

PENRITH CITY COUNCIL

DRAINAGE CULVERT EXTENSIONS ON MAMRE ROAD (MR536) AT 6 km NORTH OF KEMPS CREEK

NEW PRECAST CONCRETE BOX CULVERTS-2024

DESIGN STANDARD:

AS 1597.1 - PRECAST REINFORCED CONCRETE BOX CULVERT (SMALL CULVERTS)

AS 1597.2 - PRECAST REINFORCED CONCRETE BOX

CULVERT (LARGE CULVERTS)
AS 5100:2017 SERIES - BRIDGE DESIGN SET

CROWN UNITS SHALL BE DESIGNED AND SUPPLIED BY THE MANUFACTURER IN ACCORDANCE WITH AS 1597.1, AS 1597.2 AND TINSW SPECIFICATION R11 AND R16. THE TRAFFIC LOADING SHALL BE SM1600 AND HLP 400 IN ACCORDANCE WITH AS 5100 BRIDGE DESIGN.
CROWN UNITS SHALL ALSO BE DESIGNED FOR CONSTRUCTION LOADS AS INDICATED ON THIS SHEET WITH A LOAD FACTOR OF 1.5 AND DYNAMIC LOAD OF ALLOWANCE OF 0.1.

TfNSW QA BRIDGE WORK SPECIFICATIONS:

B30 - EXCAVATION AND BACKFILL FOR BRIDGEWORKS. B80 - CONCRETE WORKS FOR BRIDGE.

FOUNDATIONS DESIGN CRITERIA:

THE STRUCTURES HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 150 kPa.

FOUNDATION SHALL BE VERIFIED BY THE GEOTECHNICAL ENGINEER.





THE BRIDGE SITE IS APPROXIMATELY
47 km BY ROAD FROM SYDNEY

LOCALITY PLAN
NOT TO SCALE

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

DESIGN STANDARDS: AS 5100:2017 SERIES - BRIDGE DESIGN SET

NEW UNDERPASS - 2024

DESIGN TRAFFIC SPEED: 90

ROAD TRAFFIC LOADING: SM1600

HEAVY LOAD PLATFORM LOADING: HLP400

PROVISION FOR HLP400 LOADING IS RESTRICTED TO ONE VEHICLE AT ANY ONE TIME POSITIONED CENTRALLY IN TWO DESIGN TRAFFIC LANES. HLP400 LOADING MAY BE POSITIONED UP TO $\pm 1 \text{m}$ LATERALLY IN EITHER DIRECTION FROM THE SPECIFIED POSITION AND A MINIMUM OF 2 m FROM HEADWALLS.

VEHICLE SPEED IS RESTRICTED TO 10km/h.

EARTHQUAKE LOADING:

BRIDGE CLASSIFICATION:	BEDC-3
DESIGN PERFORMANCE LEVEL:	DAMAGE CONTROL
PROBABILITY FACTOR KP:	1.3
SEISMIC HAZARD FACTOR Z:	0.08

SEISMIC HAZARD FACTOR Z:

SITE SUBSOIL CLASS:

C

DESIGN DUCTILITY FACTOR μ :

1.0 LONGITUDINAL
1.0 TRANSVERSE

DIFFERENTIAL SETTLEMENT:

10mm DIFFERENTIAL SETTLEMENT BETWEEN CULVERTS.

FLOOD LOADING:

THE 311800x950 RCBC DRAINAGE STRUCTURE HAS BEEN DESIGNED WITH FLOOD LOADING INFORMATION PROVIDED IN THE FLOOD IMPACT ASSESSMENT BY CARNO (NOW STANTEC) REPORT No. AWE20083 DATED 27/07/2022.

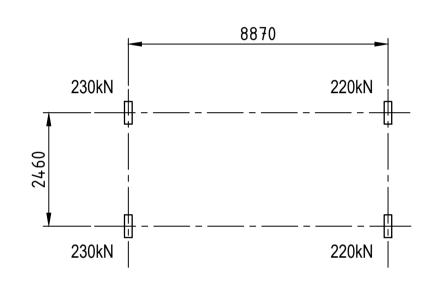
PMF

FLOW VELOCITY:
FLOOD LEVEL(m):
SCOUR DEPTH(m)

41.0m AHD 38.34 AHD

CONSTRUCTION LOADING

6376 CONSTRUCTION SCRAPER LOAD WITH MINIMUM 1m FILL



6376 WHEEL TRACTOR SCRAPER MAX WHEEL LOADS.

A DYNAMIC LOAD ALLOWANCE OF 10% HAS BEEN CONSIDERED IN THE DESIGN. PROVISION OF CONSTRUCTION LOADING IS RESTRICTED TO ONE VEHICLE AT ANY TIME WITH NO CO-EXISTING LOADING.

VEHICLE SPEED IS RESTRICT TP 10km/h ON THE CULVERT.
A MINIMUM CLEARANCE OF 1.5m FROM HEADWALL AND
WINGWALL SHALL BE MAINTAINED.

