Transport for NSW

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Design Review Cover Sheet

29 May 2026

Project: Richmond Rd M7 Motorway to Townson Road

Phase: Substantial Detailed Design (Review 2 of 2)

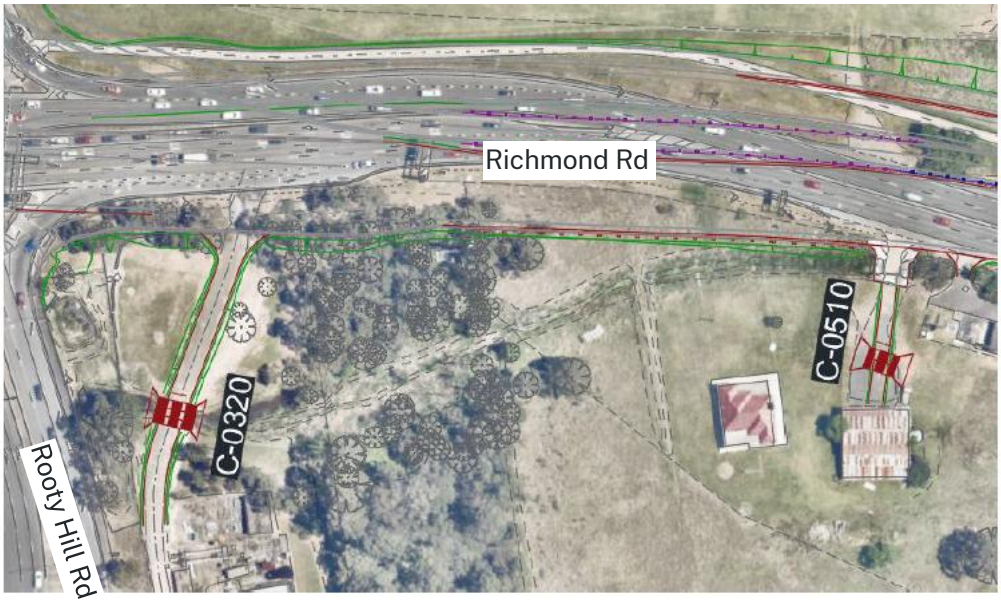
Package: Culverts

Date of Issue: 29 May 2026

Date for Return: 12 June 2026

Summary

This design package previously (during DCD phase) included the design drawings and design report for the proposed drainage culvert structures under access lanes at two properties on the eastern side of Richmond Rd.



Due to changes in the design requirements for the structures, the culvert on the right of the image (C-0510) is now included in a different design package (MS02 – Miscellaneous Structures). For ease of review, the relevant culvert documents in MS02

The culverts are required to retain access into these properties upon the construction of the new drainage channel along the eastern side of Rooty Hill Road. The location of the culverts are wholly within properties owned by Transport for NSW.

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Changes since previous phase

C-0320

The overall footprint of this culvert structure has not changed, however the cells have increased in height from 900mm to 1200mm. This increase in height is being accommodated by a higher surface at road level (the bottom slab has not gotten any deeper)

C-0510

While this culvert is now being incorporated in a different package, the differences are summarised in this cover sheet for ease of reference.

The overall footprint of this culvert structure has reduced in length by 1210mm. No other changes are proposed.

Responses and notes to DSMG feedback from previous phase

"Appendix G - Concerns raised

The environmental safeguards in Appendix G provide a solid baseline; however, they appear to be largely standardised.

Can these Safeguards be further developed and contextualised to address the specific environmental risks and site conditions relevant to this package, ensuring a more targeted and effective approach. Concern is that the Environmental safeguards

- *push responsibilities to a future "deal with it if and when it happens"*
- *do not define what "minimised" means*
- *do not demonstrate that impacts have been assessed at this stage"*

The observation of standardisation is correct, as the design report safeguards are transferred directly from the Project REF. The safeguards are project wide, not package specific, and therefore do not have benchmarking or performance criteria associated with them that will be able to monitor the performance of specific elements within the design.

Impacts specific to the performance of these culverts are better documented in the Flooding and Hydrology report, including flows, scour protection and water quality, where these culverts are assessed as part of the overall project impacts (including the connecting swale drains, proposed planting and drainage treatments, bridges and other stormwater elements (kerb and pavement drainage).

The flooding and hydrology report provides the following information that may assist in responding to key concerns:

- a water quality basin is proposed between the C-0320 and C-0510 culverts, which will provide primary treatment to flows into the site from the M7 and the surrounding project area (excluding the road and pavement drainage). This basin achieves 10% AEP flood immunity, with no uncontrolled overflow occurring in this event. While in significant flooding (e.g. 1%AEP) will reduce its efficacy, the channel connecting the water quality basin has 1% AEP flood immunity, and concentrates the water flow compared to the current condition which shows that flooding extends into the Colebee warehouse area and the 717 property.
- The water flow velocities in the drainage channels have been modelled, and where velocities exceed 1.8m/s, rock scour protection is proposed, while areas with lower velocity will utilize native vegetation to provide surface stability.

List of Documents

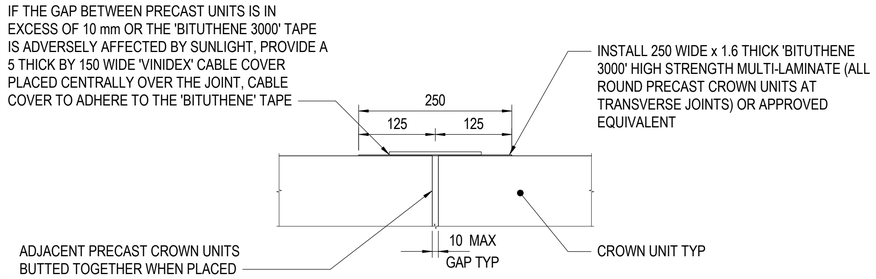
DCD Document Reference	DCD Revision	SDD Document Reference	SDD Revision	Document Type	Document Name
RRM7-GEDT-0537-MS-DRG-011000.A.S3.A.01.pdf	A	RRM7-GEDT-0537-MS-DRG-011000.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Cover Sheet
RRM7-GEDT-0537-MS-DRG-011010.A.S3.A.01.pdf	A	RRM7-GEDT-0537-MS-DRG-011010.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 General Arrangement
		RRM7-GEDT-0537-MS-DRG-011020.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Base Slab Details – Sheet A
		RRM7-GEDT-0537-MS-DRG-011021.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Base Slab Details – Sheet B
		RRM7-GEDT-0537-MS-DRG-011022.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Base Slab Details – Sheet C
		RRM7-GEDT-0537-MS-DRG-011025.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Wing Wall Details – Sheet A
		RRM7-GEDT-0537-MS-DRG-011026.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Wing Wall Details – Sheet B
		RRM7-GEDT-0537-MS-DRG-011030.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Head Wall Details
		RRM7-GEDT-0537-MS-DRG-011035.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Miscellaneous Details
		RRM7-GEDT-0537-MS-DRG-011040.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Bar Shapes Diagram – Sheet A
RRM7-GEDT-0537-MS-DRG-011999.A.S3.A.01.pdf	A	RRM7-GEDT-0537-MS-DRG-011999.B.S3.B.01.pdf	B	Drawing	Drainage Culvert Under Access Lane at Lot 101 DP1109052 C-0320 Combined Drawings
RRM7-GEDT-0537-MS-DRG-012000.A.S3.A.01.pdf	A	Deleted			Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 Cover Sheet
RRM7-GEDT-0537-MS-DRG-012010.A.S3.A.01.pdf	A	RRM7-GEDT-0537-MS-DRG-020070.A.S3.A.01.pdf	A	Drawing	Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 General Arrangement – Sheet A
		RRM7-GEDT-0537-MS-DRG-020071.A.S3.A.01.pdf	A	Drawing	Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 General Arrangement – Sheet B
		RRM7-GEDT-0537-MS-DRG-020072.A.S3.A.01.pdf	A	Drawing	Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 Base Slab Details – Sheet A
		RRM7-GEDT-0537-MS-DRG-020073.A.S3.A.01.pdf	A	Drawing	Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 Base Slab Details – Sheet B
		RRM7-GEDT-0537-MS-DRG-020074.A.S3.A.01.pdf	A	Drawing	Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 Base Slab Details – Sheet C

DCD Document Reference	DCD Revision	SDD Document Reference	SDD Revision	Document Type	Document Name
		RRM7-GEDT-0537-MS-DRG-020075.A.S3.A.01.pdf	A	Drawing	Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 Wing Wall Details
		RRM7-GEDT-0537-MS-DRG-020076.A.S3.A.01.pdf	A	Drawing	Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 Head Wall Details
		RRM7-GEDT-0537-MS-DRG-020077.A.S3.A.01.pdf	A	Drawing	Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 Miscellaneous Details
RRM7-GEDT-0537-MS-DRG-012999.A.S3.A.01.pdf	A	Deleted			Drainage Culvert Under Access Lane at Lot 49 DP1104950 C-0510 Combined Drawings
RRM7-GEDT-0537-MS-RPT-010001.A.S3.A.01.pdf	A	RRM7-GEDT-0537-MS-RPT-020001.B.S3.B.01	B	Report	Drainage Culverts Substantial Detailed Design Report

Review Purpose

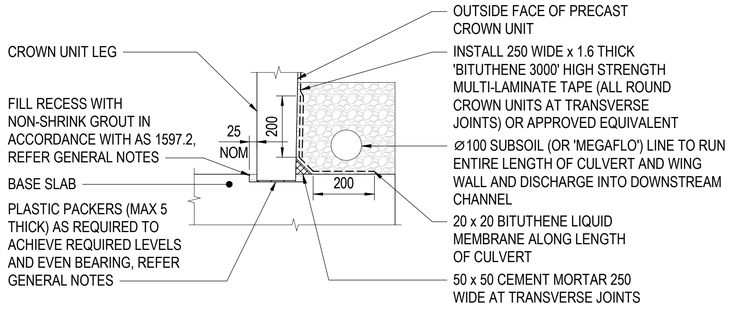
Document provided for information only however comments or questions are welcome.

When submitting comments or questions, please provide the document reference number.



SECTION 1
SCALE 1 : 5

NOTE: 'VINIDEX' CABLE COVER TO BE PROVIDED IF HEAT TREATED PAVEMENT LAYERS ARE APPLIED DIRECTLY TO THE TOP OF THE CROWN UNITS



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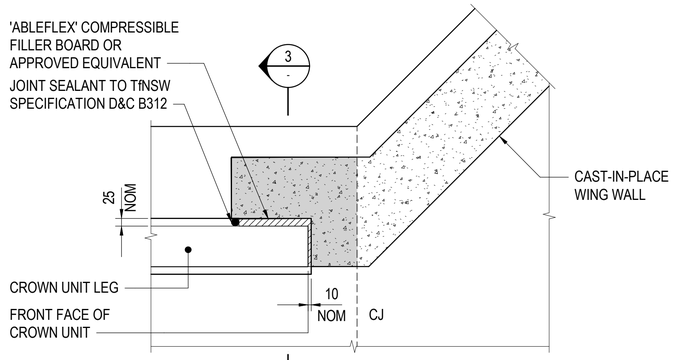
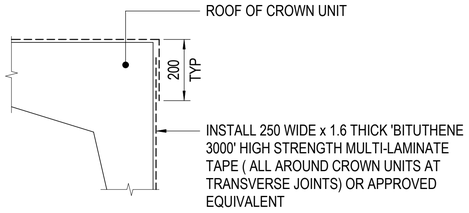
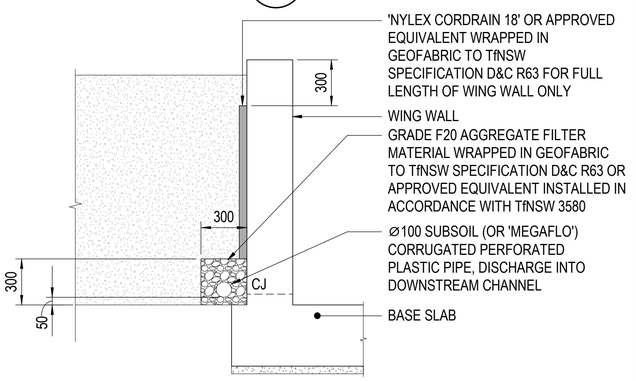


TYPICAL WING WALL AND CROWN UNIT INTERFACE
SCALE 1 : 10



TYPICAL HAUNCH OF CROWN UNIT
SCALE 1 : 10



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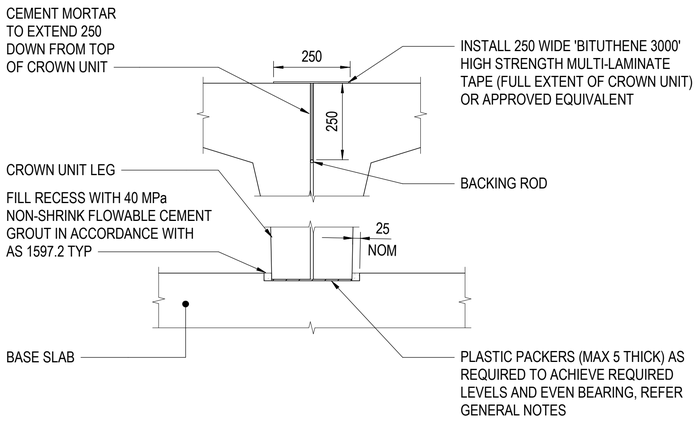

TYPICAL LEG OF CROWN UNIT AND BASE SLAB JOINT - DOUBLE LEG
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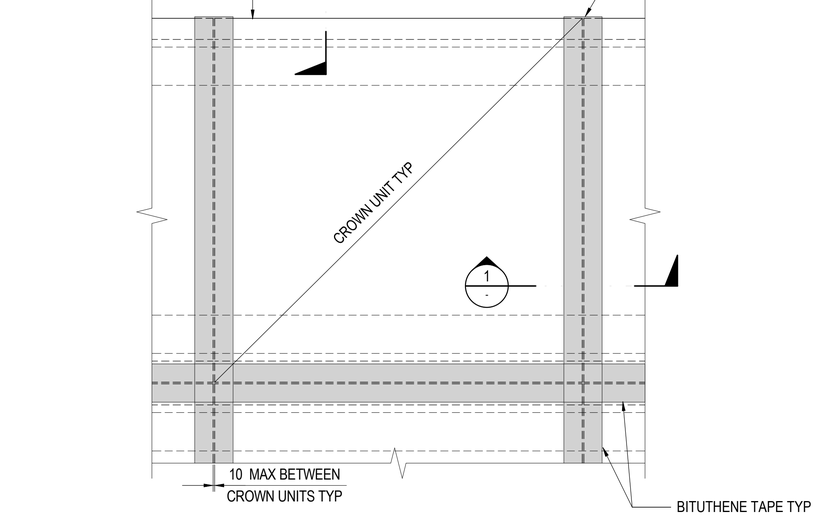
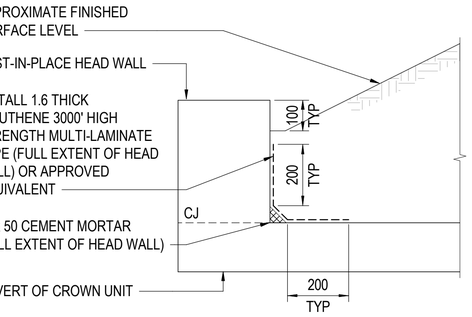


PLAN INSTALLED CROWN UNITS TYPICAL JOINT TREATMENT
SCALE 1 : 20

DRAINAGE BEHIND WING WALLS
SCALE 1 : 20



TYPICAL JOINT TREATMENT FOR HEAD WALLS
SCALE 1 : 10

GENERAL NOTES

FOR OTHER NOTES RELATING TO THIS SHEET, REFER TO DRAWING No 020070.
CEMENT GROUT AT RECESSES MUST HAVE A MINIMUM 28 DAYS COMPRESSIVE STRENGTH OF 40 MPa.
HIGH STRENGTH, MULTI-LAMINATE TAPE MUST BE 1.6 mm THICK AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS INCLUDING APPLICATION OF BITUTHENE PRIMER.
'BITUTHENE 3000' IS SUSCEPTIBLE TO HEAT DAMAGE FROM EXPOSURE TO DIRECT SUNLIGHT ON HOT DAYS. MEASURES MUST BE TAKEN TO PROTECT THE TAPE IF IT IS EXPOSED TO HOT WEATHER PRIOR TO BACKFILLING.
PACKERS MUST NOT BE PLACED AT INTERVALS GREATER THAN 1000 mm.
PACKERS MUST NOT BE PLACED WITHIN 150 mm OF THE END OF THE CROWN UNIT.

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FOR REVIEW AND COMMENT

REFERENCES:

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REV	DESCRIPTION	DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE
A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 | HEIGHT DATUM: AHD

SCALE: N/A

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR: Western Parkland City Development Infrastructure & Place Transport for NSW

NETWORK COMPLEX CODE:

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DRAWN	JAMES HAWTHORNE	12.05.2026
DESIGNED	CASSANDRA BLAGA	12.05.2026
DRG CHECK	LUKE GANDY	12.05.2026
DESIGN CHECK	TOM SHEASBY	12.05.2026
PROJ/DES MNGR	JAMES ABRAHAM	12.05.2026
APPROVED	ROB FERGUSON	12.05.2026

BLACKTOWN CITY LGA

MR537 - RICHMOND ROAD

RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD

MISCELLANEOUS STRUCTURES

C-0510, DRAINAGE CULVERT UNDER ACCESS LANE, 2 CELL - 2700 x 1200 RCBC

MISCELLANEOUS DETAILS

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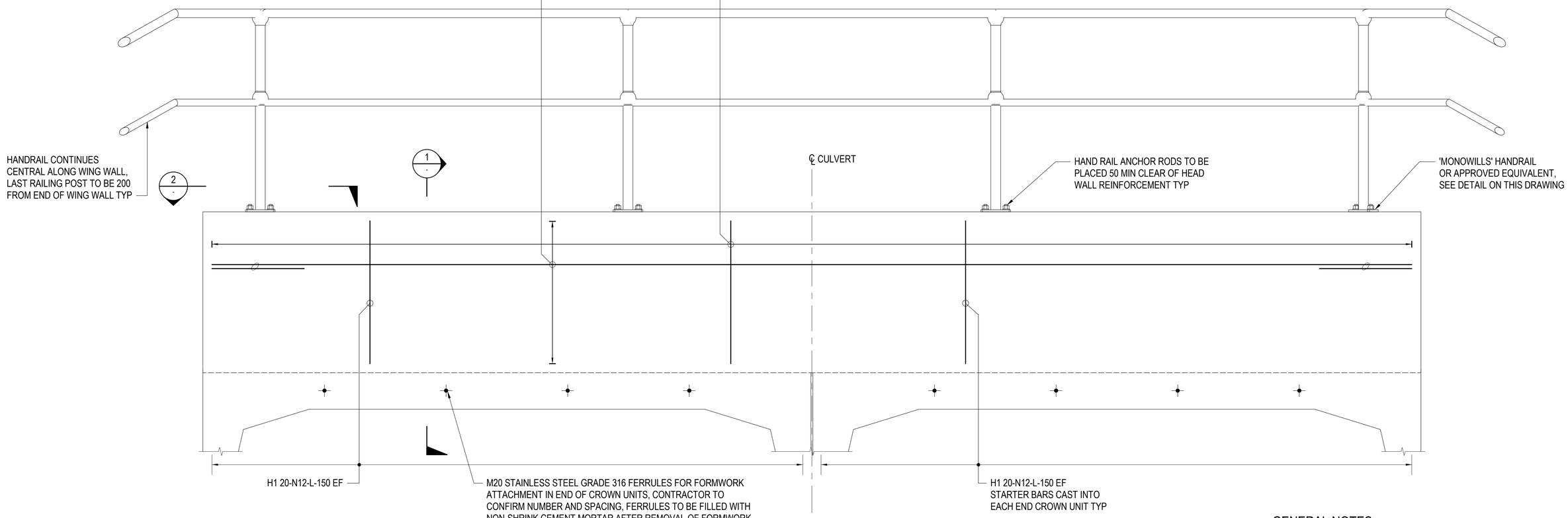
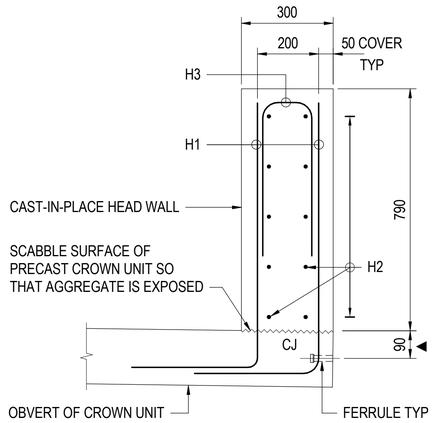


ELEVATION
SCALE 1 : 10



SECTION 1 / -
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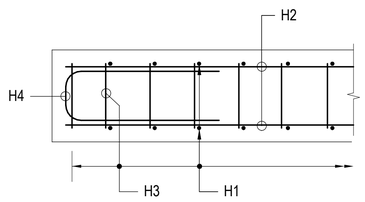
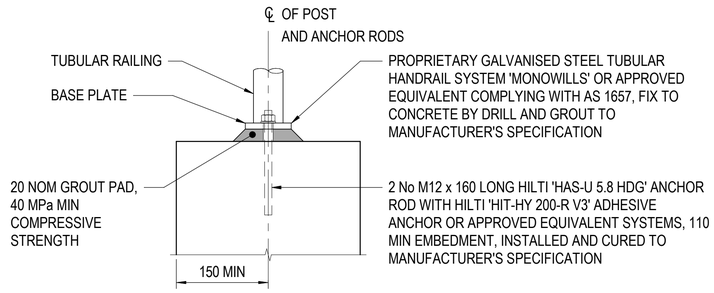


VIEW 2 / -
SCALE 1 : 10



TYPICAL RAILING BASE PLATE CONNECTION
SCALE 1 : 5

GENERAL NOTES

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, REFER DRG No 020070.
PROPRIETARY HANDRAILS MUST BE HOT DIP GAVANISED AND MUST BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH AS 1657 AND THE MANUFACTURER'S DETAILS.
HANDRAIL ANCHOR BOLTS MUST BE HOT DIP GALVANISED POST-INSTALLED FASTENERS IN ACCORDANCE WITH TfNSW SPECIFICATION D&C B240 AND MANUFACTURER'S DETAILS.

POST-INSTALLED ANCHOR INSTALLATION NOTES

DESIGN, INSTALLATION AND TESTING OF POST-INSTALLED ANCHORS MUST BE IN ACCORDANCE WITH AS 5216.
MINIMUM DESIGN LIFE OF POST-INSTALLED ANCHORS AND BONDING COMPOUND (IF REQUIRED) MUST BE 100-YEARS.
REINFORCEMENT MUST BE SCANNED AND IDENTIFIED PRIOR TO DRILLING.
REINFORCEMENT SCANNING MUST BE CARRIED OUT BY VERIFIED PERSONNEL USING ONE OF TWO INDEPENDENT METHODS:

- PRIMARY METHOD: USING A HIGH PRECISION MAGNETIC INDUCTION COVER METER TO LOCATE REINFORCEMENT AND ASSESS COVER DEPTH.
- SECONDARY METHOD: USING A HIGH PRECISION GROUND PENETRATING RADAR FOR CONCRETE APPLICATIONS TO VERIFY LOCATION OF REINFORCEMENT.

ANCHOR INSTALLATION PERSONNEL MUST BE TRAINED AND CERTIFIED BY AEFAC AND BE INDEPENDENT TO THE REINFORCEMENT SCANNING PERSONNEL.
CONTRACTOR SHALL PRE-PLAN THE LOCATION OF THE ANCHORS BY SLIGHT LOCAL SHIFTING OF BARS AND TIES.
HOLES TO BE DRILLED AT LEAST 50 mm CLEAR OF REINFORCEMENT. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, DRILLING HOLE IS TO BE TERMINATED AND RELOCATED.
THE ABANDONED HOLE IS TO BE REPAIRED IN ACCORDANCE WITH THE APPROVED CONCRETE REPAIR METHOD.

