TECHNICAL AND PROJECT SERVICES
ESTIMATE CONCURRENCE REPORT

Roads & Maritime

PROJECT: Windsor Bridge Replacement over Hawkesbury River

ROAD No: Macquarie Street to Wilberforce Road **PROJECT No:** P.0011444

LOCATION: Windsor, Hawkesbury **PROJECT MANAGER**: Gurjit Singh

REGION/ OFFICE: Greater Sydney PO **ESTIMATE STATUS:** Post-tender

ESTIMATE OF P90 COST: $131M ($ March 2018) **DATE:** (12/04/2018)

ESTIMATE OF P90 $OT COST: $137M (construction June 2018 to August 2021)

Background

The project is located at Windsor in the Hawkesbury local government area about 57 kilometres north- west of Sydney. Windsor is a major historic town, with European settlement dating back to the late 1700s. Today it is predominantly rural, although there is extensive and expanding urban development to the south and west of the town. The existing Windsor Bridge was opened in 1874 and is the oldest existing bridge across the Hawkesbury River. It provides an important local link for communities on each side of the river, as well as an important regional link between western Sydney, the Blue Mountains and the Hunter region. Around 19,000 vehicles use the bridge each day, with around seven per cent of these being heavy vehicles.

Parts of the existing bridge are over 140 years old and are deteriorating as a result of age and heavy use. Elements of the bridge have deteriorated substantially and it is not practical to replace or repair these elements. The existing bridge and adjacent intersections no longer meet the demands of current peak hour traffic volumes or current road standards. The level of maintenance required to maintain adequate road safety is no longer cost effective and it is therefore regarded that the bridge has reached the end of its economic life.

In June 2008, in recognition of the condition of the existing bridge and the volume of traffic it carried, the New South Wales (NSW) Government announced funding for its replacement. Preliminary investigations of potential bridge replacement options along with stakeholder consultations were completed in 2012, followed by completion and public display of the Environmental Impact Statement (EIS) exhibition. The Infrastructure Approval was provided by the NSW Minister for Planning in December 2013 but was then appealed at the NSW Land and Environmental Court on the grounds that it would impact on Thompson Square. This appeal was led by the Community Action Group for Windsor Bridge. However, in 2015 the appeal was denied and the court allowed the project to proceed.

Status/Program

Milestone	Forecast Date*	P50 Forecast Date*	P90 Forecast Date*
Complete Concept Design	Completed	Completed	Completed
REF Display	Completed	Completed	Completed
REF Determination	Completed	Completed	Completed
Complete Detail Design	Completed	Completed	Completed
Invite Tenders	Completed	Completed	Completed
Commence Construction	June 2018	June 2018	June 2018
Complete Construction	August 2021	August 2021	August 2021
Handing over	September 2022	September 2022	September 2022

* The milestone dates are provided by the Project Manager based on the monthly forecast.

Scope

The project includes:

- A 2,445 m^2 new bridge 35 metres downstream of the existing Windsor Bridge
- New approach roads and intersections to connect the new bridge to the existing road network
- New traffic lights with pedestrian facilities at the intersection of Bridge Street and George Street
- A new dual lane roundabout at the intersection of Wilberforce Street and Freemans Reach Road
- Modifications to local roads and access arrangements, including changes to the Macquarie Park access road and reconnection of The Terrace
- Pedestrian and cyclist facilities, including a shared path connecting to and across the new bridge
- Removal and backfill of the existing bridge approach roads
- Removal of the existing bridge once the new bridge is operational
- Landscaping and urban design work, including within the Thompson Square parkland area and adjacent to the northern intersection of Wilberforce Road, Freemans Reach Road and the Macquarie Park access road.

Review Methodology

1. Arithmetic checks were carried out on the estimate spreadsheets.
2. Cursory checks were carried out on some items for appropriateness of the quantities and/or rates.
3. Reality check calculations were reviewed.
4. The estimate was discussed with the project manager and relevant adjustments were made.
5. Contingency was calculated from Monte Carlo simulation and deterministic approach was used for assigning contingency for each estimate component.
6. Estimate compared to previous estimate and variances were analysed.
7. Outturn dollars have been calculated based on the program and cash flow provided by the Project Manager.

Assessment of Key Components

1. Development

For Strategic and Concept Development, a base allowance of $18.38million (excluding project management costs) has been allowed in the estimate. This is 31.5% of the total construction cost (approximately $58.38million) which is significantly higher than the achieved range of 3-4% with a construction cost between $50million and $150million.

The higher incurred expenditure has largely been due to heritage investigation works undertaken for the EIS, further investigations in multiple options (i.e. bypass and maintaining existing bridge options) and to comply with the particularly onerous conditions of approval that were placed on the project which increased both scope and complexity of the development phases.

It should be also noted that the higher allowance is due to the internal cost transfers from the previous phases including Strategic Route Options, Concept, Detail Design and Construction which stopped due to the legal case in the Land and Environment Court. When the decision in the Land and Environment Court was announced in RMS's favour in Late 2015, RMS had complex Minister's Conditions of Approval that it had to work through as well as an extensive redesign which had to be completed. This has led to higher than expected costs in the Development Phase, which could not have been foreseen due to the lack of understanding of the scope of works at the time.

After considering all the above project matters, it is difficult to identify the actual cost for strategic and concept development only and compare with the achieved range for a construction cost between $50million and $150million. As such it is considered reasonable.

2. Investigation, Detail Design and Documentation

For Investigation, Detail Design and Documentation, a base allowance of $16.65million (excluding project management costs) has been allowed in the estimate. This represents 28.5% of the total construction cost (approximately $58.38million) and is significantly higher than the achieved range of 3-6% for projects with a construction cost between $50million and $150million.

