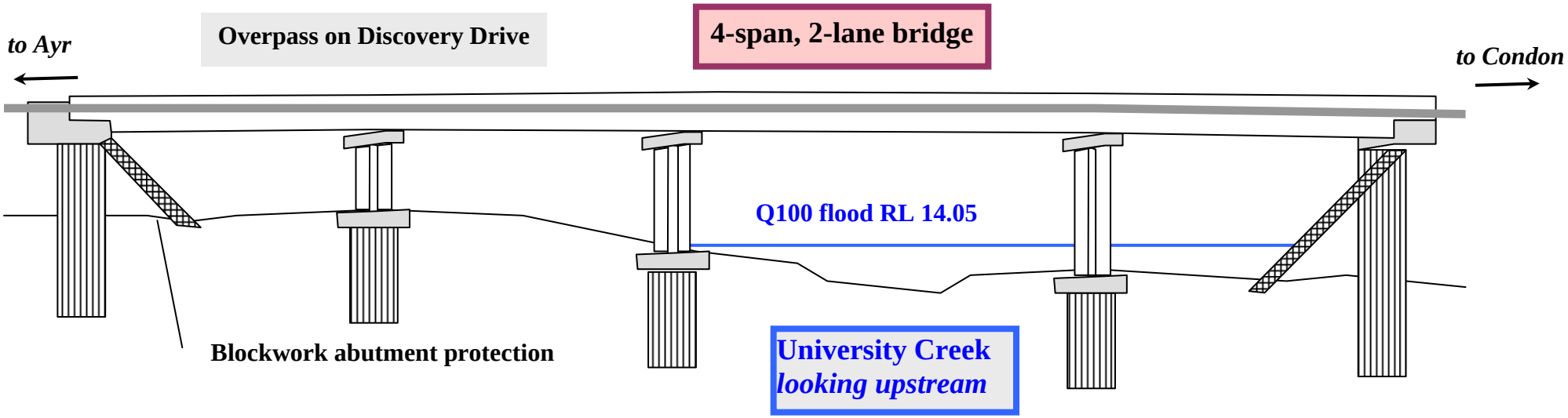
Discovery Drive box culvert – Prototype Fishway # 4 – Corner "EL" Baffle configuration



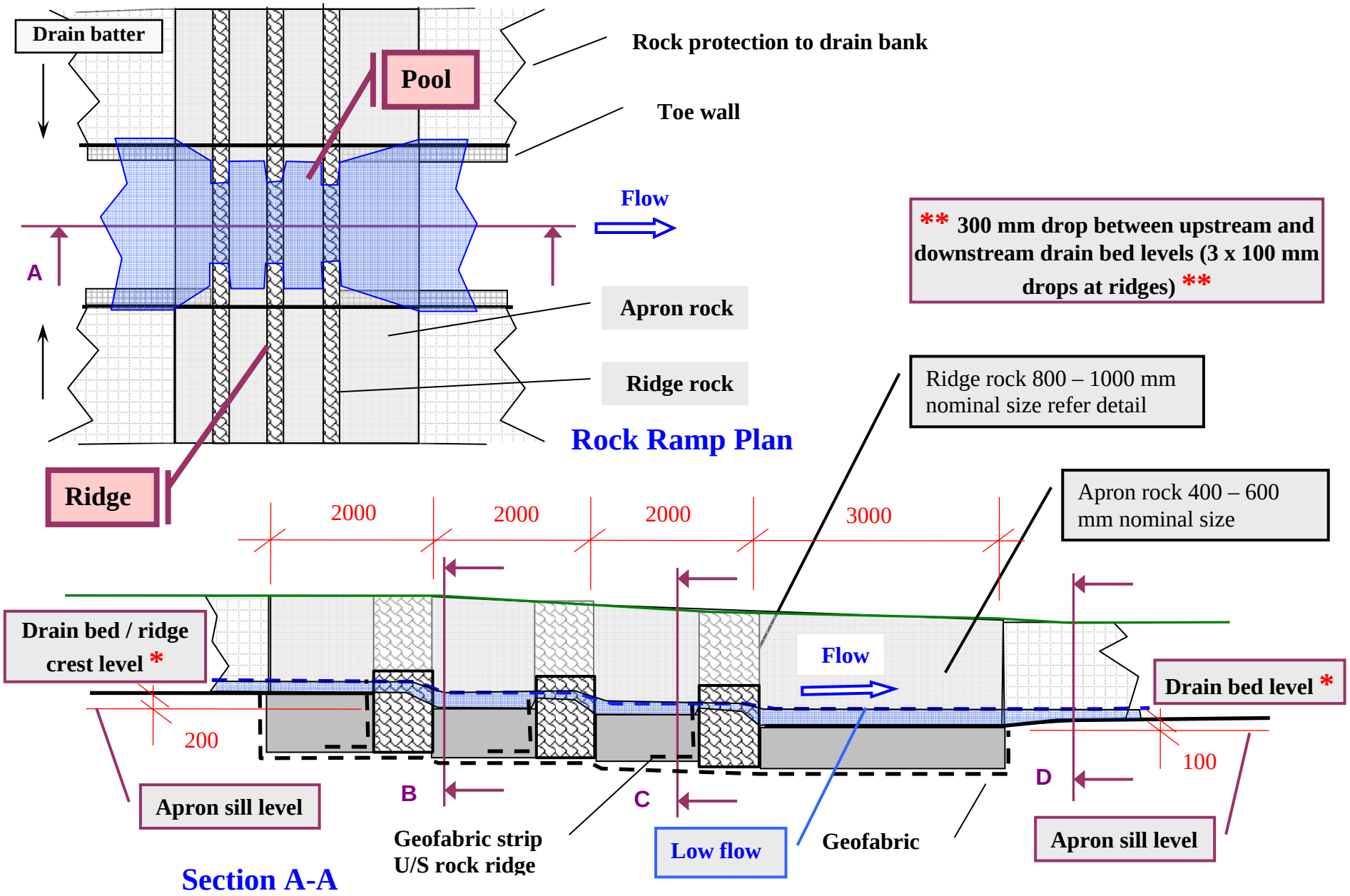
University Creek Douglas Arterial Project Crossing – Layout Plan



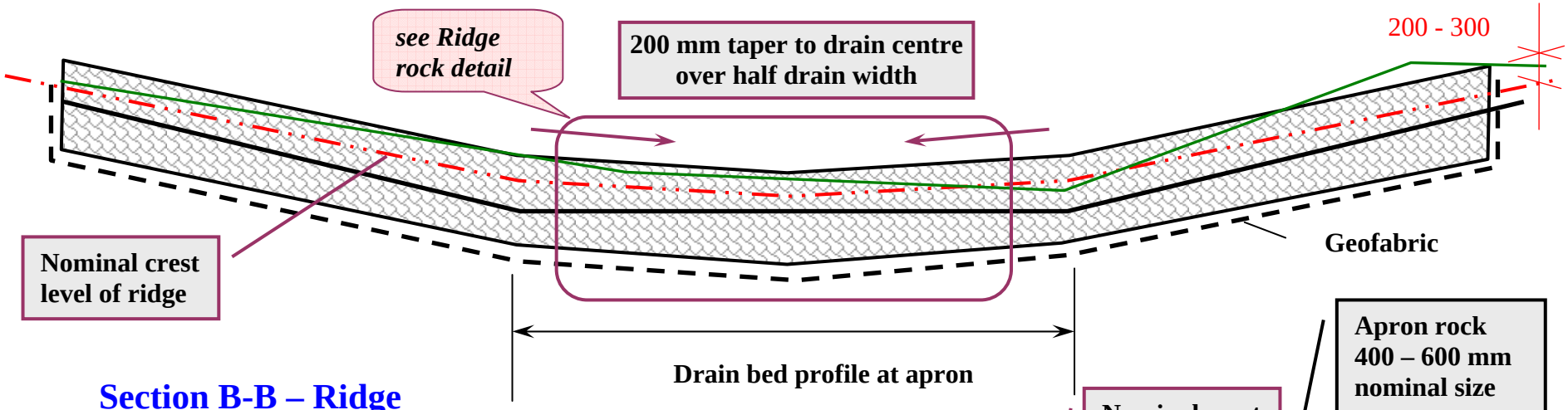
Douglas Arterial Project Diversion Drain and Rock Ramp Fishways – General Arrangement



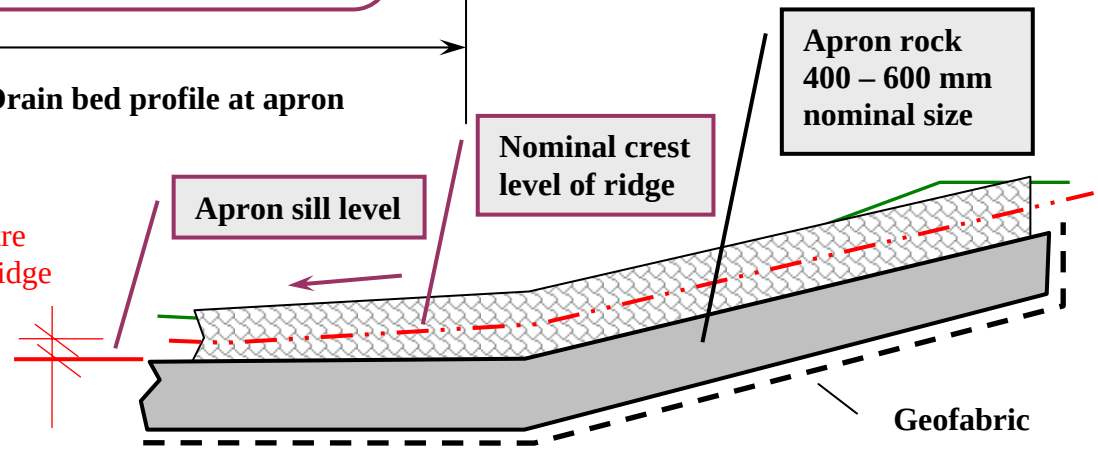
University Creek Douglas Arterial Project Bridge Crossing – Elevation



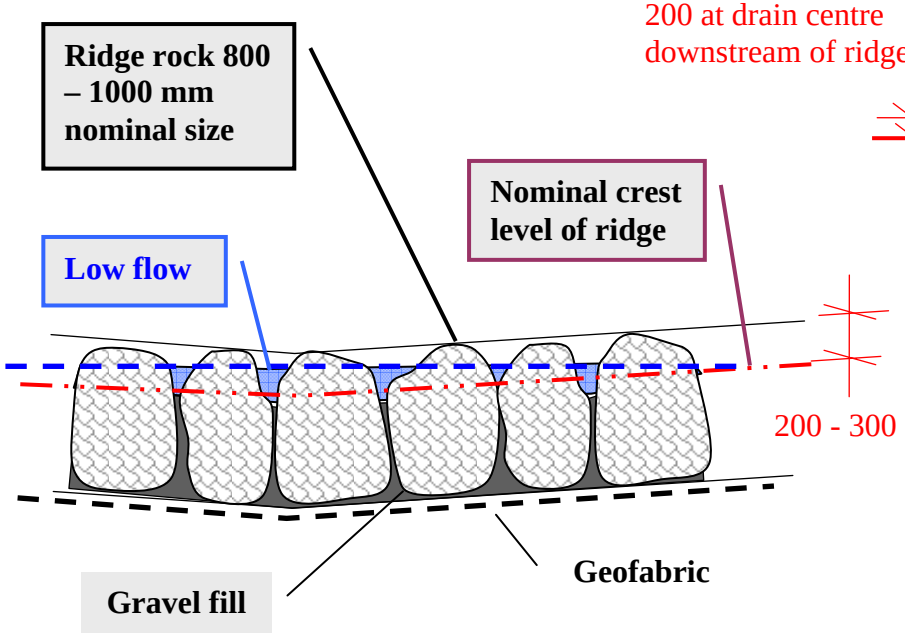
University Creek Douglas Arterial Project Rock Ramp Layout



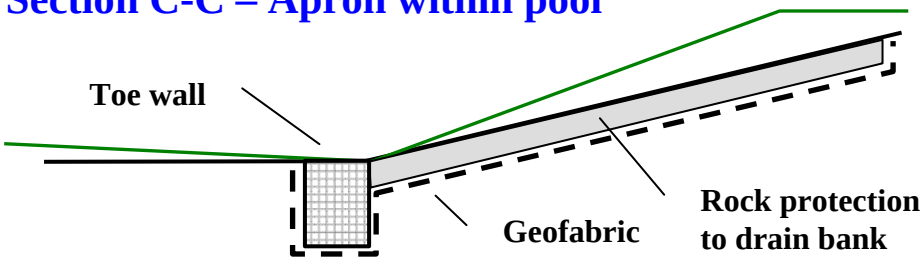
Section B-B – Ridge



Section C-C – Apron within pool

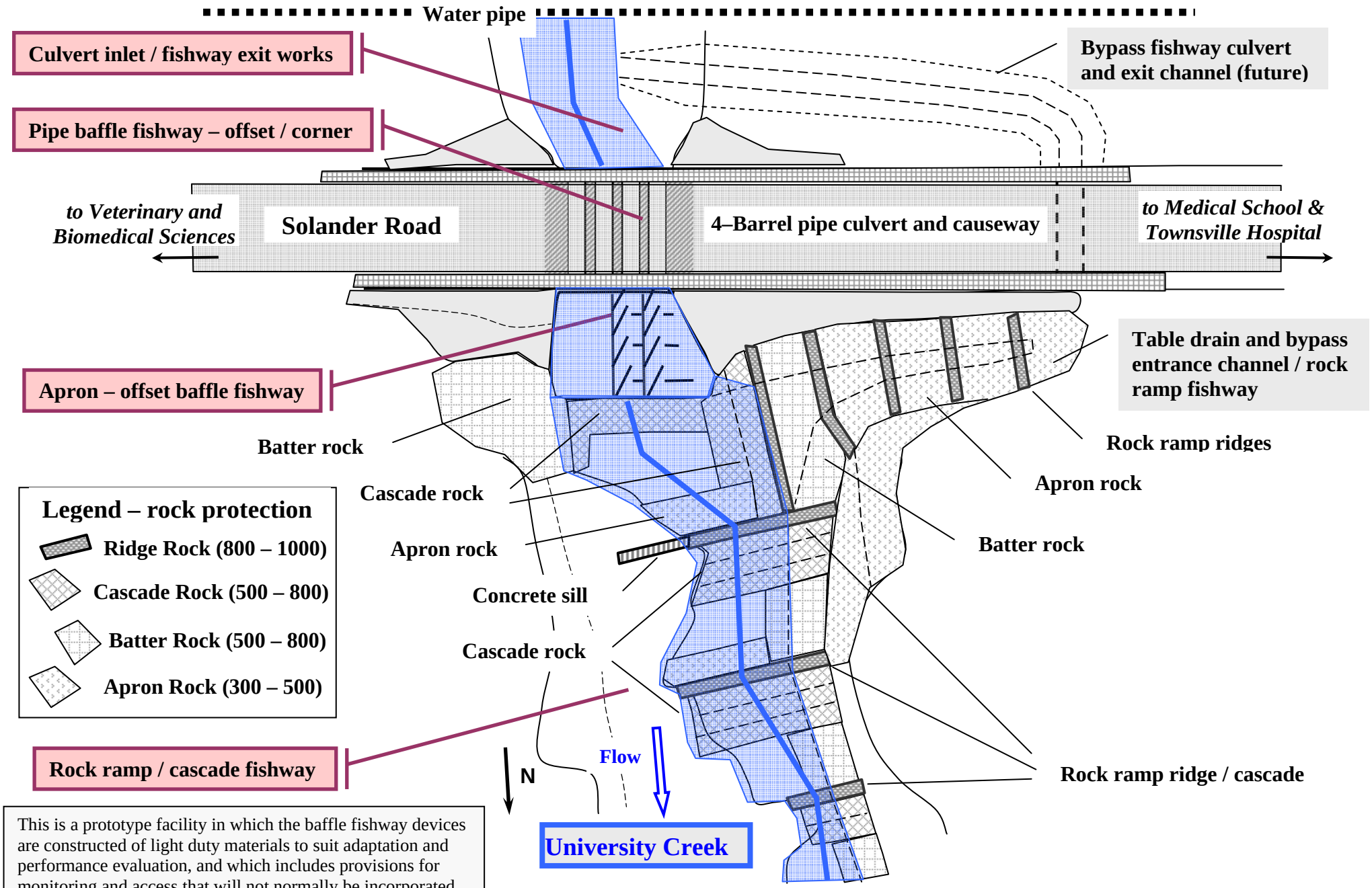


Detail – Ridge Rock



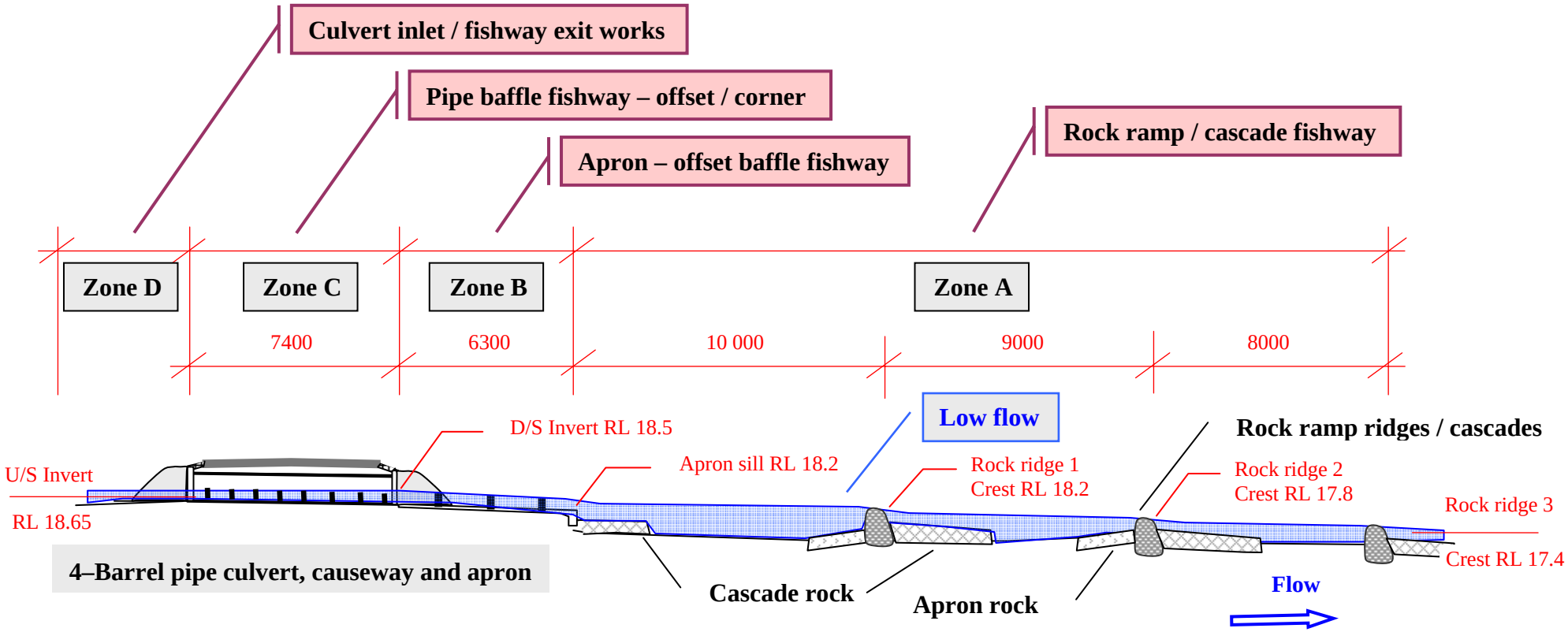
Section D-D – Drain bank protection

University Creek Douglas Arterial Project Rock Ramp Details



This is a prototype facility in which the baffle fishway devices are constructed of light duty materials to suit adaptation and performance evaluation, and which includes provisions for monitoring and access that will not normally be incorporated into field installations of culvert fishway facilities