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SCALE: 1:10 , 1:5

1:10 @ A1 0 100 200 300 400 500 mm

1:5 @ A1 0 50 100 150 200 250 mm

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MISCELLANEOUS STRUCTURES
C-0510, DRAINAGE CULVERT UNDER ACCESS LANE, 2 CELL - 2700 x 1200 RCBC
HEAD WALL DETAILS

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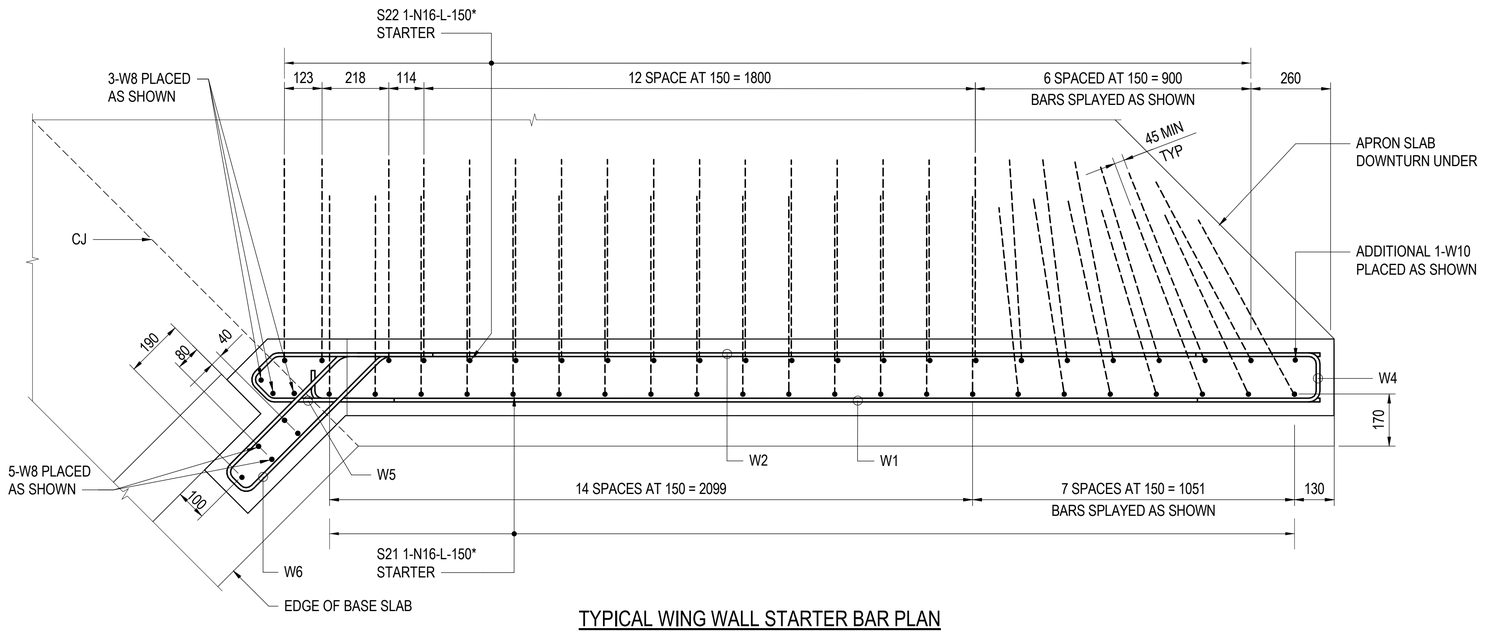
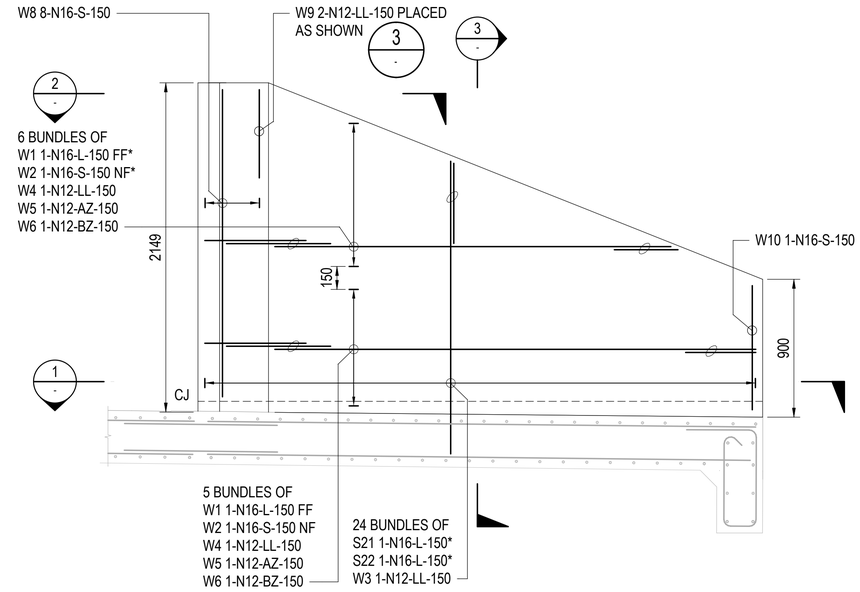


TYPICAL WING WALL STARTER BAR PLAN

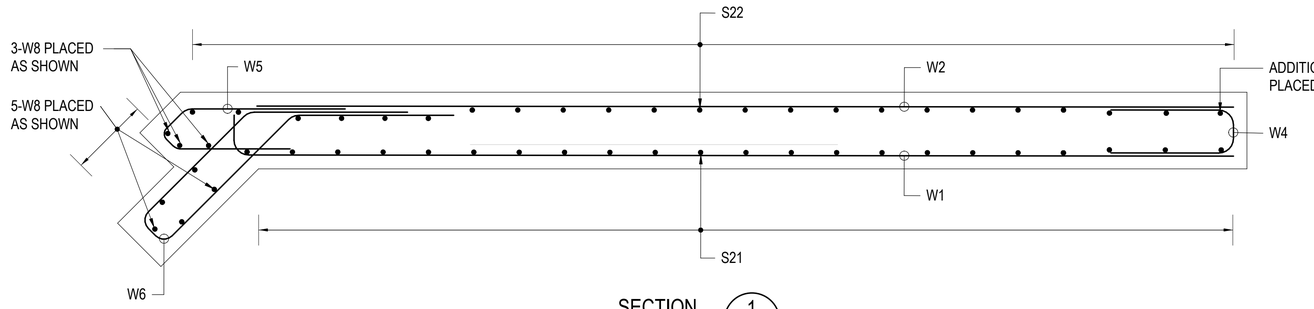
SCALE 1 : 10



TYPICAL WING WALL

SCALE 1 : 20

WING WALL B-02 SHOWN, OTHER WING WALLS SIMILAR
WEEPHOLES NOT SHOWN FOR CLARITY



SECTION 1

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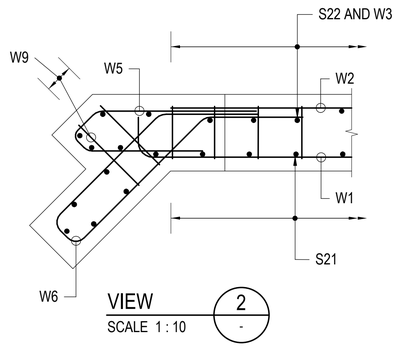
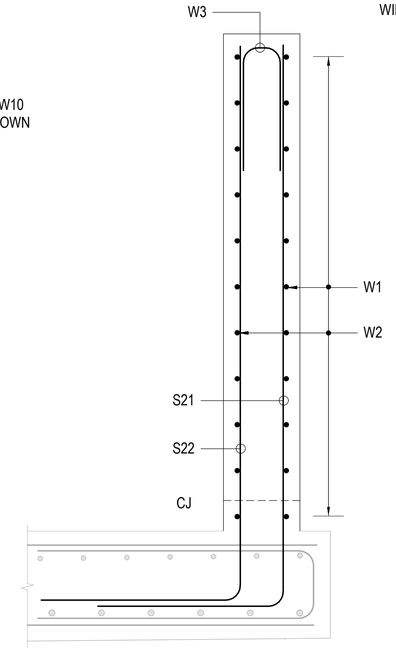


VIEW 2

SCALE 1 : 10



SECTION 3

SCALE 1 : 10

GENERAL NOTES

ALL CONCRETE WORKS MUST COMPLY WITH TfNSW SPECIFICATION D&C B80.
CONCRETE EXPOSURE CLASSIFICATION: B1
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE MUST BE 40 MPa.
EDGE MUST BE CHAMFERED 20 x 20 AND RE-ENTRANT ANGLES FILLETED 20 x 20 UNLESS SPECIFIED OTHERWISE.
REQUIRED COVER TO REINFORCEMENT NEAREST TO THE CONCRETE SURFACE MUST BE 50 mm UNLESS SPECIFIED OTHERWISE.
THE REQUIRED COVER IS BASED ON A MINIMUM OF 7 DAYS EFFECTIVE, CONTINUOUS AND UNINTERRUPTED WET OR SEALED CURING IN ACCORDANCE WITH AS 5100.5.
UNLESS OTHERWISE SPECIFIED, THE MINIMUM DEVELOPMENT LENGTHS AND LENGTHS OF LAPS MUST BE AS FOLLOWS:

BAR SIZE:	N12	N16	N20	N24	N28	N32
a. HORIZONTAL BARS WITH >300 mm OF CONCRETE CAST BELOW THE BAR	500	650	1000	1300	1700	2100
b. OTHER BARS	350	500	750	1000	1300	1600

CLEAR DISTANCE BETWEEN LAPPED BARS MUST NOT EXCEED 3x BAR DIAMETER.
UNLESS SHOWN OTHERWISE ON THE DRAWINGS, LAPS ON ADJACENT BARS ON ANY FACE MUST BE STAGGERED (OFFSET) BY NO LESS THAN THE LAP LENGTH.
REINFORCEMENT MAY BE DISPLACED SLIGHTLY WHERE NECESSARY TO CLEAR STEEL DOWELS, ANCHOR BOLTS, INSERTS, STARTER BARS AND WEEPHOLES.

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FAR FACE
NF DENOTES NEAR FACE
* DENOTES VARIABLE LENGTH BAR

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1:10 @ A1 0 100 200 300 400 500 mm

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PROJ/DES MNGR	JAMES ABRAHAM	12.05.2026
APPROVED	ROB FERGUSON	12.05.2026

BLACKTOWN CITY LGA

MR537 - RICHMOND ROAD

RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD

MISCELLANEOUS STRUCTURES

C-0510, DRAINAGE CULVERT UNDER ACCESS LANE, 2 CELL - 2700 x 1200 RCBC WING WALL DETAILS

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 1	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No:		©

DRG No.	REV	VER	EDMS No.	AMD No.
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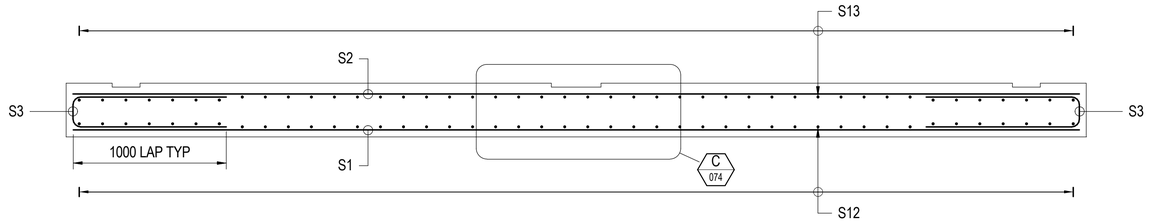
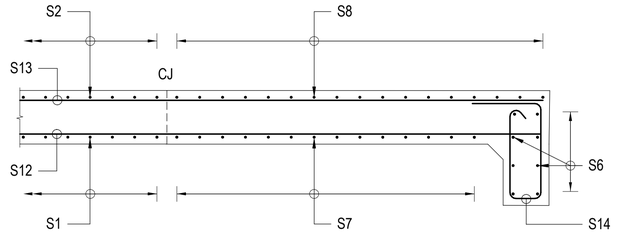


SECTION 4 (073)
SCALE 1 : 20



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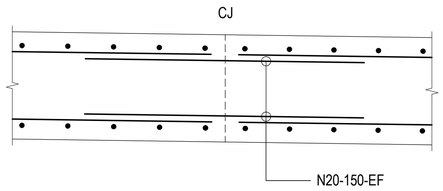
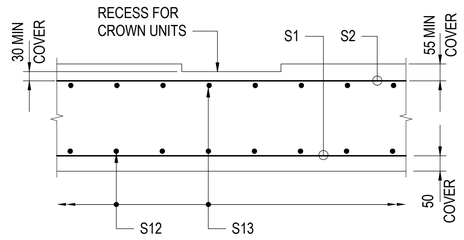


TYPICAL OPTIONAL CONSTRUCTION JOINT IN BASE SLAB
SCALE 1 : 10



DETAIL C (074)
SCALE 1 : 10

GENERAL NOTES

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, REFER DRG No 020072.

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FOR REVIEW AND COMMENT

REFERENCES:

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REV	DESCRIPTION	DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE
A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: 1:10 , 1:20

1:10 @ A1 0 100 200 300 400 500 mm

1:20 @ A1 0 200 400 600 800 1000 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

GAMUDA
INFRASTRUCTURE A GAMUDA Company
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AURECON
MISC. STRUCTURES

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DESIGNED	CASSANDRA BLAGA	12.05.2026
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DESIGN CHECK	TOM SHEASBY	12.05.2026
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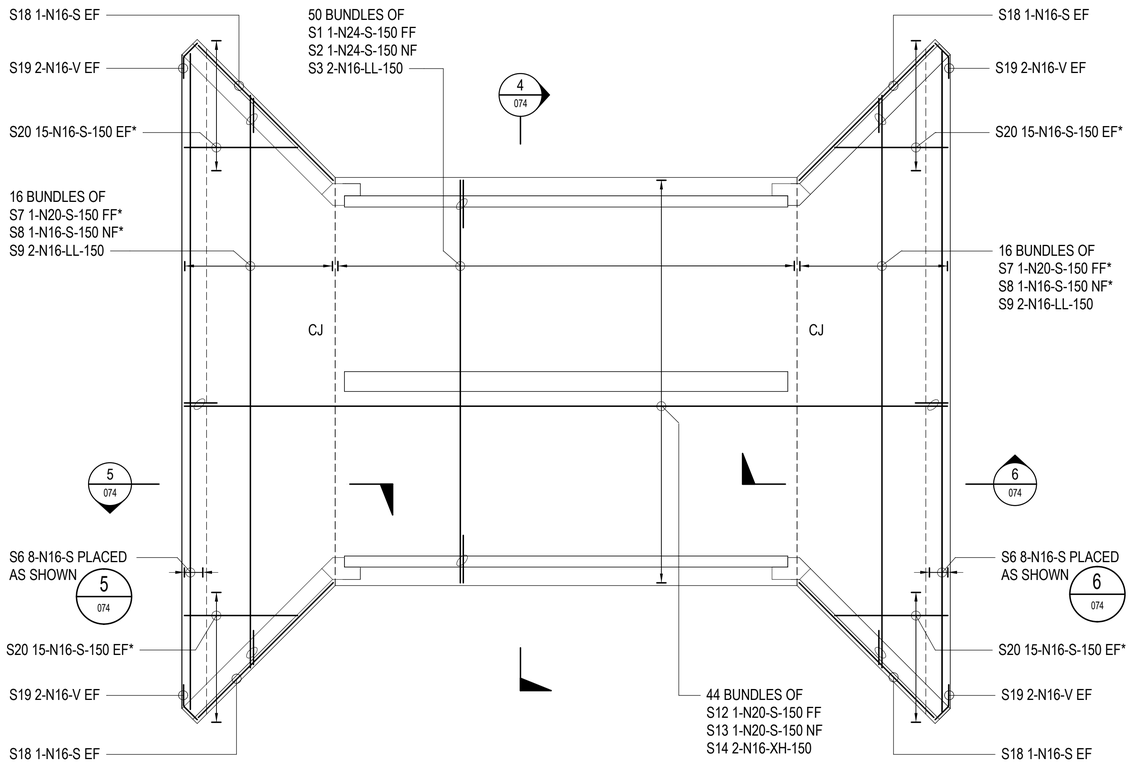
BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
MISCELLANEOUS STRUCTURES
C-0510, DRAINAGE CULVERT UNDER ACCESS LANE, 2 CELL - 2700 x 1200 RCBC
BASE SLAB DETAILS - SHEET C

DRAWING SET No: DS 2026/000040	PART	SHEET: 3 OF 3			
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No:				©
DRG No. RRM7-GEDT-0537-MS-DRG-020074	REV A	VER	EDMS No.	AMD No.	

PLOT DATE & TIME: 12/05/2026 9:26:31 AM FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-020001.rvt



PLAN

SCALE 1 : 50

S21, S22 WING WALL STARTER BARS NOT SHOWN
FOR CLARITY, REFER DETAIL ON DRG No 012075

GENERAL NOTES

SCALES AS SHOWN.
REQUIRED COVER TO REINFORCEMENT NEAREST TO THE CONCRETE SURFACE TO BE 50 mm UNLESS SPECIFIED OTHERWISE.
THE REQUIRED COVER IS BASED ON A MINIMUM OF 7 DAYS EFFECTIVE, CONTINUOUS AND UNINTERRUPTED WET OR SEALED CURING IN ACCORDANCE WITH AS 5100.5.
UNLESS SPECIFIED OTHERWISE, THE MINIMUM DEVELOPMENT LENGTHS AND LENGTHS OF LAPS MUST BE AS FOLLOWS:

BAR SIZE:	N12	N16	N20	N24	N28	N32
a. HORIZONTAL BARS WITH >300 mm OF CONCRETE CAST BELOW THE BAR	500	650	1000	1300	1700	2100
b. OTHER BARS	350	500	750	1000	1300	1600

CLEAR DISTANCE BETWEEN LAPPED BARS MUST NOT EXCEED 3x BAR DIAMETER.
UNLESS SHOWN OTHERWISE ON THE DRAWINGS, LAPS ON ADJACENT BARS ON ANY FACE MUST BE STAGGERED (OFFSET) BY NO LESS THAN THE LAP LENGTH.
REINFORCEMENT MAY BE DISPLACED SLIGHTLY WHERE NECESSARY TO CLEAR STEEL DOWELS, ANCHOR BOLTS, INSERTS AND STARTER BARS.

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FAR FACE
NF DENOTES NEAR FACE
* DENOTES VARIABLE LENGTH BAR

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A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020
HEIGHT DATUM: AHD

SCALE: 1:50
1:50 @ A1 0 500 1000 1500 2000 2500 mm
DESIGN LOT CODE:

CLIENT:
NSW GOVERNMENT Transport for NSW

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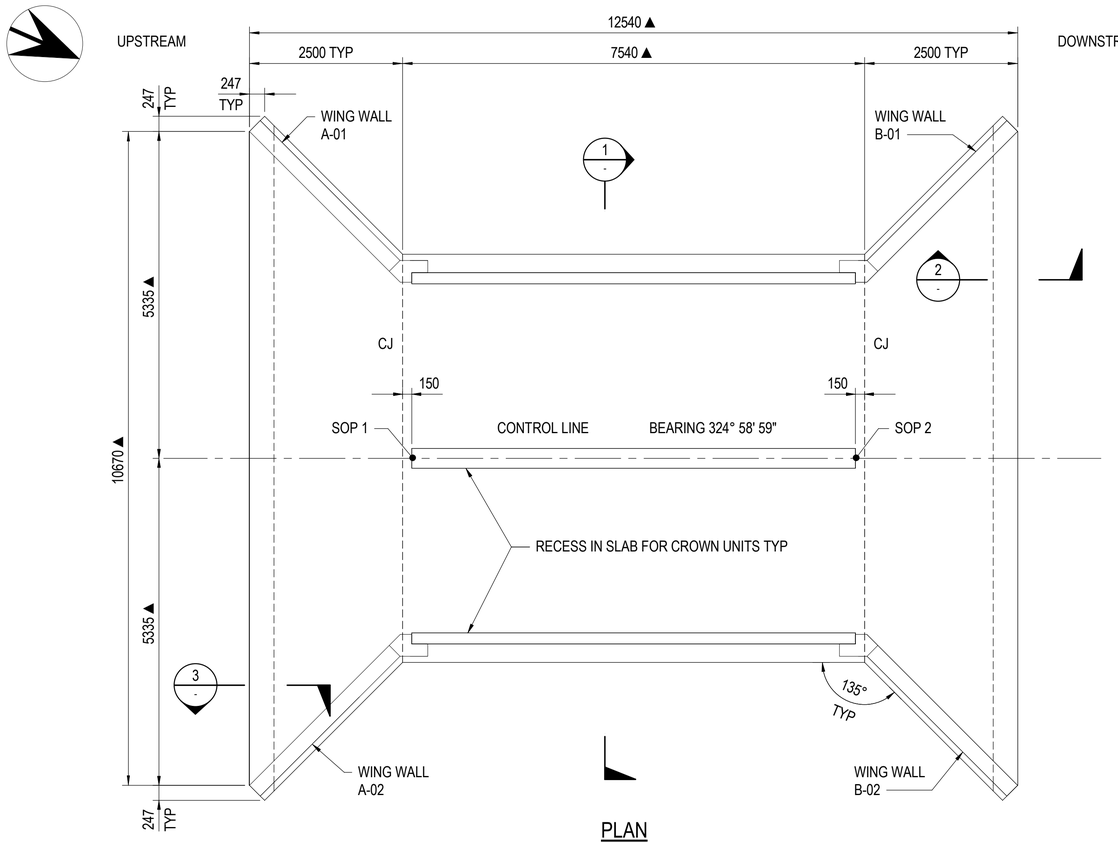
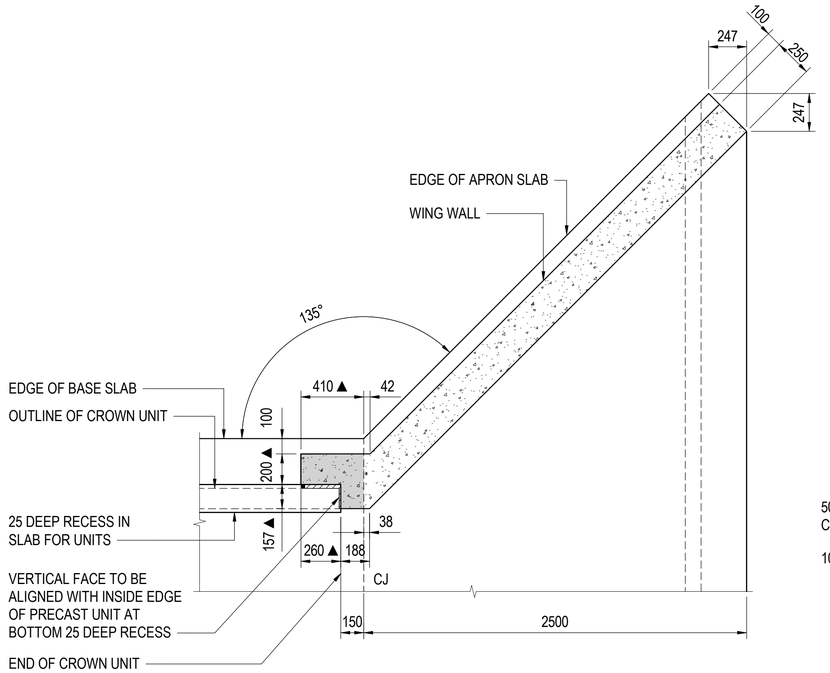
BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
MISCELLANEOUS STRUCTURES
C-0510, DRAINAGE CULVERT UNDER ACCESS LANE, 2 CELL - 2700 x 1200 RCBC
BASE SLAB DETAILS - SHEET B

DRAWING SET No: DS 2026/000040	PART	SHEET: 2 OF 3		
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No:			©
DRG No. RRM7-GEDT-0537-MS-DRG-020073	REV A	VER	EDMS No.	AMD No.

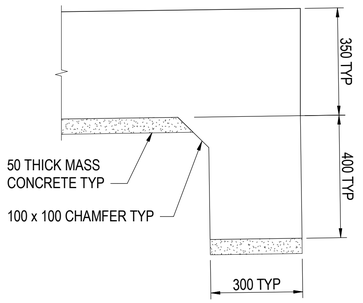
PLOT DATE & TIME: 12/05/2026 9:26:30 AM FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-020001.rvt



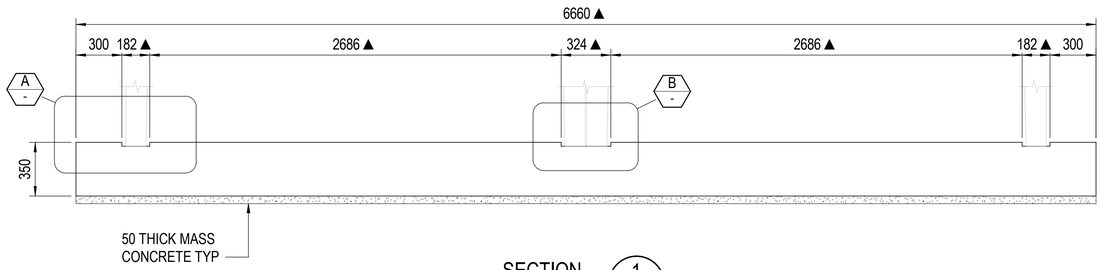
PLAN
SCALE 1 : 50



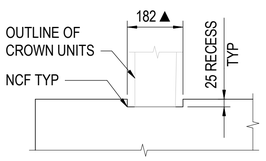
TYPICAL WING WALL DETAILS
SCALE 1 : 20



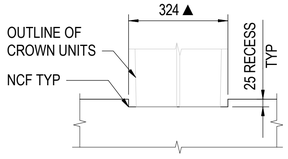
SECTION 3 / -
SCALE 1 : 10



SECTION 1 / -
SCALE 1 : 20



DETAIL A / -
SCALE 1 : 10



DETAIL B / -
SCALE 1 : 10

GENERAL NOTES

ALL CONCRETE WORKS MUST COMPLY WITH TfNSW SPECIFICATION D&C B80.
CONCRETE EXPOSURE CLASSIFICATION: B1
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE MUST BE 40 MPa.
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF MASS CONCRETE SHALL BE 20 MPa.
EDGES MUST BE CHAMFERED 20 x 20 AND RE-ENTRANT ANGLES FILLITED 20 x 20 UNLESS SPECIFIED OTHERWISE.

NCF	DENOTES NO CHAMFER OR FILLET
CJ	DENOTES CONSTRUCTION JOINT
SOP	DENOTES SETOUT POINT
RCBC	DENOTES PRECAST CONCRETE CROWN UNIT
▲	DENOTES CONCRETE DIMENSION TO BE CHECKED AND ADJUSTED IF NECESSARY TO SUIT ACTUAL PRECAST CROWN UNITS DIMENSIONS.
	DENOTES PORTION OF WING WALL NOT CAST INTEGRAL WITH BASE SLAB, REFER TO INTERFACE DETAIL ON DRG No 020077.

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A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA2020 GDA2020 | HEIGHT DATUM: AHD

SCALE: 1:100 , 1:20 , 1:10

1:100 @ A1 0 1 2 3 4 5 m
1:20 @ A1 0 200 400 600 800 1000 mm
1:10 @ A1 0 100 200 300 400 500 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
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Transport for NSW

NETWORK COMPLEX CODE:

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MISC. STRUCTURES

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BLACKTOWN CITY LGA
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RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
MISCELLANEOUS STRUCTURES
C-0510, DRAINAGE CULVERT UNDER ACCESS LANE, 2 CELL - 2700 x 1200 RCBC
BASE SLAB DETAILS - SHEET A

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 3		
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No:			©
DRG No. RRM7-GEDT-0537-MS-DRG-020072	REV A	VER	EDMS No.	AMD No.

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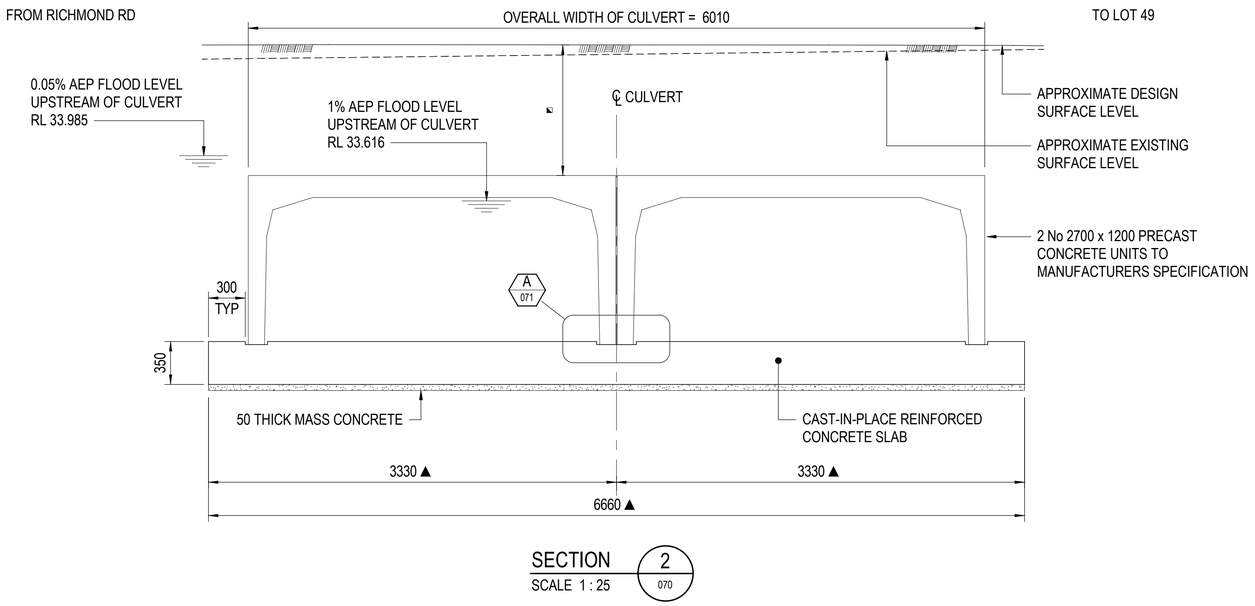
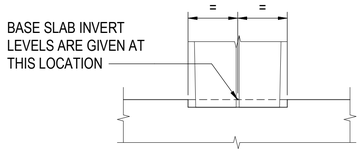
PLOT DATE & TIME: 12/05/2026 9:26:30 AM



SECTION 2 / 070
SCALE 1 : 25



DETAIL A / 071
NTS

GENERAL NOTES

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, REFER DRG No 020070.