SCHEDULE OF DRAWINGS

SHEET No

BR-DRG-0012

BR-DRG-0001	COVER SHEET
BR-DRG-0005 BR-DRG-0006	GENERAL ARRANGEMENT – SHEET A GENERAL ARRANGEMENT – SHEET B
BR-DRG-0011	GENERAL ARRANGEMENT – SHEET C

DRAWING TITLE

GENERAL ARRANGEMENT - SHEET D

REFERENCE DRAWINGS

THE RCBC UNIT DRAWINGS TO BE INCLUDED WHEN RECEIVED

BEFORE YOU DIG AUSTRALIA (BYDA)

THE CONTRACTOR SHALL, BEFORE COMMENCING ANY WORKS

- (I) DETERMINE THE EXTENT OF EXISTING UTILITY SURVEY AND INFORMATION REFERENCED ON THESE DRAWINGS;
- (II) OBTAIN CURRENT BEFORE YOU DIG AUSTRALIA PLANS AND INFORMATION BY TELEPHONING 1100 OR ONLINE WWW.BYDA.COM.AU TO ASCERTAIN THE EXACT LOCATION OF UTILITIES.

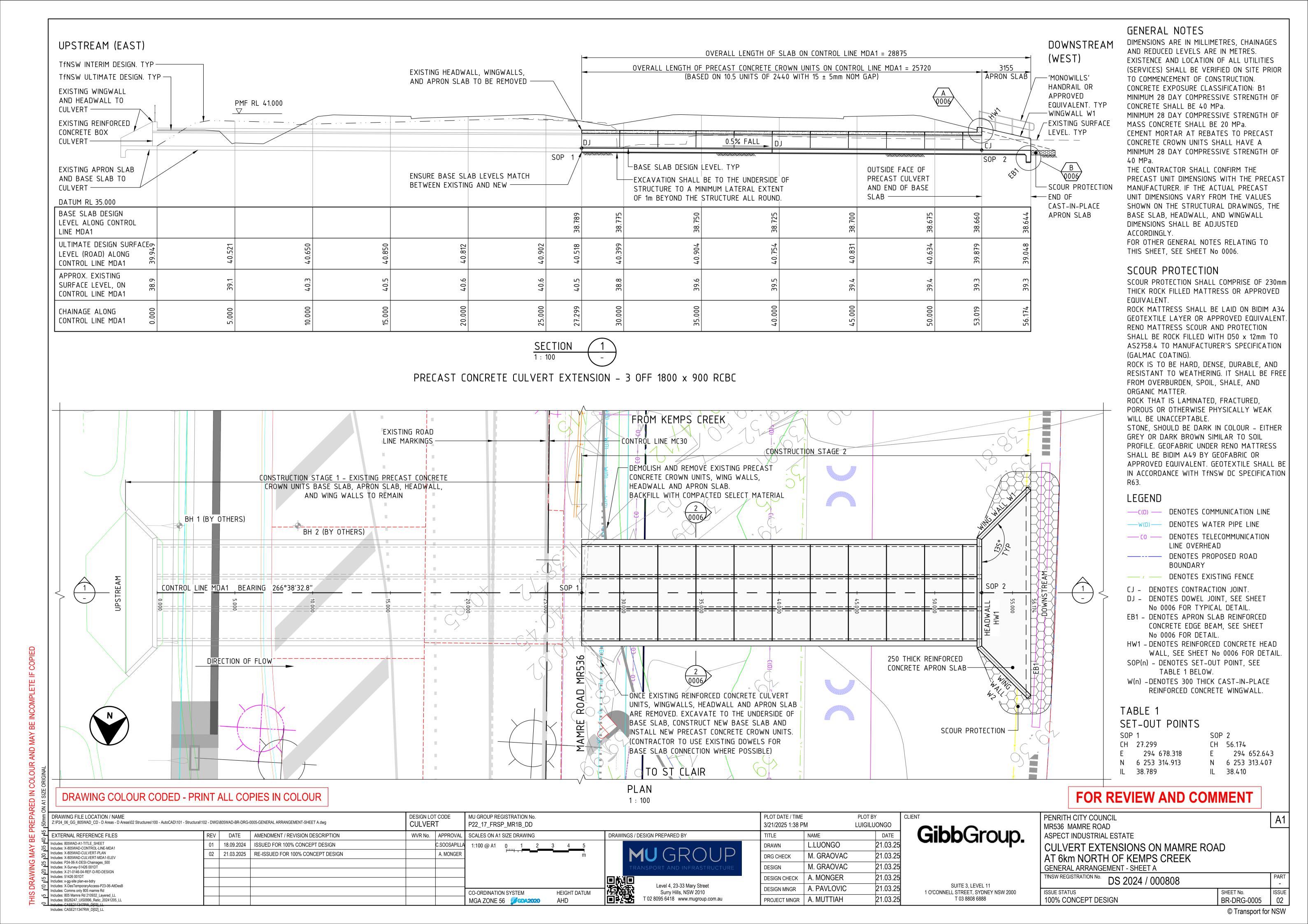


- (III) MAKE ANY OTHER ENQUIRIES AS THE CONTRACTOR
 CONSIDERS NECESSARY TO SATISFY ITSELF AS TO THE
 EXACT LOCATION OF UTILITY SERVICES; AND
- (IV) ENSURE THAT THE ADOPTED WORK METHOD WILL AVOID DAMAGE TO ALL UTILITIES.
- (V) CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF ALL UTILITY SERVICES.