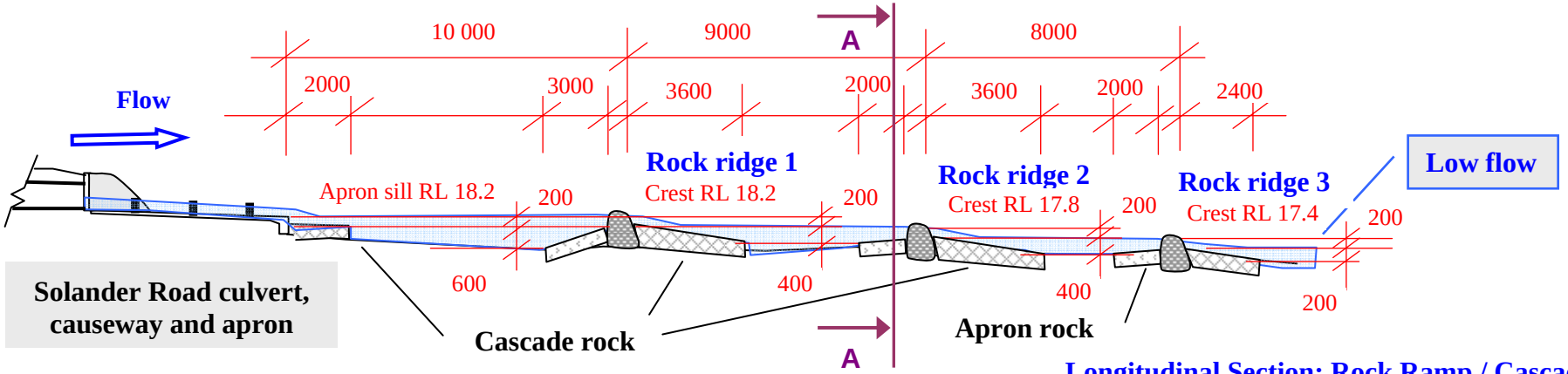
University Creek Solander Road pipe culvert – Prototype Fishway # 3 - Plan



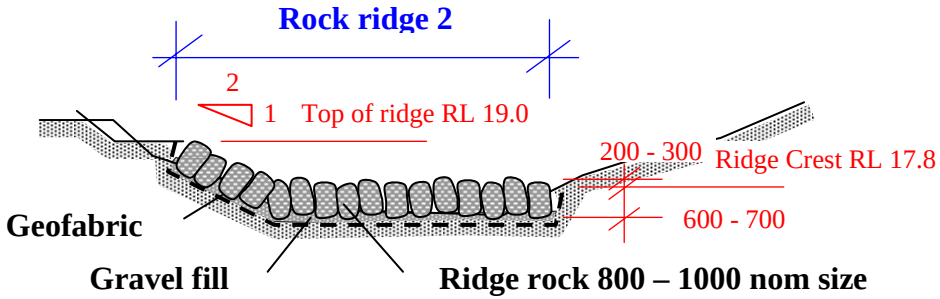
Longitudinal Section: Culvert and Fishways

This is a prototype facility in which the baffle fishway devices are constructed of light duty materials to suit adaptation and performance evaluation, and which includes provisions for monitoring and access that will not normally be incorporated into field installations of culvert fishway facilities

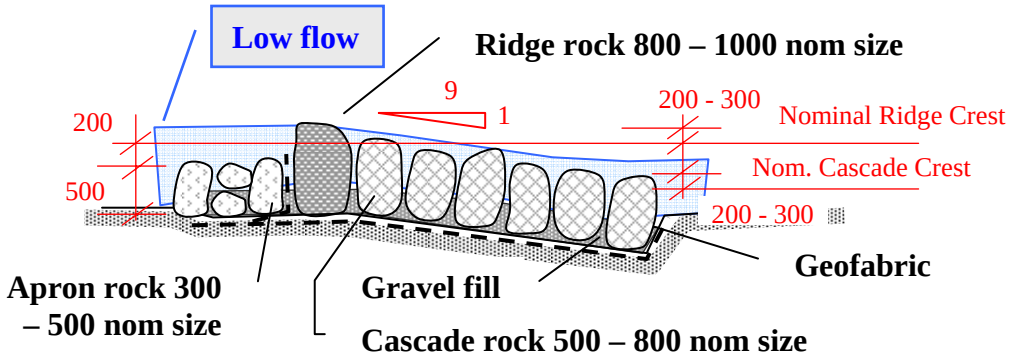
University Creek Solander Road pipe culvert – Prototype Fishway # 3 – Long section



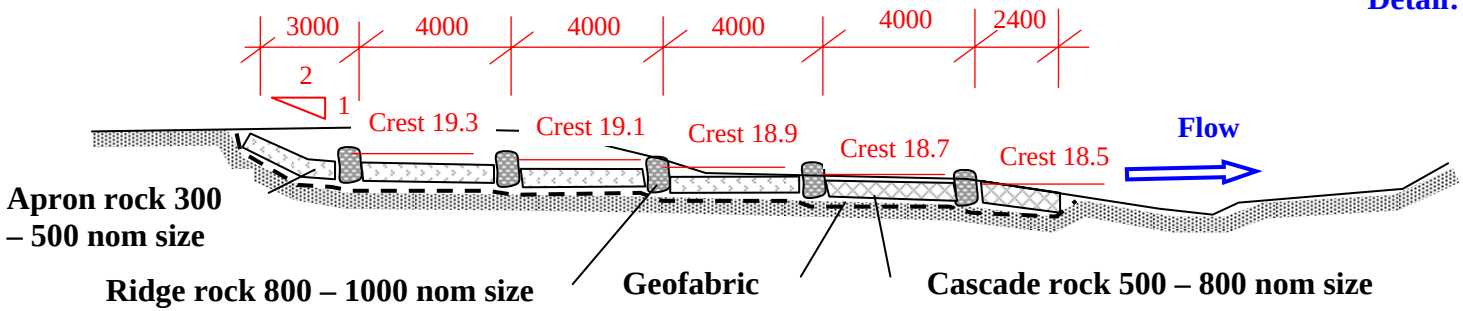
Longitudinal Section: Rock Ramp / Cascades



Section A-A: Rock Ridge 2

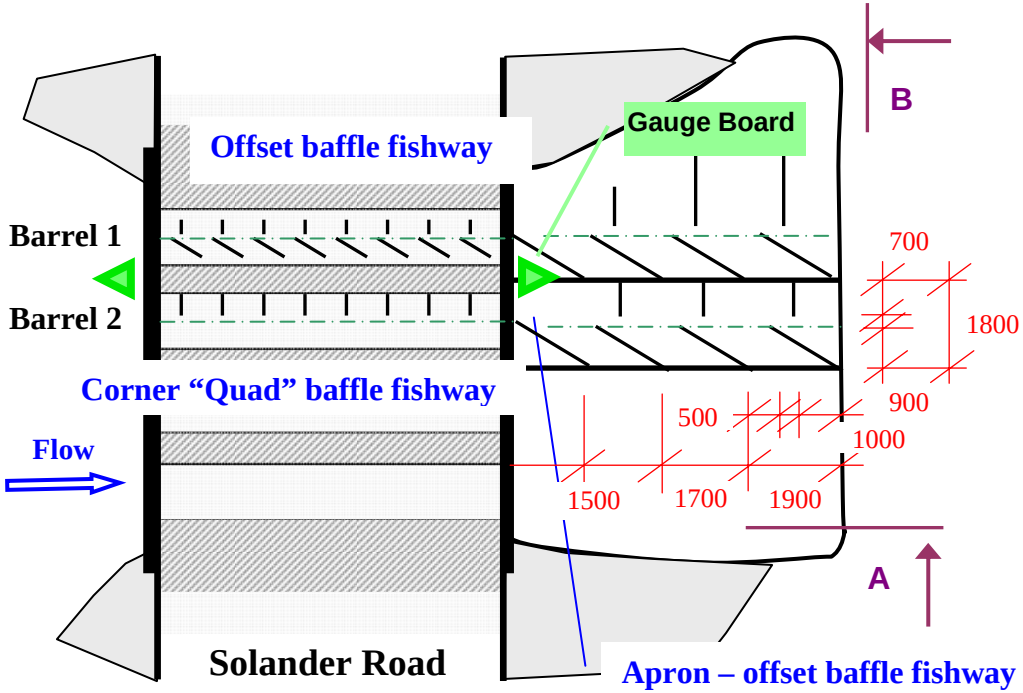


Detail: Rock Ridge / Cascade



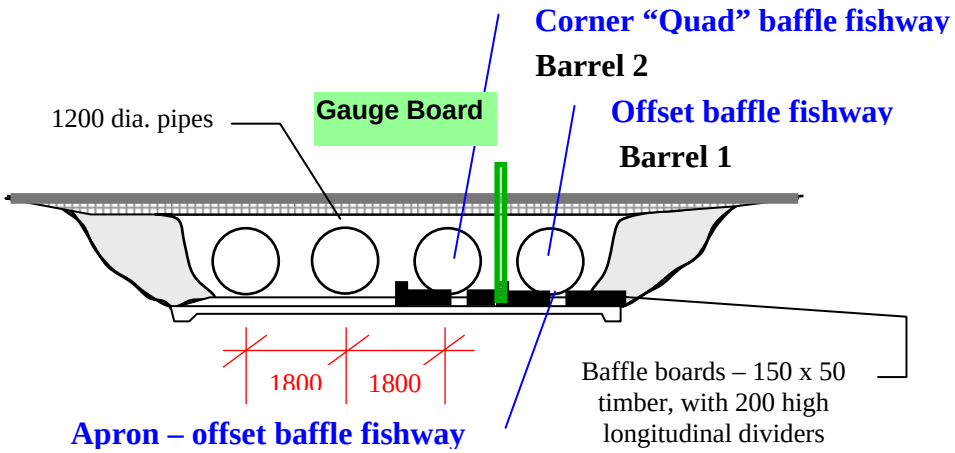
Longitudinal Section: Bypass Channel – future fishway

Solander Road pipe culvert – Prototype Fishway # 3 – Rock ramp detail

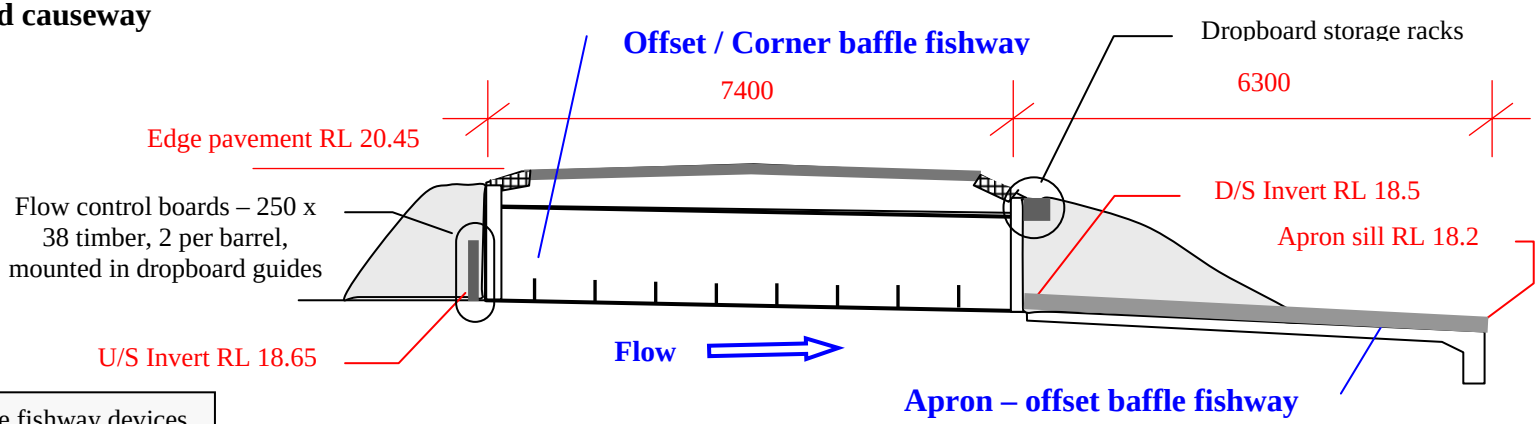


4–Barrel pipe culvert and causeway

Culvert Plan View



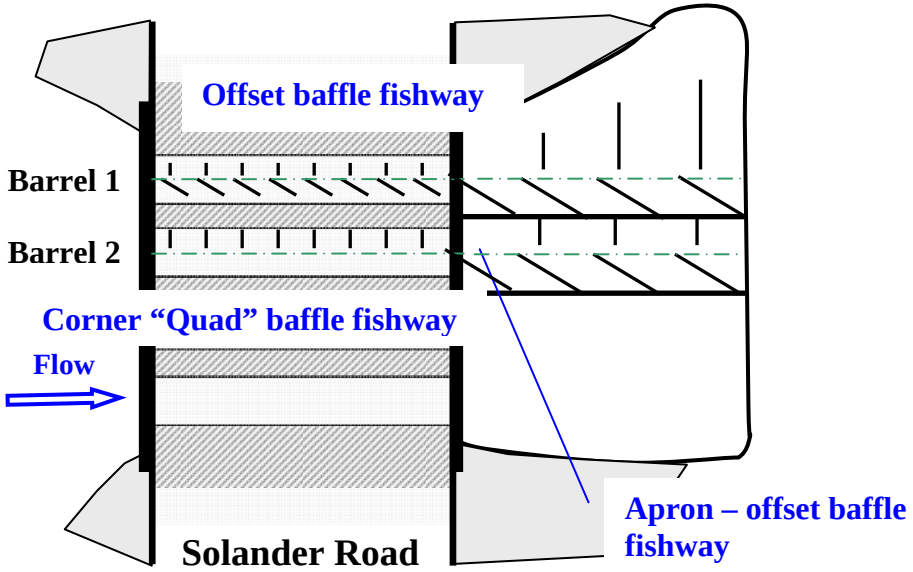
Section B-B: Culvert – Looking upstream



Section A-A: Culvert and apron

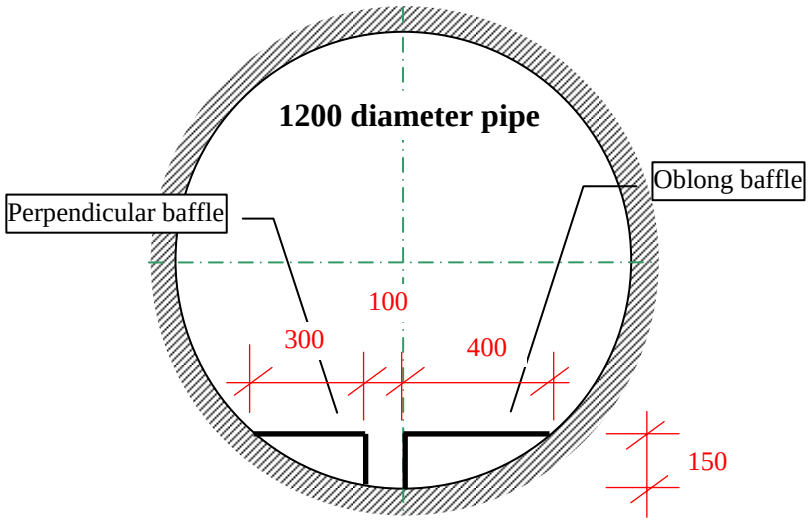
This is a prototype facility in which the baffle fishway devices are constructed of light duty materials to suit adaptation and performance evaluation, and which includes provisions for monitoring and access that will not normally be incorporated into field installations of culvert fishway facilities

Solander Road pipe culvert – Prototype Fishway # 3 – Pipe and apron fishways

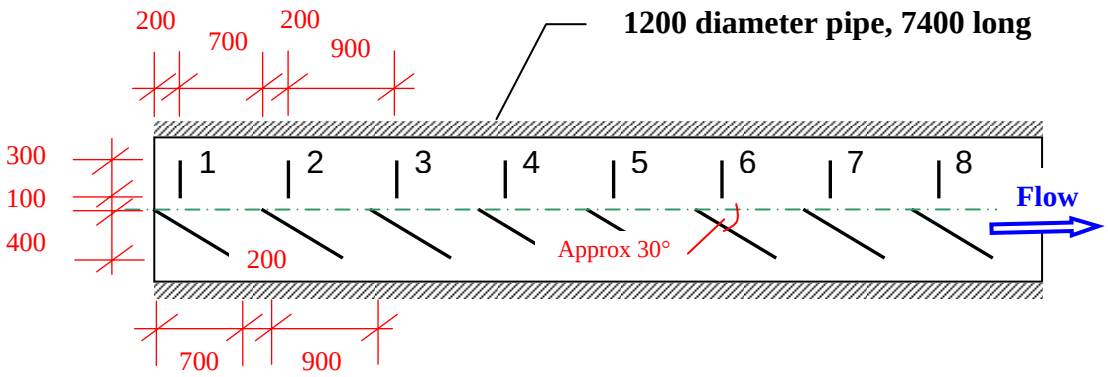


4–Barrel pipe culvert and causeway

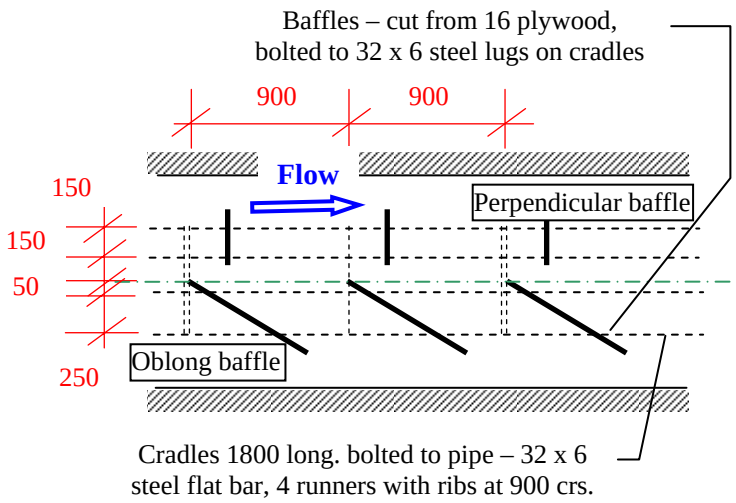
Culvert Plan showing Fishways in Barrels and Apron