▲ DENOTES CONCRETE DIMENSION TO BE CHECKED AND ADJUSTED IF NECESSARY TO SUIT ACTUAL PRECAST CROWN UNIT DIMENSIONS

◩ DENOTES FINAL DIMENSION VARIES, 1080 MAX, 875 MIN FOR TRAFFIC LOADING

NEW REINFORCED CONCRETE BOX CULVERT - 2027

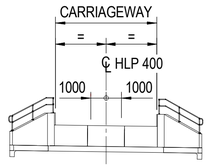
TfNSW BRIDGE No:	NOT APPLICABLE
DESIGN FILE No:	TO BE PROVIDED
DESIGN STANDARD:	AS 1597.2 - PRECAST REINFORCED BOX CULVERT (LARGE CULVERTS) AS 5100: 2017 SERIES - BRIDGE DESIGN

ROAD TRAFFIC LOADING: SM1600

DYNAMIC LOAD ALLOWANCE: 0.4
ULTIMATE LOAD FACTOR: 1.8

HEAVY LOAD PLATFORM LOADING: HLP400

DYNAMIC LOAD ALLOWANCE: 0.1
ULTIMATE LOAD FACTOR: 1.5



EARTHQUAKE LOADING

DESIGN CATEGORY:	BEDC-3
DESIGN PERFORMANCE LEVEL:	DAMAGE
ANNUAL PROBABILITY OF EXCEEDANCE:	P = 1000
PROBABILITY FACTOR:	Kp = 1.3
SEISMIC HAZARD FACTOR:	Z = 0.08
SITE SUB-SOIL CLASS:	Ce
DESIGN DUCTILITY FACTOR	μ = 2.0

FLOOD DATA

10% AEP PEAK FLOW THROUGH CULVERT:	- m³/s
10% AEP PEAK VELOCITY THROUGH CULVERT:	- m/s
1% AEP PEAK FLOOD LEVEL U/S:	RL 33.616 m
0.05% AEP PEAK FLOOD LEVEL U/S:	RL 33.985 m

DIFFERENTIAL SETTLEMENT

10 mm TOTAL DIFFERENTIAL BASED ON 15 mm SETTLEMENT IN THE CENTRE AND 5 mm SETTLEMENT AT THE ENDS

COMPACTION LIVE LOAD

WITHIN 300 mm ABOVE THE CULVERT:
- 4 TONNE TANDEM VIBRATORY ROLLER
- CENTRIFUGAL FORCE MUST BE MAX 40 kN PER AXLE
- WIDTH OF ROLLER DRUM MUST BE 1.3m MIN

ABOVE 300 mm ABOVE THE CULVERT:
- 7 TONNE VIBRATORY SOIL COMPACTOR
- CENTRIFUGAL FORCE MUST BE MAX 100 kN
- WIDTH OF ROLLER DRUM MUST BE 1.3m MIN

VEHICLE SPEED IS RESTRICTED TO 10km/h

PRECAST CROWN UNIT DESIGN

TYPE AND DIMENSION OF PRECAST CONCRETE CROWN UNITS AND DEPTH OF FILL AS INDICATED ON DRG No 012010.
PRECAST CONCRETE CROWN UNITS MUST BE DESIGNED AND CERTIFIED BY THE MANUFACTURER IN ACCORDANCE WITH AS 1597.2 WHICH INCLUDES SM1600 AND HLP400 TRAFFIC LOADING IN ACCORDANCE WITH AS 5100 BRIDGE DESIGN AND TfNSW SPECIFICATION D&C R16, R11 AND B115 FOR EXPOSURE CLASSIFICATION B1 AND MINIMUM AND MAXIMUM FILL HEIGHTS OF 0 mm TO 2000 mm.
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF PRECAST CONCRETE MUST BE 50 MPa.
END CROWN UNITS TO INCLUDE STARTER BARS IN TOP SLAB, FOR DETAILS SEE DRG No 012030.
MINIMUM COVER TO REINFORCEMENT NEAREST TO CONCRETE SURFACE FOR PRECAST CONCRETE MUST BE 30 mm.
PRECAST CROWN UNIT DRAWINGS TO BE INCLUDED IN THE WAE SUBMISSION.

CONSTRUCTION VEHICLE LOADING

AFTER COMPLETION OF CONSTRUCTION BUT PRIOR TO OPENING THE CULVERT TO PUBLIC ACCESS, ONLY VEHICLES REGISTERED TO TRAVEL ON PUBLIC ROADWAYS ARE ANTICIPATED TO CROSS THE CULVERT. THE LIKES OF 740 ARTICULATED TRUCKS, 773 DUMP TRUCKS(CATERPILLAR), 637 SCRAPER, KOMATSU HD605 OFF-HIGHWAY TRUCK ETC. ARE NOT TO CROSS THE CULVERT. CONSTRUCTION TRAFFIC LOADING FOR THE DESIGN OF PRECAST CROWN UNITS SHALL COMPRISE W80 WHEEL, A160 AXLE AND M1600 TRI-AXLE GROUP LOADS WITH A DLA OF 0.4 AS REQUIRED IN AS 1597.2 SECTION 3.3.5.4.

REFERENCE DESIGN REPORTS

MISCELLANEOUS DESIGN REPORT (THIS REPORT):	RRM7-GEDT-0537-MS-RPT-010001
DURABILITY ASSESSMENT REPORT:	TBC
GEOTECHNICAL INTERPRETIVE REPORT:	RRM7-GEDT-0537-GE-RPT-030001
FLOODING AND HYDROLOGY REPORT:	RRM7-GEDT-0537-SD-RPT-010001
DRAINAGE TRANSVERSE AND LONGITUDINAL - PORTION 2 (SOUTHERN SECTION):	RRM7-GEDT-0537-SD-RPT-020001
PROPERTY ADJUSTMENT - PORTION 2 (SOUTHERN SECTION):	RRM7-GEDT-0537-PJ-RPT-010001
PAVEMENTS AND SUBSURFACE DRAINAGE - PORTION 2 (SOUTHERN SECTION):	RRM7-GEDT-0537-PV-RPT-010001

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COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020
HEIGHT DATUM: AHD

SCALE: 1:25
1:25 @ A1 0 250 500 750 1000 1250 mm

DESIGN LOT CODE:

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PREPARED FOR:
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Infrastructure & Place
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MISCELLANEOUS STRUCTURES
C-0510, DRAINAGE CULVERT UNDER ACCESS LANE, 2 CELL - 2700 x 1200 RCBC
GENERAL ARRANGEMENT - SHEET B

DRAWING SET No: DS 2026/000040	PART	SHEET: 2 OF 2	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No:		©

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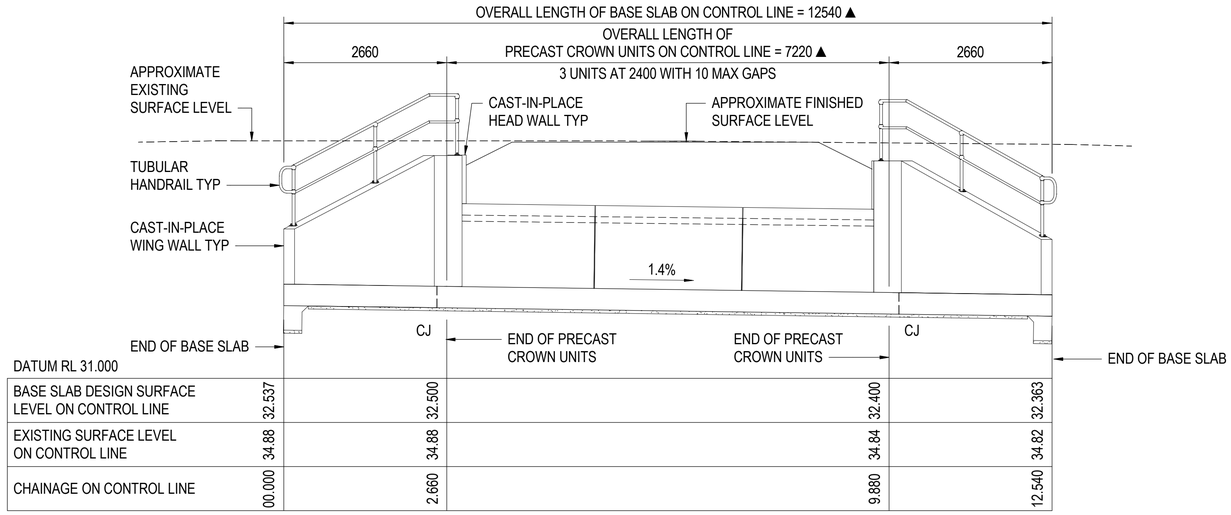
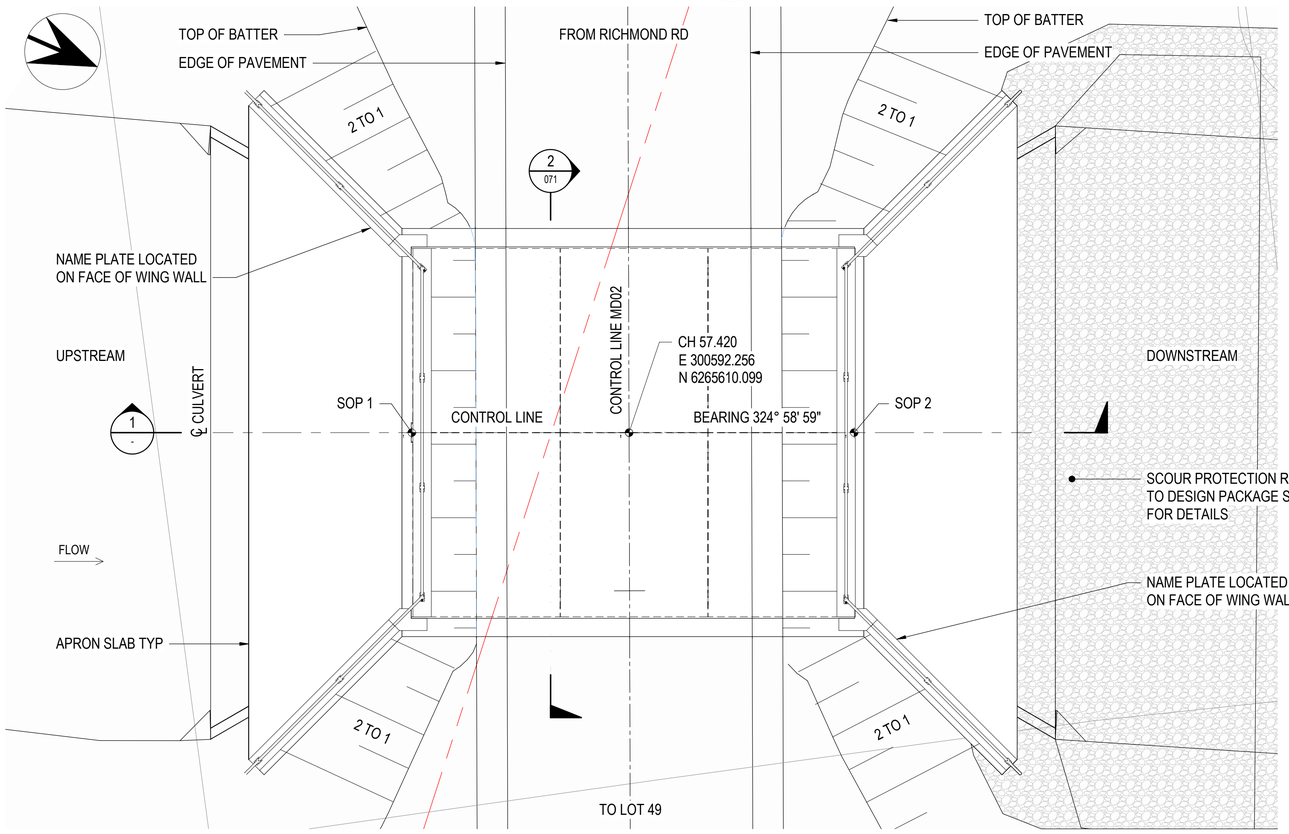
PLOT DATE & TIME: 15/05/2026 5:39:53 PM



BASE SLAB DESIGN SURFACE LEVEL ON CONTROL LINE	32.537	32.500	32.400	32.363
EXISTING SURFACE LEVEL ON CONTROL LINE	34.88	34.88	34.84	34.82
CHAINAGE ON CONTROL LINE	00.000	2.660	9.880	12.540

SECTION 1 / -
SCALE 1 : 50



PLAN
SCALE 1 : 50

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GENERAL NOTES

DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
CHAINAGES, REDUCED LEVELS AND COORDINATES ARE IN METRES.
REDUCED LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
COORDINATES ARE TO THE MAP GRID OF AUSTRALIA (MGA) ZONE 56 / GDA 2020.
LOCATION OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION AND RELOCATION AS REQUIRED.
FILL UNDER BASE SLAB:
- WITHIN 300 mm BELOW THE BASE SLAB SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL NOTES ON THIS DRAWING.
- EXCEEDING 300 mm BELOW THE BASE SLAB SHALL BE ENGINEERED FILL PLACED AND COMPACTED IN ACCORDANCE WITH TfNSW SPECIFICATION R44.

BACKFILLING OF CULVERTS:
- WITHIN PAVEMENT LAYERS, BACKFILL AND COMPACTION SHALL BE AS PER THE DETAILS IN DESIGN PACKAGE PV01.
- OUTSIDE OF PAVEMENT LAYERS, BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE CL 4.9 OF TfNSW SPECIFICATION D&C R11. MINIMUM RELATIVE COMPACTION SHALL BE 98%.
- BACKFILL MATERIAL WITHIN 1.5 m BEHIND THE WING WALL AND HEAD WALL MUST BE LIMITED TO A PEDESTRIAN ROLLER OR PLATE COMPACTOR.

LIFTING LUGS TO BE HOT DIPPED GALVANISED.
LUG RECESS TO BE FILLED WITH A PROPRIETARY GROUT ONCE PRECAST UNIT PLACED.
DESIGN, CONSTRUCTION AND INSTALLATION OF HOT DIPPED GALVANISED HANDRAILS MUST MEET THE REQUIREMENTS OF AS 1657.
CROWN UNITS TO BE BUTTED TOGETHER WHEN PLACED.

▲ DENOTES CONCRETE DIMENSION TO BE CHECKED AND ADJUSTED IF NECESSARY TO SUIT ACTUAL PRECAST CROWN UNIT DIMENSIONS
DENOTES SAFETY BARRIER
PROJECT BOUNDARY
SOP DENOTES SET OUT POINT
◩ DENOTES FINAL DIMENSION VARIES, 1080 MAX, 875 MIN FOR TRAFFIC LOADING

GEOTECHNICAL INVESTIGATION LOCATIONS
EXISTING BOREHOLE
EXISTING TEST PIT
PROPOSED BOREHOLE

GEOTECHNICAL NOTES

THE EXPOSED FOUNDATION MATERIAL FOR THE CULVERT BASE SLAB AND APRON SLAB SHALL BE INSPECTED BY THE DESIGN GEOTECHNICAL REPRESENTATIVE (DGR) TO VERIFY THE FOUNDING MATERIAL.
RELEVANT METHODS OF ASSESSMENT INCLUDE BUT ARE NOT LIMITED TO TEST PIT EXCAVATIONS WITH POCKET PENETROMETERS, DYNAMIC CONE PENETROMETER TESTING AS DEEMED APPROPRIATE BY THE DGR.
FOUNDING MATERIAL SHOULD BE STIFF CLAY OR BETTER.
THE BASE SLAB AND APRON SLAB MUST BE INSPECTED FOR WEAK/SOFT SPOTS AFTER DCP TESTING AT 300 mm BELOW THE UNDERSIDE OF THE BASE SLAB.
ANY SOFT SPOTS (DCP BLOW COUNT BELOW 3) OR UNSUITABLE MATERIAL IDENTIFIED BY THE DGR MUST BE EXCAVATED AND REPLACED WITH ENGINEERED FILL IN ACCORDANCE TfNSW D&C R44.
PLACE AND COMPACT A SINGLE LAYER OF 250 mm THICK GRAVEL IN ACCORDANCE WITH TfNSW D&C R44 ON THE PREPARED SUBGRADE (COMPACTED TO MINIMUM 98% RELATIVE COMPACTION), THEN PLACE A 50 mm THICK MASS CONCRETE BLINDING LAYER, REFER DRG No 012020.
GRAVEL SHALL BE DGB CLASS 2 TO TfNSW 3051 OR APPROVED EQUIVALENT BY DESIGNER.
THE MINIMUM SLS DESIGN BEARING PRESSURE OF THE BASE SLAB ON GROUND IS 100 kPa (ULS DESIGN BEARING PRESSURE 150 kPa).
THE DESIGN BEARING CAPACITY SHALL TAKE INTO ACCOUNT THE GEOTECHNICAL REDUCTION FACTOR Φ_g = 0.5.

TABLE 1 - SETOUT POINTS

SETOUT POINT (SOP)	CHAINAGE ON CONTROL LINE (m)	COORDINATES (m) EASTING	COORDINATES (m) NORTHING	INVERT LEVEL (m)
SOP 1	2.660	300594.291	6265607.195	32.500
SOP 2	9.880	300590.148	6265613.108	32.400

TABLE 2 - ASSUMED PRECAST CONCRETE UNIT DIMENSIONS

NOMINAL SIZE	OVERALL WIDTH (mm)	OVERALL HEIGHT (mm)	UNIT LENGTH (mm)	LEG THICKNESS AT BASE (mm)
2700x1200	3000	1380	2400	132

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FOR REVIEW AND COMMENT

REFERENCES:

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REV	DESCRIPTION	DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE
A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA2020 GDA2020 HEIGHT DATUM: AHD

SCALE: 1:50

1:50 @ A1 0 500 1000 1500 2000 2500 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

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INFRASTRUCTURE A GAMUDA Company
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AURECON
MISC. STRUCTURES

DRAWN	JAMES HAWTHORNE	12.05.2026
DESIGNED	CASSANDRA BLAGA	12.05.2026
DRG CHECK	LUKE GANDY	12.05.2026
DESIGN CHECK	TOM SHEASBY	12.05.2026
PROJ/DES MNGR	JAMES ABRAHAM	12.05.2026
APPROVED	ROB FERGUSON	12.05.2026

BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
MISCELLANEOUS STRUCTURES
C-0510, DRAINAGE CULVERT UNDER ACCESS LANE, 2 CELL - 2700 x 1200 RCBC
GENERAL ARRANGEMENT - SHEET A

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 2			
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No:				©
DRG No. RRM7-GEDT-0537-MS-DRG-020070	REV A	VER	EDMS No.	AMD No.	

FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-020001.rvt
PLOT DATE & TIME: 15/05/2026 5:38:33 PM

MR537 RICHMOND ROAD

BLACKTOWN CITY LGA

MR537 - RICHMOND ROAD

RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD

DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN

C-0320, 3 CELL - 2100 x 1200 RCBC

NEW REINFORCED CONCRETE BOX CULVERT - 2027

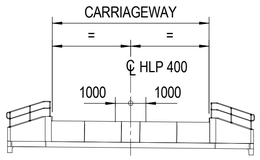
TfNSW BRIDGE No: TO BE PROVIDED
DESIGN FILE No: TO BE PROVIDED
DESIGN STANDARD: AS 1597.2 - PRECAST REINFORCED BOX CULVERT (LARGE CULVERTS) AS 5100: 2017 SERIES - BRIDGE DESIGN

ROAD TRAFFIC LOADING: SM1600

DYNAMIC LOAD ALLOWANCE: 0.4
ULTIMATE LOAD FACTOR: 1.8

HEAVY LOAD PLATFORM LOADING: HLP400

DYNAMIC LOAD ALLOWANCE: 0.1
ULTIMATE LOAD FACTOR: 1.5



EARTHQUAKE LOADING

DESIGN CATEGORY:	BEDC-3
DESIGN PERFORMANCE LEVEL:	DAMAGE
ANNUAL PROBABILITY OF EXCEEDANCE:	P = 1000
PROBABILITY FACTOR:	Kp = 1.3
SEISMIC HAZARD FACTOR:	Z = 0.08
SITE SUB-SOIL CLASS:	Ce
DESIGN DUCTILITY FACTOR	μ = 2.0

FLOOD DATA

10% AEP PEAK FLOW THROUGH CULVERT:	8.61 m³/s
10% AEP PEAK VELOCITY THROUGH CULVERT:	2.74 m/s
10% AEP PEAK FLOOD LEVEL U/S:	RL 36.51 m
1% AEP PEAK FLOOD LEVEL U/S:	RL 36.78 m

DIFFERENTIAL SETTLEMENT

10 mm TOTAL DIFFERENTIAL BASED ON 15 mm SETTLEMENT IN THE CENTRE AND 5 mm SETTLEMENT AT THE ENDS

COMPACTION LIVE LOAD

WITHIN 300 mm ABOVE THE CULVERT:
- 4 TONNE TANDEM VIBRATORY ROLLER
- CENTRIFUGAL FORCE MUST BE MAX 40 kN PER AXLE
- WIDTH OF ROLLER DRUM MUST BE 1.3m MIN

ABOVE 300 mm ABOVE THE CULVERT:
- 7 TONNE VIBRATORY SOIL COMPACTOR
- CENTRIFUGAL FORCE MUST BE MAX 100 kN
- WIDTH OF ROLLER DRUM MUST BE 1.3m MIN

VEHICLE SPEED IS RESTRICTED TO 10km/h

REFERENCE DESIGN REPORTS

MISCELLANEOUS DESIGN REPORT (THIS REPORT):	RRM7-GEDT-0537-MS-RPT-010001
DURABILITY ASSESSMENT REPORT:	TBC
GEOTECHNICAL INTERPRETIVE REPORT:	RRM7-GEDT-0537-GE-RPT-030001
FLOODING AND HYDROLOGY REPORT:	RRM7-GEDT-0537-SD-RPT-010001
DRAINAGE TRANSVERSE AND LONGITUDINAL - PORTION 2 (SOUTHERN SECTION):	RRM7-GEDT-0537-SD-RPT-020001
PROPERTY ADJUSTMENT - PORTION 2 (SOUTHERN SECTION):	RRM7-GEDT-0537-PJ-RPT-010001
PAVEMENTS AND SUBSURFACE DRAINAGE - PORTION 2 (SOUTHERN SECTION):	RRM7-GEDT-0537-PV-RPT-010001

PRECAST CROWN UNIT DESIGN

TYPE AND DIMENSION OF PRECAST CONCRETE CROWN UNITS AND DEPTH OF FILL AS INDICATED ON DRG No 011010.
PRECAST CONCRETE CROWN UNITS MUST BE DESIGNED AND CERTIFIED BY THE MANUFACTURER IN ACCORDANCE WITH AS 1597.2 WHICH INCLUDES SM1600 AND HLP400 TRAFFIC LOADING IN ACCORDANCE WITH AS 5100 BRIDGE DESIGN AND TfNSW SPECIFICATION D&C R16, R11 AND B115 FOR EXPOSURE CLASSIFICATION B1 AND MINIMUM AND MAXIMUM FILL HEIGHTS AS SHOWN ON DRG No 011010.
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF PRECAST CONCRETE MUST BE 50 MPa.
END CROWN UNITS TO INCLUDE STARTER BARS IN TOP SLAB, FOR DETAILS SEE DRG No 011030.
MINIMUM COVER TO REINFORCEMENT NEAREST TO CONCRETE SURFACE FOR PRECAST CONCRETE MUST BE 30 mm.

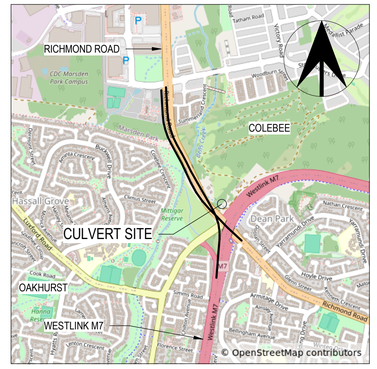
PRECAST CROWN UNIT DRAWINGS

(TO BE INCLUDED IN THE WAE DRAWINGS)

CONSTRUCTION VEHICLE LOADING

AFTER COMPLETION OF CONSTRUCTION BUT PRIOR TO OPENING THE CULVERT TO PUBLIC ACCESS, ONLY VEHICLES REGISTERED TO TRAVEL ON PUBLIC ROADWAYS ARE ANTICIPATED TO CROSS THE CULVERT. THE LIKES OF 740 ARTICULATED TRUCKS, 773 DUMP TRUCKS (CATERPILLAR), 637 SCRAPER, KOMATSU HD605 OFF-HIGHWAY TRUCK ETC. ARE NOT TO CROSS THE CULVERT. CONSTRUCTION TRAFFIC LOADING FOR THE DESIGN OF PRECAST CROWN UNITS SHALL COMPRISE W80 WHEEL, A160 AXLE AND M1600 TRI-AXLE GROUP LOADS WITH A DLA OF 0.4 AS REQUIRED IN AS 1597.2 SECTION 3.3.5.4.

SCHEDULE OF DRAWINGS



LOCALITY PLAN
NTS
THE SITE OF WORK IS APPROXIMATELY 50 km BY ROAD FROM SYDNEY

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B	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026
A	DEVELOPED CONCEPT DESIGN	CB 27/02/2026	MB 27/02/2026	RF 27/02/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: N/A

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

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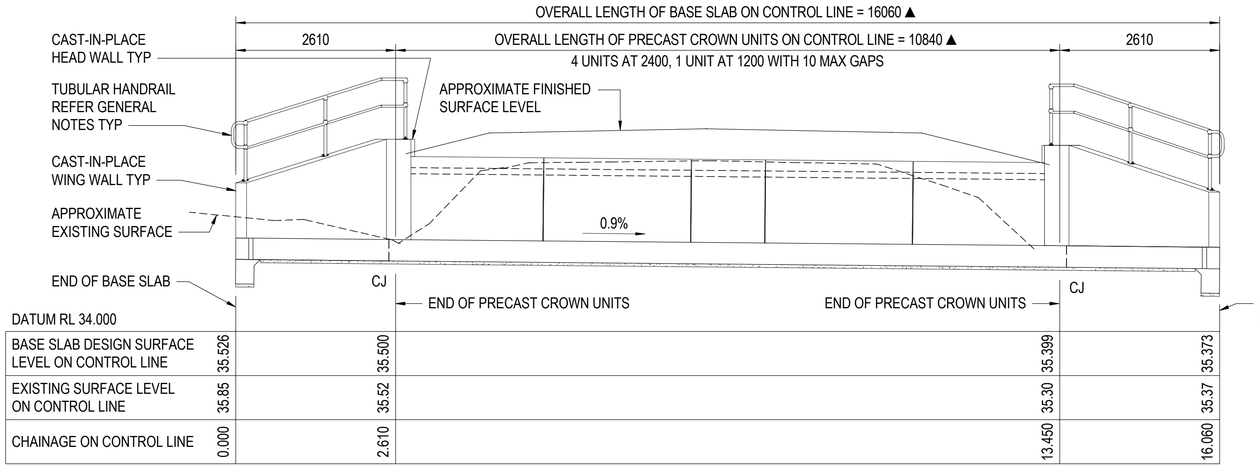
BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
COVER SHEET

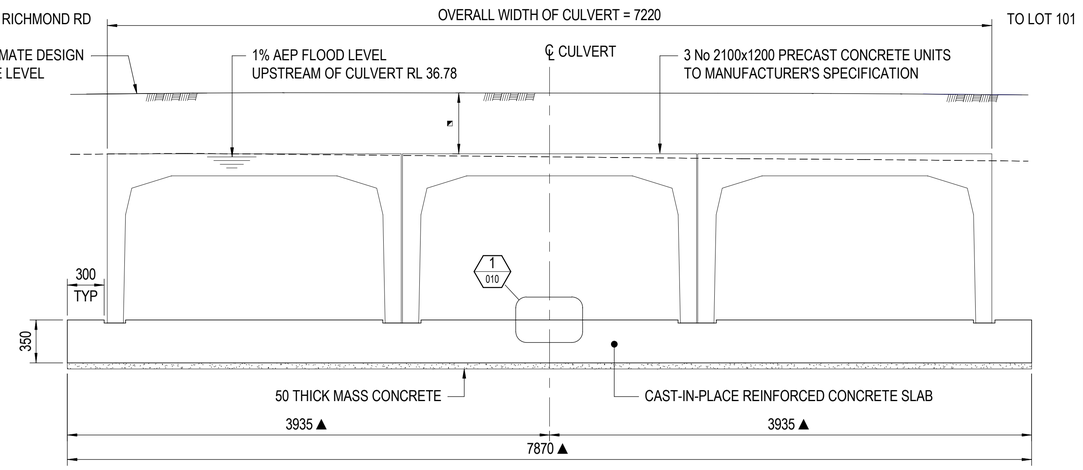
DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 1		
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED			©
DRG No. RRM7-GEDT-0537-MS-DRG-011000	REV B	VER	EDMS No.	AMD No.

FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-011000.rvt
PLOT DATE & TIME: 11/05/2026 5:00:53 PM

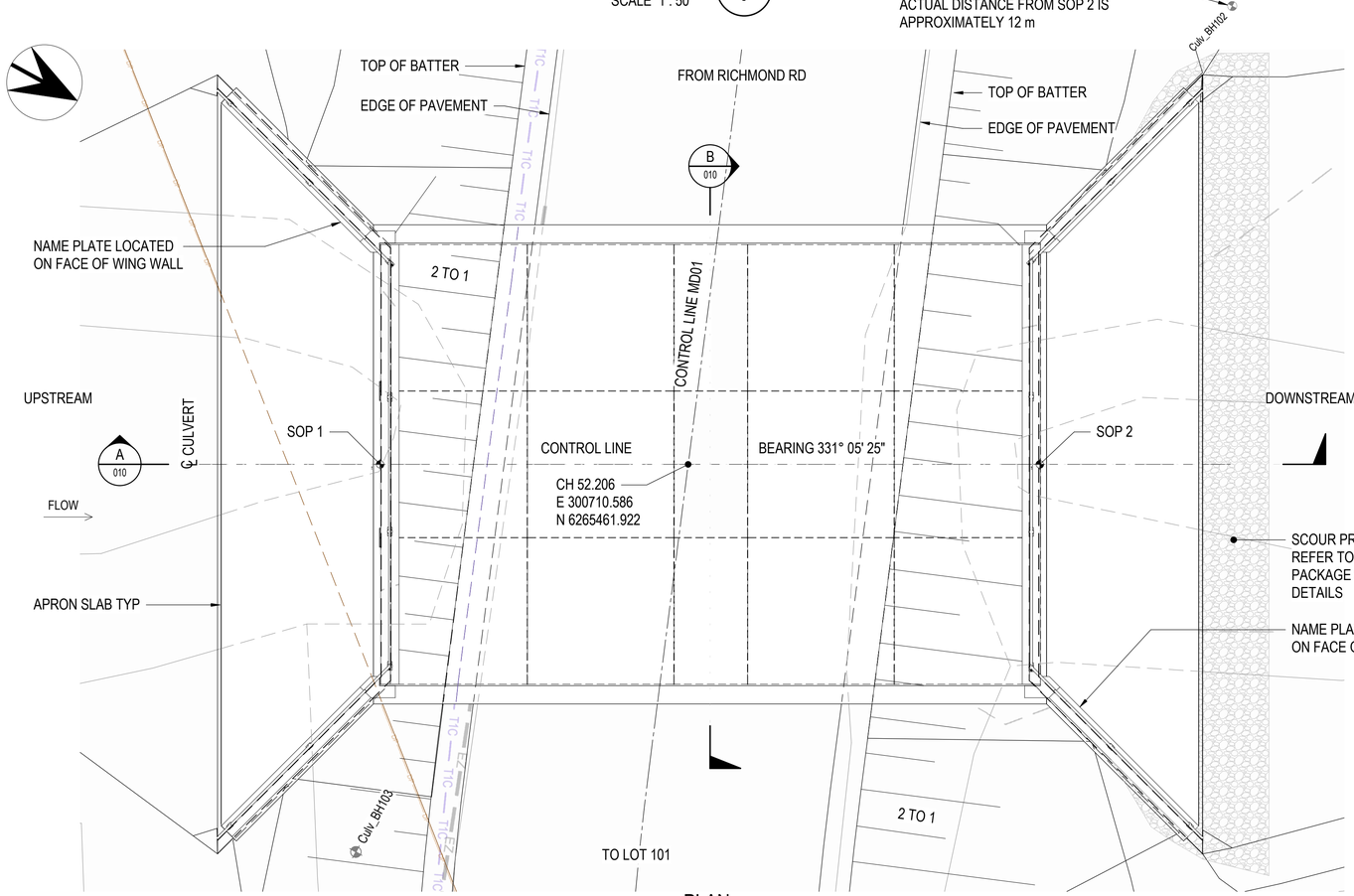


DATUM RL 34.000						
BASE SLAB DESIGN SURFACE LEVEL ON CONTROL LINE	35.526	35.500			35.399	35.373
EXISTING SURFACE LEVEL ON CONTROL LINE	35.85	35.52			35.30	35.37
CHAINAGE ON CONTROL LINE	0.000	2.610			13.450	16.060

SECTION A
SCALE 1 : 50



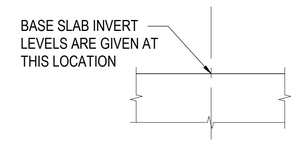
SECTION B
SCALE 1 : 25



PLAN
SCALE 1 : 50

GEOTECHNICAL NOTES

THE EXPOSED FOUNDATION MATERIAL FOR THE CULVERT BASE SLAB AND APRON SLAB SHALL BE INSPECTED BY THE DESIGN GEOTECHNICAL REPRESENTATIVE (DGR) TO VERIFY THE FOUNDING MATERIAL.
RELEVANT METHODS OF ASSESSMENT INCLUDE BUT ARE NOT LIMITED TO TEST PIT EXCAVATIONS WITH POCKET PENETROMETERS, DYNAMIC CONE PENETROMETER TESTING AS DEEMED APPROPRIATE BY THE DGR.
FOUNDING MATERIAL SHOULD BE STIFF CLAY OR BETTER.
THE BASE SLAB AND APRON SLAB MUST BE INSPECTED FOR WEAK/SOFT SPOTS AFTER DCP TESTING AT 300 mm BELOW THE UNDERSIDE OF THE BASE SLAB.
ANY SOFT SPOTS (DCP BLOW COUNT BELOW 3) OR UNSUITABLE MATERIAL IDENTIFIED BY THE DGR MUST BE EXCAVATED AND REPLACED WITH ENGINEERED FILL IN ACCORDANCE TfNSW D&C R44.
PLACE AND COMPACT A SINGLE LAYER OF 250 mm THICK GRAVEL IN ACCORDANCE WITH TfNSW D&C R44 ON THE PREPARED SUBGRADE (COMPACTED TO MINIMUM 98% RELATIVE COMPACTION). THEN PLACE A 50 mm THICK MASS CONCRETE BLINDING LAYER, REFER DRG No 011020.
GRAVEL SHALL BE DGB CLASS 2 TO TfNSW 3051 OR APPROVED EQUIVALENT BY DESIGNER.
THE MINIMUM SLS DESIGN BEARING PRESSURE OF THE BASE SLAB ON GROUND IS 75 kPa (ULS DESIGN BEARING PRESSURE 150 kPa).
THE DESIGN BEARING CAPACITY SHALL TAKE INTO ACCOUNT THE GEOTECHNICAL REDUCTION FACTOR $\Phi_g = 0.35$.



DETAIL 1
SCALE 1 : 10

TABLE 1 - SETOUT POINTS

SETOUT POINT (SOP)	CHAINAGE ON CONTROL LINE (m)	COORDINATES (m) EASTING	COORDINATES (m) NORTHING	INVERT LEVEL (m)
SOP 1	2.610	300713.034	6265457.491	35.500
SOP 2	13.450	300707.793	6265466.979	35.399

TABLE 2 - ASSUMED PRECAST CONCRETE UNIT DIMENSIONS

NOMINAL SIZE	OVERALL WIDTH (mm)	OVERALL HEIGHT (mm)	UNIT LENGTH (mm)	LEG THICKNESS AT BASE (mm)
2100x1200	2400	1380	2400	132

GENERAL NOTES

DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
CHAINAGES, REDUCED LEVELS AND COORDINATES ARE IN METRES.
REDUCED LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
COORDINATES ARE TO THE MAP GRID OF AUSTRALIA (MGA) ZONE 56 / GDA 2020.
LOCATION OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION AND RELOCATION AS REQUIRED.
FILL UNDER BASE SLAB:
- WITHIN 300 mm BELOW THE BASE SLAB SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL NOTES ON THIS DRAWING.
- EXCEEDING 300 mm BELOW THE BASE SLAB SHALL BE ENGINEERED FILL PLACED AND COMPACTED IN ACCORDANCE WITH TfNSW SPECIFICATION R44.

BACKFILLING OF CULVERTS:
- WITHIN PAVEMENT LAYERS, BACKFILL AND COMPACTION SHALL BE AS PER THE DETAILS IN DESIGN PACKAGE PV01.
- OUTSIDE OF PAVEMENT LAYERS, BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE CL 4.9 OF TfNSW SPECIFICATION D&C R11. MINIMUM RELATIVE COMPACTION SHALL BE 98%.
- BACKFILL MATERIAL WITHING 1.5 m BEHIND THE WING WALL AND HEAD WALL MUST BE LIMITED TO A PEDESTRIAN ROLLER OR PLATE COMPACTOR.

LIFTING LUGS TO BE HOT DIPPED GALVANISED.
LUG RECESS TO BE FILLED WITH A PROPRIETARY GROUT ONCE PRECAST UNIT PLACED.
DESIGN, CONSTRUCTION AND INSTALLATION OF HOT DIPPED GALVANISED HANDRAILS MUST MEET THE REQUIREMENTS OF AS 1657 WITH A MINIMUM HEIGHT OF 900 mm AND DESIGN TO MEET LOAD REQUIREMENTS OF AS 1170.1 TABLE 3.3, B/E FOR AREAS NOT SUSCEPTIBLE TO OVERCROWDING IN INDUSTRIAL SETTINGS.
CROWN UNITS TO BE BUTTED TOGETHER WHEN PLACED.

▲ DENOTES CONCRETE DIMENSION TO BE CHECKED AND ADJUSTED IF NECESSARY TO SUIT ACTUAL PRECAST CROWN UNIT DIMENSIONS
DENOTES SAFETY BARRIER
PROJECT BOUNDARY
SOP DENOTES SET OUT POINT
◩ DENOTES DIMENSION VARIES, 500 MAX, 480 MIN FOR TRAFFIC LOADING

GEOTECHNICAL INVESTIGATION LOCATIONS
EXISTING BOREHOLE
EXISTING TEST PIT

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A	DEVELOPED CONCEPT DESIGN	CB 27/02/2026	MB 27/02/2026	RF 27/02/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: 1:50 , 1:25

1:50 @ A1 0 500 1000 1500 2000 2500 mm
1:25 @ A1 0 250 500 750 1000 1250 mm

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BLACKTOWN CITY LGA
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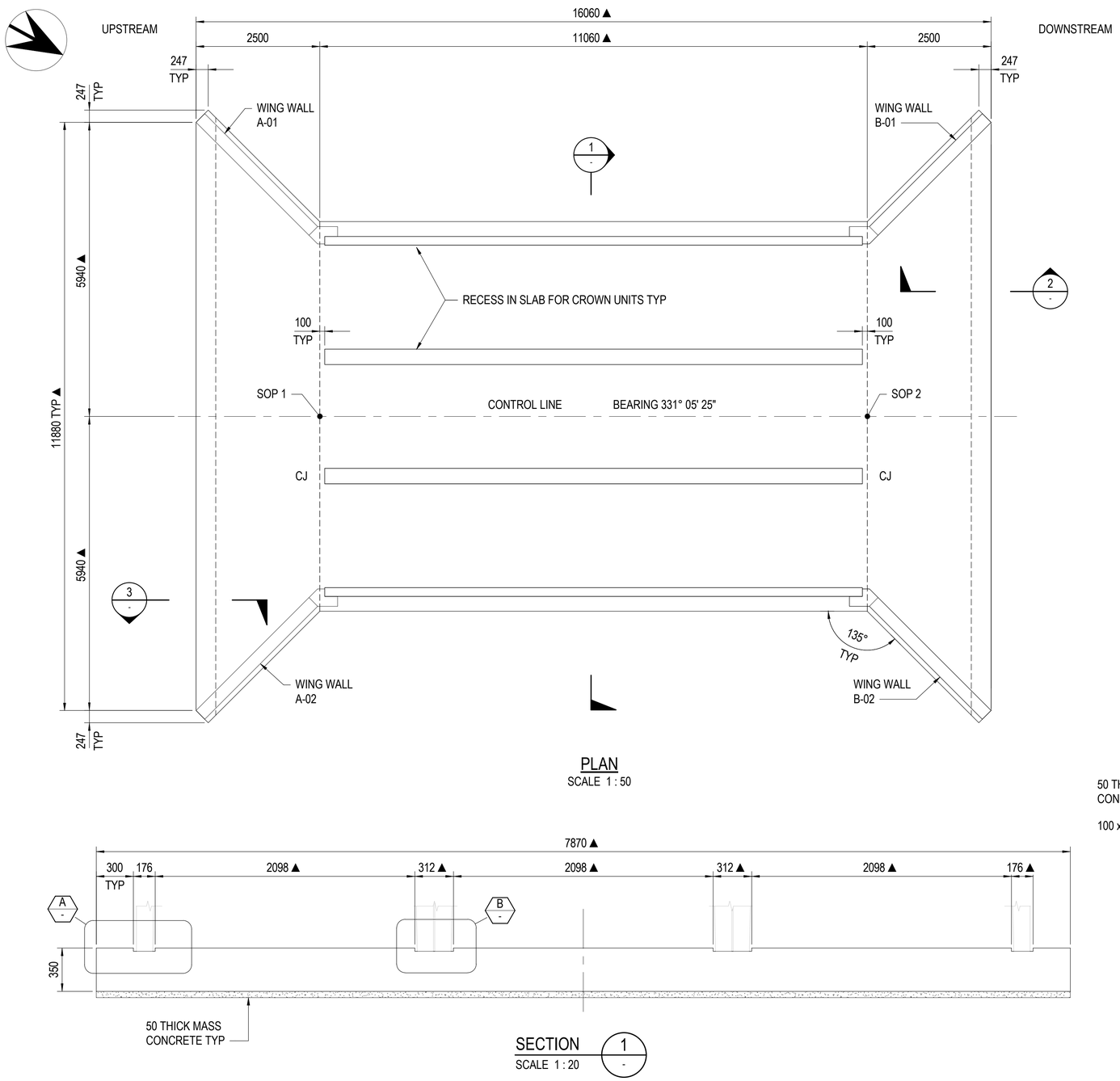
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
GENERAL ARRANGEMENT

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 1	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

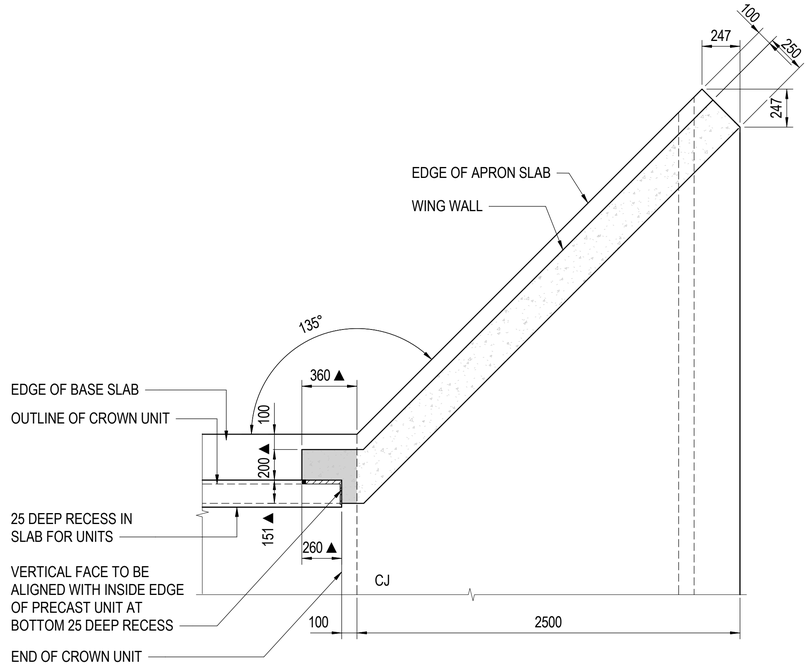
DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011010	B			

PLOT DATE & TIME: 11/05/2026 5:00:55 PM | FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-011000.rvt

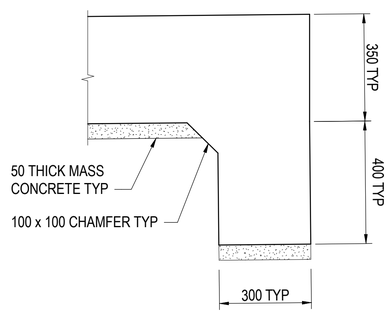


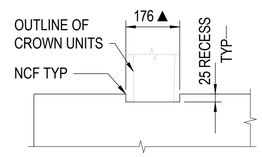
PLAN
SCALE 1 : 50

SECTION 1
SCALE 1 : 20

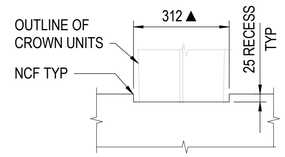


TYPICAL WING WALL DETAILS
SCALE 1 : 20





DETAIL A
SCALE 1 : 10



DETAIL B
SCALE 1 : 10

SECTION 3 2
SCALE 1 : 10

GENERAL NOTES

ALL CONCRETE WORKS MUST COMPLY WITH TfNSW SPECIFICATION D&C B80.
CONCRETE EXPOSURE CLASSIFICATION: B1
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE MUST BE 40 MPa.
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF MASS CONCRETE SHALL BE 20 MPa.
EDGES MUST BE CHAMFERED 20 x 20 AND RE-ENTRANT ANGLES FILLITED 20 x 20 UNLESS SPECIFIED OTHERWISE.

NCF	DENOTES NO CHAMFER OR FILLET
CJ	DENOTES CONSTRUCTION JOINT
SOP	DENOTES SETOUT POINT
RCBC	DENOTES PRECAST CONCRETE CROWN UNIT
▲	DENOTES CONCRETE DIMENSION TO BE CHECKED AND ADJUSTED IF NECESSARY TO SUIT ACTUAL PRECAST CROWN UNITS DIMENSIONS.
	DENOTES PORTION OF WING WALL NOT CAST INTEGRAL WITH BASE SLAB, REFER TO INTERFACE DETAIL ON DRG No 011035.

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COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 | HEIGHT DATUM: AHD

SCALE: 1:100 , 1:20 , 1:10

1:100 @ A1 0 1 2 3 4 5 m
1:20 @ A1 0 200 400 600 800 1000 mm
1:10 @ A1 0 100 200 300 400 500 mm

DESIGN LOT CODE:

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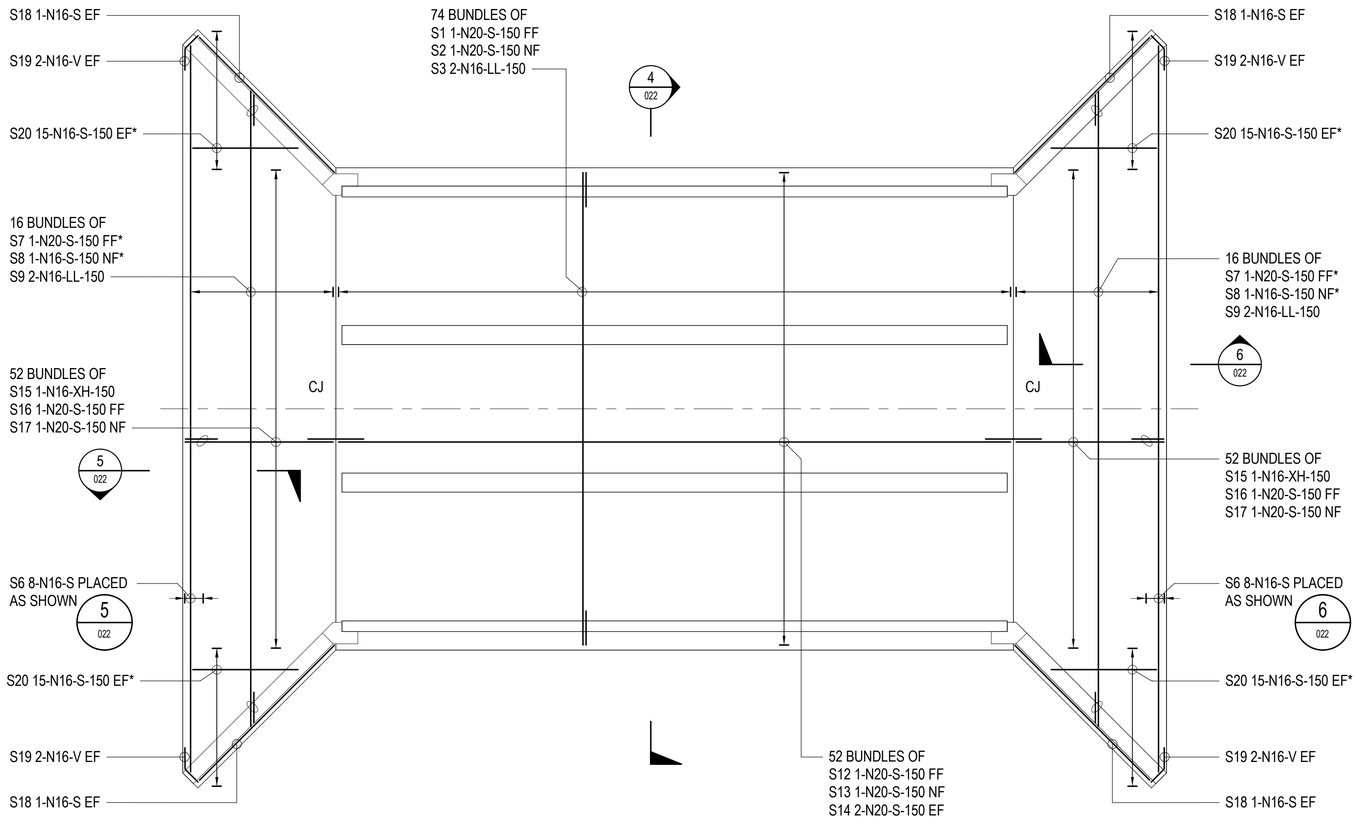
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
BASE SLAB DETAILS - SHEET A

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 3	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		Ⓒ

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011020	A			



PLAN
SCALE 1 : 50

S21, S22 WING WALL STARTER BARS NOT SHOWN
FOR CLARITY, REFER DETAIL ON DRG No 011025

GENERAL NOTES

SCALES AS SHOWN.
REQUIRED COVER TO REINFORCEMENT NEAREST TO THE CONCRETE SURFACE TO BE 50 mm UNLESS SPECIFIED OTHERWISE.
THE REQUIRED COVER IS BASED ON A MINIMUM OF 7 DAYS EFFECTIVE, CONTINUOUS AND UNINTERRUPTED WET OR SEALED CURING IN ACCORDANCE WITH AS 5100.5.
UNLESS SPECIFIED OTHERWISE, THE MINIMUM DEVELOPMENT LENGTHS AND LENGTHS OF LAPS MUST BE AS FOLLOWS:

BAR SIZE:	N12	N16	N20	N24	N28	N32
a. HORIZONTAL BARS WITH >300 mm OF CONCRETE CAST BELOW THE BAR	500	650	1000	1300	1700	2100
b. OTHER BARS	350	500	750	1000	1300	1600

CLEAR DISTANCE BETWEEN LAPPED BARS MUST NOT EXCEED 3x BAR DIAMETER.
UNLESS SHOWN OTHERWISE ON THE DRAWINGS, LAPS ON ADJACENT BARS ON ANY FACE MUST BE STAGGERED (OFFSET) BY NO LESS THAN THE LAP LENGTH.
REINFORCEMENT MAY BE DISPLACED SLIGHTLY WHERE NECESSARY TO CLEAR STEEL DOWELS, ANCHOR BOLTS, INSERTS AND STARTER BARS.

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FAR FACE
NF DENOTES NEAR FACE
* DENOTES VARIABLE LENGTH BAR

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REFERENCES:

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A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020
HEIGHT DATUM: AHD

SCALE: 1:50
1:50 @ A1 0 500 1000 1500 2000 2500 mm
DESIGN LOT CODE:

CLIENT:
NSW GOVERNMENT Transport for NSW
PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW
NETWORK COMPLEX CODE:

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AURECON
MISC. STRUCTURES

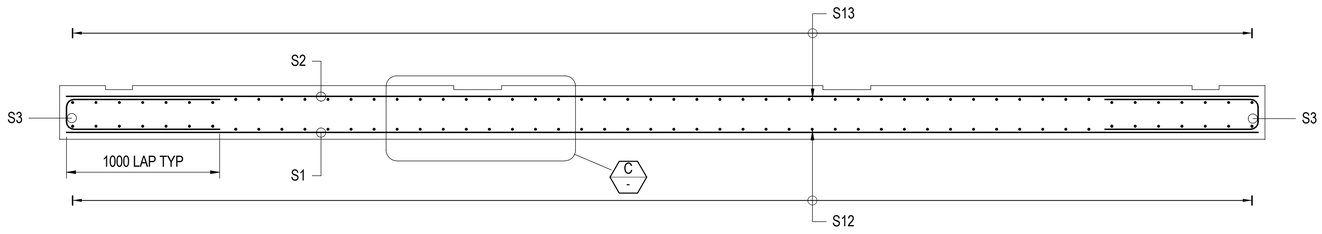
DRAWN	JAMES HAWTHORNE	12.05.2026
DESIGNED	CASSANDRA BLAGA	12.05.2026
DRG CHECK	LUKE GANDY	12.05.2026
DESIGN CHECK	TOM SHEASBY	12.05.2026
PROJ/DES MNGR	JAMES ABRAHAM	12.05.2026
APPROVED	ROB FERGUSON	12.05.2026

BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
BASE SLAB DETAILS - SHEET B

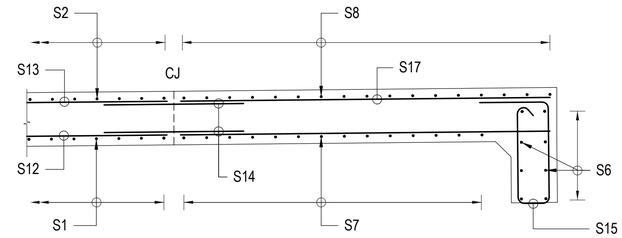
DRAWING SET No: DS 2026/000040	PART	SHEET: 2 OF 3	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011021	A			

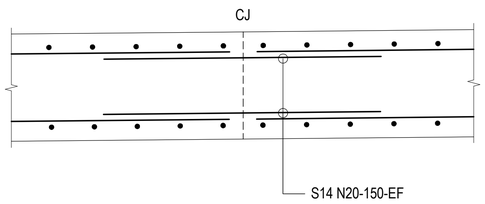
PLOT DATE & TIME: 11/05/2026 5:00:56 PM
FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-011000.rvt



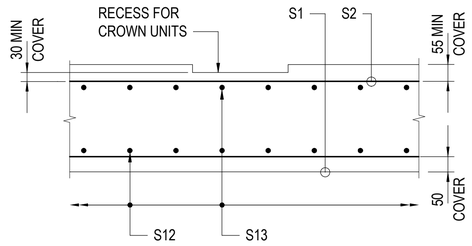
SECTION 4 / 021
SCALE 1 : 20



SECTION 5 / 021 , 6 / 021
SCALE 1 : 20



TYPICAL OPTIONAL CONSTRUCTION JOINT IN BASE SLAB
SCALE 1 : 10



DETAIL C / -
SCALE 1 : 10

GENERAL NOTES

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, REFER DRG No 011020.