FOR REVIEW AND COMMENT

PREPA	DRAWING FILE LOCATION / NAME Z:\P24_06_GG_805WAD_CD - D Areas - D Areas\02 Structures\100 - A	AutoCAD\101 - Structural\102 - DWG\805WAD-BR-DRG-0001-COVER SHEET.dwg		DESIGN LOT CODE MU GROUP REGISTRATION No. CULVERT P22_17_FRSP_MR1B_DD				PLOT DATE / TIME PLOT BY CL 3/21/2025 1:37 PM LUIGILUONGO		PENRITH CITY COUNCIL MR536 MAMRE ROAD	A1
E F	EXTERNAL REFERENCE FILES	REV DATE AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL SCALES ON A1 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY	TITLE	NAME	DATE	GibbGroup.	ASPECT INDUSTRIAL ESTATE	
Y B	Includes: 805WAD-A1-TITLE_SHEET	01 18.09.2024 ISSUED FOR 100% CONCEPT DESIGN		C.SOOSAPILLA		DRAWN	L.LUONGO	21.03.25	and a cap.	CULVERT EXTENSIONS ON MAMRE ROAD	
MA (02 21.03.2025 RE-ISSUED FOR 100% CONCEPT DESIGN		A. MONGER	MU GROUP	DRG CHECK	M. GRAOVAC	21.03.25		AT 6km NORTH OF KEMPS CREEK	
/ING					TRANSPORT AND INFRASTRUCTURE	DESIGN	M. GRAOVAC	21.03.25		COVER SHEET	
3AM						DESIGN CHEC	K A. MONGER	21.03.25		TfNSW REGISTRATION No. DS 2024 / 000808	PAR
S DF	2			CO-ORDINATION SYSTEM HEIGHT DATUI	Level 4, 23-33 Mary Street	DESIGN MNG	A. PAVLOVIC	21.03.25	SUITE 3, LEVEL 11 1 O'CONNELL STREET, SYDNEY NSW 2000	ISSUE STATUS SHEE	ET No. ISSU
THIS				MGA ZONE 56 GDA2020 AHD	T 02 8095 6418 www.mugroup.com.au	PROJECT MNO	GR A. MUTTIAH	21.03.25	T 03 8808 6888		DRG-0001 02

IIS DRAWING MAY BE PREPARED IN COLOUR AND M



GENERAL NOTES

FOR GENERAL NOTES RELATING TO THIS SHEET, SEE SHEET No 0005. CONCRETE MIX SHALL BE IN ACCORDANCE WITH TFNSW SPECIFICATION B80.

CURING SHALL BE IN ACCORDANCE WITH TINSW SPECIFICATION B80. EDGES SHALL BE CHAMFERED 20 x 20 AND RE-ENTRANT ANGLES FILLETED

20 x 20 UNLESS SPECIFIED OTHERWISE. NCF DENOTES NO CHAMFER OR FILLET.

ALL BACKFILL SHALL BE IN ACCORDANCE WITH TINSW DC R11, R44, AND B30 THE MAXIMUM DYNAMIC ROLLER COMPACTION LOAD IS 20 kN/m AND SHALL BE APPLIED AT A MINIMUM OF 1.5m FROM THE WINGWALL. COMPACTION EQUIPMENT USED TO COMPACT THE SELECT BACKFILL MATERIAL WITHIN 1.5m BEHIND THE WINGWALLS AND HEADWALL SHALL BE LIMITED TO PEDESTRIAN ROLLER OR PLATE COMPACTOR.

DIFFERENTIAL LOADING OF THE BOX CULVERTS DURING THE BACKFILL OPERATION SHALL BE AVOIDED, AS PER CL 6.6 OF AS 1597.6.

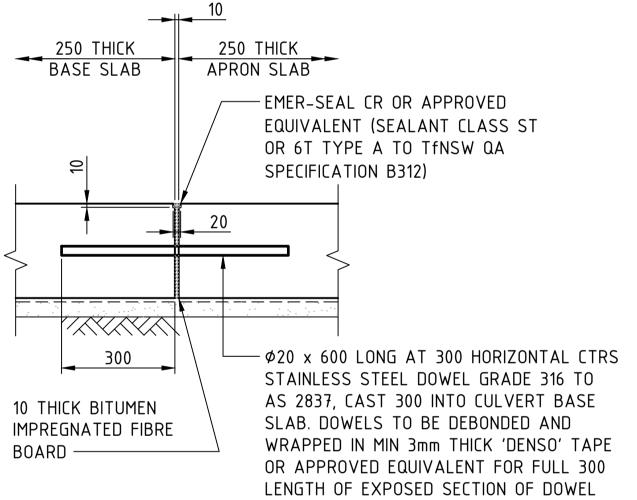
FOUNDING MATERIAL AND SUB-GRADE PREPARATION