Offset Baffle Fishway – Barrel 1 looking downstream



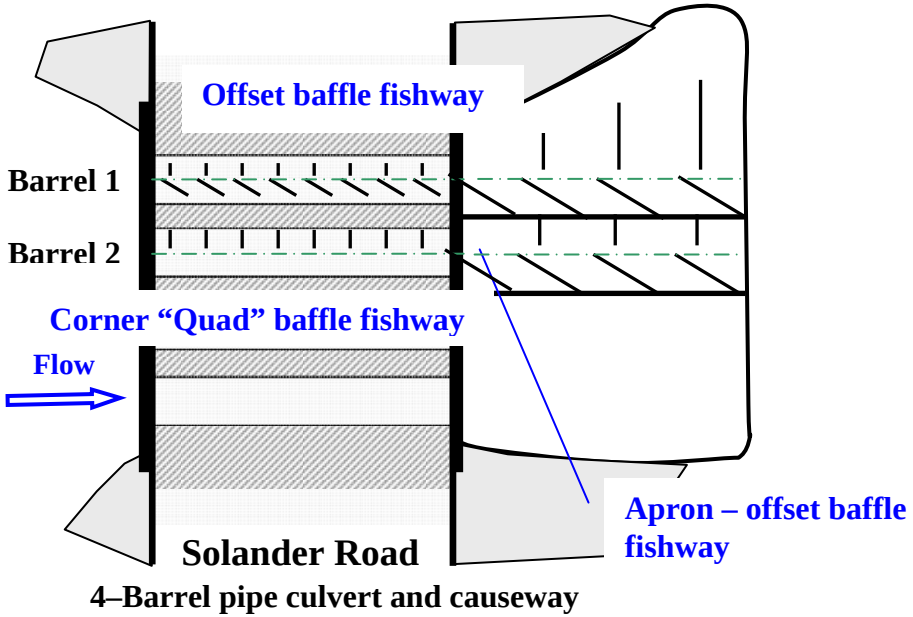
Offset Baffle Fishway in Barrel 1 – Plan View



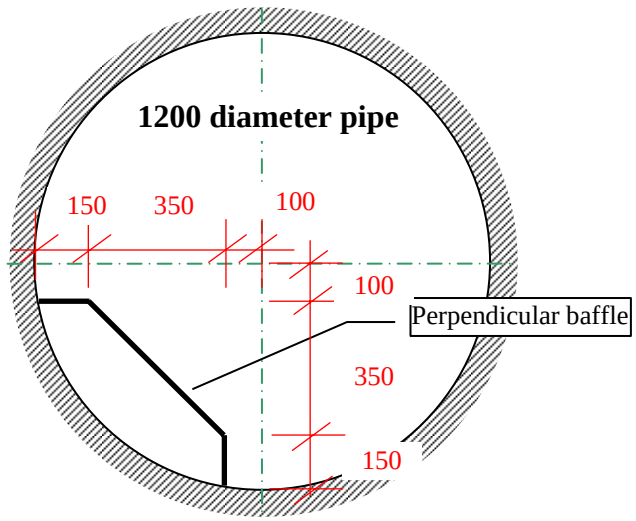
Offset Baffle – Fixing Detail

This is a prototype facility in which the baffle fishway devices are constructed of light duty materials to suit adaptation and performance evaluation, and which includes provisions for monitoring and access that will not normally be incorporated into field installations of culvert fishway facilities

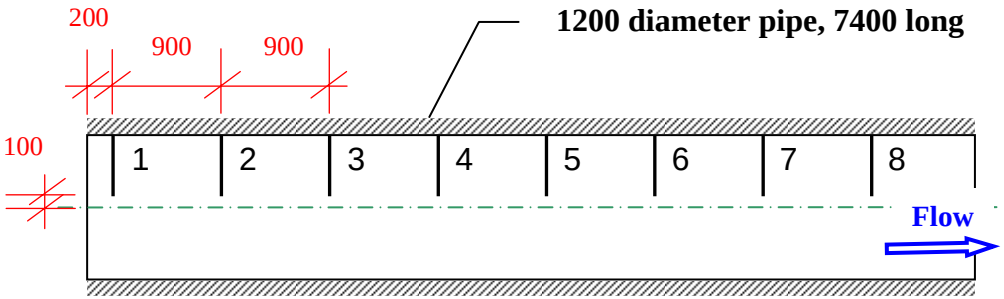
Solander Road pipe culvert – Prototype Fishway # 3 – Offset baffle fishway



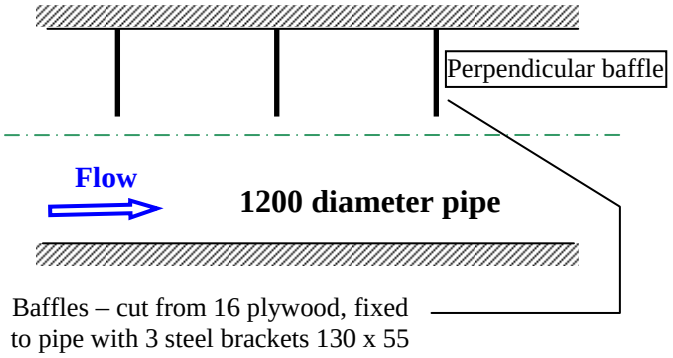
Culvert Plan showing Fishways in Barrels and on Apron



Corner "Quad" Baffle Fishway – Barrel 2 looking downstream



Corner "Quad" Baffle Fishway in Barrel 2 – Plan View



Corner "Quad" Baffle – Fixing Detail

This is a prototype facility in which the baffle fishway devices are constructed of light duty materials to suit adaptation and performance evaluation, and which includes provisions for monitoring and access that will not normally be incorporated into field installations of culvert fishway facilities

Solander Road pipe culvert – Prototype Fishway # 3 – Corner "Quad" baffle fishway

APPENDIX I2 – BRUCE HIGHWAY CORDUROY CREEK TO TULLY BOX CULVERT AND PIPE CULVERT BAFFLE FISHWAYS: MAUNSELL DRAWINGS

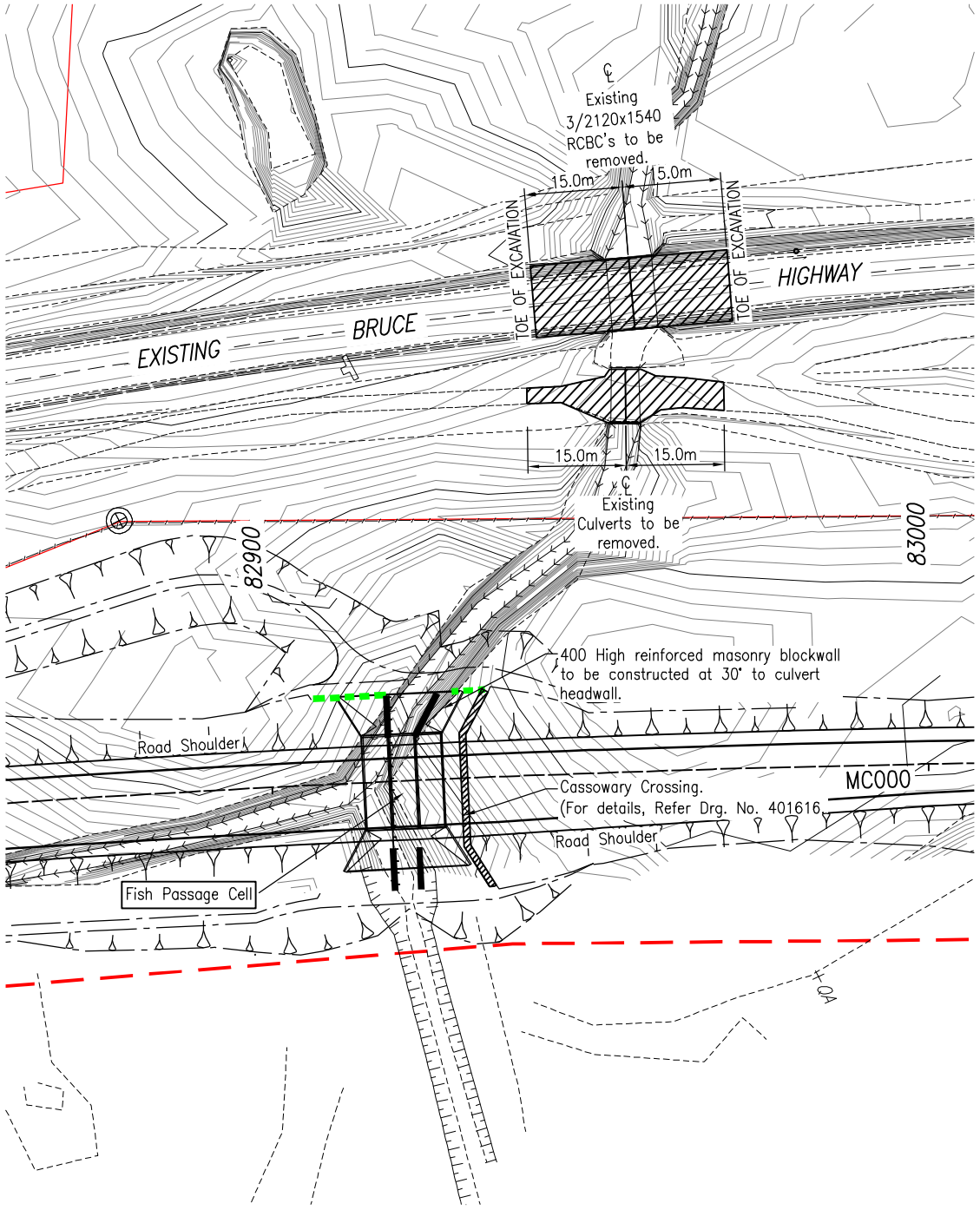
Drawing	Title
Drainage and fish passage configuration at culvert crossings	
Dwg No 401610C	Fish passage plans Culverts 399714D and 399716A
Dwg No 401611B	Fish passage plans Culverts 399716C and 399717D
Dwg No 399596E	Drainage cross sections Chge 80 010 – 94 376
Dwg No 399597E	Drainage cross sections Chge 80 010 – 94 376
Dwg No 399598E	Drainage cross sections Chge 80 010 – 94 376
Dwg No 399599D	Drainage cross sections Chge 80 010 – 94 376
Culvert fishway details	
Dwg No 401615C	Fish passage details (Control line MC000 and Existing Bruce Highway)
Dwg No 401612C	Fish passage Baffle locations
Dwg No 401613B	Fish passage works Baffle plate details Sheet 1 of 2
Dwg No 401614C	Fish passage works Baffle plate details Sheet 2 of 2

Notes These design drawings, prepared by Maunsell, incorporate culvert fishway designs developed by James Cook University School of Engineering on the basis of fish passage planning and design studies *Bruce Highway Corduroy Creek to Tully High School Provisions for fish passage – Preliminary Design Assessment Tasks 1B and 2* (Kapitzke 2007) and *Bruce Highway Corduroy Creek to Tully High School Provisions for fish passage Landholder access crossing at 82 920* (Kapitzke 2008)

These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School project. They are not standard drawings and the designs are not necessarily applicable to other locations. Users should make their own site-specific evaluation and design arrangements and should seek specialist input on fish passage design as required.

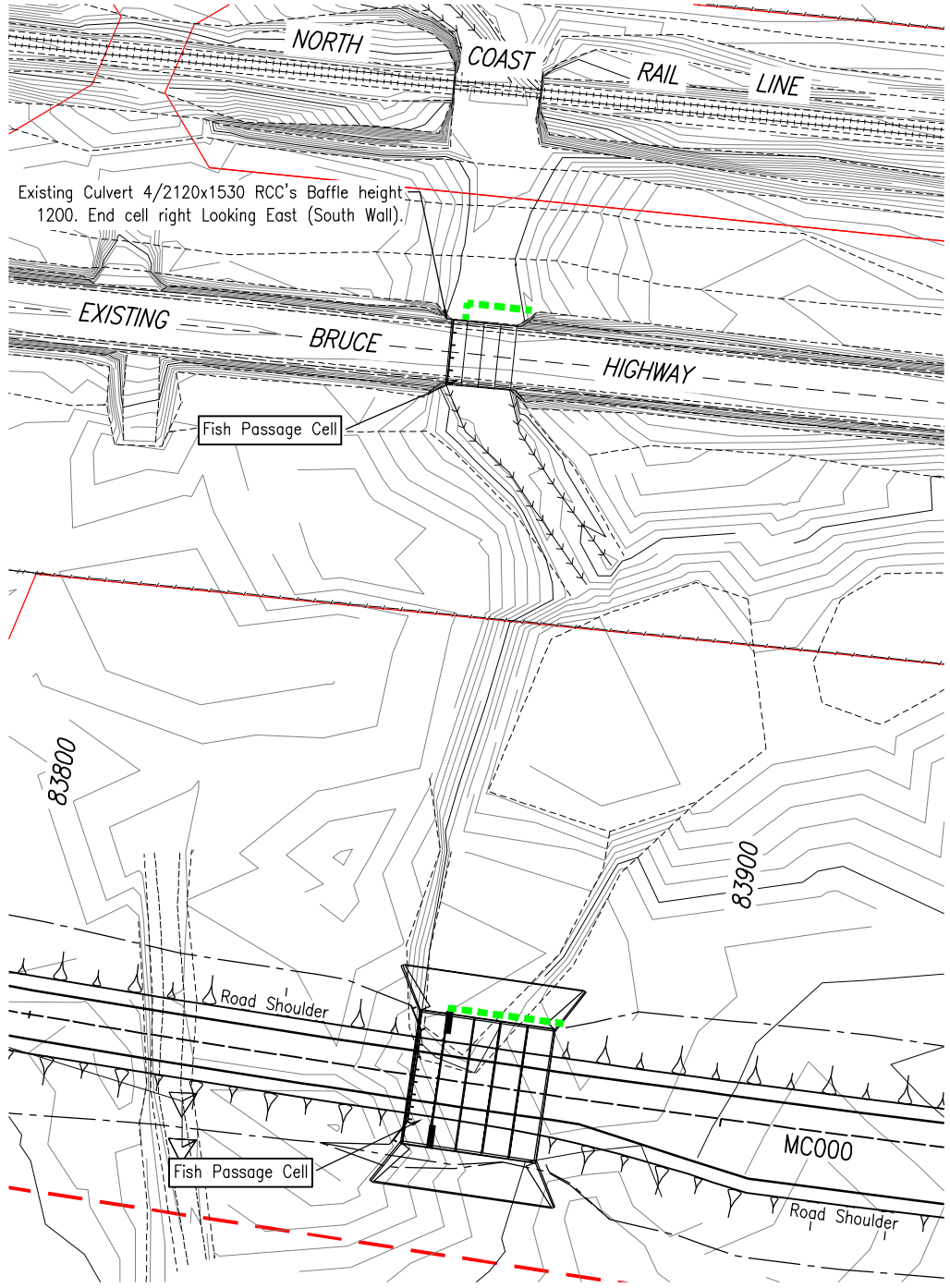
MAUNSELL | AECOM

ISSUED NO: C ISSUED DATE: 9/10/08



FISH PASSAGE No. 1 – CULVERT 399714D, CH82920.000

Baffle Height 2400, 3rd cell right – Southern Wall looking East.
(5/3600x3000 RCBC's)



FISH PASSAGE No. 2 – CULVERT 399716A, CH83865.000

Baffle Height 900, End cell right – Southern Wall looking East.
(3/3600x1200 RCBC's + 2/3600 RCSS)

NOTES:

- Refer Drg. No. 401616 for Cassowary crossing details.
- Refer Drg. No. 401612 for Fish Passage Installation/Location Details.
- Refer Drg. No's. 401613 – 401615 for Fish Passage Baffle Plate Details.

LEGEND:

- 2m x 500 x 500 Rock Gabions.
- 400 High Reinforced Masonry Block wall.
- Fish Passage Baffles.
- Cassowary Crossing.
- Existing Culverts and embankment to be removed 15.0 metres each side of existing culvert centreline. Cut batters to be no steeper than 1V:4H. Excavated area to be grassed and rock protection placed where directed by the Quality Officer.
- Resumption Boundary
- Cadastral Boundary

These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.