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A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: 1:20 , 1:10

1:20 @ A1 0 200 400 600 800 1000 mm

1:10 @ A1 0 100 200 300 400 500 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

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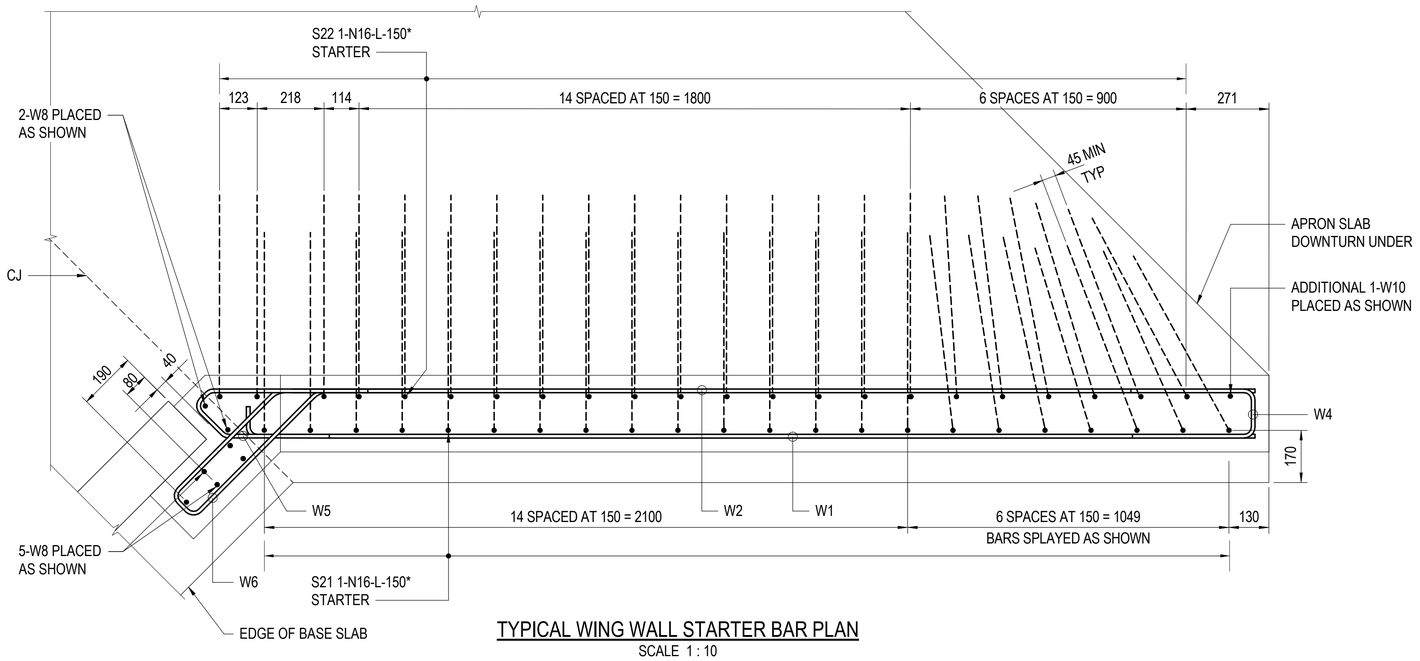
APPROVED	ROB FERGUSON	12.05.2026

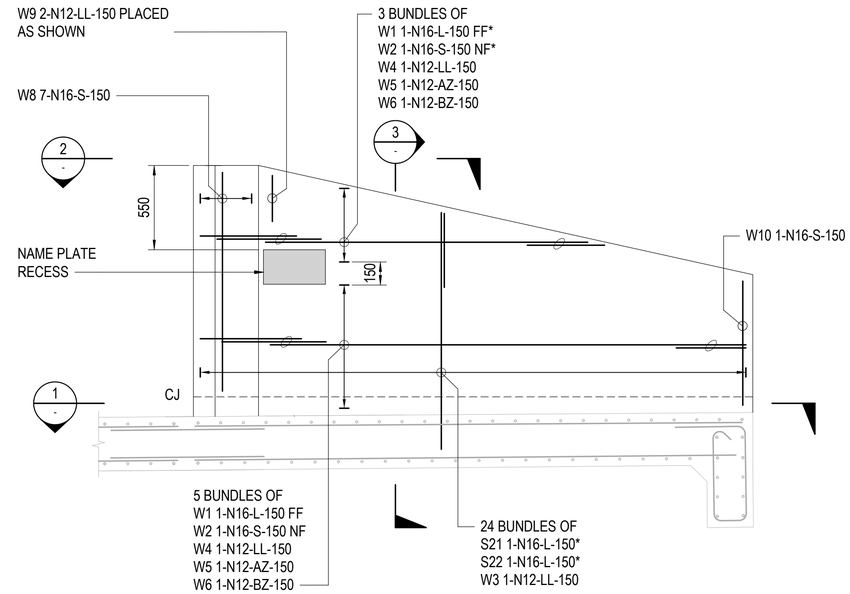
BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
BASE SLAB DETAILS - SHEET C

DRAWING SET No: DS 2026/000040	PART	SHEET: 3 OF 3		
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED			Ⓒ
DRG No. RRM7-GEDT-0537-MS-DRG-011022	REV A	VER	EDMS No.	AMD No.

PLOT DATE & TIME: 11/05/2026 5:00:57 PM FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-011000.rvt

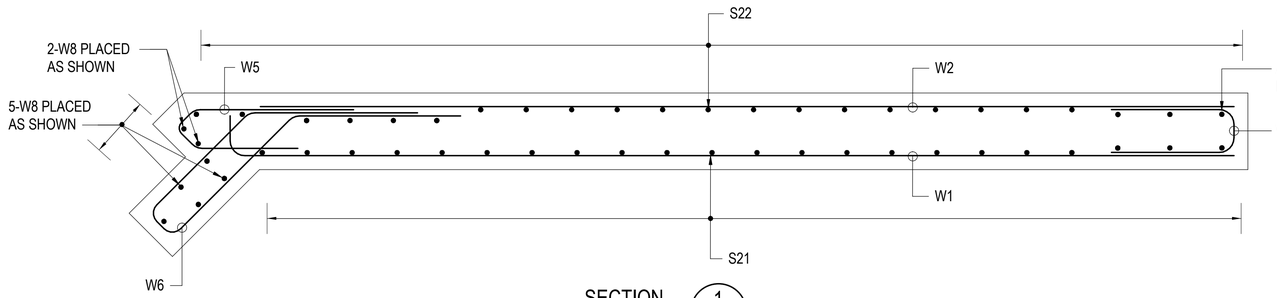


TYPICAL WING WALL STARTER BAR PLAN
SCALE 1 : 10

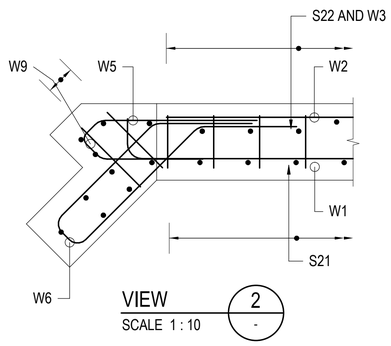


TYPICAL WING WALL
SCALE 1 : 20

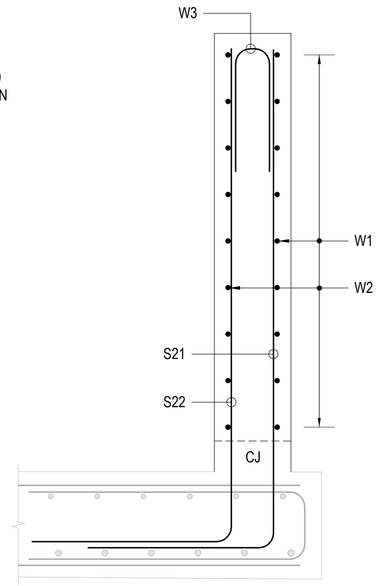
WING WALL A-01 SHOWN, OTHER WING WALLS SIMILAR
WEEPHOLES NOT SHOWN FOR CLARITY



SECTION 1
SCALE 1 : 10



VIEW 2
SCALE 1 : 10



SECTION 3
SCALE 1 : 10

GENERAL NOTES

ALL CONCRETE WORKS MUST COMPLY WITH TfNSW SPECIFICATION D&C B80.
CONCRETE EXPOSURE CLASSIFICATION: B1
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE MUST BE 40 MPa.
EDGE MUST BE CHAMFERED 20 x 20 AND RE-ENTRANT ANGLES FILLETED 20 x 20 UNLESS SPECIFIED OTHERWISE.
REQUIRED COVER TO REINFORCEMENT NEAREST TO THE CONCRETE SURFACE MUST BE 50 mm UNLESS SPECIFIED OTHERWISE.
THE REQUIRED COVER IS BASED ON A MINIMUM OF 7 DAYS EFFECTIVE, CONTINUOUS AND UNINTERRUPTED WET OR SEALED CURING IN ACCORDANCE WITH AS 5100.5.
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CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FAR FACE
NF DENOTES NEAR FACE
* DENOTES VARIABLE LENGTH BAR

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COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: 1:20 , 1:10

1:20 @ A1 0 200 400 600 800 1000 mm

1:10 @ A1 0 100 200 300 400 500 mm

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CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

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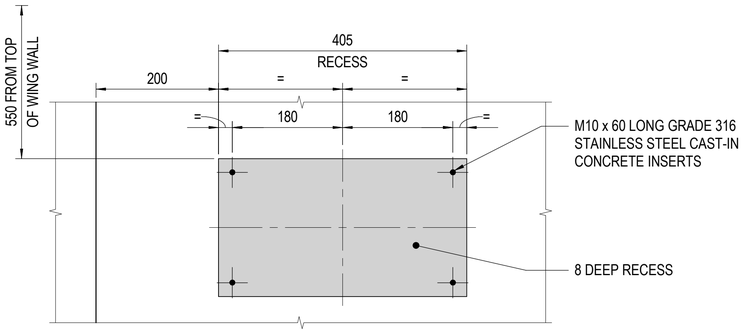
BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
WING WALL DETAILS - SHEET A

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 2	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011025	A			

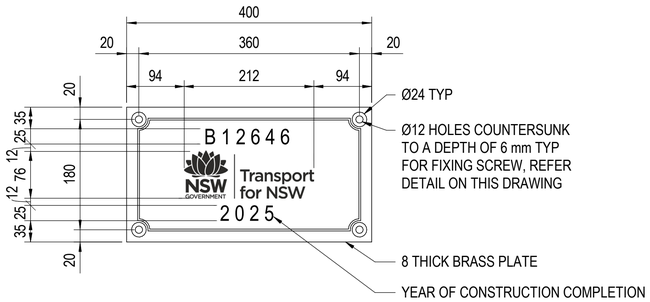
PLOT DATE & TIME: 11/05/2026 5:00:57 PM | FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-011000.rvt



NAME PLATE RECESS

SCALE 1 : 5

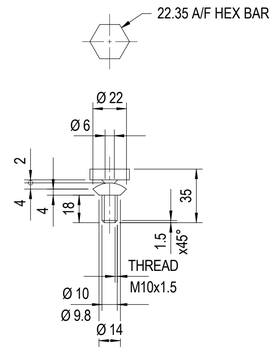
FOR WING WALL A-02 AND B-01 ONLY



BRIDGE NAME PLATE

SCALE 1 : 5

2 No REQUIRED



BRIDGE NAME PLATE FIXING SCREW

SCALE 1 : 2

8 No REQUIRED

FIXING SCREWS TO BE PROVIDED WITH NYLON ISOLATION WASHERS

GENERAL NOTES

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, REFER DRG No 011025.
BRIDGE NAME PLATES ARE TO BE IN ACCORDANCE WITH TfNSW SPECIFCATION D&C B345 AND TfNSW STANDARD BRIDGE DRAWINGS B0701 AND B0706.

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A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 | HEIGHT DATUM: AHD

SCALE: 1:5 , 1:2

1:5 @ A1 0 50 100 150 200 250 mm

1:2 @ A1 0 20 40 60 80 100 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

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MISC. STRUCTURES

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APPROVED	ROB FERGUSON	12.05.2026

BLACKTOWN CITY LGA

MR537 - RICHMOND ROAD

RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD

DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN

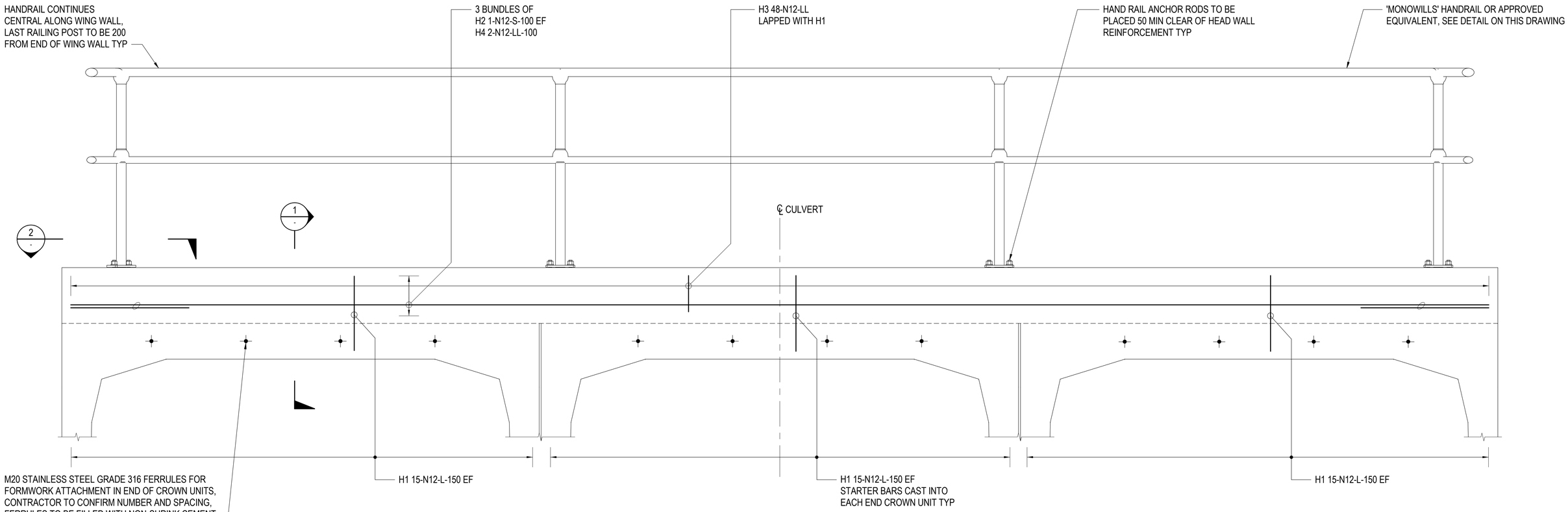
C-0320, 3 CELL - 2100 x 1200 RCBC

WING WALL DETAILS - SHEET B

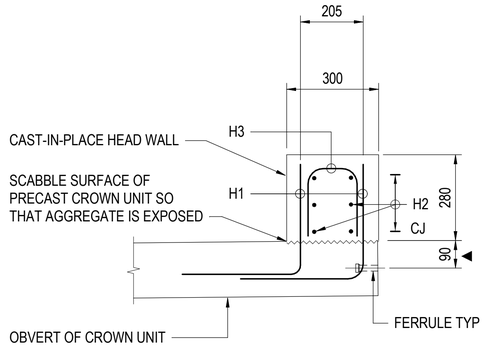
DRAWING SET No: DS 2026/000040	PART	SHEET: 2 OF 2		
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED			©
DRG No. RRM7-GEDT-0537-MS-DRG-011026	REV A	VER	EDMS No.	AMD No.

FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-011000.rvt

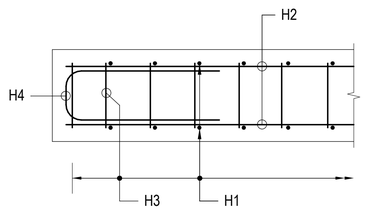
PLOT DATE & TIME: 11/05/2026 5:00:57 PM



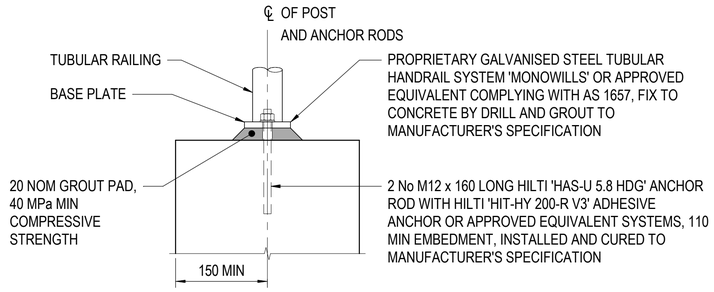
ELEVATION
SCALE 1 : 10



SECTION 1
SCALE 1 : 10



VIEW 2
SCALE 1 : 10



TYPICAL RAILING BASE PLATE CONNECTION
SCALE 1 : 5

GENERAL NOTES

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, REFER DRG No 011025.
PROPRIETARY HANDRAILS MUST BE HOT DIP GAVANISED AND MUST BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH AS 1657 AND THE MANUFACTURER'S DETAILS.
HANDRAIL ANCHOR BOLTS MUST BE HOT DIP GALVANISED POST-INSTALLED FASTENERS IN ACCORDANCE WITH TfNSW SPECIFICATION D&C B240 AND MANUFACTURER'S DETAILS.

POST-INSTALLED ANCHOR INSTALLATION NOTES

DESIGN, INSTALLATION AND TESTING OF POST-INSTALLED ANCHORS MUST BE IN ACCORDANCE WITH AS 5216.
MINIMUM DESIGN LIFE OF POST-INSTALLED ANCHORS AND BONDING COMPOUND (IF REQUIRED) MUST BE 100-YEARS.
REINFORCEMENT MUST BE SCANNED AND IDENTIFIED PRIOR TO DRILLING.
REINFORCEMENT SCANNING MUST BE CARRIED OUT BY VERIFIED PERSONNEL USING ONE OF TWO INDEPENDENT METHODS:

- PRIMARY METHOD: USING A HIGH PRECISION MAGNETIC INDUCTION COVER METER TO LOCATE REINFORCEMENT AND ASSESS COVER DEPTH.
- SECONDARY METHOD: USING A HIGH PRECISION GROUND PENETRATING RADAR FOR CONCRETE APPLICATIONS TO VERIFY LOCATION OF REINFORCEMENT.

ANCHOR INSTALLATION PERSONNEL MUST BE TRAINED AND CERTIFIED BY AEFAC AND BE INDEPENDENT TO THE REINFORCEMENT SCANNING PERSONNEL.
CONTRACTOR SHALL PRE-PLAN THE LOCATION OF THE ANCHORS BY SLIGHT LOCAL SHIFTING OF BARS AND TIES.
HOLES TO BE DRILLED AT LEAST 50 mm CLEAR OF REINFORCEMENT. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, DRILLING HOLE IS TO BE TERMINATED AND RELOCATED.
THE ABANDONED HOLE IS TO BE REPAIRED IN ACCORDANCE WITH THE APPROVED CONCRETE REPAIR METHOD.

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COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 | HEIGHT DATUM: AHD

SCALE: 1:10 , 1:5

1:10 @ A1 0 100 200 300 400 500 mm

1:5 @ A1 0 50 100 150 200 250 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

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BLACKTOWN CITY LGA

MR537 - RICHMOND ROAD

RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD

DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
HEAD WALL DETAILS

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 1	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011030	A			

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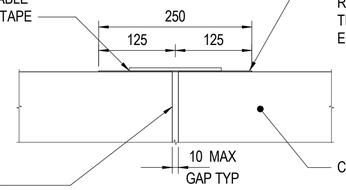
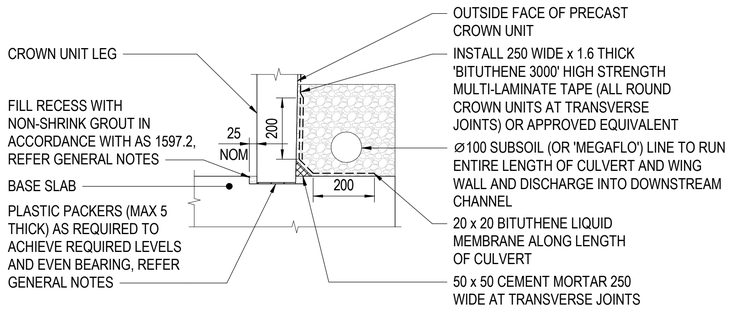
IF THE GAP BETWEEN PRECAST UNITS IS IN EXCESS OF 10 mm OR THE 'BITUTHENE 3000' TAPE IS ADVERSELY AFFECTED BY SUNLIGHT, PROVIDE A 5 THICK BY 150 WIDE 'VINIDEX' CABLE COVER PLACED CENTRALLY OVER THE JOINT, CABLE COVER TO ADHERE TO THE 'BITUTHENE' TAPE

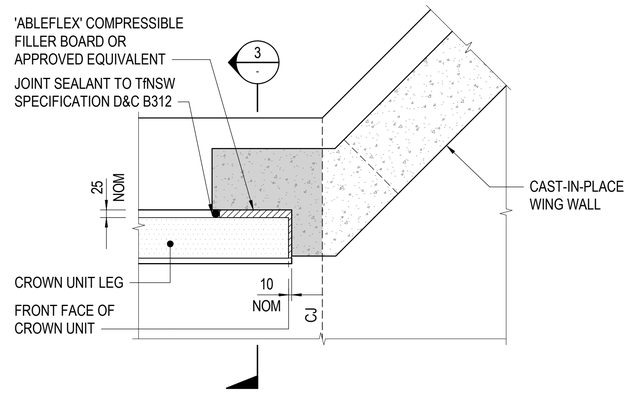


SECTION 1 / SCALE 1 : 5

NOTE: 'VINIDEX' CABLE COVER TO BE PROVIDED IF HEAT TREATED PAVEMENT LAYERS ARE APPLIED DIRECTLY TO THE TOP OF THE CROWN UNITS



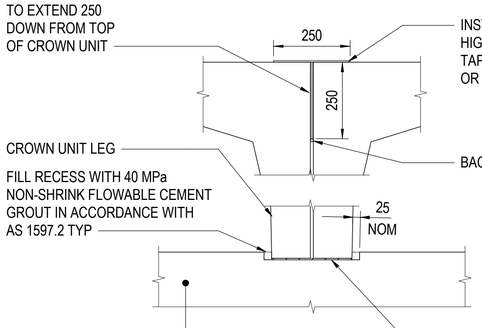
SECTION 2 / SCALE 1 : 10



TYPICAL WING WALL AND CROWN UNIT INTERFACE

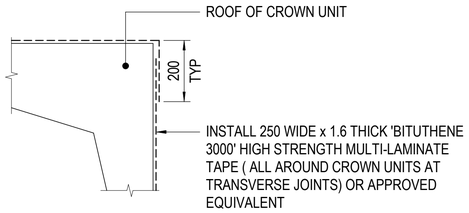
SCALE 1 : 10

CEMENT MORTAR TO EXTEND 250 DOWN FROM TOP OF CROWN UNIT



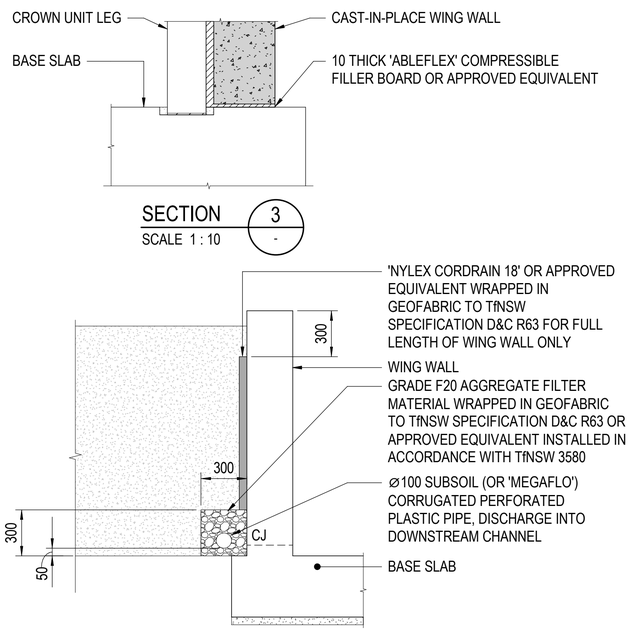
TYPICAL LEG OF CROWN UNIT AND BASE SLAB JOINT - DOUBLE LEG

SCALE 1 : 10



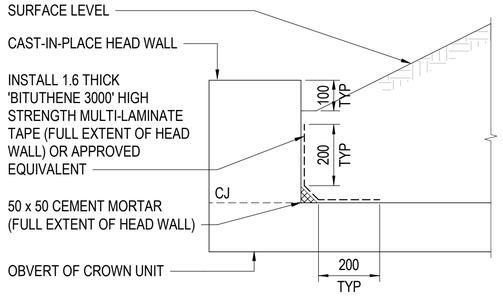
TYPICAL HAUNCH OF CROWN UNIT

SCALE 1 : 10



SECTION 3 / SCALE 1 : 10

APPROXIMATE FINISHED SURFACE LEVEL

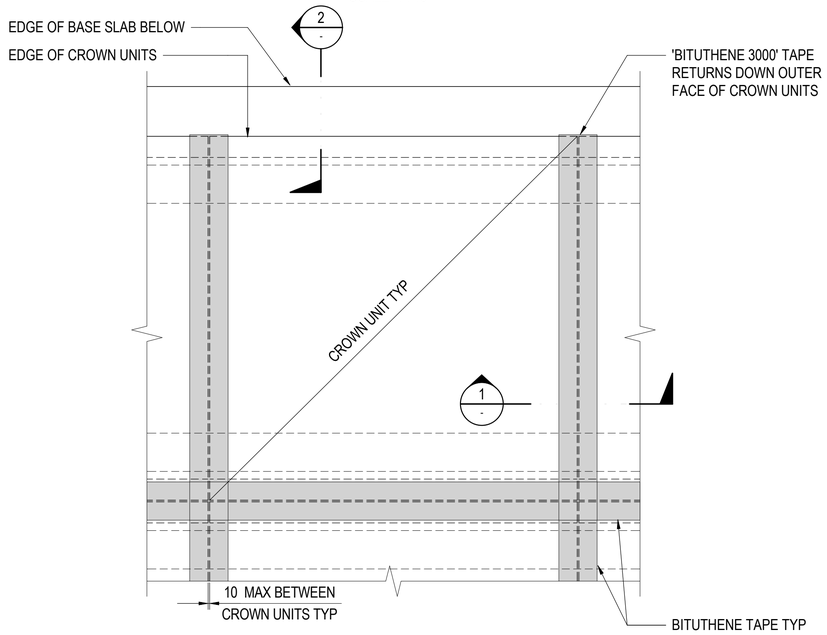


TYPICAL JOINT TREATMENT FOR HEAD WALLS

SCALE 1 : 10

EDGE OF BASE SLAB BELOW

EDGE OF CROWN UNITS



PLAN INSTALLED CROWN UNITS TYPICAL JOINT TREATMENT

SCALE 1 : 20

DRAINAGE BEHIND WING WALLS

SCALE 1 : 20

GENERAL NOTES

FOR OTHER NOTES RELATING TO THIS SHEET, REFER TO DRAWING No 011010.
CEMENT GROUT AT RECESSES MUST HAVE A MINIMUM 28 DAYS COMPRESSIVE STRENGTH OF 40 MPa.
HIGH STRENGTH, MULTI-LAMINATE TAPE MUST BE 1.6 mm THICK AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS INCLUDING APPLICATION OF BITUTHENE PRIMER.
'BITUTHENE 3000' IS SUSCEPTIBLE TO HEAT DAMAGE FROM EXPOSURE TO DIRECT SUNLIGHT ON HOT DAYS. MEASURES MUST BE TAKEN TO PROTECT THE TAPE IF IT IS EXPOSED TO HOT WEATHER PRIOR TO BACKFILLING.
PACKERS MUST NOT BE PLACED AT INTERVALS GREATER THAN 1000 mm.
PACKERS MUST NOT BE PLACED WITHIN 150 mm OF THE END OF THE CROWN UNIT.