THE FOUNDATION FOR THE RCBC SHALL BE PREPARED AS FOLLOWS:

- a) REMOVE AND STOCKPILE EXISTING EMBANKMENT FILL IF APPLICABLE. b) REMOVE TOPSOIL AND UNSUITABLE MATERIAL AND REPLACE WITH
- GENERAL FILL AS SPECIFIED FOR CULVERTS.
- c) THE FOUNDATION CONDITIONS SHALL BE VERIFIED ON SITE USING DYNAMIC CONE PENETRATION TESTS THIS CONSTITUTES A HOLD POINT AND SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.
- d) REPLACE WITH GENERAL FILL GRADED AND COMPACTED IN ACCORDANCE WITH THE TINSW DC R44 SPECIFICATION UP TO THE DESIGN FOUNDATION LEVEL.

LEGEND

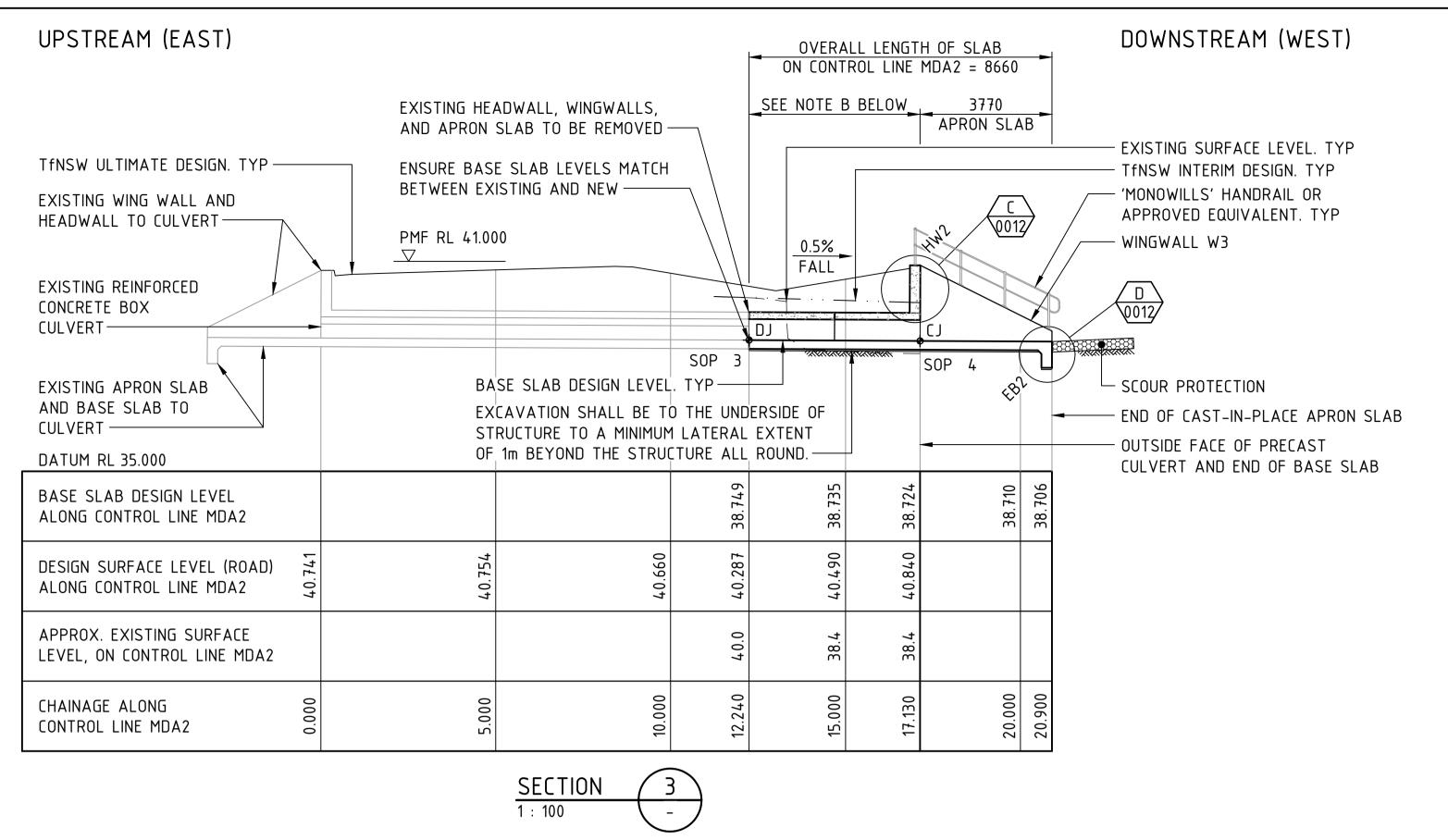
FOR LEGEND RELATING TO THIS SHEET. SEE SHEET No 0005.