Revisions		Issued By	Date	Microfiled
C	Fish Passage Updated		9/10/08	
B	Issued for Construction	MRP	20/12/07	
A	Original Issue A3			

Associated Job Nos

Auxiliary Drg Nos: Refer drawing indexes on drgs. 399510 – 399512

Survey Data	
Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales: 0 5 10 15 20m HORIZONTAL

Dimensions shown in millimetres except where shown otherwise

Last modified: 19 Jan 09 - 13:56

CARDWELL SHIRE

BRUCE HIGHWAY (INGHAM – INNISFAIL)

CTL CHGE 80010.414 – 94376.059

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

FISH PASSAGE PLANS
CULVERTS 399714D & 399716A

Drawing	Design	Design Review	For scheme submitted status refer	For scheme approval status refer
NJS	JC	MRP	Drg. No. 399510 (DI-01 of 03)	Drg. No. 399510 (DI-01 of 03)
Checked DAP	Verified WPW	Date: M.PETTIGREW		

Queensland Government Department of Main Roads

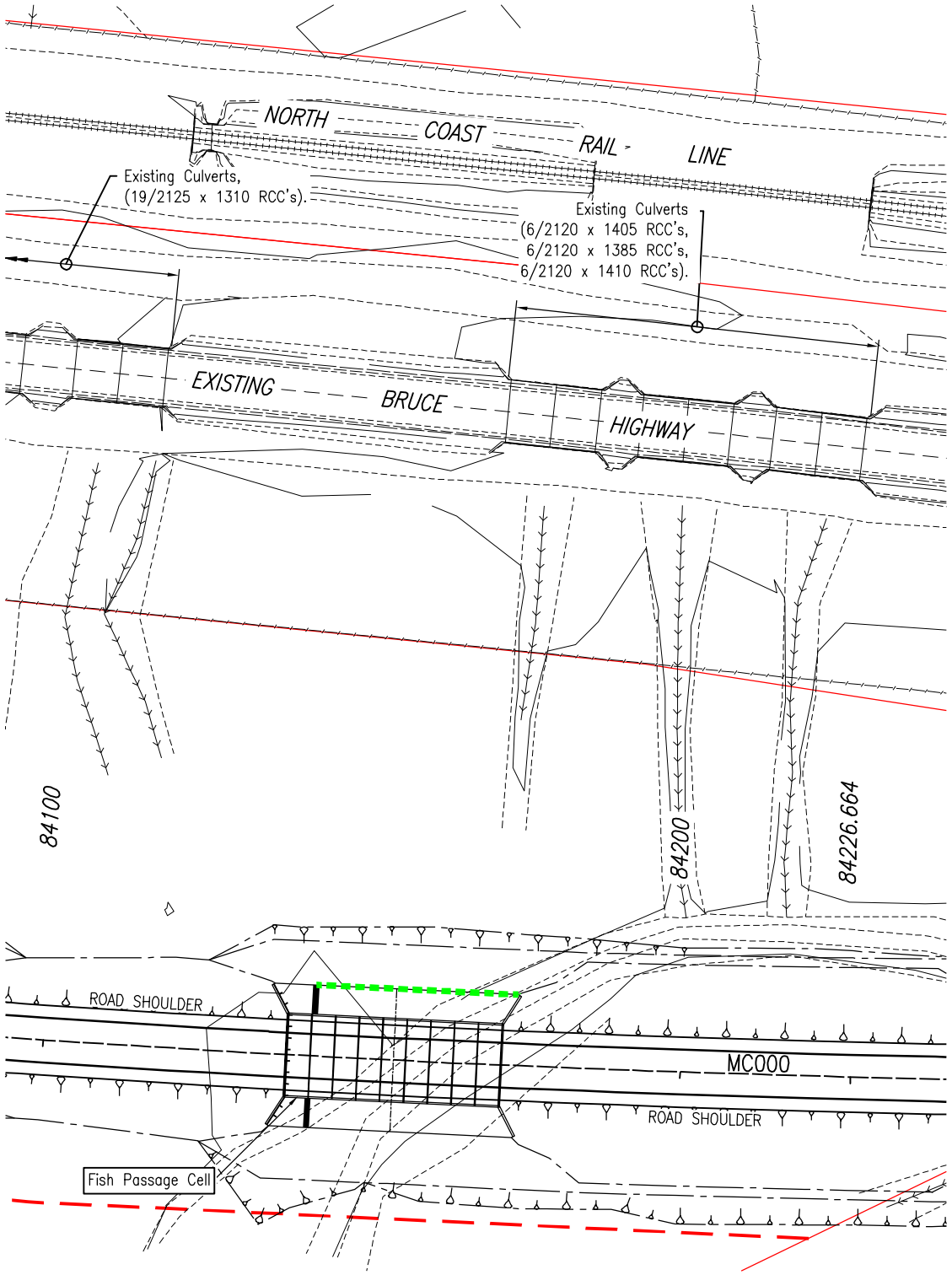
Job No.	30/10N/81
Contract No.	AC-09-006
Drawing No.	401610 C
Series Number	MD-06 of 17

MRR_Detail (08/06)

CAD FILES | Cad ref: J:\TullyProject\Tully_60018841\Cad\20_Detail\Civil\60018841-MD-06.dwg

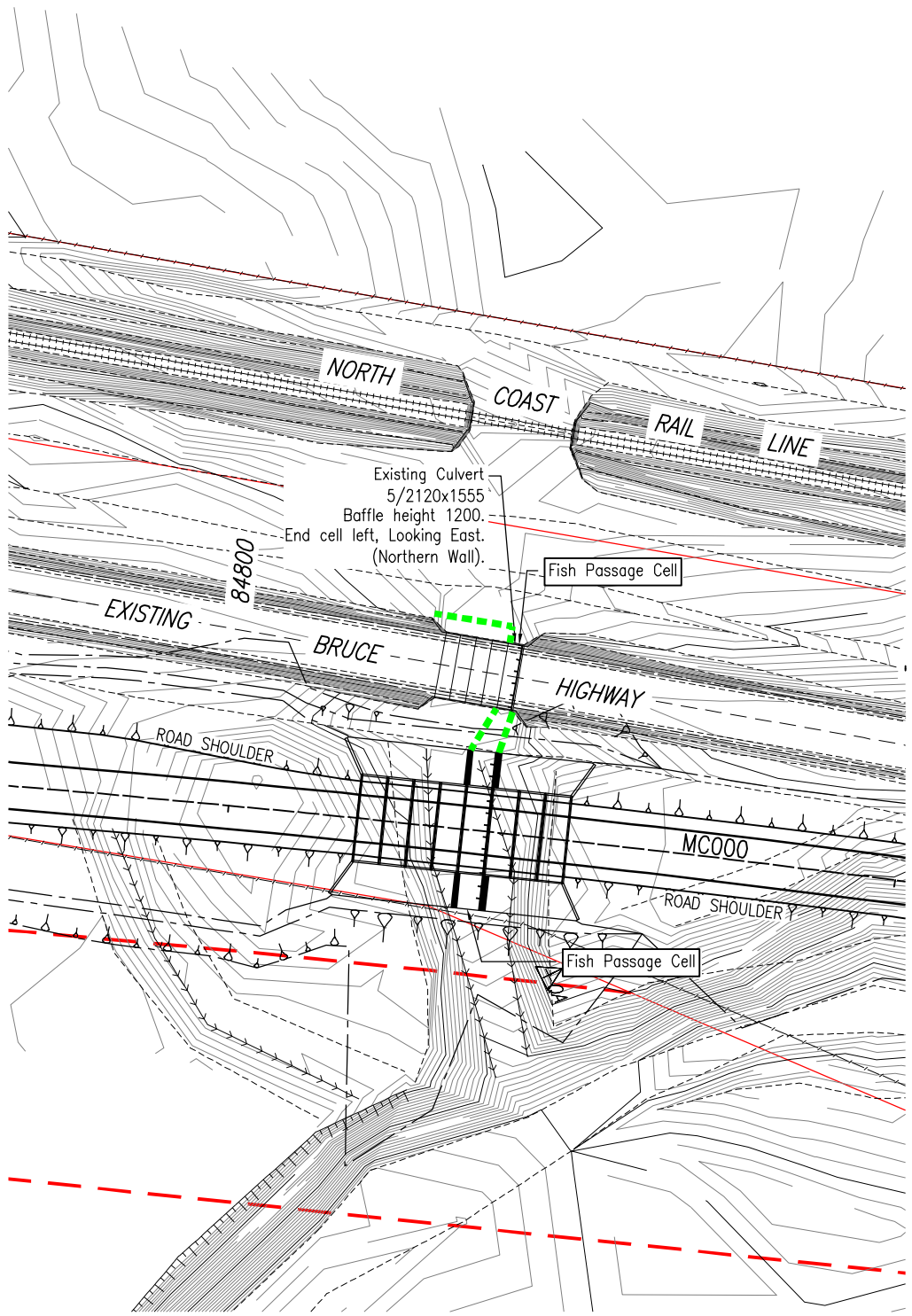
MAUNSELL | AECOM

ISSUED NO: B ISSUED DATE: 20/12/07



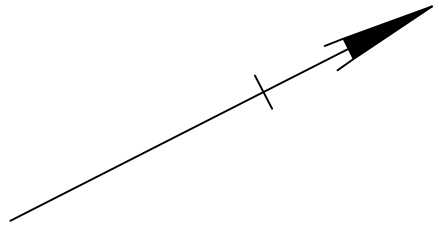
FISH PASSAGE No. 3 – CULVERT 399716C, CH84155.000

Baffle Height 1500, End cell Right – Southern Wall Looking East.
(5/3600x1800 RCBC's + 4/3600 RCC's)



FISH PASSAGE No. 4 – CULVERT 399717D, CH84835.000

Baffle Height 1500, 4th cell Right – Northern Wall, Looking East.
(8/3600x2400 RCBC's)



NOTES:

- Refer Drg. No. 401612 for Fish Passage Installation/Location Details.
- Refer Drg. No's. 401613 – 401615 for Fish Passage Baffle Plate Details.

LEGEND:

- 2m x 500 x 500 Rock Gabions.
- 400 High Reinforced Masonry Block wall.
- Fish Passage Baffles.
- Resumption Boundary
- Cadastral Boundary

These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.

Revisions		Issued By	Date	Microfiled
B	Issued for Construction	MRP	20/12/07	
A	Original Issue A3			

Associated Job Nos

Auxiliary Drg Nos: Refer drawing indexes on drgs. 399510 – 399512

Survey Data	
Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales: 0 5 10 15 20m HORIZONTAL

Dimensions shown in millimetres except where shown otherwise

Last modified: 19 Jan 09 – 13:56

CARDWELL SHIRE

BRUCE HIGHWAY (INGHAM – INNISFAIL)

CTL CHGE 80010.414 – 94376.059

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

FISH PASSAGE PLANS
CULVERTS 399716C & 399717D

Drawing	Design	Design Review	For scheme submitted status refer Drg. No. 399510 (DI-01 of 03)	For scheme approval status refer Drg. No. 399510 (DI-01 of 03)
NJS	JC	MRP		
Checked DAP	Verified WPW	Date: M.PETTIGREW		

Queensland Government Department of Main Roads

Job No.	30/10N/81
Contract No.	AC-09-006
Drawing No.	401611 B
Series Number	MD-07 of 17

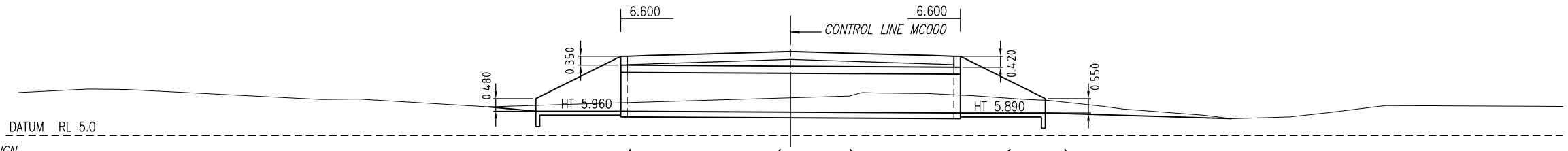
MRR_Detail (08/06)

CAD FILES Cad ref: J:\TullyProject\Tully_60018841\Cad\20_Detail\Civil\60018841-MD-07.dwg

MAUNSELL | AECOM

ISSUED NO: E ISSUED DATE: 20/12/07

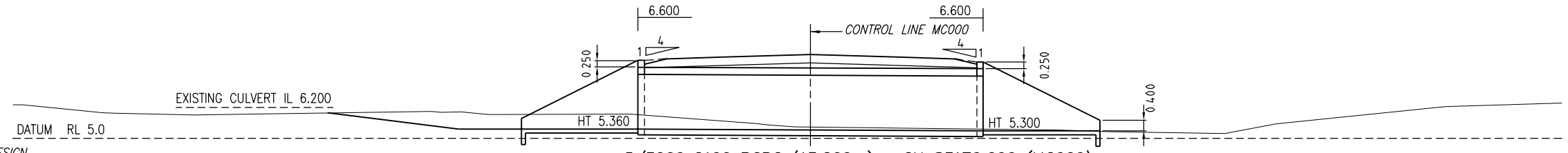
Culvert No.	Culvert Chainage	Drainage Structure	Wingwalls Skew	Wingwalls Type	Wingwalls Lengths W1 (m)	Wingwalls Lengths W2 (m)	EndWalls / Wingwalls (U)Conc. (m3) 2309	EndWalls / Wingwalls (R)Conc. (m3) 2308	EndWalls / Wingwalls Reinforcing (m2)	EndWalls / Wingwalls Reinforcing (fabric)	Concrete Bases Conc. (m3) 2302	Concrete Bases Reinforcing N16 (m)	Concrete Bases Reinforcing N12 (m)	Concrete Bases Reinforcing Nibs (m)	Aprons Rock Area (m2) 2315	Aprons Wire Matt. Area (m2) 2316	Aprons Wire Matt. Thick (mm)	Aprons Reinforced Conc. (m3) 2313	Aprons Reinforced Reinforcing (m2)	Aprons Reinforced Reinforcing (fabric)	Aprons Mass Conc. (m3) 2314	Cut Off Walls (m3)	Excavation (m3) Culv.	Excavation (m3) Ends	Excavation (m3) Inlet Outlet	Fill / Backfill OLM (m3)	Fill / Backfill FBM (m3)	Fill / Backfill BHM (m3)	Fill / Backfill BSP (m3)	No Fines Conc. Block	Reo. Bar Mass (kg)	Remarks (OLM = Overlay Material; FBM = Fill / Backfill /Side Material; BHM = Bedding / Haunch Material; BSP = Bedding Steel Pipes)
399714D	82920.000 (MC000)	5/3600x3000 RCBC'S	0	4	7.2 7.2	7.2 7.2		41.1	104.6 104.6	SL1218 SL82	89.2	3336	3330	0.845 (83)				37.8	277.7	SL62		3.5	591.5	70.4			280.4	24.9		24	8840	Culvert 12 (Hydrology Number) (Design Package 1)
399714E	82922.000 (MC000)	2/1350 RCP	0	4	3.0 3.0	3.0 3.0	2.9	6.2	22.2 22.2	SL1018 SL82								2.6	22.2	SL62		0.8	6.4	0.2		16.7		9.9		8	45	(Design Package 4)
399715A	83050.000 (MC000)	3/3600x1500 RCBC'S	0	4	3.8 3.8	3.8 3.8		12.6	33.9 33.9	SL1018 SL82	42.0	1550	1540	0.845 (65)				11.5	90.8	SL62		2.0	155.5	27.0			91.5	11.7		12	4049	Culvert 13 (Hydrology Number) (Design Package 1)
399715B	83170.000 (MC000)	5/3600x2100 RCBC'S	0	4	5.1 5.1	5.1 5.1		20.8	57.2 57.2	SL1218 SL82	69.3	2582	2558	0.845 (65)				26.5	200.2	SL62		3.2	98.8	28.7			184.9	19.2		16	6720	Culvert 14 (Hydrology Number) (Design Package 1)
399715C	83335.000 (MC000)	10/3600x1500 RCBC'S	0	4	3.8 3.8	3.8 3.8		16.0	33.9 33.9	SL1018 SL82	137.4	5164	5116	0.845 (65)				39.1	302.8	SL62		5.7	503.4	18.2			209.0	37.8		12	13207	Culvert15 (Hydrology Number) (Design Package 1)
			Total Quantities				2.9	96.7			337.9	12632	12544	(278)				117.5	893.7	SL62		15.2	1356	144			766	104		72	32861	Fabric quantities are net only
			Total Fabric				162 / SL1218		90 / SL1018		252 / SL82			894 / SL62																		No allowances made for laps etc.



399715 C

DRG. No. 399533 – FINAL DESIGN

10/3600x1500 RCBC (13.200m) *CH 83335.000 (MC000)*

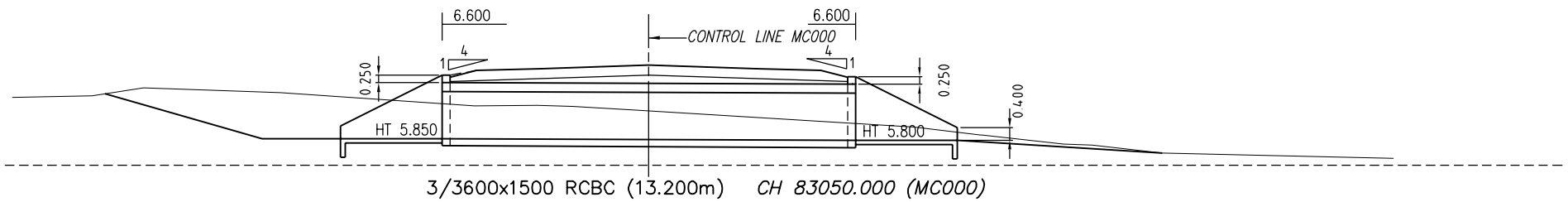


399715 B

DRG. No. 399533 – FINAL DESIGN

5/3600x2100 RCBC (13.200m) *CH 83170.000 (MC000)*

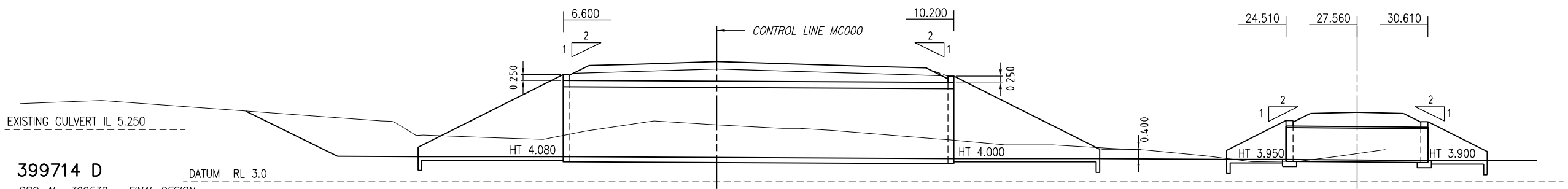
These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.