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

FOR REVIEW AND COMMENT

REFERENCES:

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED.

REV	DESCRIPTION	DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE
A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA2020 GDA2020 | HEIGHT DATUM: AHD

SCALE: 1:20 , 1:10 , 1:5

1:20 @ A1 0 200 400 600 800 1000 mm

1:10 @ A1 0 100 200 300 400 500 mm

1:5 @ A1 0 50 100 150 200 250 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

GAMUDA / INFRASTRUCTURE A GAMUDA Company / aurecon www.aurecongroup.com
AURECON MISC. STRUCTURES

DRAWN	JAMES HAWTHORNE	12.05.2026
DESIGNED	CASSANDRA BLAGA	12.05.2026
DRG CHECK	LUKE GANDY	12.05.2026
DESIGN CHECK	TOM SHEASBY	12.05.2026
PROJ/DES MNGR	JAMES ABRAHAM	12.05.2026
APPROVED	ROB FERGUSON	12.05.2026

BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
MISCELLANEOUS DETAILS

DRAWING SET No: DS 2026/000040		PART	SHEET: 1 OF 1	
STATUS: SUBSTANTIAL DETAILED DESIGN		BRIDGE No: TO BE PROVIDED		©
DRG No. RRM7-GEDT-0537-MS-DRG-011035	REV A	VER	EDMS No.	AMD No.

FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-011000.rvt
PLOT DATE & TIME: 11/05/2026 5:00:58 PM

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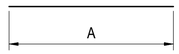
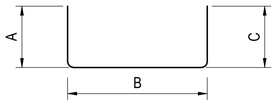
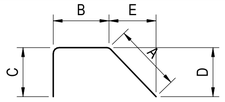
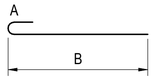
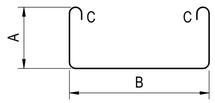
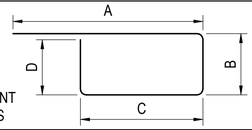
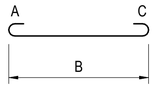
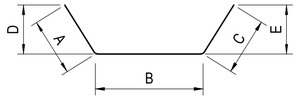
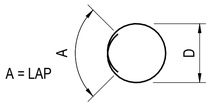
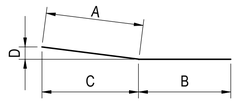
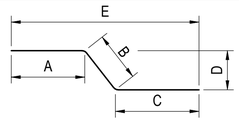
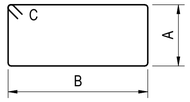
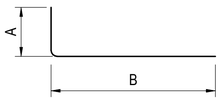
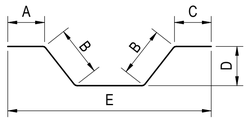
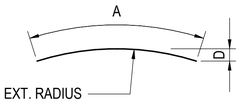
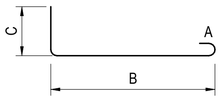
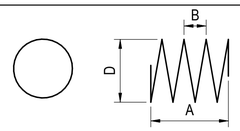
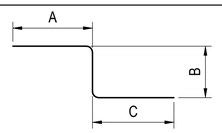
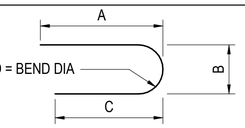
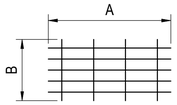
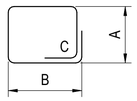
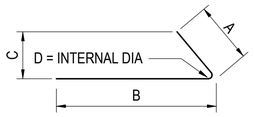
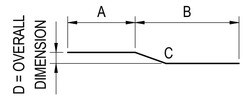
S		LL		VL		H	
SH		XT	 FITMENT BENDS	HH		VV	
CT	 A = LAP D = OD	V		J		HT	 FITMENT BENDS
L		JJ		R	 R = EXT. RADIUS	LH	
SP		RC		U		F	 'A' IS IN THE DIRECTION OF THE MAIN WIRES
T	 FITMENT BENDS	A		CC			

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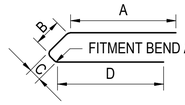
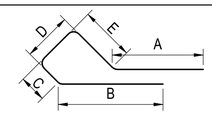
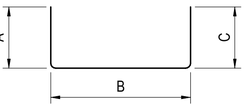
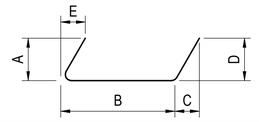
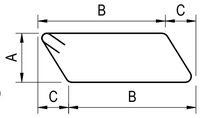
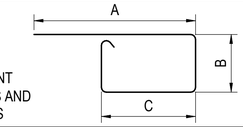
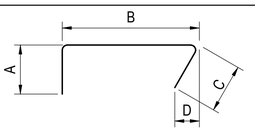
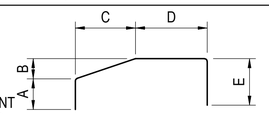
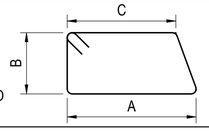
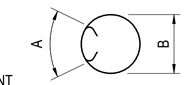
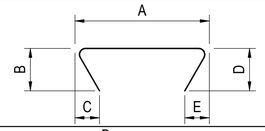
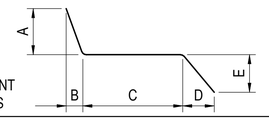
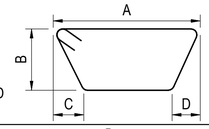
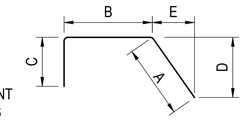
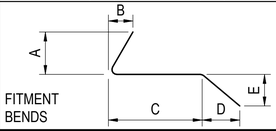
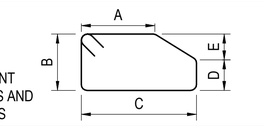
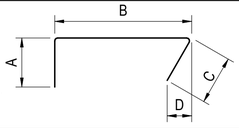
AZ	
BZ	 FITMENT BENDS

SHAPE CODE	TRANSPORT FOR NSW STANDARD SHAPES	SHAPE CODE	TRANSPORT FOR NSW STANDARD SHAPES	SHAPE CODE	TRANSPORT FOR NSW STANDARD SHAPES	SHAPE CODE	TRANSPORT FOR NSW STANDARD SHAPES
LF	 FITMENT BENDS	AV		TT	 FITMENT BENDS AND HOOKS	XH	 FITMENT BENDS AND HOOKS
LA		LG	 FITMENT BENDS	PT	 FITMENT BENDS AND HOOKS	ST	 FITMENT HOOKS
AA		KH	 FITMENT BENDS	QT	 FITMENT BENDS AND HOOKS	VF	 FITMENT BENDS
KL	 FITMENT BENDS	GT	 FITMENT BENDS AND HOOKS	KF	 FITMENT BENDS	AF	FITMENT BENDS

BAR MARKING LEGEND

THE METHOD USED TO LABEL REINFORCEMENT ON THE DRAWINGS IS AS FOLLOWS:
A1 10-N16-S-300 EF

- INFORMATION FOR PLACING
- SPACING ALONG LIMIT LINE
- BAR SHAPE CODE
- BAR SIZE IN MILLIMETRES
- BAR STRUCTURAL PROPERTIES
- NUMBER OF BARS IN THE SET
- BAR NUMBER IN SEQUENCE
- STRUCTURE ELEMENT DENOTATION

WHERE THE BAR SPACING IS APPROXIMATE ONLY,
THE FOLLOWING FORMAT SHALL BE USED:
A1 10-N16-S-300 EF APPROX

STRUCTURE ELEMENT DENOTATIONS COMMONLY USED ARE:

S	FOR BASE SLAB
W	FOR WING WALL
H	FOR HEAD WALL

INFORMATION FOR PLACING:

NF	FOR NEAR FACE
FF	FOR FAR FACE
EF	FOR EACH FACE
*	FOR VARIABLE LENGTH BAR
NSOP	FOR NOT SHOWN ON PLAN

REINFORCEMENT NOTES

AUSTRALIAN STANDARD BAR SHAPES ARE IN ACCORDANCE WITH AS 1100.501.
BAR SIZE IS THE NOMINAL DIAMETER IN MILLIMETRES, OR THE AS/NZS 4671 FABRIC NUMBER.
THE GRADE OF REINFORCEMENT, IF NOT STATED ON THE DRAWINGS, MUST BE D500N TO AS/NZS 4671.
DIMENSIONS SHOWN ON BAR SHAPES DIAGRAMS ARE MEASURED FROM OUTSIDE FACES OF THE BARS AND ARE IN MILLIMETRES.
THE INCLUDED ANGLE OF ANY BEND SHALL BE RIGHT ANGLE IF NO DIMENSION SHOWN.
BARS OF DIAMETER GREATER THAN 24 mm MUST NOT BE REBENT.
BAR BENDING AND HOOK DETAILS MUST BE IN ACCORDANCE WITH SECTION 5.13 OF AS 5100-BRIDGE DESIGN.

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

OFFICIAL: SENSITIVE - NSW GOVERNMENT

FOR REVIEW AND COMMENT

REFERENCES:

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED.

REV	DESCRIPTION	DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE
A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: N/A

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

GAMUDA
INFRASTRUCTURE A GAMUDA Company
aurecon www.aurecongroup.com
AURECON MISC. STRUCTURES

DRAWN	JAMES HAWTHORNE	12.05.2026
DESIGNED	CASSANDRA BLAGA	12.05.2026
DRG CHECK	LUKE GANDY	12.05.2026
DESIGN CHECK	TOM SHEASBY	12.05.2026
PROJ/DES MNGR	JAMES ABRAHAM	12.05.2026
APPROVED	ROB FERGUSON	12.05.2026

BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
BAR SHAPES DIAGRAM - SHEET A

DRAWING SET No: DS 2026/000040	PART	SHEET:	OF
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011040	A			

PLOT DATE & TIME: 11/05/2026 5:00:59 PM FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-053 7-GEDT-0537-MS-M3D-011000.rvt

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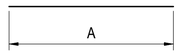
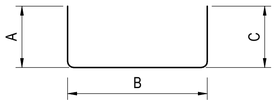
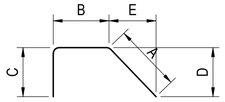
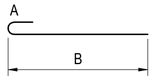
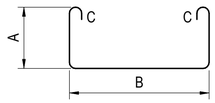
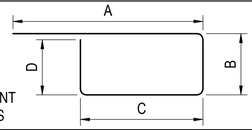
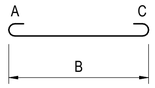
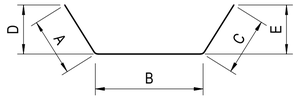
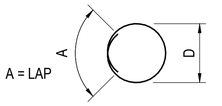
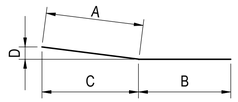
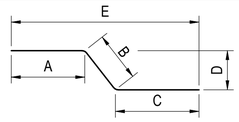
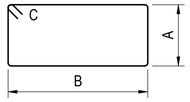
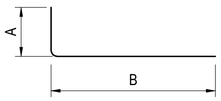
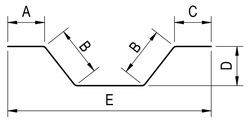
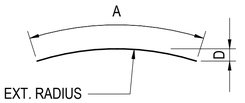
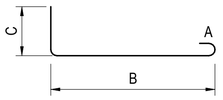
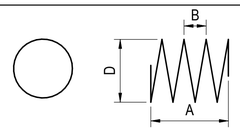
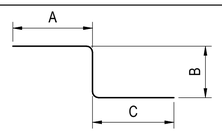
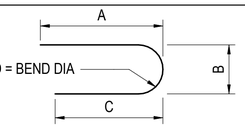
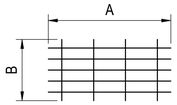
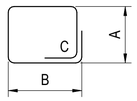
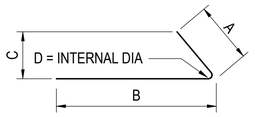
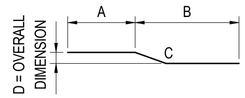
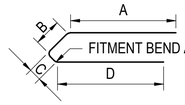
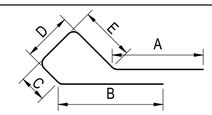
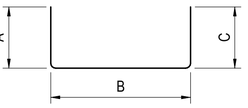
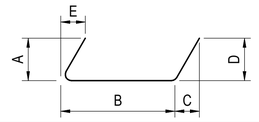
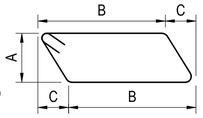
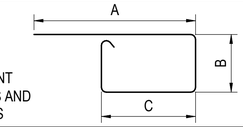
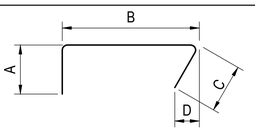
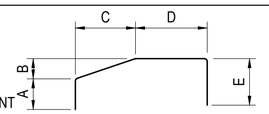
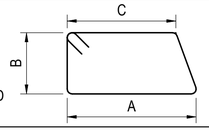
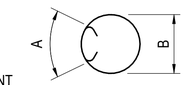
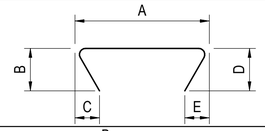
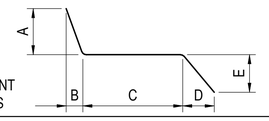
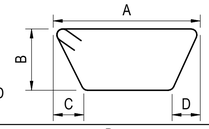
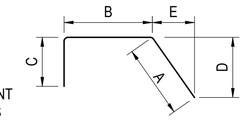
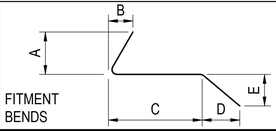
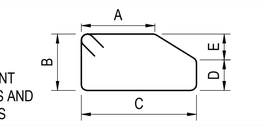
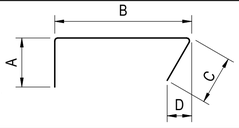
S		LL		VL		H	
SH		XT	 FITMENT BENDS	HH		VV	
CT	 A = LAP D = OD	V		J		HT	 FITMENT BENDS
L		JJ		R	 R = EXT. RADIUS	LH	
SP		RC		U		F	 'A' IS IN THE DIRECTION OF THE MAIN WIRES
T	 FITMENT BENDS	A		CC			

SHAPE CODE	NON STANDARD SHAPE
AZ	
BZ	 FITMENT BENDS

SHAPE CODE	TRANSPORT FOR NSW STANDARD SHAPES	SHAPE CODE	TRANSPORT FOR NSW STANDARD SHAPES	SHAPE CODE	TRANSPORT FOR NSW STANDARD SHAPES	SHAPE CODE	TRANSPORT FOR NSW STANDARD SHAPES
LF	 FITMENT BENDS	AV		TT	 FITMENT BENDS AND HOOKS	XH	 FITMENT BENDS AND HOOKS
LA		LG	 FITMENT BENDS	PT	 FITMENT BENDS AND HOOKS	ST	 FITMENT HOOKS
AA		KH	 FITMENT BENDS	QT	 FITMENT BENDS AND HOOKS	VF	 FITMENT BENDS
KL	 FITMENT BENDS	GT	 FITMENT BENDS AND HOOKS	KF	 FITMENT BENDS	AF	FITMENT BENDS

BAR MARKING LEGEND

THE METHOD USED TO LABEL REINFORCEMENT ON THE DRAWINGS IS AS FOLLOWS:
A1 10-N16-S-300 EF

- INFORMATION FOR PLACING
- SPACING ALONG LIMIT LINE
- BAR SHAPE CODE
- BAR SIZE IN MILLIMETRES
- BAR STRUCTURAL PROPERTIES
- NUMBER OF BARS IN THE SET
- BAR NUMBER IN SEQUENCE
- STRUCTURE ELEMENT DENOTATION

WHERE THE BAR SPACING IS APPROXIMATE ONLY,
THE FOLLOWING FORMAT SHALL BE USED:
A1 10-N16-S-300 EF APPROX

STRUCTURE ELEMENT DENOTATIONS COMMONLY USED ARE:

S	FOR BASE SLAB
W	FOR WING WALL
H	FOR HEAD WALL

INFORMATION FOR PLACING:

NF	FOR NEAR FACE
FF	FOR FAR FACE
EF	FOR EACH FACE
*	FOR VARIABLE LENGTH BAR
NSOP	FOR NOT SHOWN ON PLAN

REINFORCEMENT NOTES

AUSTRALIAN STANDARD BAR SHAPES ARE IN ACCORDANCE WITH AS 1100.501.
BAR SIZE IS THE NOMINAL DIAMETER IN MILLIMETRES, OR THE AS/NZS 4671 FABRIC NUMBER.
THE GRADE OF REINFORCEMENT, IF NOT STATED ON THE DRAWINGS, MUST BE D500N TO AS/NZS 4671.
DIMENSIONS SHOWN ON BAR SHAPES DIAGRAMS ARE MEASURED FROM OUTSIDE FACES OF THE BARS AND ARE IN MILLIMETRES.
THE INCLUDED ANGLE OF ANY BEND SHALL BE RIGHT ANGLE IF NO DIMENSION SHOWN.
BARS OF DIAMETER GREATER THAN 24 mm MUST NOT BE REBENT.
BAR BENDING AND HOOK DETAILS MUST BE IN ACCORDANCE WITH SECTION 5.13 OF AS 5100-BRIDGE DESIGN.

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

OFFICIAL: SENSITIVE - NSW GOVERNMENT

FOR REVIEW AND COMMENT

REFERENCES:

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED.

REV	DESCRIPTION	DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE
A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: N/A

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

GAMUDA
INFRASTRUCTURE A GAMUDA Company
aurecon www.aurecongroup.com
AURECON MISC. STRUCTURES

DRAWN	JAMES HAWTHORNE	12.05.2026
DESIGNED	CASSANDRA BLAGA	12.05.2026
DRG CHECK	LUKE GANDY	12.05.2026
DESIGN CHECK	TOM SHEASBY	12.05.2026
PROJ/DES MNGR	JAMES ABRAHAM	12.05.2026
APPROVED	ROB FERGUSON	12.05.2026

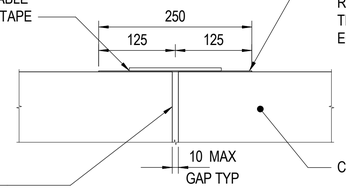
BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
BAR SHAPES DIAGRAM - SHEET A

DRAWING SET No: DS 2026/000040	PART	SHEET:	OF
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011040	A			

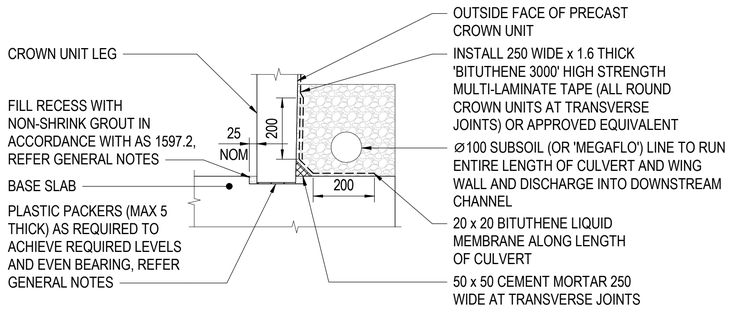
PLOT DATE & TIME: 11/05/2026 5:00:59 PM FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-053 7-GEDT-0537-MS-M3D-011000.rvt

IF THE GAP BETWEEN PRECAST UNITS IS IN EXCESS OF 10 mm OR THE 'BITUTHENE 3000' TAPE IS ADVERSELY AFFECTED BY SUNLIGHT, PROVIDE A 5 THICK BY 150 WIDE 'VINIDEX' CABLE COVER PLACED CENTRALLY OVER THE JOINT, CABLE COVER TO ADHERE TO THE 'BITUTHENE' TAPE

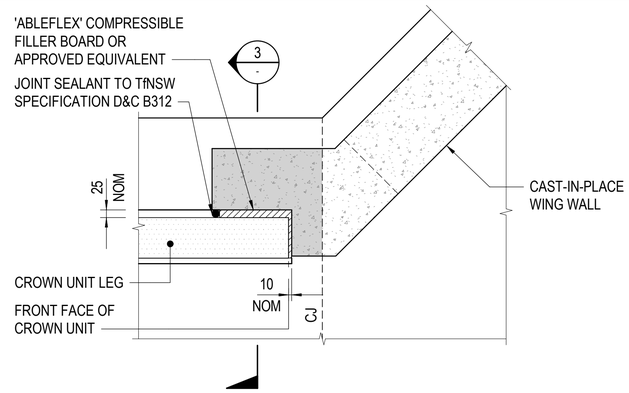


SECTION 1 / SCALE 1 : 5

NOTE: 'VINIDEX' CABLE COVER TO BE PROVIDED IF HEAT TREATED PAVEMENT LAYERS ARE APPLIED DIRECTLY TO THE TOP OF THE CROWN UNITS



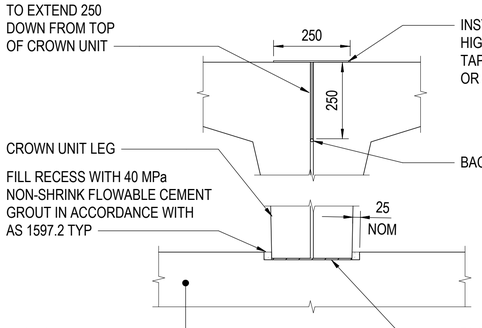
SECTION 2 / SCALE 1 : 10



TYPICAL WING WALL AND CROWN UNIT INTERFACE

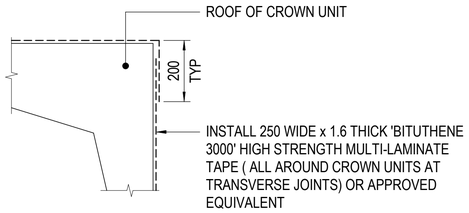
SCALE 1 : 10

CEMENT MORTAR TO EXTEND 250 DOWN FROM TOP OF CROWN UNIT



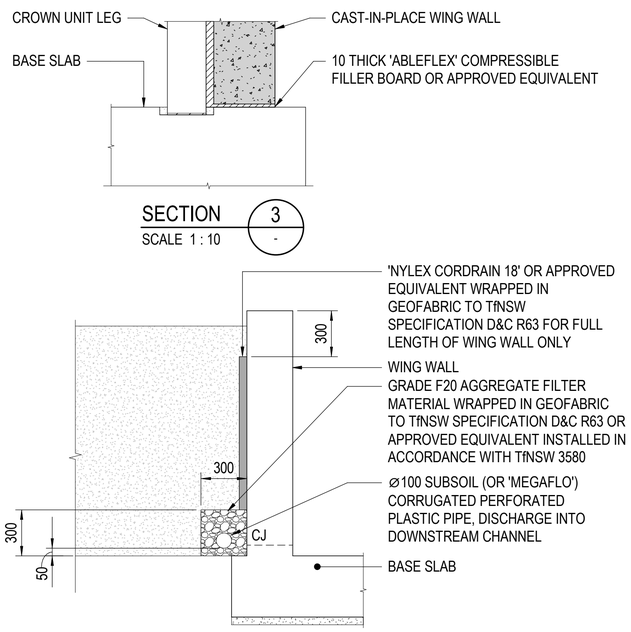
TYPICAL LEG OF CROWN UNIT AND BASE SLAB JOINT - DOUBLE LEG

SCALE 1 : 10



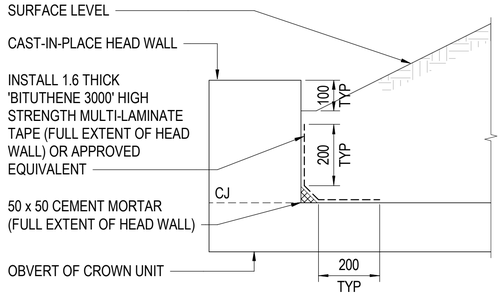
TYPICAL HAUNCH OF CROWN UNIT

SCALE 1 : 10



SECTION 3 / SCALE 1 : 10

APPROXIMATE FINISHED SURFACE LEVEL

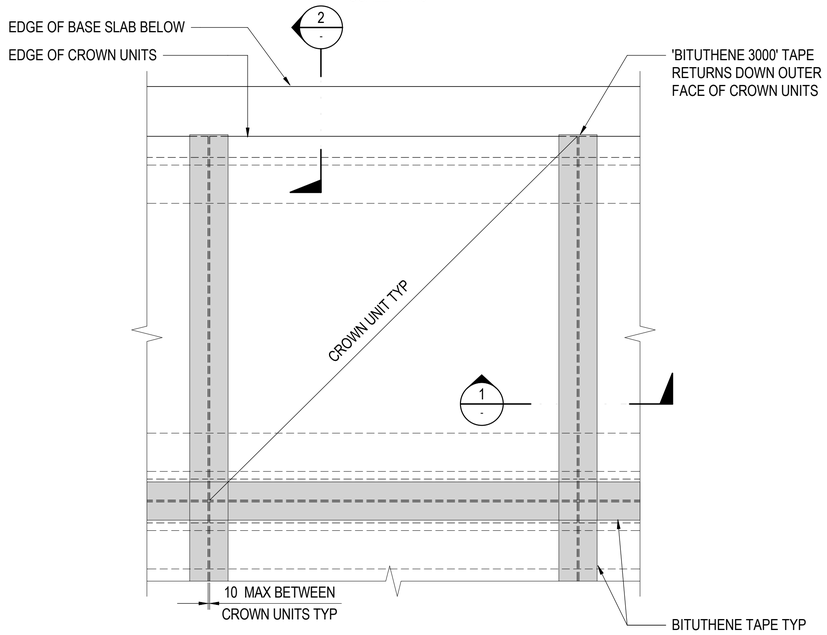


TYPICAL JOINT TREATMENT FOR HEAD WALLS

SCALE 1 : 10

EDGE OF BASE SLAB BELOW

EDGE OF CROWN UNITS



PLAN INSTALLED CROWN UNITS TYPICAL JOINT TREATMENT

SCALE 1 : 20

DRAINAGE BEHIND WING WALLS

SCALE 1 : 20

GENERAL NOTES

FOR OTHER NOTES RELATING TO THIS SHEET, REFER TO DRAWING No 011010.
CEMENT GROUT AT RECESSES MUST HAVE A MINIMUM 28 DAYS COMPRESSIVE STRENGTH OF 40 MPa.
HIGH STRENGTH, MULTI-LAMINATE TAPE MUST BE 1.6 mm THICK AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS INCLUDING APPLICATION OF BITUTHENE PRIMER.
'BITUTHENE 3000' IS SUSCEPTIBLE TO HEAT DAMAGE FROM EXPOSURE TO DIRECT SUNLIGHT ON HOT DAYS. MEASURES MUST BE TAKEN TO PROTECT THE TAPE IF IT IS EXPOSED TO HOT WEATHER PRIOR TO BACKFILLING.
PACKERS MUST NOT BE PLACED AT INTERVALS GREATER THAN 1000 mm.
PACKERS MUST NOT BE PLACED WITHIN 150 mm OF THE END OF THE CROWN UNIT.