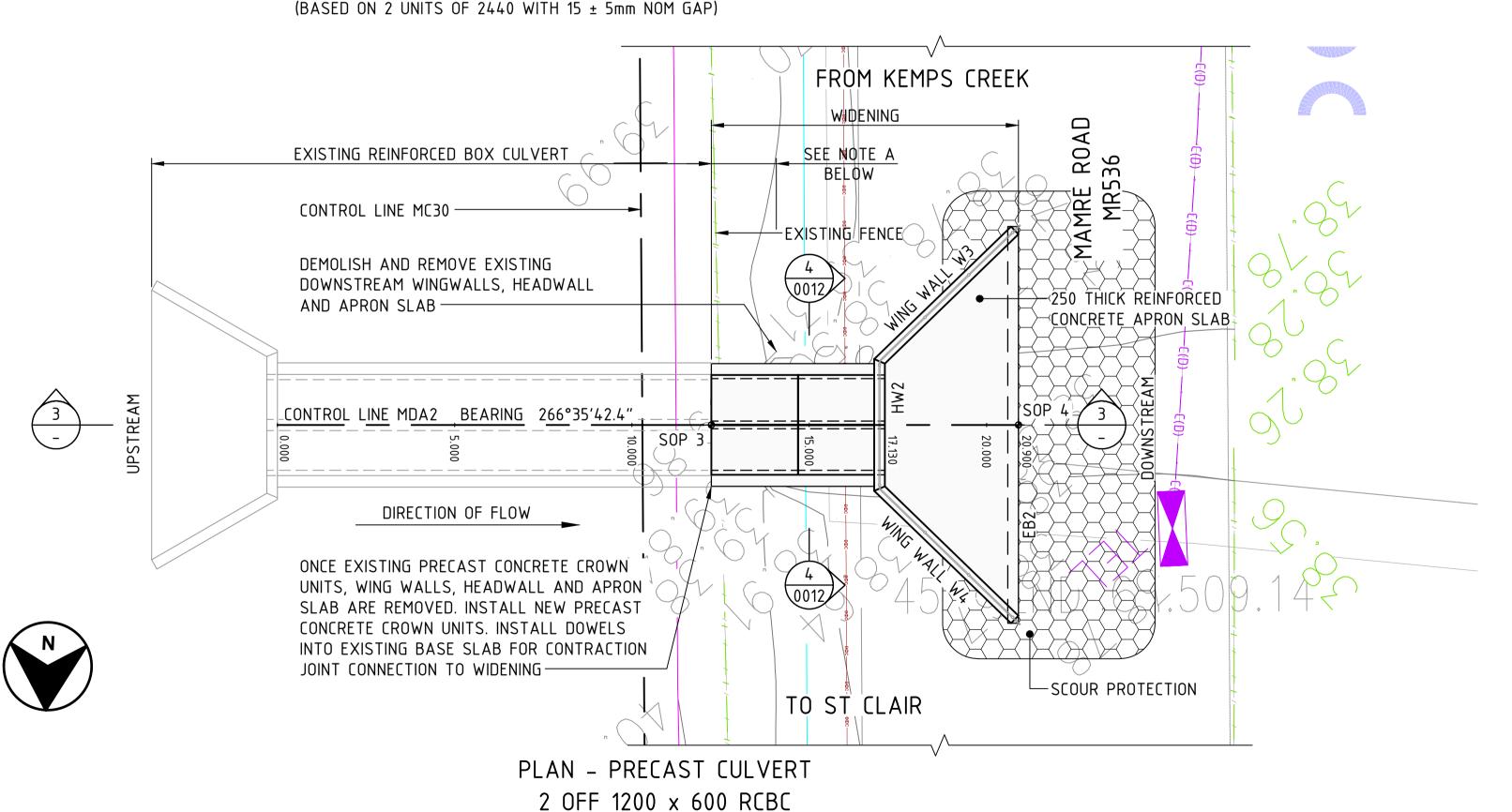
TYPICAL DOWEL JOINT SHOWN AS DJ 1 : 10

FOR REVIEW AND COMMENT

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EP/	DRAWING FILE LOCATION / NAME Z:\P24_06_GG_805WAD_CD - D Areas - D Areas\02 Structures\100 - AutoCAD\101 - Structural\1	102 - DWG\805WAD-BR-DRG-0006-GENERAL ARRANGEMENT-SHEET B.dwa	DESIGN LOT CODE	MU GROUP REGISTRATION No.		PLOT DATE / TIME	PLOT BY	CLIENT	PENRITH CITY COUNCIL	<u>م</u> ا
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三	EXTERNAL REFERENCE FILES	REV DATE AMENDMENT / REVISION DESCRIPTION	WVR No. APPROVAL	SCALES ON A1 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY	TITLE NAME	DATE	GibbGroup.	ASPECT INDUSTRIAL ESTATE	
Y E	Includes: 805WAD-A1-TITLE_SHEET	01 18.09.2024 ISSUED FOR 100% CONCEPT DESIGN	C.SOOSAPILL	A 1:25 @ A1 0 250 50 <u>0 75</u> 0 10 <u>00 12</u> 50		DRAWN L.LUONGO	21.03.25	Gibb Gi Gap.	CULVERT EXTENSIONS ON MAMRE ROAD	j
M/	2002	02 21.03.2025 RE-ISSUED FOR 100% CONCEPT DESIGN	A. MONGER	mm	MUGROUP	DRG CHECK M. GRAOVAC	21.03.25	5	AT 6km NORTH OF KEMPS CREEK	
/ING	6 <u>7</u>			1:10 @ A1	TRANSPORT AND INFRASTRUCTURE	DESIGN M. GRAOVAC	21.03.25	5	GENERAL ARRANGEMENT - SHEET B	
SAM	<u>र</u>			1	or with the second seco	DESIGN CHECK A. MONGER	21.03.25		TfNSW REGISTRATION No. DS 2024 / 000808	PA
<u> </u>	<u> </u>			CO ODDINATION CYCTEM LIFECUT DATUM	Level 4, 23-33 Mary Street	DESIGN MNGR A. PAVLOVIC	21.03.25	SUITE 3, LEVEL 11 1 O'CONNELL STREET, SYDNEY NSW 2000		HEET No. ISSI
THIS				CO-ORDINATION SYSTEM MGA ZONE 56	Level 4, 23-33 Mary Street Surry Hills, NSW 2010 T 02 8095 6418 www.mugroup.com.au	PROJECT MNGR A. MUTTIAH	21.03.25			BR-DRG-0006 02
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PRECAST CONCRETE CULVERT EXTENSION - 2 OFF 1200 x 600 RCBC NOTE B - OVERALL LENGTH OF PRECAST CONCRETE CROWN UNITS ON CONTROL LINE MDA2 = 4890



DRAWING COLOUR CODED - PRINT ALL CODIES IN COLOUR