399715 A

DRG. No. 399533 – FINAL DESIGN

3/3600x1500 RCBC (13.200m) *CH 83050.000 (MC000)*



399714 D

DRG. No. 399532 – FINAL DESIGN

5/3600x3000 RCBC (16.800m) *CH 82920.000 (MC000)*
(FISH PASSAGE AND CASSOWARY CROSSING)

2/1350 DIA RCP (6.100m) *CH 82922.000 (MC000)*

1. Refer also Standard Drawing Nos 1303, 1304, 1316, 1317, 1320 & 1359.
2. All drainage cross section chainages are control line chainages unless specified otherwise.
3. All aprons to be constructed with cutoff walls including precast ends.
4. Type H2 support condition to apply unless specified otherwise.
   – material between overlay/backfill and subgrade included in embankment quantities.
5. Refer Erosion and Sediment Control Drawings for Protective Treatments beyond culvert Endwalls and Aprons.
6. All box culvert unit dimensions may vary from design information. Dimensions of base slabs to be confirmed by the constructor on site prior to the commencement of setout.
7. For Extended Headwall Detail – Refer Drawing 399593.
8. Base slab joints :–
   (i) For base slabs < 40.0m in length and/or width contraction joints to be constructed in accordance with Main Roads Standard Drawing 1317
   (ii) For base slabs > 40.0m in length and/or width expansion joints to be constructed in accordance with Drawing 399593

	Revisions	Issued By	Date	Microfiled
E	Issued for Construction	MRP	20/12/07	
D	Culverts Amended	MRP	27/08/07	
C	General Amendments	MRP	13/08/07	
B	Bwks Package 1 Amended	MRP	5/07/07	
A	Original Issue A3			

CAD FILES 60018841-DD-CS-04.dwg

Associated Job Nos

Auxiliary Drg Nos: Refer drawing indexes on drgs. 399510 – 399512

Survey Data	
Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales: 0 1 2 3 4m

Dimensions shown in millimetres except where shown otherwise

19 Jan 09 - 14:00

CARDWELL SHIRE

BRUCE HIGHWAY (INGHAM – INNISFAIL)

CTL CHGE *80010.414 (=79826.036) – 94376.059*

Reference Points				
Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

DRAINAGE CROSS SECTIONS

Drawing	Design	Design Review	For scheme submitted status refer	For scheme approval status refer
JAE	JAE	MRP	Drg. No. 399510 (DI-01 of 03)	Drg. No. 399510 (DI-01 of 03)
Checked RJS	Verified WPW	Date: M.PETTIGREW		

Queensland Government Department of Main Roads

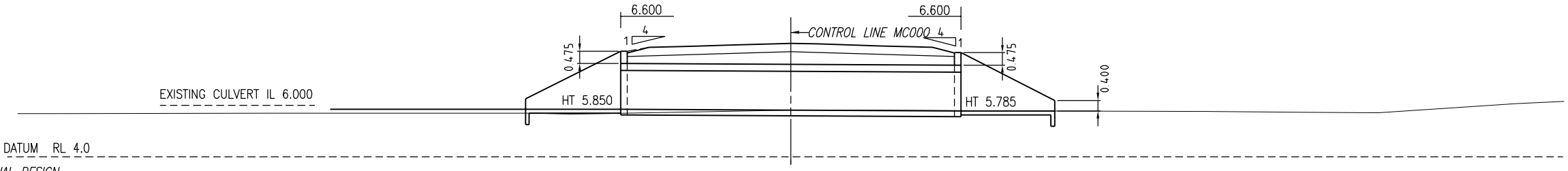
Job No.	30/10N/81
Contract No.	AC-09-006
Drawing No.	399596 E
Series Number	DD-XS-04 of 19

MRR_Detail (08/06)

Culvert No.	Culvert Chainage	Drainage Structure	Wingwalls Skew	Wingwalls Type	Wingwalls Lengths W1 (m)	Wingwalls Lengths W2 (m)	EndWalls / Wingwalls (U)Conc. (m3) 2309	EndWalls / Wingwalls (R)Conc. (m3) 2308	EndWalls / Wingwalls Reinforcing (m2)	EndWalls / Wingwalls Reinforcing (fabric)	Concrete Bases Conc. (m3) 2302	Concrete Bases Reinforcing N16 (m)	Concrete Bases Reinforcing N12 (m)	Concrete Bases Reinforcing Nibs (m)	Aprons Rock Area (m2) 2315	Aprons Wire Matt. Area (m2) 2316	Aprons Wire Matt. Thick (mm)	Aprons Reinforced Conc. (m3) 2313	Aprons Reinforced Reinforcing (m2)	Aprons Reinforced Reinforcing (fabric)	Aprons Mass Conc. (m3) 2314	Cut Off Walls (m3)	Excavation (m3) Culv.	Excavation (m3) Ends	Excavation (m3) Inlet Outlet	Fill / Backfill OLM (m3)	Fill / Backfill FBM (m3)	Fill / Backfill BHM (m3)	Fill / Backfill BSP (m3)	No Fines Conc. Block	Reo. Bar Mass (kg)	Remarks (OLM = Overlay Material; FBM = Fill / Backfill /Side Material; BHM = Bedding / Haunch Material; BSP = Bedding Steel Pipes)
399715D	83500.000 (MC000)	10/3600x1500 RCBC'S	0	4	4.2 4.5	4.2 4.5	(WEST) (EAST)	17.6	34.8 34.8	SL1018 SL82	137.4	5164	5116	0.845 (65)				39.0	302.4	SL62		5.7	81.6				236.2	37.8		12	13226	Culvert 16 (Hydrology Number) (Design Package 1)
399716A	83865.000 (MC000)	5/3600x1200 SLBC (3/3600x1200 RCBC + + 2/3600 RCSS)	0	4	3.7 3.7	3.7 3.7		14.7	33.2 33.2	SL1018 SL82	67.4	2490	2480	0.845 (130)				18.4	144.4	SL62		2.9	58.0				150.6	18.5		12	6507	Culvert 17 (Hydrology Number) (Design Package 1)
399716B	84073.000 (MC000)	6/3600x1500 RCBC'S	0	4	4.3 4.3	4.3 4.3		17.5	36.8 36.8	SL1018 SL82	82.9	3100	3080	0.845 (65)				23.1	180.4	SL62		3.6	70.9	0.1			176.6	22.9		12	8018	Culvert 18 (Hydrology Number) (Design Package 2)
			Total Quantities					49.8			287.7	10754	10676	(260)				80.5	627.2	SL62		12.2	210	1			563	79		36	27751	Fabric quantities are net only
			Total Fabric				105 / SL1018		105 / SL82		627 / SL62																					No allowances made for laps etc.

MAUNSELL | AECOM

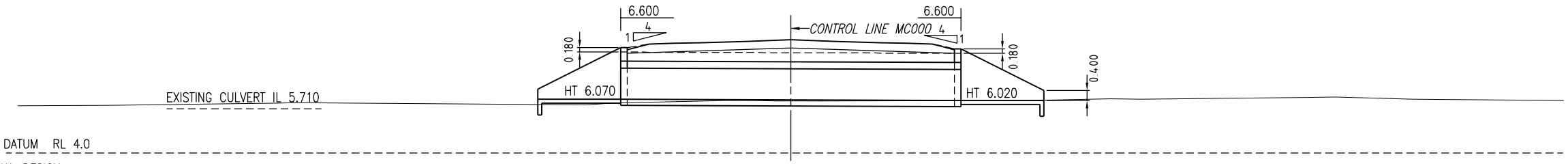
ISSUED NO: E ISSUED DATE: 6/03/08



399716 B

DRG. No. 399534 – FINAL DESIGN

6/3600x1500 RCBC (13.200m) *CH 84073.000 (MC000)*

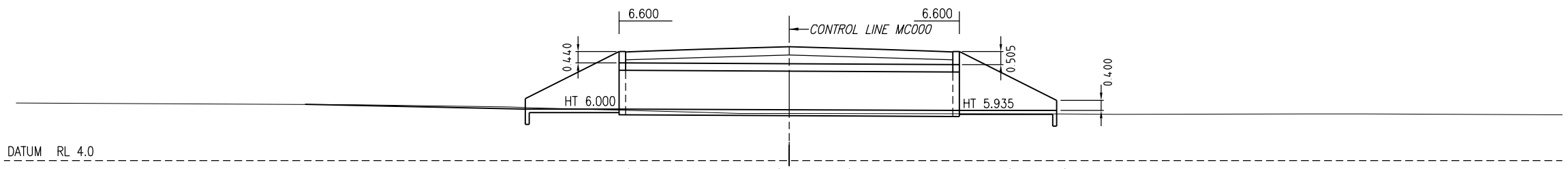


399716 A

DRG. No. 399534 – FINAL DESIGN

5/3600x1200 RCBC (13.200m) *CH 83865.000 (MC000)*
3 BOX CULVERTS, 2 SPANNING SLABS
(FISH PASSAGE)

These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.



399715 D

DRG. No. 399533 – FINAL DESIGN

10/3600x1500 RCBC (13.200m) *CH 83500.000 (MC000)*

1. Refer also Standard Drawing Nos 1303, 1304, 1316, 1317, 1320 & 1359.
2. All drainage cross section chainages are control line chainages unless specified otherwise.
3. All aprons to be constructed with cutoff walls including precast ends.
4. Type H2 support condition to apply unless specified otherwise.
   – material between overlay/backfill and subgrade included in embankment quantities.
5. Refer Erosion and Sediment Control Drawings for Protective Treatments beyond culvert Endwalls and Aprons.
6. All box culvert unit dimensions may vary from design information. Dimensions of base slabs to be confirmed by the constructor on site prior to the commencement of setout.
7. For Extended Headwall Detail – Refer Drawing 399593.
8. Base slab joints :–
   (i) For base slabs < 40.0m in length and/or width contraction joints to be constructed in accordance with Main Roads Standard Drawing 1317
   (ii) For base slabs > 40.0m in length and/or width expansion joints to be constructed in accordance with Drawing 399593

	Revisions	Issued By	Date	Microfiled
E	Wingwalls Amended		6/03/08	
D	Issued for Construction	MRP	20/12/07	
C	Culverts Amended	MRP	27/08/07	
B	General Amendments	MRP	13/08/07	
A	Original Issue A3			

Associated Job Nos

Auxiliary Drg Nos
Refer drawing indexes on drgs. 399510 – 399512

Survey Data	
Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales: 0 1 2 3 4m

Dimensions shown in millimetres except where shown otherwise

CAD FILES | Cad ref: J:\TullyProject\Tully_60018841\Cad\20_Detail\Civil\60018841-DD-CS-05.dwg | Last modified: 19 Jan 89 - 14:01

CARDWELL SHIRE

BRUCE HIGHWAY (INGHAM – INNISFAIL)

CTL CHGE *80010.414 (=79826.036) – 94376.059*

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

DRAINAGE CROSS SECTIONS

Drawing	Design	Design Review	For scheme submitted status refer	For scheme approval status refer
JAE	JAE	MRP	Drg. No. 399510 (DI-01 of 03)	Drg. No. 399510 (DI-01 of 03)
Checked RJS	Verified MRP	Date: M.PETTIGREW		

Queensland Government
Department of Main Roads

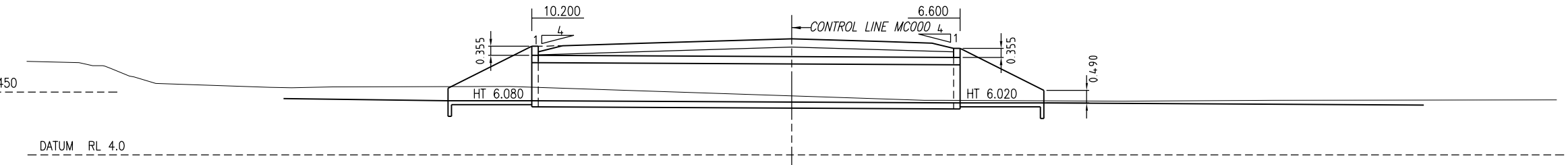
Job No.	30/10N/81
Contract No.	AC-09-006
Drawing No.	399597 E
Series Number	DD-XS-05 of 19

MRR_Detail (08/06)

Culvert No.	Culvert Chainage	Drainage Structure	Wingwalls Skew	Wingwalls Type	Wingwalls Lengths W1 (m)	Wingwalls Lengths W2 (m)	EndWalls / Wingwalls (U)Conc. (m3) 2309	EndWalls / Wingwalls (R)Conc. (m3) 2308	EndWalls / Wingwalls Reinforcing (m2)	EndWalls / Wingwalls Reinforcing (fabric)	Concrete Bases Conc. (m3) 2302	Concrete Bases Reinforcing N16 (m)	Concrete Bases Reinforcing N12 (m)	Concrete Bases Reinforcing Nibs (m)	Aprons Rock Area (m2) 2315	Aprons Wire Matt. Area (m2) 2316	Aprons Wire Matt. Thick (mm)	Aprons Reinforced Conc. (m3) 2313	Aprons Reinforced Reinforcing (m2)	Aprons Reinforced Reinforcing (fabric)	Aprons Mass Conc. (m3) 2314	Cut Off Walls (m3)	Excavation (m3) Culv.	Excavation (m3) Ends	Excavation (m3) Inlet Outlet	Fill / Backfill OLM (m3)	Fill / Backfill FBM (m3)	Fill / Backfill BHM (m3)	Fill / Backfill BSP (m3)	No Fines Conc. Block	Reo. Bar Mass (kg)	Remarks (OLM = Overlay Material; FBM = Fill / Backfill /Side Material; BHM = Bedding / Haunch Material; BSP = Bedding Steel Pipes)
399716C	84155.000 (MC000)	9/3600x1800 SLBC (5/3600x1800 RCBC + 4/3600 RCSS)	0	4	5.1 5.1	5.1 5.1		24.8	56.4 56.4	SL1218 SL82	119.5	4462	4438	0.845 (130)				45.6	341.9	SL62		5.1	306.7	45.2			225.4	32.7		16	11583	Culvert 19 (Hydrology Number) (Design Package 2)
399717A	84270.000 (MC000)	9/3600x2100 SLBC (5/3600x2100 RCBC + 4/3600 RCSS)	0	4	5.8 5.8	5.8 5.8		29.1	70.1 70.1	SL1218 SL82	119.5	4462	4438	0.845 (130)				51.8	383.6	SL62		5.2	281.7	22.6			246.6	32.7		20	11613	Culvert 20 (Hydrology Number) (Design Package 2)
399717B	84565.000 (MC000)	9/3600x1800 SLBC (5/3600x1800 RCBC + 4/3600 RCSS)	0	4	5.4 5.5	5.4 5.5	(WEST) (EAST)	28.6	59.4 59.4	SL1218 SL82	119.5	4462	4438	0.845 (130)				45.4	340.5	SL62		5.1	183.8	9.6			228.5	32.7		16	11623	Culvert 21 (Hydrology Number) (Design Package 2)
399717C	84740.000 (MC000)	8/3600x1500 RCBC'S	0	4	3.8 3.8	3.8 3.8		17.5	35.6 35.6	SL1018 SL82	139.7	5258	5230	0.845 (83)				31.1	241.5	SL62		4.6	319.7	37.3			234.3	38.9		12	13417	Culvert 22 (Hydrology Number) (Design Package 2)
			Total Quantities					100			498.2	18644	18544	(473)				173.9	1307.5	SL62		20.0	1092	115			935	137		64	48236	Fabric quantities are net only
			Total Fabric				186 / SL1218		36 / SL1018		221 / SL82				1307 / SL62																	No allowances made for laps etc.

MAUNSELL | AECOM

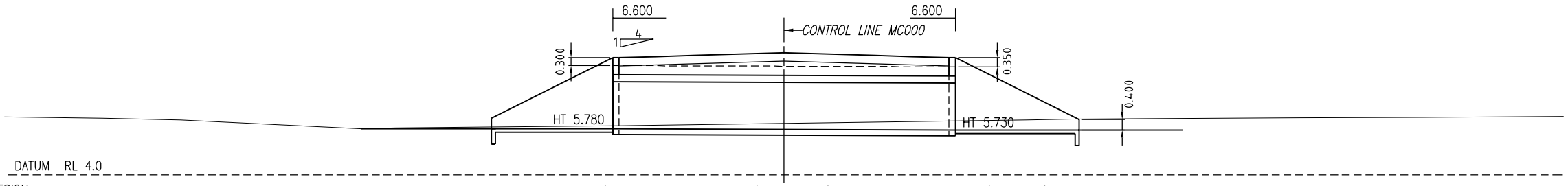
ISSUED NO: E ISSUED DATE: 6/03/08



399717 C

DRG. No. 399535 – FINAL DESIGN

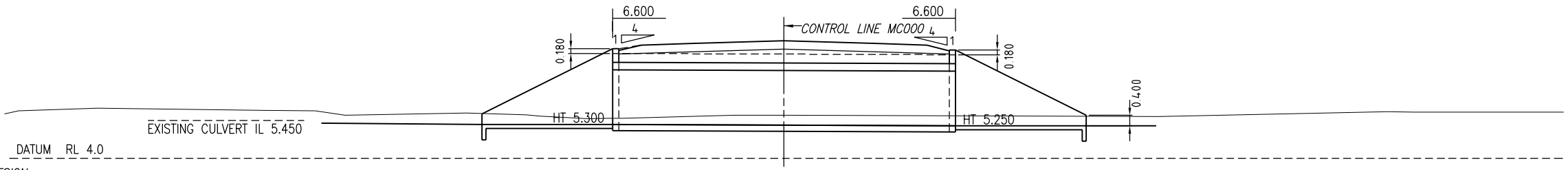
8/3600x1500 RCBC (16.800m) *CH 84740.000 (MC000)*



399717 B

DRG. No. 399535 – FINAL DESIGN

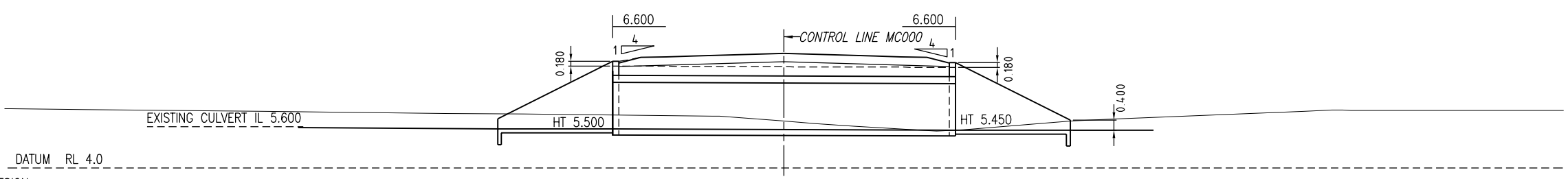
9/3600x1800 RCBC (13.200m) *CH 84565.000 (MC000)*
5 BOX CULVERTS, 4 SPANNING SLABS



399717 A

DRG. No. 399535 – FINAL DESIGN

9/3600x2100 RCBC (13.200m) *CH 84270.000 (MC000)*
5 BOX CULVERTS, 4 SPANNING SLABS



399716 C

DRG. No. 399534 – FINAL DESIGN

9/3600x1800 RCBC (13.200m) *CH 84155.000 (MC000)*
5 BOX CULVERTS, 4 SPANNING SLABS
(FISH PASSAGE)

These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.