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FOR REVIEW AND COMMENT

REFERENCES:

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REV	DESCRIPTION	DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE
A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA2020 GDA2020 | HEIGHT DATUM: AHD

SCALE: 1:20 , 1:10 , 1:5

1:20 @ A1 0 200 400 600 800 1000 mm

1:10 @ A1 0 100 200 300 400 500 mm

1:5 @ A1 0 50 100 150 200 250 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

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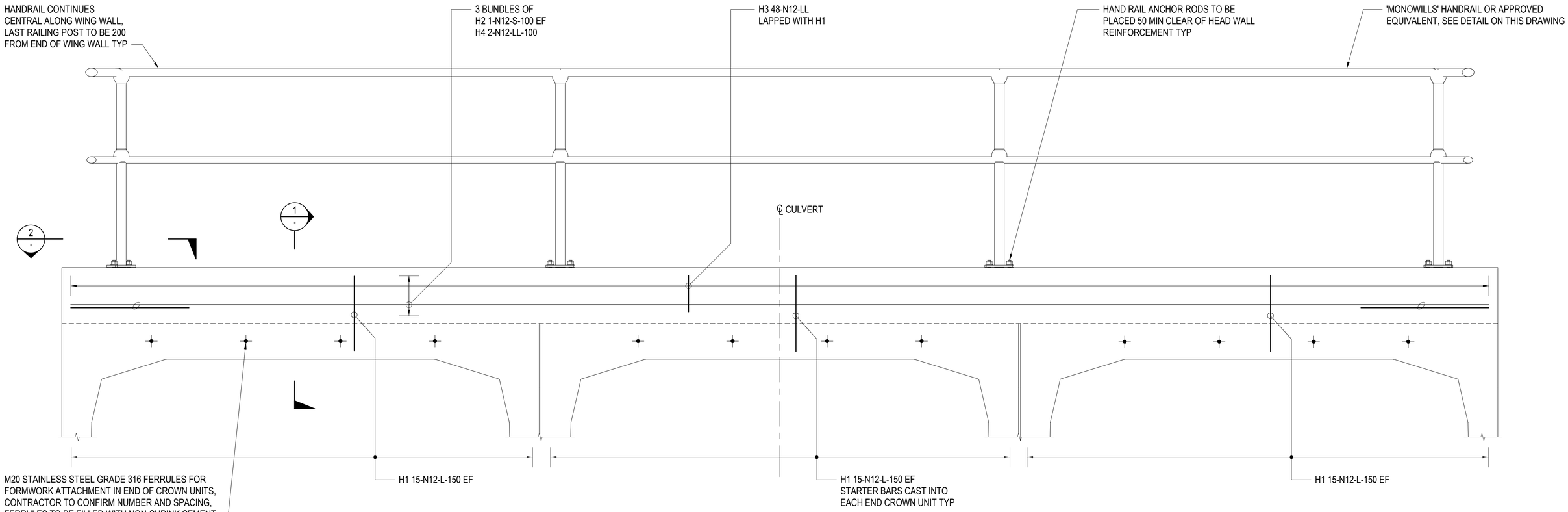
AURECON MISC. STRUCTURES

DRAWN	JAMES HAWTHORNE	12.05.2026
DESIGNED	CASSANDRA BLAGA	12.05.2026
DRG CHECK	LUKE GANDY	12.05.2026
DESIGN CHECK	TOM SHEASBY	12.05.2026
PROJ/DES MNGR	JAMES ABRAHAM	12.05.2026
APPROVED	ROB FERGUSON	12.05.2026

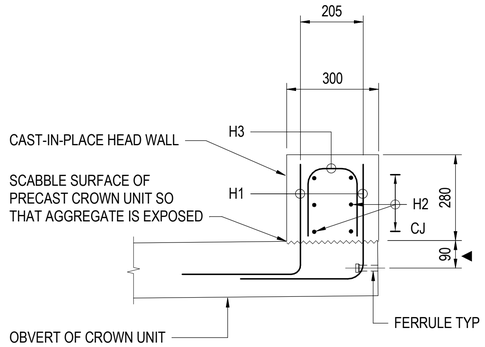
BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
MISCELLANEOUS DETAILS

DRAWING SET No: DS 2026/000040		PART	SHEET: 1 OF 1	
STATUS: SUBSTANTIAL DETAILED DESIGN		BRIDGE No: TO BE PROVIDED		©
DRG No. RRM7-GEDT-0537-MS-DRG-011035	REV A	VER	EDMS No.	AMD No.

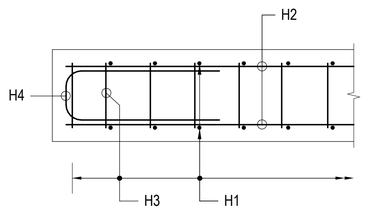
FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-011000.rvt
PLOT DATE & TIME: 11/05/2026 5:00:58 PM



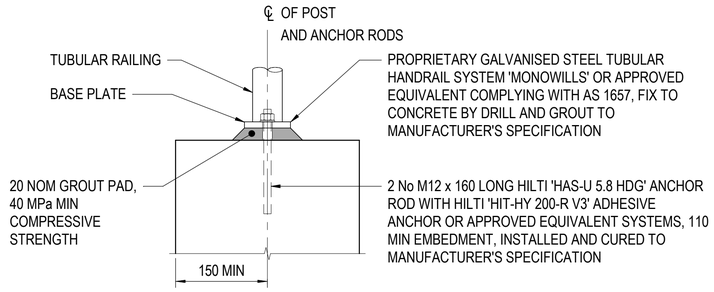
ELEVATION
SCALE 1 : 10



SECTION 1
SCALE 1 : 10



VIEW 2
SCALE 1 : 10



TYPICAL RAILING BASE PLATE CONNECTION
SCALE 1 : 5

GENERAL NOTES

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, REFER DRG No 011025.
PROPRIETARY HANDRAILS MUST BE HOT DIP GAVANISED AND MUST BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH AS 1657 AND THE MANUFACTURER'S DETAILS.
HANDRAIL ANCHOR BOLTS MUST BE HOT DIP GALVANISED POST-INSTALLED FASTENERS IN ACCORDANCE WITH TfNSW SPECIFICATION D&C B240 AND MANUFACTURER'S DETAILS.

POST-INSTALLED ANCHOR INSTALLATION NOTES

DESIGN, INSTALLATION AND TESTING OF POST-INSTALLED ANCHORS MUST BE IN ACCORDANCE WITH AS 5216.
MINIMUM DESIGN LIFE OF POST-INSTALLED ANCHORS AND BONDING COMPOUND (IF REQUIRED) MUST BE 100-YEARS.
REINFORCEMENT MUST BE SCANNED AND IDENTIFIED PRIOR TO DRILLING.
REINFORCEMENT SCANNING MUST BE CARRIED OUT BY VERIFIED PERSONNEL USING ONE OF TWO INDEPENDENT METHODS:

- PRIMARY METHOD: USING A HIGH PRECISION MAGNETIC INDUCTION COVER METER TO LOCATE REINFORCEMENT AND ASSESS COVER DEPTH.
- SECONDARY METHOD: USING A HIGH PRECISION GROUND PENETRATING RADAR FOR CONCRETE APPLICATIONS TO VERIFY LOCATION OF REINFORCEMENT.

ANCHOR INSTALLATION PERSONNEL MUST BE TRAINED AND CERTIFIED BY AEFAC AND BE INDEPENDENT TO THE REINFORCEMENT SCANNING PERSONNEL.
CONTRACTOR SHALL PRE-PLAN THE LOCATION OF THE ANCHORS BY SLIGHT LOCAL SHIFTING OF BARS AND TIES.
HOLES TO BE DRILLED AT LEAST 50 mm CLEAR OF REINFORCEMENT. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, DRILLING HOLE IS TO BE TERMINATED AND RELOCATED.
THE ABANDONED HOLE IS TO BE REPAIRED IN ACCORDANCE WITH THE APPROVED CONCRETE REPAIR METHOD.

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REFERENCES:

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COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 | HEIGHT DATUM: AHD

SCALE: 1:10 , 1:5

1:10 @ A1 0 100 200 300 400 500 mm

1:5 @ A1 0 50 100 150 200 250 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

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MISC. STRUCTURES

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APPROVED	ROB FERGUSON	12.05.2026

BLACKTOWN CITY LGA

MR537 - RICHMOND ROAD

RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD

DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
HEAD WALL DETAILS

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 1	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011030	A			

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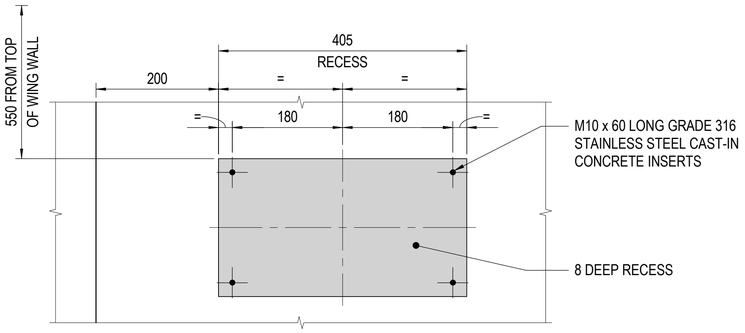
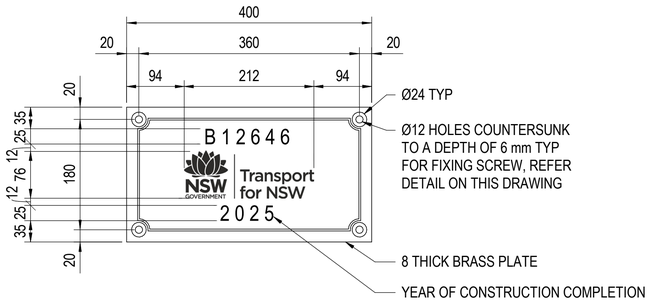


NAME PLATE RECESS

SCALE 1 : 5

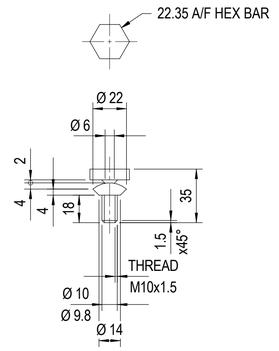
FOR WING WALL A-02 AND B-01 ONLY



BRIDGE NAME PLATE

SCALE 1 : 5

2 No REQUIRED



BRIDGE NAME PLATE FIXING SCREW

SCALE 1 : 2

8 No REQUIRED

FIXING SCREWS TO BE PROVIDED WITH NYLON ISOLATION WASHERS

GENERAL NOTES

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, REFER DRG No 011025.
BRIDGE NAME PLATES ARE TO BE IN ACCORDANCE WITH TfNSW SPECIFCATION D&C B345 AND TfNSW STANDARD BRIDGE DRAWINGS B0701 AND B0706.

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COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 | HEIGHT DATUM: AHD

SCALE: 1:5 , 1:2

1:5 @ A1 0 50 100 150 200 250 mm

1:2 @ A1 0 20 40 60 80 100 mm

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BLACKTOWN CITY LGA

MR537 - RICHMOND ROAD

RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD

DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN

C-0320, 3 CELL - 2100 x 1200 RCBC

WING WALL DETAILS - SHEET B

DRAWING SET No: DS 2026/000040	PART	SHEET: 2 OF 2		
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED			©
DRG No. RRM7-GEDT-0537-MS-DRG-011026	REV A	VER	EDMS No.	AMD No.

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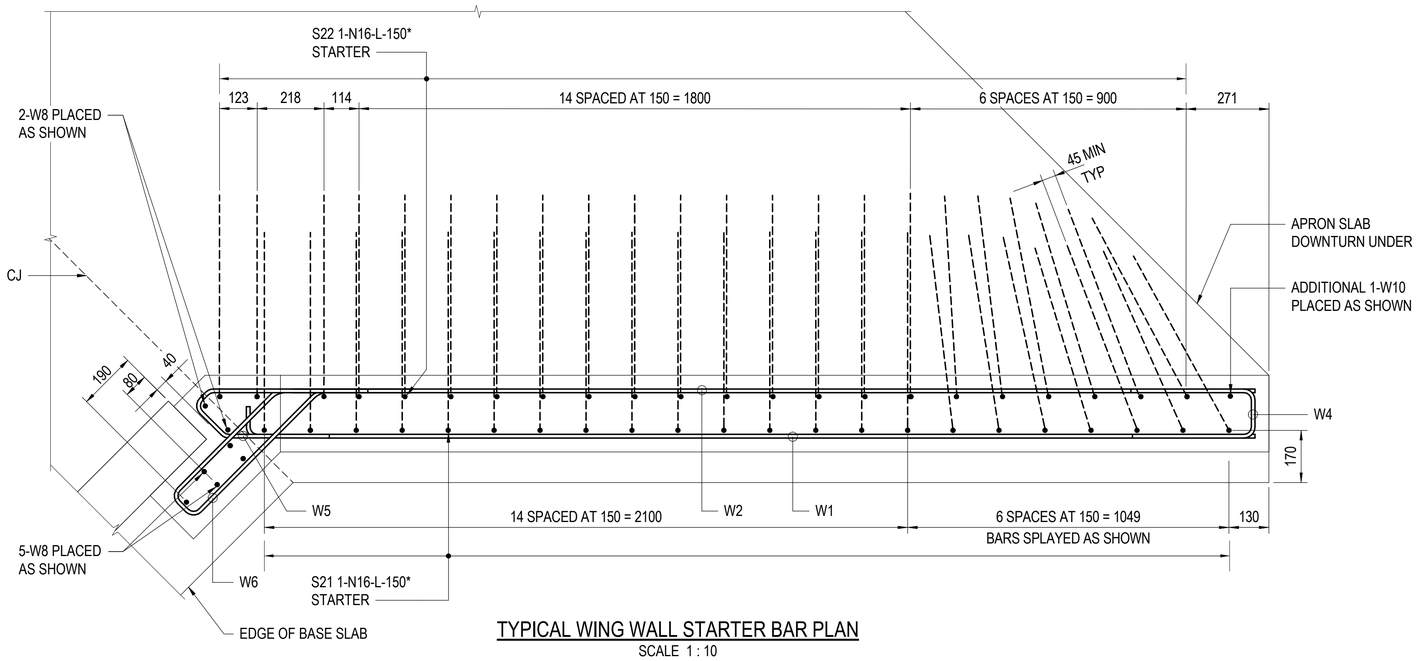
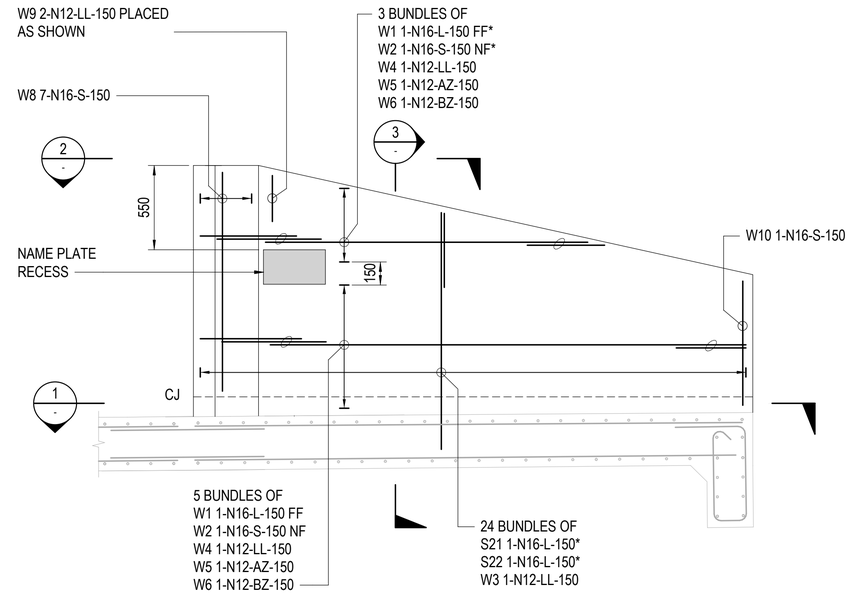
PLOT DATE & TIME: 11/05/2026 5:00:57 PM

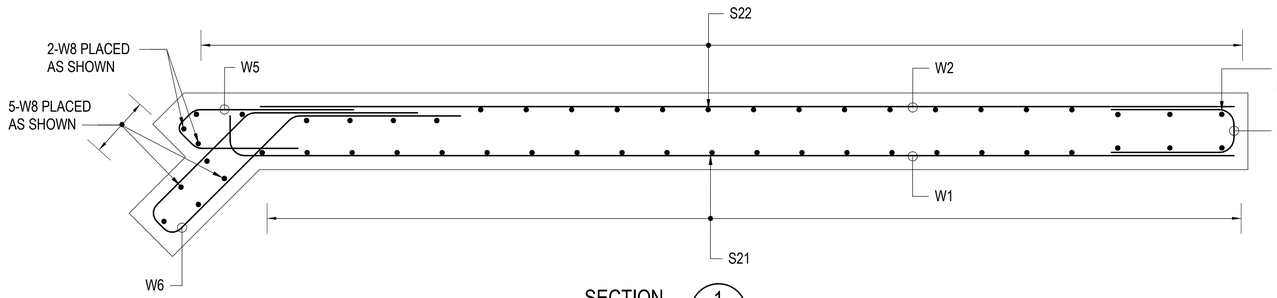


TYPICAL WING WALL STARTER BAR PLAN
SCALE 1 : 10

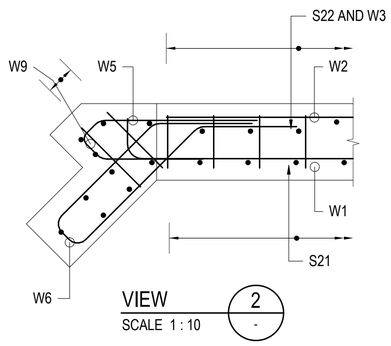


TYPICAL WING WALL
SCALE 1 : 20

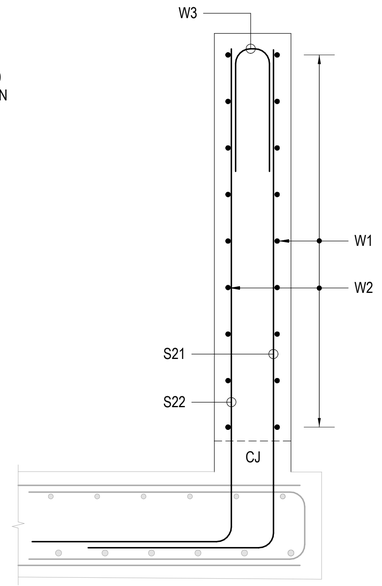
WING WALL A-01 SHOWN, OTHER WING WALLS SIMILAR
WEEPHOLES NOT SHOWN FOR CLARITY



SECTION 1
SCALE 1 : 10



VIEW 2
SCALE 1 : 10



SECTION 3
SCALE 1 : 10

GENERAL NOTES

ALL CONCRETE WORKS MUST COMPLY WITH TfNSW SPECIFICATION D&C B80.
CONCRETE EXPOSURE CLASSIFICATION: B1
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE MUST BE 40 MPa.
EDGE MUST BE CHAMFERED 20 x 20 AND RE-ENTRANT ANGLES FILLETED 20 x 20 UNLESS SPECIFIED OTHERWISE.
REQUIRED COVER TO REINFORCEMENT NEAREST TO THE CONCRETE SURFACE MUST BE 50 mm UNLESS SPECIFIED OTHERWISE.
THE REQUIRED COVER IS BASED ON A MINIMUM OF 7 DAYS EFFECTIVE, CONTINUOUS AND UNINTERRUPTED WET OR SEALED CURING IN ACCORDANCE WITH AS 5100.5.
UNLESS OTHERWISE SPECIFIED, THE MINIMUM DEVELOPMENT LENGTHS AND LENGTHS OF LAPS MUST BE AS FOLLOWS:

BAR SIZE:	N12	N16	N20	N24	N28	N32
a. HORIZONTAL BARS WITH >300 mm OF CONCRETE CAST BELOW THE BAR	500	650	1000	1300	1700	2100
b. OTHER BARS	350	500	750	1000	1300	1600

CLEAR DISTANCE BETWEEN LAPPED BARS MUST NOT EXCEED 3x BAR DIAMETER.
UNLESS SHOWN OTHERWISE ON THE DRAWINGS, LAPS ON ADJACENT BARS ON ANY FACE MUST BE STAGGERED (OFFSET) BY NO LESS THAN THE LAP LENGTH.
REINFORCEMENT MAY BE DISPLACED SLIGHTLY WHERE NECESSARY TO CLEAR STEEL DOWELS, ANCHOR BOLTS, INSERTS, STARTER BARS AND WEEPHOLES.

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FAR FACE
NF DENOTES NEAR FACE
* DENOTES VARIABLE LENGTH BAR

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COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: 1:20 , 1:10

1:20 @ A1 0 200 400 600 800 1000 mm

1:10 @ A1 0 100 200 300 400 500 mm

DESIGN LOT CODE:

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PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

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PROJ/DES MNGR	JAMES ABRAHAM	12.05.2026
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BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
WING WALL DETAILS - SHEET A

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 2	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011025	A			

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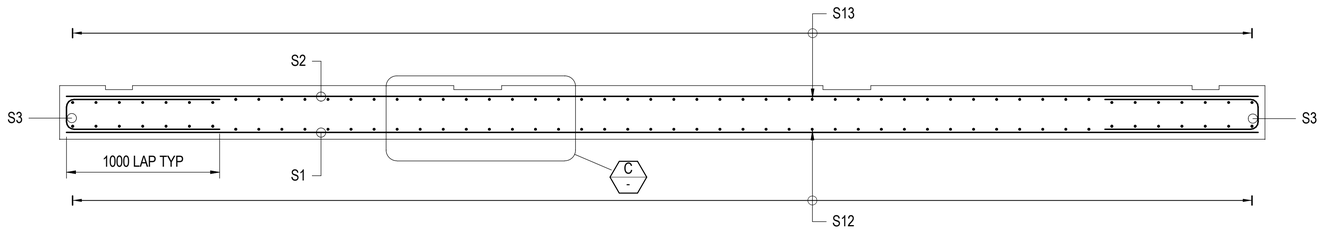
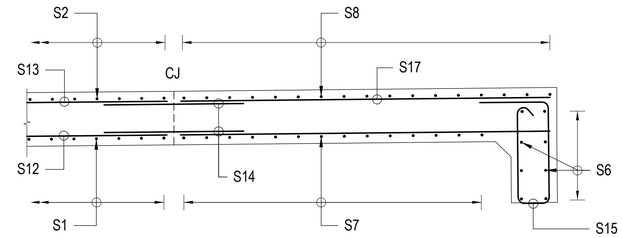
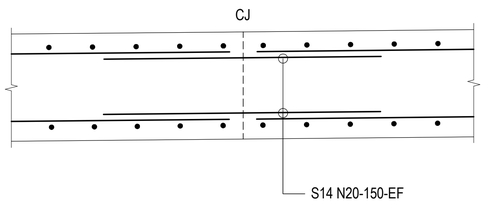


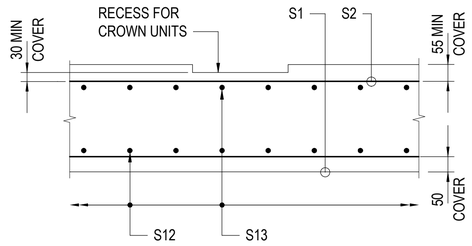
SECTION 4 / 021
SCALE 1 : 20



SECTION 5 / 021 , 6 / 021
SCALE 1 : 20



TYPICAL OPTIONAL CONSTRUCTION JOINT IN BASE SLAB
SCALE 1 : 10



DETAIL C / -
SCALE 1 : 10

GENERAL NOTES

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, REFER DRG No 011020.