NOTE A - EXISTING DRAINAGE PRECAST CONCRETE CROWN UNITS, APRON

1:100

DRAWING COLOUR COD	ED - PRINT	ALL CO	PIES IN COLOUR	SLAB, WING WALLS AND BASE SLAB TO BE DEMOLISHED							
DRAWING FILE LOCATION / NAME Z:\P24_06_GG_805WAD_CD - D Areas - D Areas\02 Structures\100 - Auto	oCAD\101 - Structural\102 - DW	G\805WAD-BR-DRG	G-0011-GENERAL ARRANGEMENT-SHEET C.dwg	DESIGN LO CULVER		MU GROUP REGISTRATION No. P22_17_FRSP_MR1B_DD		PLOT DAT 3/21/202			
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A1 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY	TITLE		
Includes: 805WAD-A1-TITLE_SHEET Includes: X-805WAD-CULVERT-PLAN	01	18.09.2024	ISSUED FOR 100% CONCEPT DESIGN		C.SOOSAPILLA	1:100 @ A1 0 1 2	3 4 5		DRAWN		
Includes: 51426 001DT Includes: X-805WAD-CONTROL-LINE-MDA2	02	21.03.2025	RE-ISSUED FOR 100% CONCEPT DESIGN		A. MONGER	 	m	MU GROUP	DRG CHEC		
Includes: X-805WAD-CULVERT-MDA2-ELEV Includes: P24-06-X-DESI-Chainages_500								TRANSPORT AND INFRASTRUCTURE	DESIGN		
Includes: X-21-0146-04-REF-D-RD-DESIGN Includes: x-gg-site plan-ex-bdry									DESIGN C		
Includes: 805 Mamre Rd 210932_Layered_LL Includes: B526247_UIS0996_Retic_20241205_LL								Level 4, 23-33 Mary Street			
Includes: CASE211347PW_D[03]_LL						CO-ORDINATION SYSTEM	HEIGHT DATUM	Surry Hills, NSW 2010	DESIGN M		
Includes: CASE211347RW_D[02]_LL Includes: Comms only 805 mamre Rd						MGA ZONE 56 GDA2020	AHD	Level 4, 23-33 Mary Street Surry Hills, NSW 2010 T 02 8095 6418 www.mugroup.com.au	PROJECT		

DATE / TIME PLOT BY 2025 1:37 PM LUIGILUONGO DATE NAME 21.03.25 L.LUONGO 21.03.25 M. GRAOVAC 21.03.25 M. GRAOVAC 21.03.25 A. MONGER IN CHECK 21.03.25 A. PAVLOVIC 21.03.25 PROJECT MNGR | A. MUTTIAH

GibbGroup.

SUITE 3, LEVEL 11 1 O'CONNELL STREET, SYDNEY NSW 2000 T 03 8808 6888

FOR REVIEW AND COMMENT

PENRITH CITY COUNCIL MR536 MAMRE ROAD ASPECT INDUSTRIAL ESTATE

GENERAL NOTES

BE 20 MPa.

No 0012.

COATING).