1. Refer also Standard Drawing Nos 1303, 1304, 1316, 1317, 1320 & 1359.
2. All drainage cross section chainages are control line chainages unless specified otherwise.
3. All aprons to be constructed with cutoff walls including precast ends.
4. Type H2 support condition to apply unless specified otherwise.
   – material between overlay/backfill and subgrade included in embankment quantities.
5. Refer Erosion and Sediment Control Drawings for Protective Treatments beyond culvert Endwalls and Aprons.
6. All box culvert unit dimensions may vary from design information. Dimensions of base slabs to be confirmed by the constructor on site prior to the commencement of setout.
7. For Extended Headwall Detail – Refer Drawing 399593.
8. Base slab joints :–
   (i) For base slabs < 40.0m in length and/or width contraction joints to be constructed in accordance with Main Roads Standard Drawing 1317
   (ii) For base slabs > 40.0m in length and/or width expansion joints to be constructed in accordance with Drawing 399593

	Revisions	Issued By	Date	Microfiled
E	Wingwalls Amended		6/03/08	
D	Issued for Construction	MRP	20/12/07	
C	Culverts Amended	MRP	27/08/07	
B	General Amendments	MRP	13/08/07	
A	Original Issue A3			

Associated Job Nos

Auxiliary Drg Nos
Refer drawing indexes on drgs. 399510 – 399512

Survey Data

Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales: 0 1 2 3 4m

Dimensions shown in millimetres except where shown otherwise

CAD FILES | Cad ref: J:\TullyProject\Tully_60018841\Cad\20_Detail\Civil\60018841-DD-CS-06.dwg | Last modified: 19 Jan 09 - 14:03

CARDWELL SHIRE

BRUCE HIGHWAY (INGHAM – INNISFAIL)

CTL CHGE *80010.414 (=79826.036) – 94376.059*

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

DRAINAGE CROSS SECTIONS

Drawing	Design	Design Review	For scheme submitted status refer	For scheme approval status refer
JAE	JAE	MRP	Drg. No. 399510	Drg. No. 399510
Checked RJS	Verified MRP	Date: M.PETTIGREW	(DI-01 of 03)	(DI-01 of 03)

Queensland Government
Department of Main Roads

Job No.	30/10N/81
Contract No.	AC-09-006
Drawing No.	399598 E
Series Number	DD-XS-06 of 19

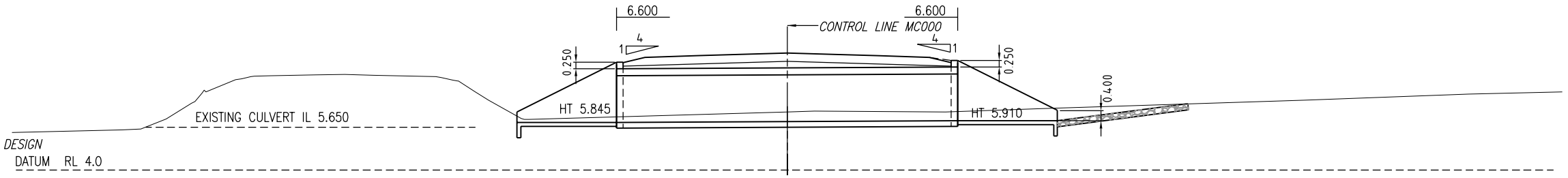
MRR_Detail (08/06)

Culvert No.	Culvert Chainage	Drainage Structure	Wingwalls Skew	Wingwalls Type	Wingwalls Lengths W1 (m)	Wingwalls Lengths W2 (m)	EndWalls / Wingwalls (U)Conc. (m3) 2309	EndWalls / Wingwalls (R)Conc. (m3) 2308	EndWalls / Wingwalls Reinforcing (m2)	EndWalls / Wingwalls Reinforcing (fabric)	Concrete Bases Conc. (m3) 2302	Concrete Bases Reinforcing N16 (m)	Concrete Bases Reinforcing N12 (m)	Concrete Bases Reinforcing Nibs (m)	Aprons Rock Area (m2) 2315	Aprons Wire Matt. Area (m2) 2316	Aprons Wire Matt. Thick (mm)	Aprons Reinforced Conc. (m3) 2313	Aprons Reinforced Reinforcing (m2)	Aprons Reinforced Reinforcing (fabric)	Aprons Mass Conc. (m3) 2314	Cut Off Walls (m3)	Excavation (m3) Culv.	Excavation (m3) Ends	Excavation (m3) Inlet Outlet	Fill / Backfill OLM (m3)	Fill / Backfill FBM (m3)	Fill / Backfill BHM (m3)	Fill / Backfill BSP (m3)	No Fines Conc. Block	Reo. Bar Mass (kg)	Remarks
399717D	84835.000 (MC000)	8/3600x2400 RCBC'S	0	4	5.9 5.9	5.9 5.9		26.7	71.1 71.1	SL1218 SL82	111.0	4162	4124	0.845 (65)				48.6	360.3	SL62		4.9	208.4	30.0			251.4	30.6		20	10756	Culvert 23 (Hydrology Number) (Design Package 2)
399718A	85000.000 (MC000)	8/3600x2700 RCBC'S	0	4	6.9 7.1	6.9 7.1	(WEST) (EAST)	42.4	93.4 93.4	SL1218 SL82	111.8	4194	4150	0.845 (65)				54.7	401.7	SL62		5.1	447.6	104.5			234.2	30.8		20	10940	Culvert 24 (Hydrology Number) (Design Package 2)
399718B	85225.000 (MC000)	10/2400x900 RCBC'S	0	4	2.3 2.3	2.3 2.3		7.2	14.1	SL818	81.0	2034	2023	0.765 (65)				16.0	135.4	SL62		3.9	141.0	10.1			139.5	26.3		8	5356	Culvert 25 (Hydrology Number) (Design Package 2)
399718C	85335.000 (MC000)	9/3600x1800 RCBC'S	0	4	4.5 4.5	4.5 4.5		18.9	44.8 44.8	SL1018 SL82	123.8	4648	4594	0.845 (65)				41.5	315.6	SL62		5.2	268.7	16.6			224.3	34.1		16	11920	Culvert 26 (Hydrology Number) (Design Package 2)
			Total Quantities					95.2			427.6	15038	14891	(260)				160.8	1213.0	SL62		19.1	1066	161			849	122		64	38972	Fabric quantities are net only
			Total Fabric				164 / SL1218		45 / SL1018		14 / SL818			209 / SL82		1213 / SL62																No allowances made for laps etc.

OLM = Overlay Material
FBM = Fill / Backfill /Side Material
BHM = Bedding / Haunch Material
BSP = Bedding Steel Pipes

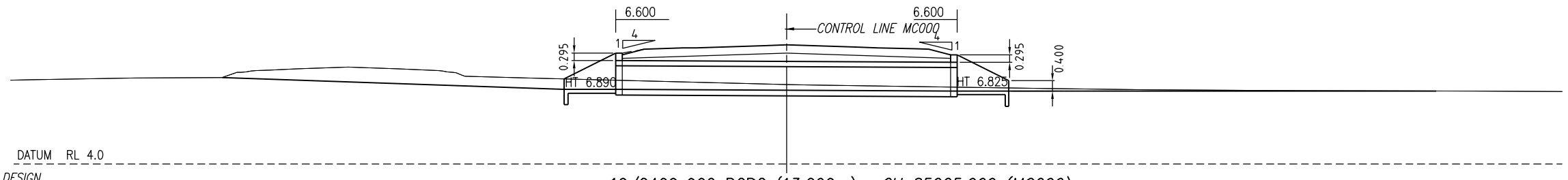
MAUNSELL | AECOM

ISSUED NO: D ISSUED DATE: 6/03/08



399718 C
DRG. No. 399536 – FINAL DESIGN

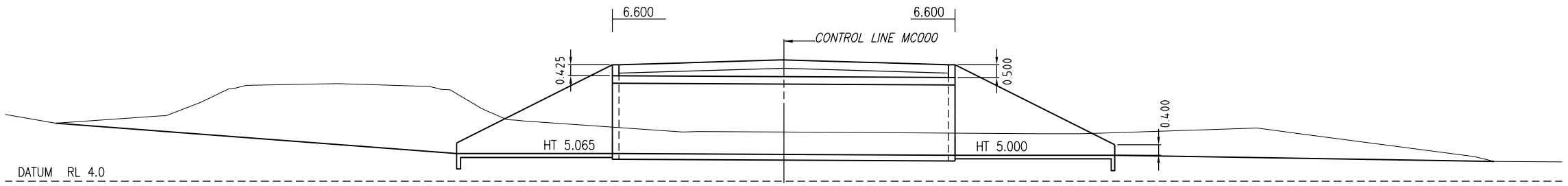
9/3600x1800 RCBC (13.200m) *CH 85335.000 (MC000)*



399718 B
DRG. No. 399536 – FINAL DESIGN

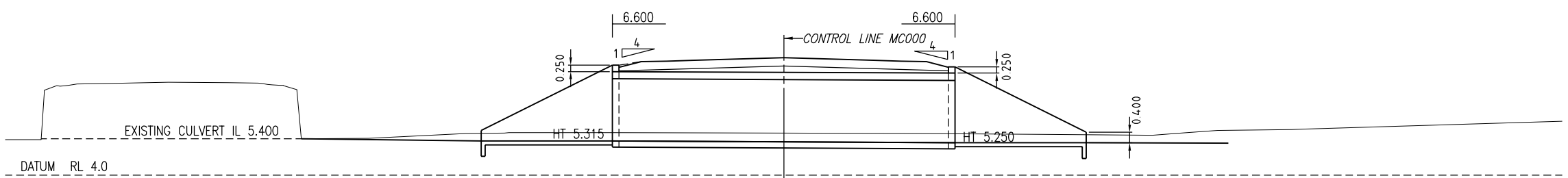
10/2400x900 RCBC (13.200m) *CH 85225.000 (MC000)*

These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.



399718 A
DRG. No. 399536 – FINAL DESIGN

8/3600x2700 RCBC (13.200m) *CH 85000.000 (MC000)*



399717 D
DRG. No. 399535 – FINAL DESIGN

8/3600x2400 RCBC (13.200m) *CH 84835.000 (MC000)*
(FISH PASSAGE)

1. Refer also Standard Drawing Nos 1303, 1304, 1316, 1317, 1320 & 1359.
2. All drainage cross section chainages are control line chainages unless specified otherwise.
3. All aprons to be constructed with cutoff walls including precast ends.
4. Type H2 support condition to apply unless specified otherwise.
   – material between overlay/backfill and subgrade included in embankment quantities.
5. Refer Erosion and Sediment Control Drawings for Protective Treatments beyond culvert Endwalls and Aprons.
6. All box culvert unit dimensions may vary from design information. Dimensions of base slabs to be confirmed by the constructor on site prior to the commencement of setout.
7. For Extended Headwall Detail – Refer Drawing 399593.
8. Base slab joints :–
   (i) For base slabs < 40.0m in length and/or width contraction joints to be constructed in accordance with Main Roads Standard Drawing 1317
   (ii) For base slabs > 40.0m in length and/or width expansion joints to be constructed in accordance with Drawing 399593

	Revisions	Issued By	Date	Microfiled
D	Wingwalls Amended		6/03/08	
C	Issued for Construction	MRP	20/12/07	
B	General Amendments	MRP	13/08/07	
A	Original Issue A3			

Associated Job Nos

Auxiliary Drg Nos
Refer drawing indexes on drgs. 399510 – 399512

Survey Data	
Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales
0 1 2 3 4m

Dimensions shown in millimetres except where shown otherwise

CAD FILES | Cad ref: J:\TullyProject\Tully_60018841\Cad\20_Detail\Civil\60018841-DD-CS-07.dwg | Last modified: 19 Jan 09 - 14:03

CARDWELL SHIRE
BRUCE HIGHWAY (INGHAM – INNISFAIL)
CTL CHGE *80010.414 (=79826.036) – 94376.059*

Reference Points				
Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

DRAINAGE CROSS SECTIONS

Drawing	Design	Design Review		
JAE	JAE	MRP	For scheme submitted status refer Drg. No. 399510 (DI-01 of 03)	For scheme approval status refer Drg. No. 399510 (DI-01 of 03)
Checked RJS	Verified MRP	Date: M.PETTIGREW		

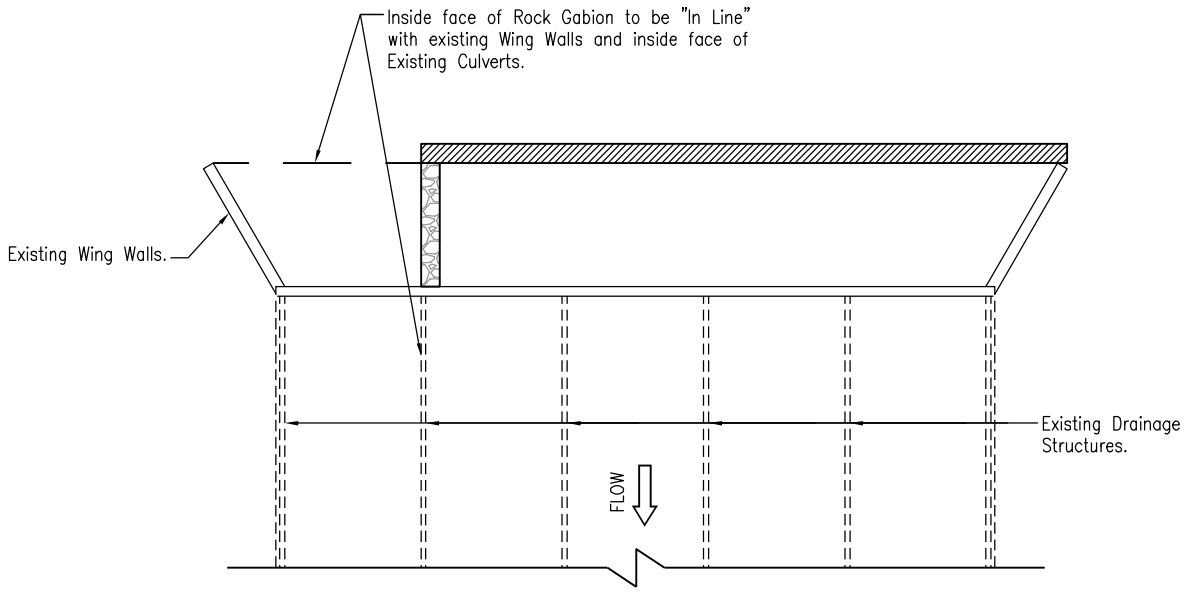
Queensland Government
Department of Main Roads

Job No.	30/10N/81
Contract No.	AC-09-006
Drawing No.	399599 D
Series Number	DD-XS-07 of 19

MRR_Detail (08/06)

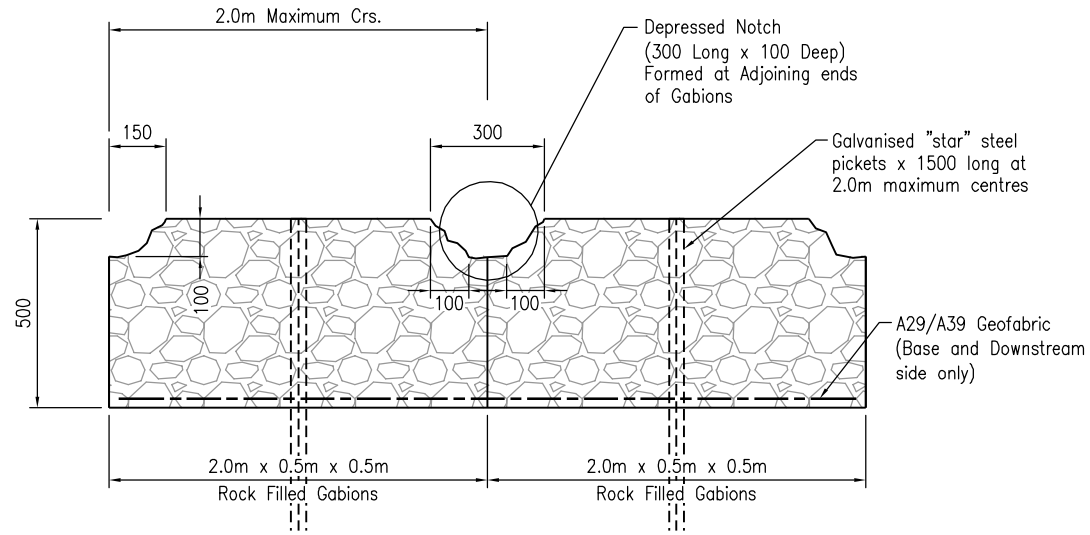
MAUNSELL | AECOM

ISSUED NO: C ISSUED DATE: 9/10/08

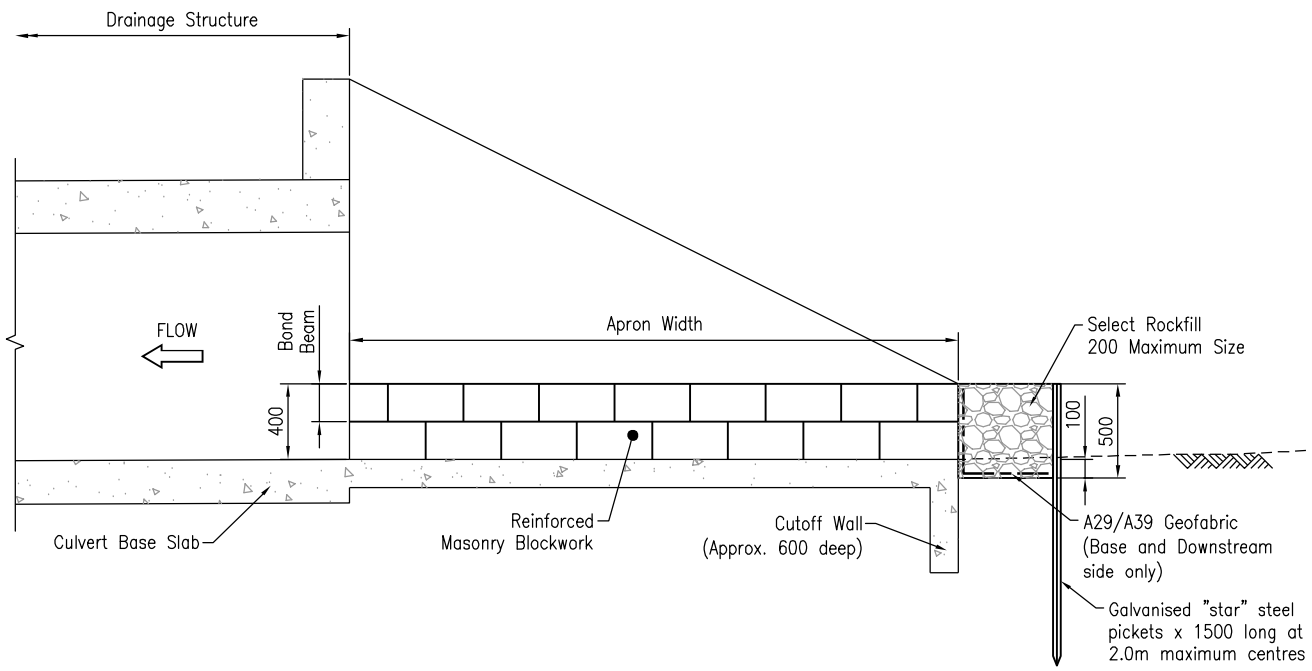


PLAN
GABION TREATMENT FOR EXISTING CULVERTS WITHOUT APRONS.