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COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: 1:20 , 1:10

1:20 @ A1 0 200 400 600 800 1000 mm

1:10 @ A1 0 100 200 300 400 500 mm

DESIGN LOT CODE:

CLIENT: NSW GOVERNMENT Transport for NSW

PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW

NETWORK COMPLEX CODE:

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AURECON MISC. STRUCTURES

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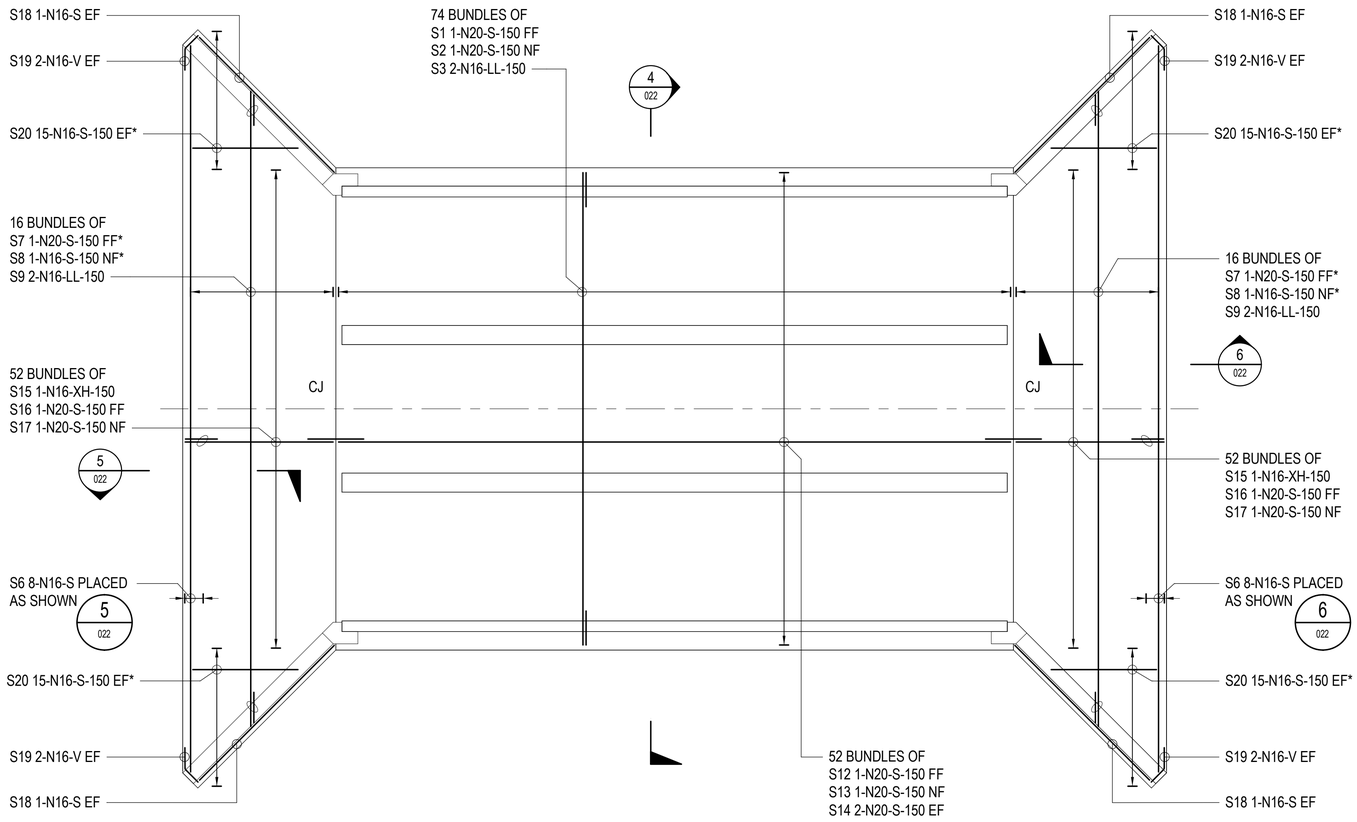
BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
BASE SLAB DETAILS - SHEET C

DRAWING SET No: DS 2026/000040	PART	SHEET: 3 OF 3		
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED			Ⓒ
DRG No. RRM7-GEDT-0537-MS-DRG-011022	REV A	VER	EDMS No.	AMD No.

PLOT DATE & TIME: 11/05/2026 5:00:57 PM FILE PATH: Autodesk Docs://530316 - Richmond Rd Upgrade - Townson to M7/RRM7-GEDT-0537-MS-M3D-011000.rvt



PLAN
SCALE 1 : 50

S21, S22 WING WALL STARTER BARS NOT SHOWN
FOR CLARITY, REFER DETAIL ON DRG No 011025

GENERAL NOTES

SCALES AS SHOWN.
REQUIRED COVER TO REINFORCEMENT NEAREST TO THE CONCRETE SURFACE TO BE 50 mm UNLESS SPECIFIED OTHERWISE.
THE REQUIRED COVER IS BASED ON A MINIMUM OF 7 DAYS EFFECTIVE, CONTINUOUS AND UNINTERRUPTED WET OR SEALED CURING IN ACCORDANCE WITH AS 5100.5.
UNLESS SPECIFIED OTHERWISE, THE MINIMUM DEVELOPMENT LENGTHS AND LENGTHS OF LAPS MUST BE AS FOLLOWS:

BAR SIZE:	N12	N16	N20	N24	N28	N32
a. HORIZONTAL BARS WITH >300 mm OF CONCRETE CAST BELOW THE BAR	500	650	1000	1300	1700	2100
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CLEAR DISTANCE BETWEEN LAPPED BARS MUST NOT EXCEED 3x BAR DIAMETER.
UNLESS SHOWN OTHERWISE ON THE DRAWINGS, LAPS ON ADJACENT BARS ON ANY FACE MUST BE STAGGERED (OFFSET) BY NO LESS THAN THE LAP LENGTH.
REINFORCEMENT MAY BE DISPLACED SLIGHTLY WHERE NECESSARY TO CLEAR STEEL DOWELS, ANCHOR BOLTS, INSERTS AND STARTER BARS.

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FAR FACE
NF DENOTES NEAR FACE
* DENOTES VARIABLE LENGTH BAR

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REV	DESCRIPTION	DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE
A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020
HEIGHT DATUM: AHD

SCALE: 1:50
1:50 @ A1 0 500 1000 1500 2000 2500 mm
DESIGN LOT CODE:

CLIENT:
NSW GOVERNMENT Transport for NSW
PREPARED FOR:
Western Parkland City Development
Infrastructure & Place
Transport for NSW
NETWORK COMPLEX CODE:

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MISC. STRUCTURES

DRAWN	JAMES HAWTHORNE	12.05.2026
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BLACKTOWN CITY LGA
MR537 - RICHMOND ROAD
RICHMOND ROAD UPGRADE, M7 TO TOWNSON ROAD
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
BASE SLAB DETAILS - SHEET B

DRAWING SET No: DS 2026/000040	PART	SHEET: 2 OF 3	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011021	A			

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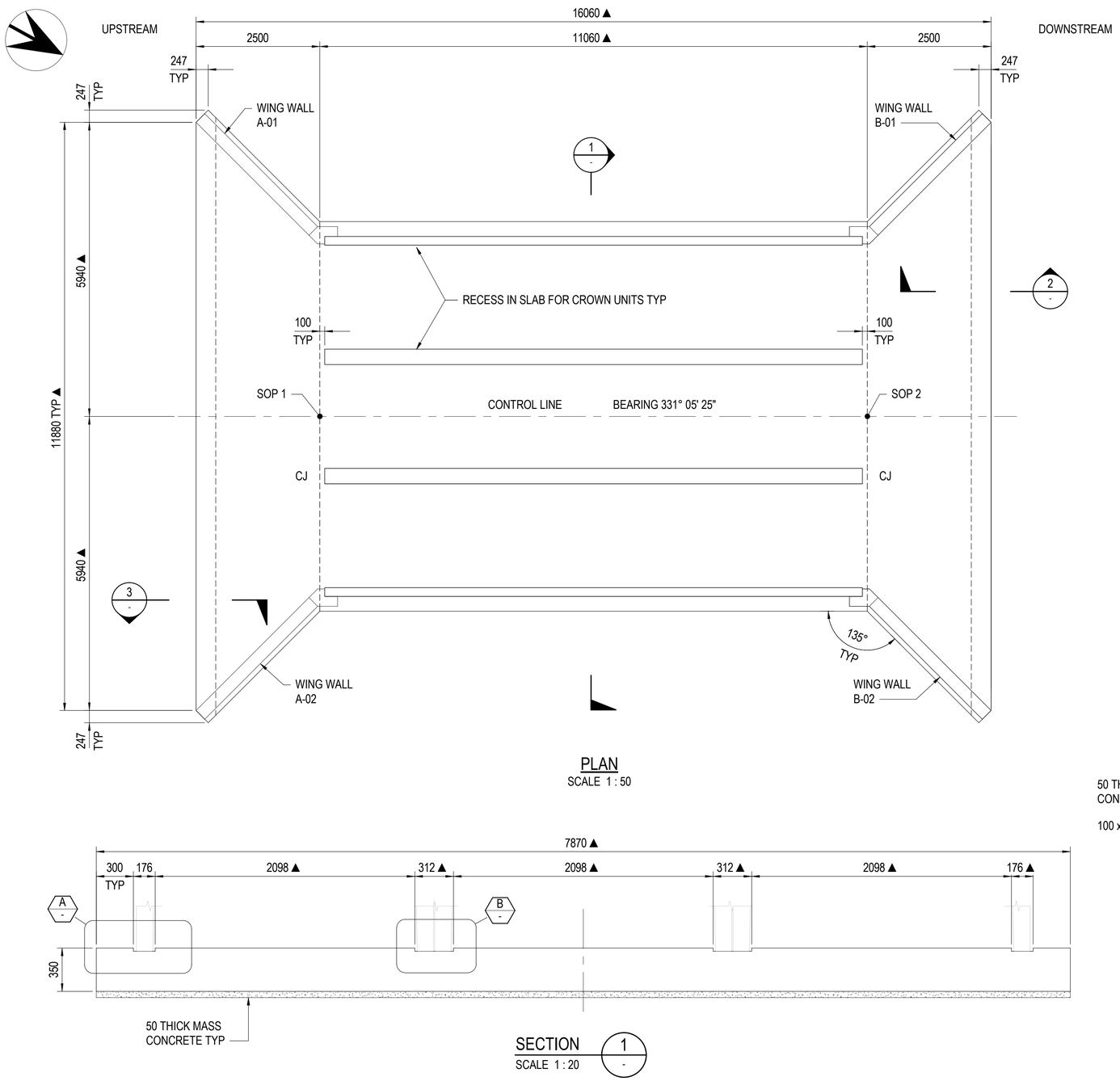
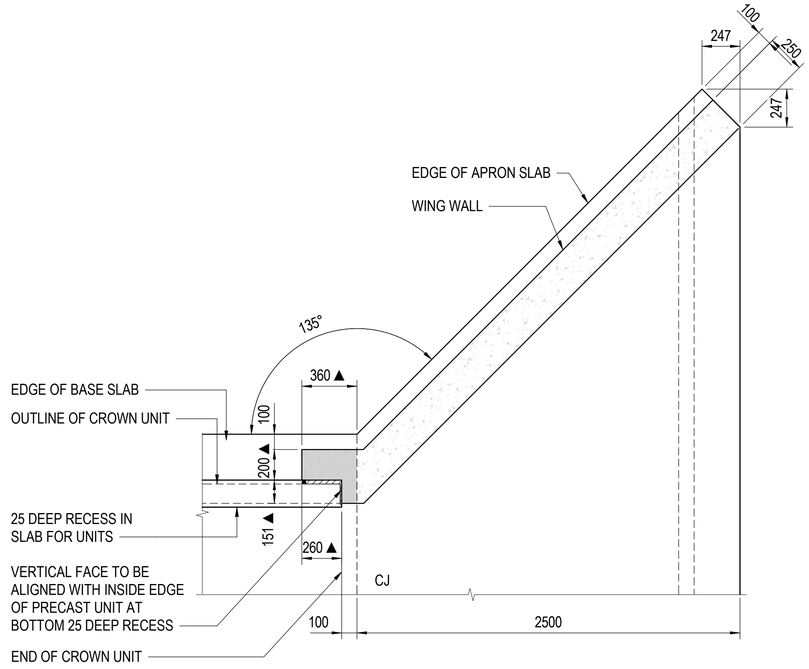
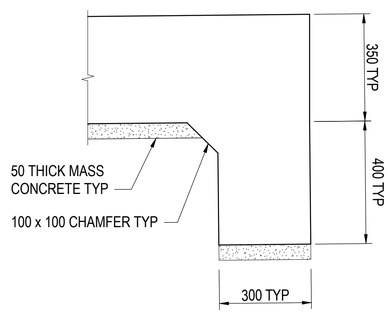


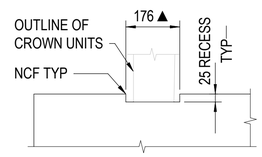
PLAN
SCALE 1 : 50

SECTION 1
SCALE 1 : 20

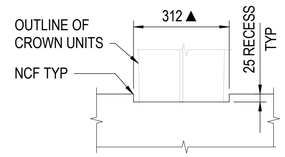


TYPICAL WING WALL DETAILS
SCALE 1 : 20





DETAIL A
SCALE 1 : 10



DETAIL B
SCALE 1 : 10

SECTION 3 2
SCALE 1 : 10

GENERAL NOTES

ALL CONCRETE WORKS MUST COMPLY WITH TfNSW SPECIFICATION D&C B80.
CONCRETE EXPOSURE CLASSIFICATION: B1
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE MUST BE 40 MPa.
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF MASS CONCRETE SHALL BE 20 MPa.
EDGES MUST BE CHAMFERED 20 x 20 AND RE-ENTRANT ANGLES FILLITED 20 x 20 UNLESS SPECIFIED OTHERWISE.

NCF	DENOTES NO CHAMFER OR FILLET
CJ	DENOTES CONSTRUCTION JOINT
SOP	DENOTES SETOUT POINT
RCBC	DENOTES PRECAST CONCRETE CROWN UNIT
▲	DENOTES CONCRETE DIMENSION TO BE CHECKED AND ADJUSTED IF NECESSARY TO SUIT ACTUAL PRECAST CROWN UNITS DIMENSIONS.
	DENOTES PORTION OF WING WALL NOT CAST INTEGRAL WITH BASE SLAB, REFER TO INTERFACE DETAIL ON DRG No 011035.

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A	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 | HEIGHT DATUM: AHD

SCALE: 1:100 , 1:20 , 1:10

1:100 @ A1 0 1 2 3 4 5 m
1:20 @ A1 0 200 400 600 800 1000 mm
1:10 @ A1 0 100 200 300 400 500 mm

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PREPARED FOR:
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Transport for NSW

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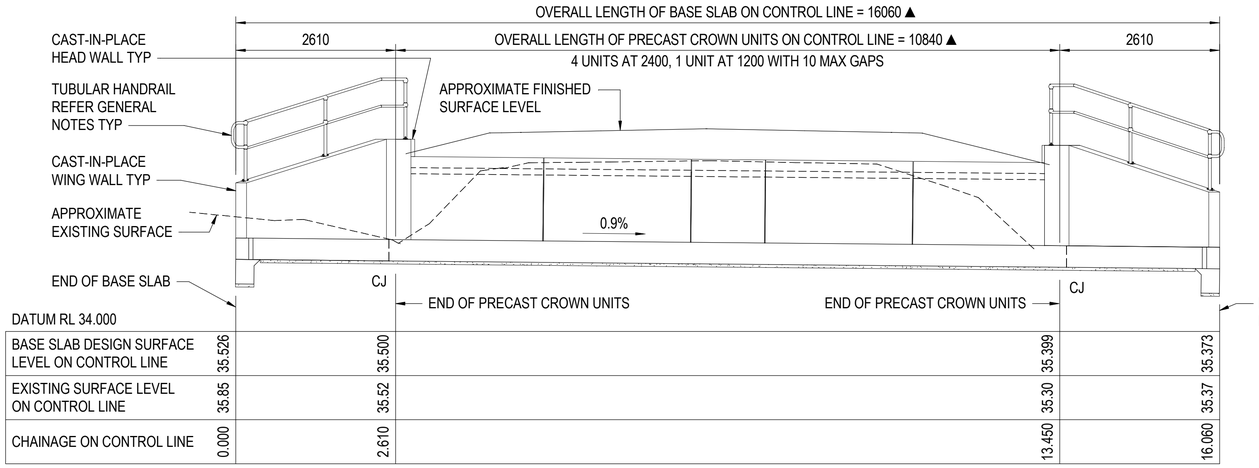
DRAINAGE CULVERT UNDER ACCESS LANE AT 9.8km WEST OF BLACKTOWN
C-0320, 3 CELL - 2100 x 1200 RCBC
BASE SLAB DETAILS - SHEET A

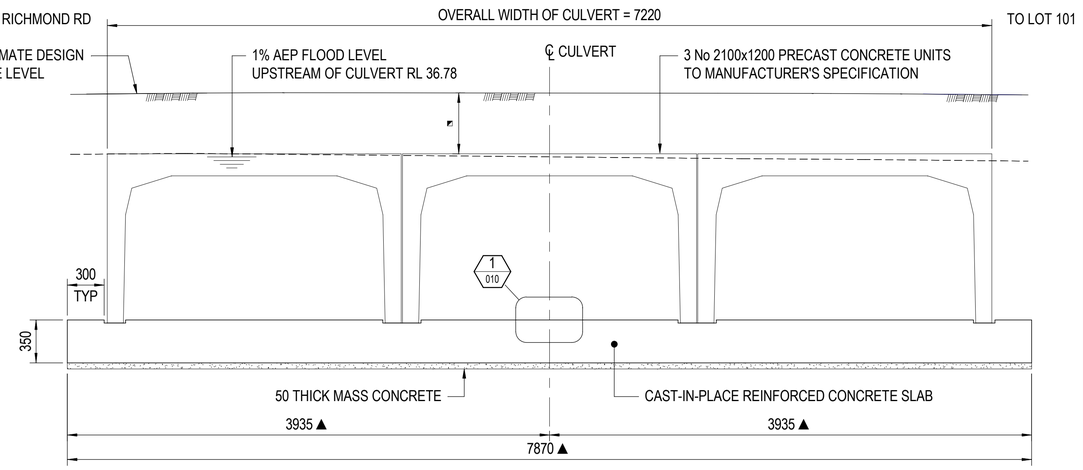
DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 3	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		Ⓒ

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011020	A			

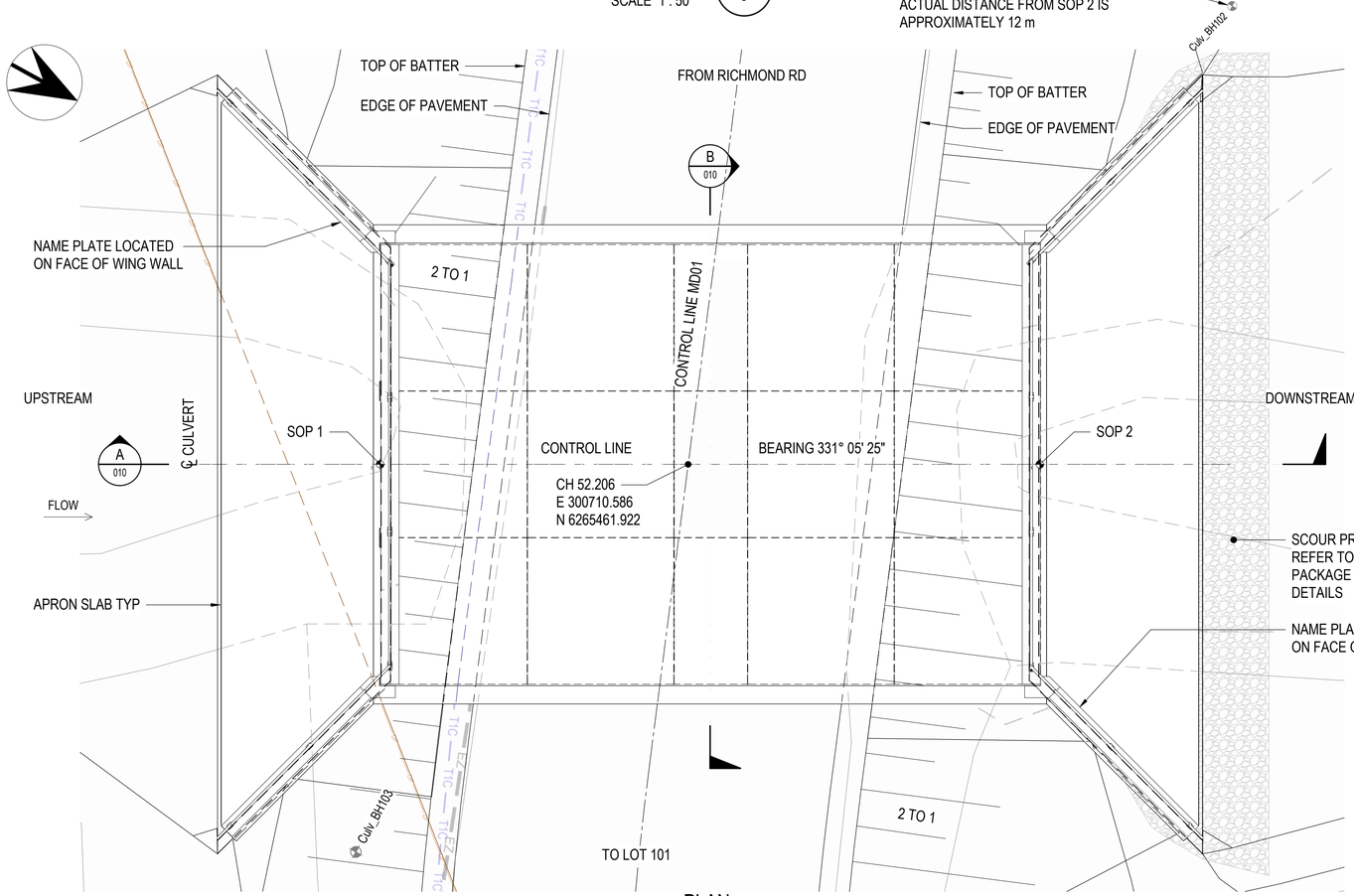


DATUM RL 34.000						
BASE SLAB DESIGN SURFACE LEVEL ON CONTROL LINE	35.526	35.500			35.399	35.373
EXISTING SURFACE LEVEL ON CONTROL LINE	35.85	35.52			35.30	35.37
CHAINAGE ON CONTROL LINE	0.000	2.610			13.450	16.060

SECTION A
SCALE 1 : 50



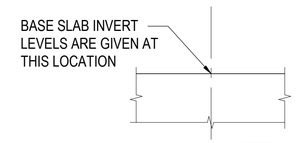
SECTION B
SCALE 1 : 25



PLAN
SCALE 1 : 50

GEOTECHNICAL NOTES

THE EXPOSED FOUNDATION MATERIAL FOR THE CULVERT BASE SLAB AND APRON SLAB SHALL BE INSPECTED BY THE DESIGN GEOTECHNICAL REPRESENTATIVE (DGR) TO VERIFY THE FOUNDING MATERIAL.
RELEVANT METHODS OF ASSESSMENT INCLUDE BUT ARE NOT LIMITED TO TEST PIT EXCAVATIONS WITH POCKET PENETROMETERS, DYNAMIC CONE PENETROMETER TESTING AS DEEMED APPROPRIATE BY THE DGR.
FOUNDING MATERIAL SHOULD BE STIFF CLAY OR BETTER.
THE BASE SLAB AND APRON SLAB MUST BE INSPECTED FOR WEAK/SOFT SPOTS AFTER DCP TESTING AT 300 mm BELOW THE UNDERSIDE OF THE BASE SLAB.
ANY SOFT SPOTS (DCP BLOW COUNT BELOW 3) OR UNSUITABLE MATERIAL IDENTIFIED BY THE DGR MUST BE EXCAVATED AND REPLACED WITH ENGINEERED FILL IN ACCORDANCE TfNSW D&C R44.
PLACE AND COMPACT A SINGLE LAYER OF 250 mm THICK GRAVEL IN ACCORDANCE WITH TfNSW D&C R44 ON THE PREPARED SUBGRADE (COMPACTED TO MINIMUM 98% RELATIVE COMPACTION). THEN PLACE A 50 mm THICK MASS CONCRETE BLINDING LAYER, REFER DRG No 011020.
GRAVEL SHALL BE DGB CLASS 2 TO TfNSW 3051 OR APPROVED EQUIVALENT BY DESIGNER.
THE MINIMUM SLS DESIGN BEARING PRESSURE OF THE BASE SLAB ON GROUND IS 75 kPa (ULS DESIGN BEARING PRESSURE 150 kPa).
THE DESIGN BEARING CAPACITY SHALL TAKE INTO ACCOUNT THE GEOTECHNICAL REDUCTION FACTOR $\Phi_g = 0.35$.



DETAIL 1
SCALE 1 : 10

TABLE 1 - SETOUT POINTS

SETOUT POINT (SOP)	CHAINAGE ON CONTROL LINE (m)	COORDINATES (m) EASTING	COORDINATES (m) NORTHING	INVERT LEVEL (m)
SOP 1	2.610	300713.034	6265457.491	35.500
SOP 2	13.450	300707.793	6265466.979	35.399

TABLE 2 - ASSUMED PRECAST CONCRETE UNIT DIMENSIONS

NOMINAL SIZE	OVERALL WIDTH (mm)	OVERALL HEIGHT (mm)	UNIT LENGTH (mm)	LEG THICKNESS AT BASE (mm)
2100x1200	2400	1380	2400	132

GENERAL NOTES

DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
CHAINAGES, REDUCED LEVELS AND COORDINATES ARE IN METRES.
REDUCED LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
COORDINATES ARE TO THE MAP GRID OF AUSTRALIA (MGA) ZONE 56 / GDA 2020.
LOCATION OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION AND RELOCATION AS REQUIRED.
FILL UNDER BASE SLAB:
- WITHIN 300 mm BELOW THE BASE SLAB SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL NOTES ON THIS DRAWING.
- EXCEEDING 300 mm BELOW THE BASE SLAB SHALL BE ENGINEERED FILL PLACED AND COMPACTED IN ACCORDANCE WITH TfNSW SPECIFICATION R44.

BACKFILLING OF CULVERTS:
- WITHIN PAVEMENT LAYERS, BACKFILL AND COMPACTION SHALL BE AS PER THE DETAILS IN DESIGN PACKAGE PV01.
- OUTSIDE OF PAVEMENT LAYERS, BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE CL 4.9 OF TfNSW SPECIFICATION D&C R11. MINIMUM RELATIVE COMPACTION SHALL BE 98%.
- BACKFILL MATERIAL WITHING 1.5 m BEHIND THE WING WALL AND HEAD WALL MUST BE LIMITED TO A PEDESTRIAN ROLLER OR PLATE COMPACTOR.

LIFTING LUGS TO BE HOT DIPPED GALVANISED.
LUG RECESS TO BE FILLED WITH A PROPRIETARY GROUT ONCE PRECAST UNIT PLACED.
DESIGN, CONSTRUCTION AND INSTALLATION OF HOT DIPPED GALVANISED HANDRAILS MUST MEET THE REQUIREMENTS OF AS 1657 WITH A MINIMUM HEIGHT OF 900 mm AND DESIGN TO MEET LOAD REQUIREMENTS OF AS 1170.1 TABLE 3.3, B/E FOR AREAS NOT SUSCEPTIBLE TO OVERCROWDING IN INDUSTRIAL SETTINGS.
CROWN UNITS TO BE BUTTED TOGETHER WHEN PLACED.

▲ DENOTES CONCRETE DIMENSION TO BE CHECKED AND ADJUSTED IF NECESSARY TO SUIT ACTUAL PRECAST CROWN UNIT DIMENSIONS
DENOTES SAFETY BARRIER
PROJECT BOUNDARY
SOP DENOTES SET OUT POINT
◩ DENOTES DIMENSION VARIES, 500 MAX, 480 MIN FOR TRAFFIC LOADING

GEOTECHNICAL INVESTIGATION LOCATIONS
EXISTING BOREHOLE
EXISTING TEST PIT

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B	SUBSTANTIAL DETAILED DESIGN	CB 12/05/2026	MB 12/05/2026	RF 12/05/2026
A	DEVELOPED CONCEPT DESIGN	CB 27/02/2026	MB 27/02/2026	RF 27/02/2026

COORDINATE SYSTEM: MGA_ZONE_56/GDA20 GDA2020 HEIGHT DATUM: AHD

SCALE: 1:50 , 1:25

1:50 @ A1 0 500 1000 1500 2000 2500 mm
1:25 @ A1 0 250 500 750 1000 1250 mm

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GENERAL ARRANGEMENT

DRAWING SET No: DS 2026/000040	PART	SHEET: 1 OF 1	
STATUS: SUBSTANTIAL DETAILED DESIGN	BRIDGE No: TO BE PROVIDED		©

DRG No.	REV	VER	EDMS No.	AMD No.
RRM7-GEDT-0537-MS-DRG-011010	B			

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