LEGEND

DIMENSIONS ARE IN MILLIMETRES, CHAINAGES AND REDUCED LEVELS ARE

MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 40

MINIMUM 28 DAY COMPRESSIVE STRENGTH OF MASS CONCRETE SHALL

CEMENT MORTAR AT REBATES TO PRECAST CONCRETE CROWN UNITS

SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 40 MPa.

DIMENSIONS VARY FROM THE VALUES SHOWN ON THE STRUCTURAL DRAWINGS, THE BASE SLAB, HEADWALL, AND WINGWALL DIMENSIONS

FOR OTHER GENERAL NOTES RELATING TO THIS SHEET, SEE SHEET

SCOUR PROTECTION SHALL COMPRISE OF 230mm THICK ROCK FILLED

ROCK MATTRESS SHALL BE LAID ON BIDIM A34 GEOTEXTILE LAYER OR

RENO MATTRESS SCOUR AND PROTECTION SHALL BE ROCK FILLED WITH

D50 x 12mm TO AS2758.4 TO MANUFACTURER'S SPECIFICATION (GALMAC

WEATHERING. IT SHALL BE FREE FROM OVERBURDEN, SPOIL, SHALE, AND

STONE, SHOULD BE DARK IN COLOUR - EITHER GREY OR DARK BROWN SIMILAR TO SOIL PROFILE. GEOFABRIC UNDER RENO MATTRESS SHALL BE

BIDIM A49 BY GEOFABRIC OR APPROVED EQUIVALENT. GEOTEXTILE

SHALL BE IN ACCORDANCE WITH TINSW DC SPECIFICATION R63.

— co — DENOTES TELECOMMUNICATION LINE OVERHEAD

DJ - DENOTES DOWEL JOINT, SEE SHEET No 0006 FOR TYPICAL DETAIL.

HW2 -DENOTES REINFORCED CONCRETE HEAD WALL, SEE SHEET No 0012

EB2 - DENOTES APRON SLAB REINFORCED CONCRETE EDGE BEAM

W(n) - DENOTES 300 THICK CAST-IN-PLACE REINFORCED CONCRETE

SOP(n) - DENOTES SET-OUT POINT, SEE TABLE 2 BELOW.

SOP 4

CH 17.130

IL 38.724

E 294 652.103

N 6 253 679.443

———— DENOTES PROPOSED ROAD BOUNDARY

ROCK IS TO BE HARD, DENSE, DURABLE, AND RESISTANT TO

ROCK THAT IS LAMINATED, FRACTURED, POROUS OR OTHERWISE

THE PRECAST MANUFACTURER. IF THE ACTUAL PRECAST UNIT

THE CONTRACTOR SHALL CONFIRM THE PRECAST UNIT DIMENSIONS WITH

EXISTENCE AND LOCATION OF ALL UTILITIES (SERVICES) SHALL BE

VERIFIED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

CONCRETE EXPOSURE CLASSIFICATION: B1

SHALL BE ADJUSTED ACCORDINGLY.

MATTRESS OR APPROVED EQUIVALENT.

PHYSICALLY WEAK WILL BE UNACCEPTABLE.

——C(D) — DENOTES COMMUNICATION LINE

——W(D) — DENOTES WATER PIPE LINE

— / — DENOTES EXISTING FENCE

SEE SHEET No 0012 FOR DETAIL.

CJ - DENOTES CONTRACTION JOINT.

FOR DETAIL.

WINGWALL.