NOTE:
Rock Filled Gabions Full width of Inlet Structure where detailed.



ROCK GABION DETAIL (PART)



ELEVATION – CULVERTS WITH CONCRETE APRONS.

MATERIAL LIST – FISH PASSAGE BAFFLES

CULVERT CHAINAGE	BAFFLE TYPE 1.	BAFFLE TYPE 2.	BAFFLE TYPE 3.	BAFFLE TYPE 4.	BAFFLE TYPE 5.	BAFFLE TYPE 6.
82920	–	10	–	10	6	–
NEW CULVERT EAST OF CH.82920	–	–	–	–	–	14
83865	10	–	–	–	2	–
EXISTING CULVERT WEST OF CH.83865	–	–	6	–	–	–
84155	2	8	2	–	–	–
84835	–	8	–	–	4	–
EXISTING CULVERT WEST OF CH.84835	–	–	6	–	–	–
TOTALS	12	26	14	10	12	14

MASONRY NOTES

- Masonry and masonry work shall conform to A.S. 3700 – SAA Masonry code.
- Characteristic compressive strength of masonry units shall be as follows: Concrete masonry units.
- Concrete masonry walls shall be reinforced with N16 vertical bars at 1000 CRS. U.N.O.
- Single bond beams shall be reinforced with 2/N12 (extend 150 minimum past face of opening U.N.O.).
- Bond beam reinforcement shall be continuous.
- Provide WTBB W2 ties at 600 CRS. To longitudinal reinforcement in all masonry bond beams U.N.O.
- Mortar classification shall be M4 in accordance with A.S. 3700.
- All cores shall be concrete core filled, strength grade S20.
- Maximum slump core fill concrete = 225.
- Minimum grout cover to reinforcement shall be 20 U.N.O.
- Masonry cores shall be concrete filled where masonry anchors are required.
- Wall ties shall be heavy duty galvanised steel in accordance with A.S. 2699. spacing shall be as follows:
  Generally – CRS. horizontally & vertically.

These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.

	Revisions	Issued By	Date	Microfiled
C	Baffle Type 6 added		9/10/08	
B	Issued for Construction	MRP	20/12/07	
A	Original Issue A3			

Associated Job Nos

Auxiliary Drg Nos
Refer drawing indexes on drgs. 399510 – 399512

Survey Data	
Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales
N.T.S.

Dimensions shown in millimetres except where shown otherwise

CARDWELL SHIRE
BRUCE HIGHWAY (INGHAM – INNISFAIL)

CTL CHGE 80010.414 – 94376.059

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

FISH PASSAGE DETAILS
(CONTROL LINE MC000 AND EXISTING BRUCE HIGHWAY)

Drawing	Design	Design Review	For scheme submitted status refer	For scheme approval status refer
NJS	JC	MRP	Drg. No. 399510	Drg. No. 399510
Checked DAP	Verified WPW	Date: M.PETTIGREW	(DI-01 of 03)	(DI-01 of 03)

Queensland Government
Department of Main Roads

Job No.	30/10N/81
Contract No.	AC-09-006
Drawing No.	401615 C
Series Number	MD-11 of 17

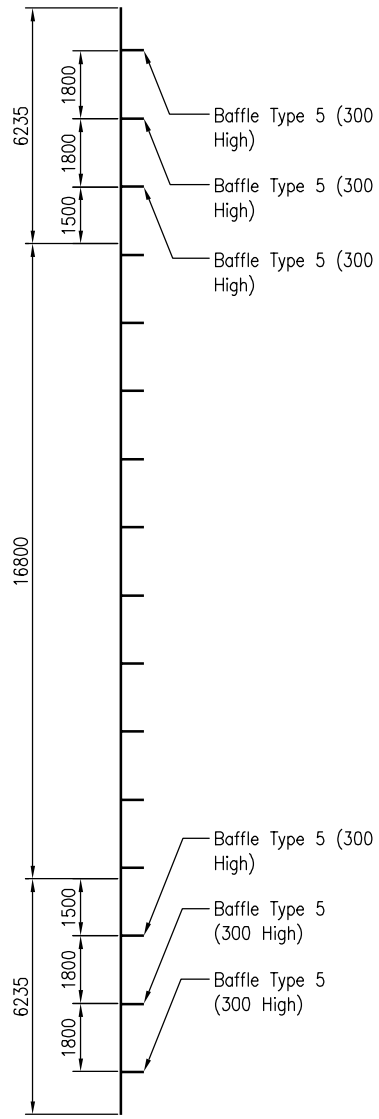
MRR_Detail (08/06)

CAD FILES | Cad ref: J:\TullyProject\Tully_60018841\Cad\20_Detail\Civil\60018841-MD-11.dwg

Last modified: 19 Jan 09 - 13:56

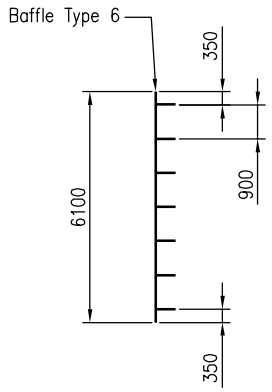
MAUNSELL | AECOM

ISSUED NO: C ISSUED DATE: 9/10/08



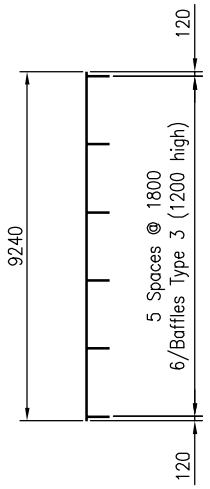
NEW CULVERT 399714D CH.82920 (5/3600 x 3000 RCBC's)

CONTROL LINE MC000



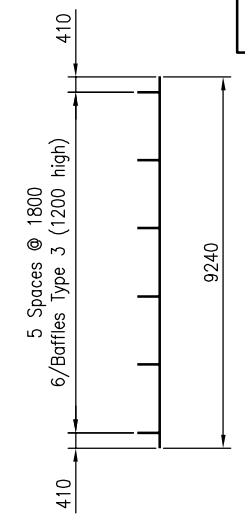
NEW CULVERT EAST OF CH.82920
(2/1350 DIA. RCP's)

BAFFLES BOTH CELLS



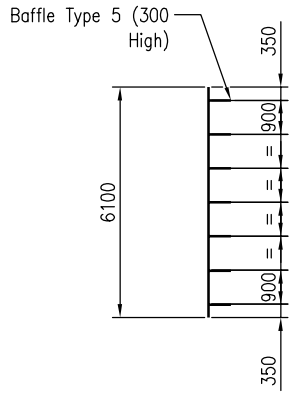
EXISTING CULVERT WEST OF CH.83865
(4/2120 x 1530 RCBC's)

EXISTING BRUCE HIGHWAY



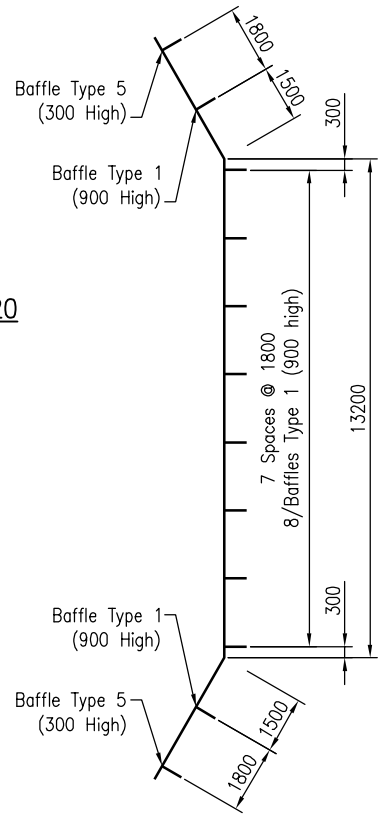
EXISTING CULVERT WEST OF CH.84835
(5/2120 x 1555 RCC's)

EXISTING BRUCE HIGHWAY



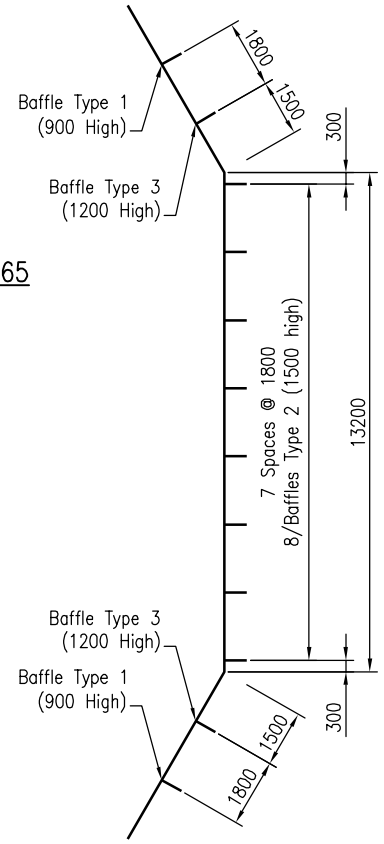
NEW CULVERT EAST OF CH.82920
2/1350 DIA. R.C.P.
BAFFLES BOTH CELLS

CONTROL LINE MC000



NEW CULVERT 399716A CH.83865 (3/3600 x 1200 RCBC's + 2/3600 RCC's)

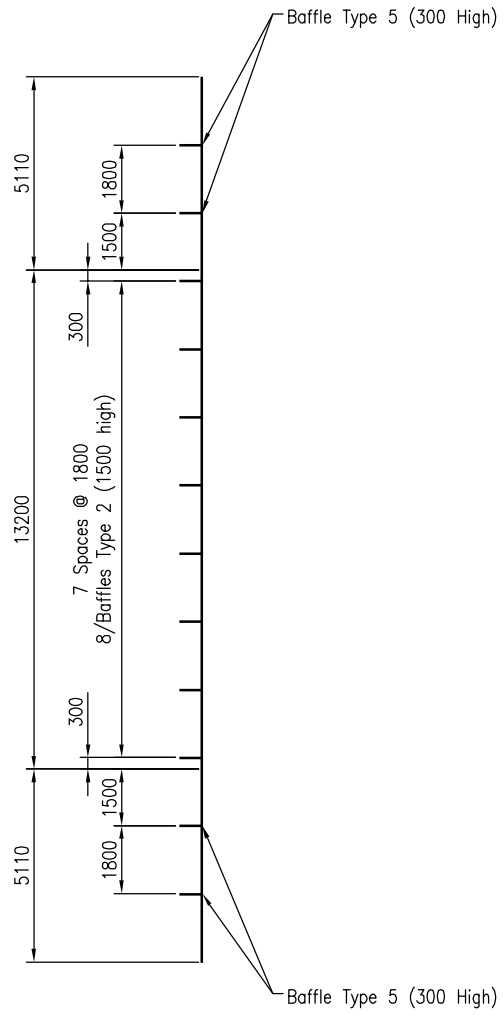
CONTROL LINE MC000



NEW CULVERT 399716C CH.84155 (5/3600 x 1800 RCBC's + 4/3600 RCC's)

CONTROL LINE MC000

These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.



NEW CULVERT 399717D CH.84835 (8/3600 x 2400 RCBC's)

CONTROL LINE MC000

Revisions		Issued By	Date	Microfiled
C	For Construction		9/10/08	
B	Issued for Construction	MRP	20/12/07	
A	Original Issue A3			

Associated Job Nos

Auxiliary Drg Nos
Refer drawing indexes on drgs. 399510 – 399512

Survey Data	
Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales

N.T.S.

Dimensions shown in millimetres except where shown otherwise

CARDWELL SHIRE

BRUCE HIGHWAY (INGHAM – INNISFAIL)

CTL CHGE 80010.414 – 94376.059

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

FISH PASSAGE
BAFFLE LOCATIONS

Drawing	Design	Design Review	For scheme submitted status refer	For scheme approval status refer
NJS	JC	MRP	Drg. No. 399510	Drg. No. 399510
Checked DAP	Verified WPW	Date: M.PETTIGREW	(DI–01 of 03)	(DI–01 of 03)

Queensland Government
Department of Main Roads

Job No.	30/10N/81
Contract No.	AC–09–006
Drawing No.	401612 C
Series Number	MD–08 of 17

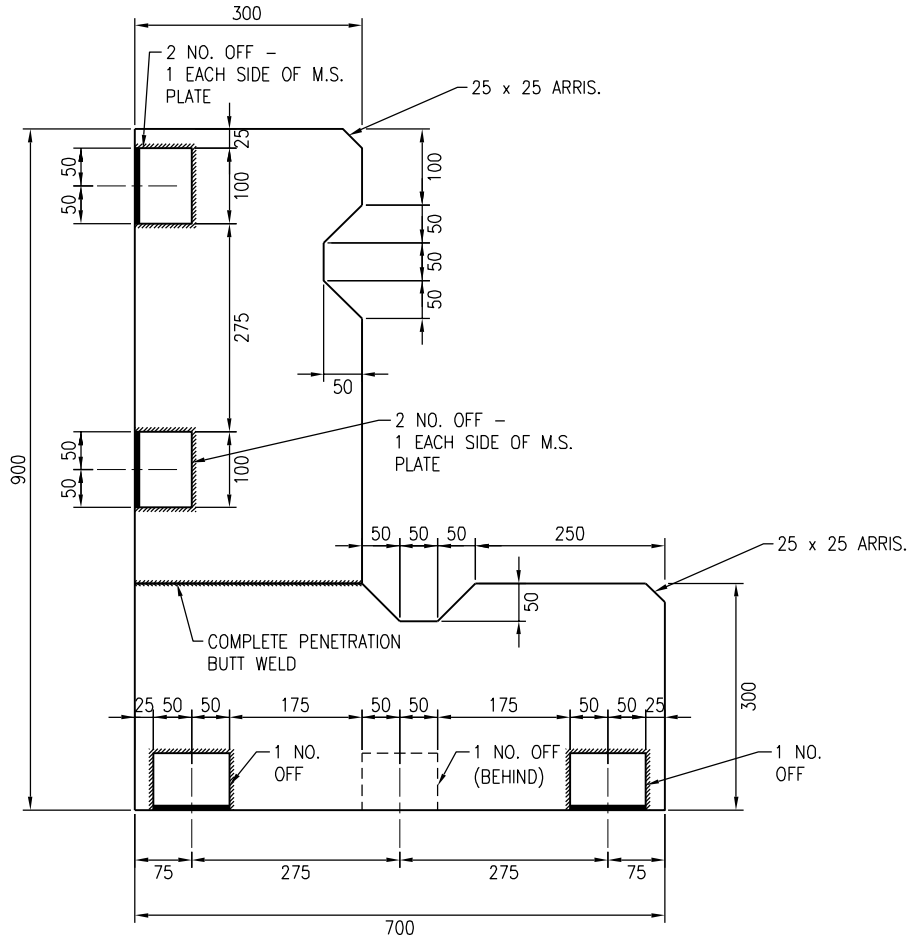
MRR_Detail (08/06)

CAD FILES Cad ref: J:\TullyProject\Tully_60018841\Cad\20_Detail\Civil\60018841–MD–08.dwg

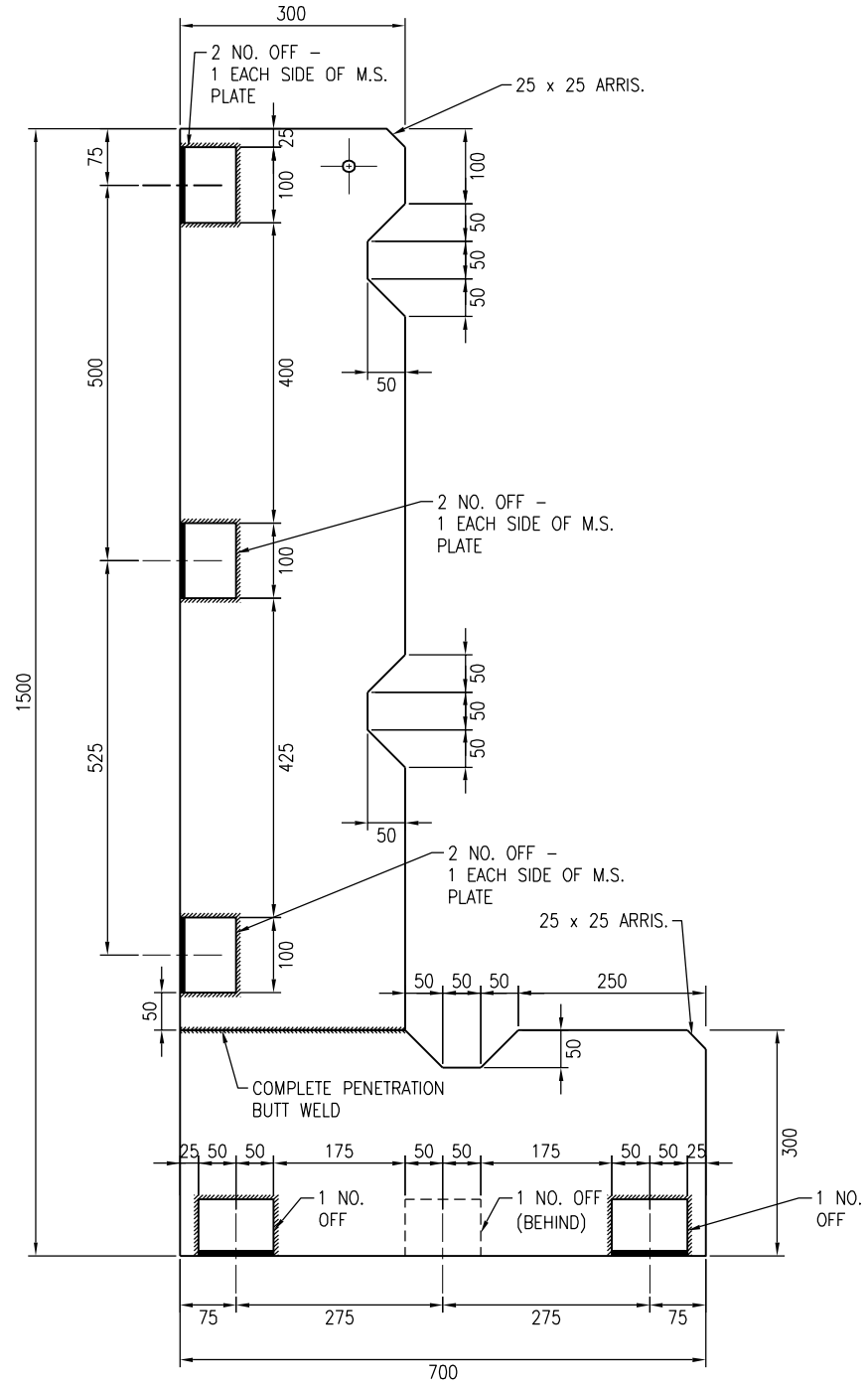
Last modified: 19 Jan 09 - 13:56

MAUNSELL | AECOM

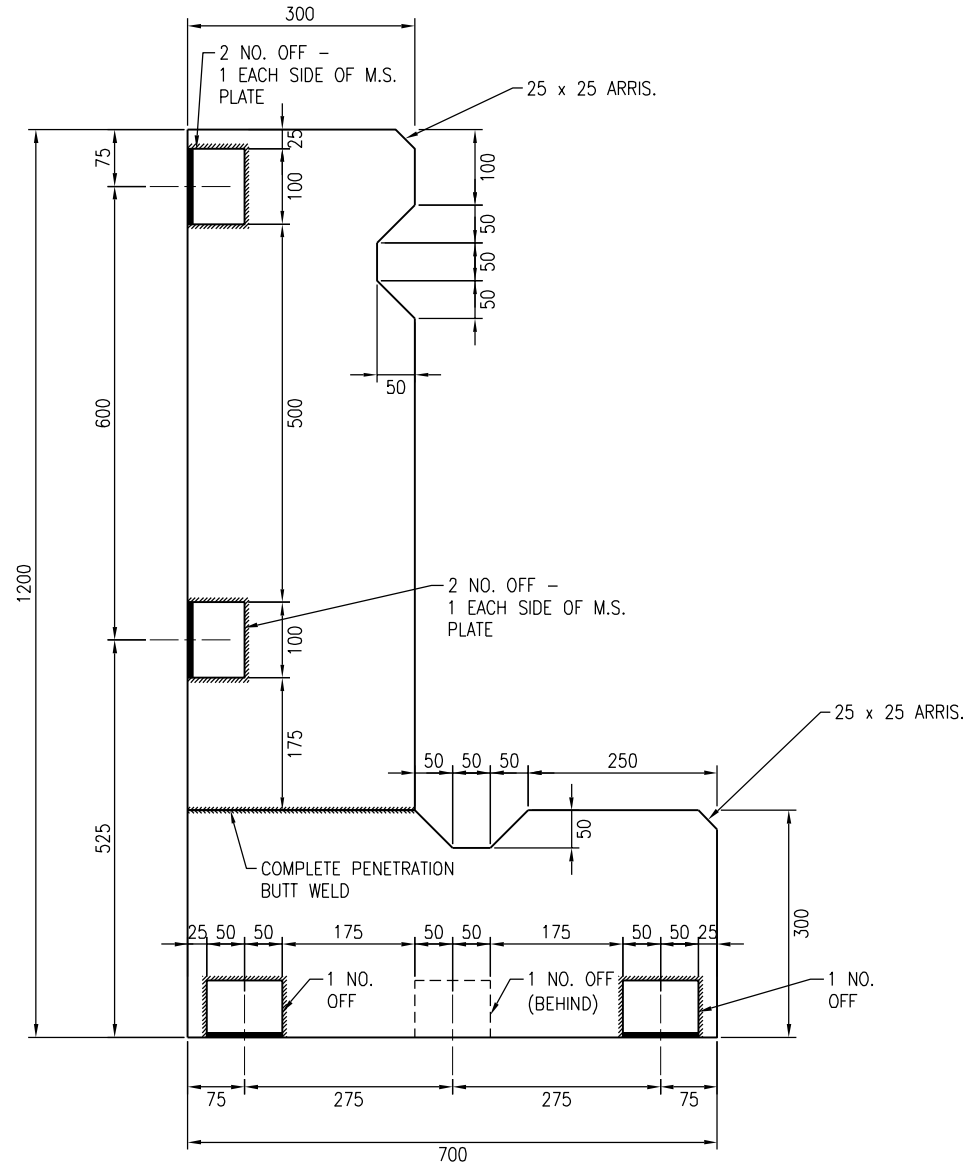
ISSUED NO: B ISSUED DATE: 20/12/07



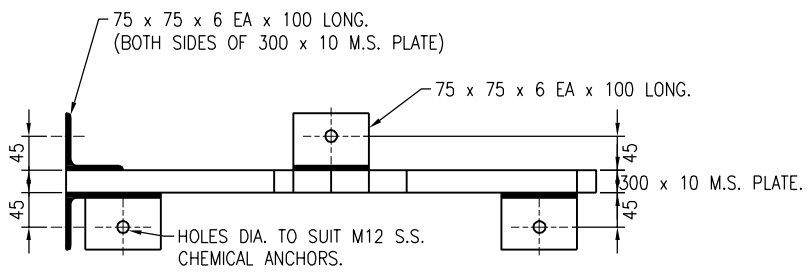
ELEVATION
BAFFLE PLATE TYPE 1.



ELEVATION
BAFFLE PLATE TYPE 2.



ELEVATION
BAFFLE PLATE TYPE 3.



TYPICAL PLAN
BAFFLE PLATES TYPES 1,2 & 3.

These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.

STEELWORK NOTES

- All steelwork shall conform to A.S. 4100, steel structures.
- Steel grades: 300 U.O.N.
  plates – 250.
- Fabrication shall be carried out by welders who are qualified in accordance with the requirements of A.S./NZS 1554.1.
- All welds shall be 6 C.F.W. unless noted otherwise.
- All welds shall be category S.P. as specified in A.S. 1554, U.O.N.
- Electrodes shall be E48XX/W50X.
- All steelwork shall be blast cleaned to class 2½ as specified in A.S. 1627.4.
- Shop drawings, if required, shall be submitted before commencement of fabrication.
- All angles to be 75 x 75 x 6 x 100 long U.O.N.
- All fixings to be M12 S.S. chemical anchor embedded 100. ramset/chemset injection 801. Epoxy. each fitting.
- All baffle plates shall be hot dipped galvanised and passivated in 0.2% sodium dichromate solution.

Revisions		Issued By	Date	Microfiled
B	Issued for Construction	MRP	20/12/07	
A	Original Issue A3			

Associated Job Nos

Auxiliary Drg Nos: Refer drawing indexes on drgs. 399510 – 399512

Survey Data	
Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales: N.T.S

Dimensions shown in millimetres except where shown otherwise

CAD FILES Cad ref: J:\TullyProject\Tully_60018841\Cad\20_Detail\Civil\60018841-MD-09.dwg

Last modified: 19 Jan 09 - 13:54

CARDWELL SHIRE
BRUCE HIGHWAY (INGHAM – INNISFAIL)
CTL CHGE 80010.414 – 94376.059

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

FISH PASSAGE WORKS
BAFFLE PLATE DETAILS
SHEET 1 OF 2

Drawing	Design	Design Review		
NJS	JC	MRP	For scheme submitted status refer Drg. No. 399510 (DI-01 of 03)	For scheme approval status refer Drg. No. 399510 (DI-01 of 03)
Checked DAP	Verified WPW	Date: M.PETTIGREW		

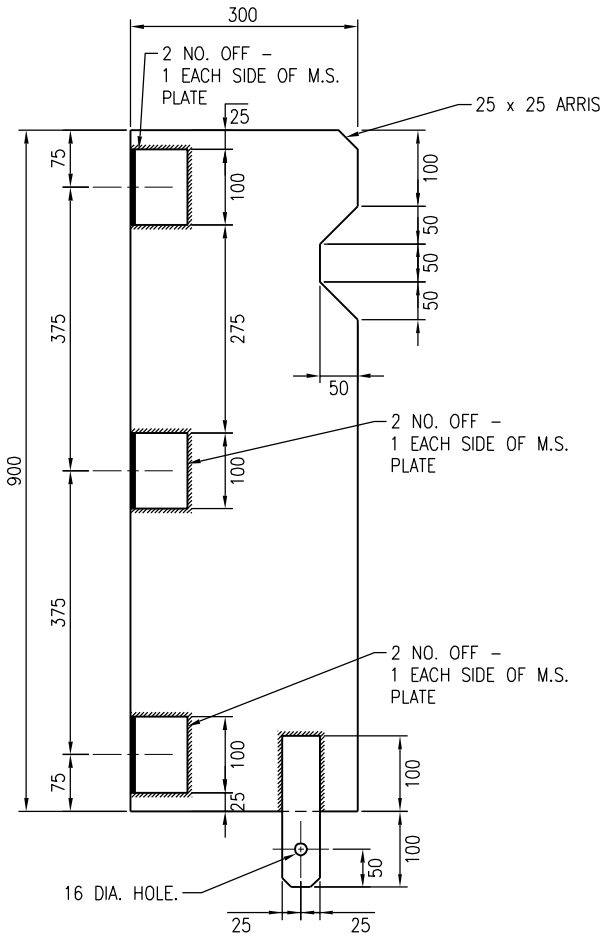
Queensland Government
Department of Main Roads

Job No.	30/10N/81
Contract No.	AC-09-006
Drawing No.	401613 B
Series Number	MD-09 of 17

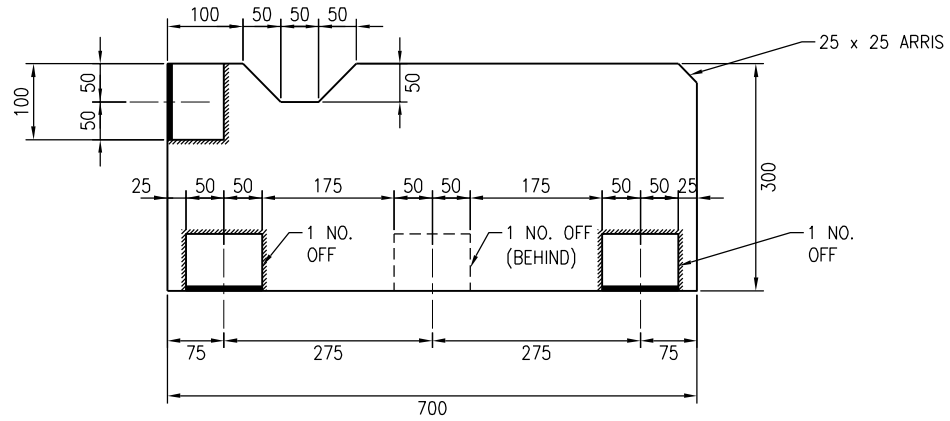
MRR_Detail (08/06)

MAUNSELL | AECOM

ISSUED NO: C ISSUED DATE: 10/9/2008



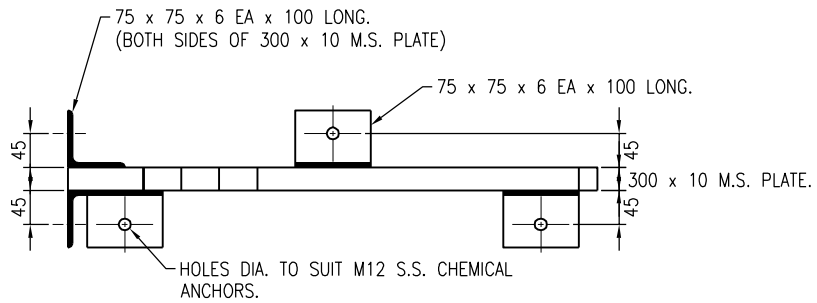
ELEVATION
BAFFLE PLATE TYPE 4.



ELEVATION
BAFFLE PLATE TYPE 5.

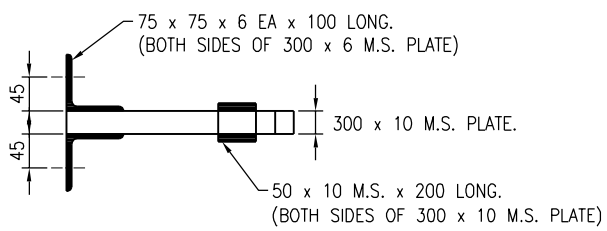
STEELWORK NOTES

- All steelwork shall conform to A.S. 4100, steel structures.
- Steel grades: 300 U.O.N.
  Plates – 250.
- Fabrication shall be carried out by welders who are qualified in accordance with the requirements of A.S./NZS 1554.1.
- All welds shall be 6 C.F.W. U.O.N.
- All welds shall be category S.P. as specified in A.S. 1554, U.N.O.
- Electrodes shall be E48XX/W50X.
- All steelwork shall be blast cleaned to class 2½ as specified in A.S. 1627.4.
- Shop drawings, if required, shall be submitted before commencement of fabrication.
- All angles to be 75 x 75 x 6 x 100 long U.O.N.
- All fixings to be M12 S.S. chemical anchor embedded 100. Ramset/chemset injection 801. Epoxy. Each fitting.
- All baffle plates shall be hot dipped galvanised and passivated in 0.2% sodium dichromate solution.

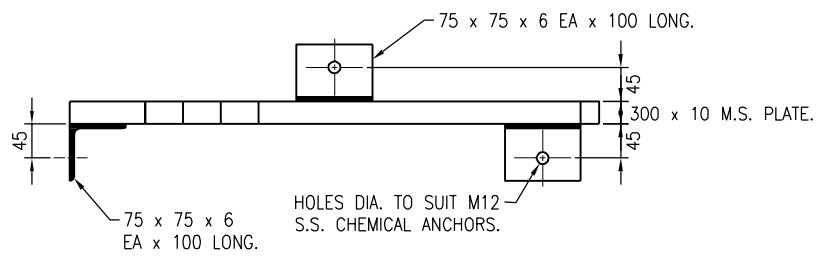


TYPICAL PLAN
BAFFLE PLATE TYPE 5.

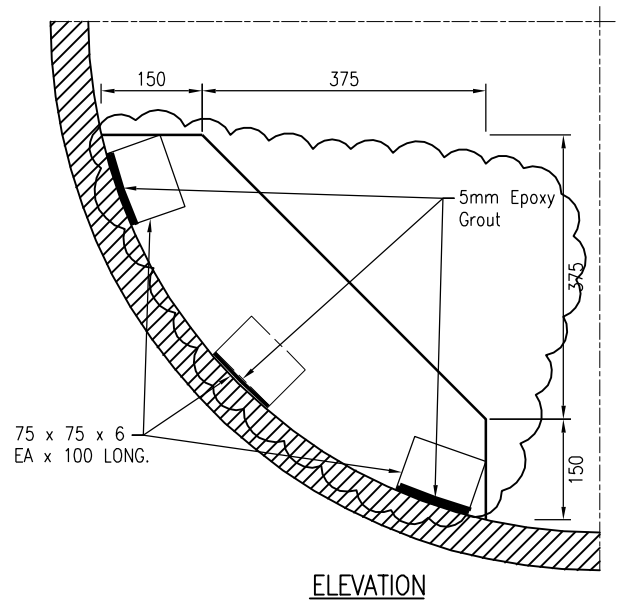
These drawings have been prepared for the Tully Alliance specifically for use on the Bruce Highway Corduroy Creek to Tully High School. They are not standard drawings and the designs are not necessarily applicable to other locations.



TYPICAL PLAN
BAFFLE PLATE TYPE 4.



TYPICAL PLAN
BAFFLE PLATE TYPE 6.



ELEVATION
BAFFLE PLATE TYPE 6.

Revisions		Issued By	Date	Microfiled
C	For Construction		9/10/08	
B	Issued for Construction	MRP	20/12/07	
A	Original Issue A3			

Associated Job Nos

Auxiliary Drg Nos: Refer drawing indexes on drgs. 399510 – 399512

Survey Data	
Horiz. Datum	MGA 94 Zone 55
Azimuth Datum	MGA 94 Zone 55
Height Datum	PM49752 = 9.087 AHD
Survey Books	MR 84562 MR 84563

GDA

Scales: N.T.S

Dimensions shown in millimetres except where shown otherwise

CARDWELL SHIRE
BRUCE HIGHWAY (INGHAM – INNISFAIL)
CTL CHGE 80010.414 – 94376.059

Reference Points				
Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
10N/12	5.545	14.36	4.3	10N/19

Through Chainage from Intersection Townsville Rd/Lannercost St Ingham (10M/10N/614)

FISH PASSAGE WORKS
BAFFLE PLATE DETAILS
SHEET 2 OF 2

Drawing	Design	Design Review		
NJS	JC	MRP	For scheme submitted status refer Drg. No. 399510 (DI-01 of 03)	For scheme approval status refer Drg. No. 399510 (DI-01 of 03)
Checked DAP	Verified PS/WPW	Date: M.PETTIGREW		

Queensland Government
Department of Main Roads

Job No.	30/10N/81
Contract No.	AC-09-006
Drawing No.	401614 C
Series Number	MD-10 of 17

MRR_Detail (08/06)

CAD FILES | Cad ref: J:\TullyProject\Tully_60018841\Cad\20_Detail\Civil\60018841-MD-10.dwg | Last modified: 19 Jan 09 - 13:56