SET-OUT POINTS

294 660.755

6 253 679.807

TABLE 2

CH 12.240

38.749

SOP 3

SCOUR PROTECTION

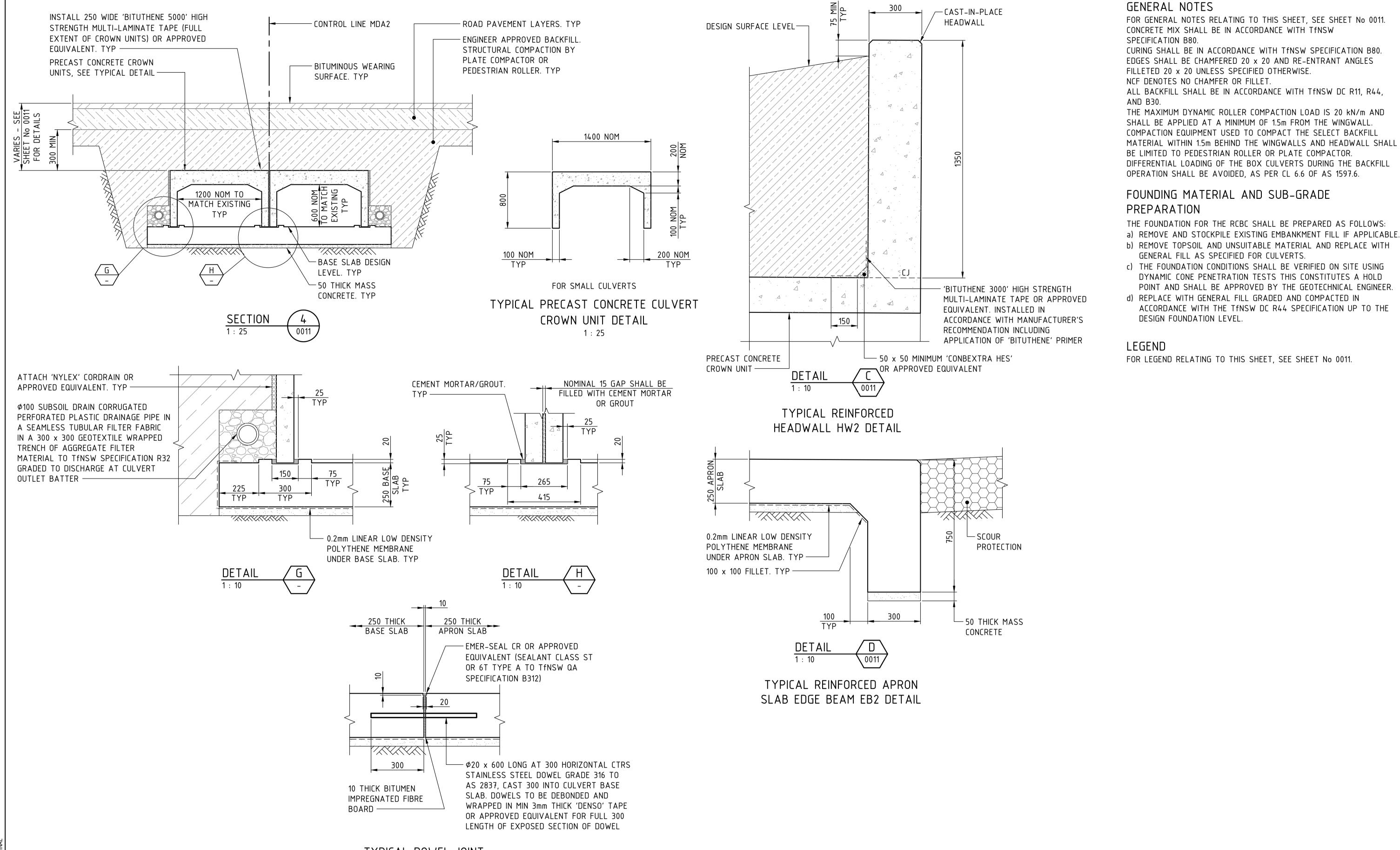
APPROVED EQUIVALENT

ORGANIC MATTER.

CULVERT EXTENSIONS ON MAMRE ROAD AT 6km NORTH OF KEMPS CREEK

GENERAL ARRANGEMENT - SHEET C TfNSW REGISTRATION No.

DS 2024 / 000808 ISSUE STATUS SHEET No. 100% CONCEPT DESIGN BR-DRG-0011



TYPICAL DOWEL JOINT SHOWN AS DJ

1:10

AHD

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

DRAWING FILE LOCATION / NAME **DESIGN LOT CODE** MU GROUP REGISTRATION No. Z:\P24_06_GG_805WAD_CD - D Areas - D Areas\02 Structures\100 - AutoCAD\101 - Structural\102 - DWG\805WAD-BR-DRG-0012-GENERAL ARRANGEMENT-SHEET D.dwg **CULVERT** P22_17_FRSP_MR1B_DD **EXTERNAL REFERENCE FILES** AMENDMENT / REVISION DESCRIPTION WVR No. | APPROVA SCALES ON A1 SIZE DRAWING ncludes: 805WAD-A1-TITLE_SHEET 18.09.2024 ISSUED FOR 100% CONCEPT DESIGN C.SOOSAPIL 0 250 500 750 1000 1250 02 21.03.2025 RE-ISSUED FOR 100% CONCEPT DESIGN A. MONGER 1:10 @ A1 CO-ORDINATION SYSTEM HEIGHT DATUM

DRAWINGS / DESIGN PREPARED BY Level 4, 23-33 Mary Street Surry Hills, NSW 2010 T 02 8095 6418 www.mugroup.com.au

PLOT DATE / TIME PLOT BY 3/21/2025 1:39 PM LUIGILUONGO DATE NAME 21.03.25 L.LUONGO DRAWN M. GRAOVAC 21.03.25 DRG CHECK 21.03.25 M. GRAOVAC DESIGN A. MONGER 21.03.25 **DESIGN CHECK** 21.03.25 A. PAVLOVIC **DESIGN MNGR** 21.03.25 PROJECT MNGR | A. MUTTIAH

GibbGroup.

SUITE 3, LEVEL 11 1 O'CONNELL STREET, SYDNEY NSW 2000 T 03 8808 6888

FOR REVIEW AND COMMENT

PENRITH CITY COUNCIL MR536 MAMRE ROAD ASPECT INDUSTRIAL ESTATE **CULVERT EXTENSIONS ON MAMRE ROAD**

AT 6km NORTH OF KEMPS CREEK GENERAL ARRANGEMENT - SHEET D

TfNSW REGISTRATION No. DS 2024 / 000808 ISSUE STATUS SHEET No. 100% CONCEPT DESIGN BR-DRG-0012