Prior to receiving the Infrastructure Approval, an alliance was formed to take the project from concept to completion of construction. As part of their work the design progressed past concept into detailed design.

The subsequent Infrastructure Approval included a condition that the southern bridge approach was to be lowered by one metre, which then required substantial redesign. Additional other conditions, in particular those associated with archaeological studies have also necessitated redesign work and increased the scope.

Further cost increases have occurred during this phase due to changes to the scope of works on the archaeological investigations that were previously unforeseen.

It is noted that during the progress of detail design, the project team had to go through a substantial redesign works due to change in infrastructure approval conditions and change in scope of works due to archaeological investigation. Considering the need to redesign the elements of the new bridge and associated works along the project corridor, it is considered reasonable.

3. Property Acquisition

An allowance of $0.52million plus 10% contingency has been allowed for the property acquisition along the project corridor.

4. Utility Adjustment

A base allowance of $5.43million has been allocated for the following utilities works along the project corridor.

- Adjustments to electricity mains and street lighting
- Adjustments to water mains
- Adjustments to Telstra and NBN infrastructure
- Adjustments to Hawkesbury City Council's existing infrastructure

5. Infrastructure Construction

(a) Earthworks

The overall earthworks base rate is $\$61/m^3$ (for $13,600m^3$ of earthwork quantity). The earthwork in this case is cut/fill. The base rate is higher than the achieved rate in Sydney region for Cut/Fill between $\$40/m^3$ and $\$50/m^3$. The project scope in this case involves removal and backfill of existing bridge approach roads, improvements at the existing intersection, new dual lane roundabout and modification to existing local road arrangements. Considering the nature of works along the project corridor and sensitivity in terms of environmental and heritage requirements, it is considered acceptable.

(b) Pavement

A base rate of $\$244/m^2$ is allowed for the new pavement ($6650m^2$) on the main carriageway. The main pavement comprises of 240mm of heavily bound material, 7mm of seal, 130mm of AC20 intermediate layer followed by 50mm of AC14 wearing course and the achieved rates for similar pavement in Sydney region varies between $\$140/m^2$ and $\$170/m^2$. The base rate is higher than the achieved rate in Sydney region. The pavement works in the project involves mill and re-sheet, level correction, pavement rehabilitation and new pavement on the main carriageway and roundabout. As with earthworks, the pavement rates are higher due to the need to carry out smaller quantity of pavement works on different locations along the project corridor. With the possibility of lower production rates, it is considered reasonable.

(c) Structures

Description	**Area (m^2)**	**Base Rate/m^2**	**Achieved rate/m^2 for similar structures**
Five Span of 31.32m with the total length of 156.6m, 14.52m wide consist of 1850mm deep incrementally launched double T-girders	$2,274m^2$	$\$10,357/m^2$	*$\$7,000/m^2$- $7,900/m^2$

*BW004 bridge at Hunter Expressway and Cliff Bridge rates escalated to current dollars.

The base rate (excluding retaining walls, safety barrier and miscellaneous works) is $10,357/m2. The higher rate is due to the significant higher cost associated with piling and pier works and the complex methodology (incremental launching) for the construction of the new bridge. Also the availability of limited number of contractors on final tendering process may have increase the base rate significantly. As such it is considered reasonable.

Note: It is noted from the tender analysis that the average rate for some of the pay items such as the demolition of the bridge, earthworks, casting bed (for the incremental launching), precast pile caps and piling is substantially higher than the achieved range for similar projects. Considering that the construction of an incremental bridge is a specialised activity and completion of such a small incrementally launched bridge in an urban area with the site constraints of community, heritage, DPI approvals and other factors has meant that the tenderers have added additional risk factors to their tender prices.

It is also noted that the current market environment may also have contributed in the higher than normal tendered prices.

6. Project Management

The overall base Project Management cost is $8.95million which is 8.65% of the total project cost. A typical Project Management range for a development project of this size (project cost between $100M and $250M) would be between 4% - 5.5% depending on the complexity, nature and location of the works. The above project management percentage is higher than the achieved range due to the need to have ongoing discussion/liaison with internal and external stakeholders to mitigate number of non-engineering residual risks such as to obtain all necessary environmental and heritage approval before the award, continue to work with local community on the opposition of the project and negotiate the agreement with local council on the future maintenance responsibilities of the assets. After taking into account all the above matters, the higher project management percentage is considered acceptable.

7. Reality Checks/Project Cost Summary

Item	Unit	Base $	Achieved Range for similar projects
1. Project Cost/km	Km	$103.44M	
2. Project Cost/Lane-km	Lane-km	$51.72M	
3. Infrastructure Cost/Lane-km (excl. Bridge/Structures)	Lane-km	$12.41M	

The Infrastructure construction cost per lane-km rate (excluding bridge/structures/utilities) is $12.41million. This is primarily a bridge project with the road upgrades on the bridge approach and departure to support the future movement of traffic through the area. The higher infrastructure cost is due to the high proportion of work associated with structure and the contractor allowing for additional risk and complexity involved with onerous Minister's condition of approval in specific in earthworks and pavement works in the project. Considering the current status of the estimate, it is considered acceptable.

Conclusions and Recommendation

The rates and contingencies listed are considered to be appropriate for this stage of development.

It is recommended that concurrence now be given to the P50 Post-tender Cost of $124M ($ December 2017) with an outturn cost of $130M and P90 Post-tender Cost of $131M ($ December 2017) with an outturn cost of $137M, assuming that the construction commences in June-2018 with completion being achieved in August-2021 with an escalation rate of 3% for the project Windsor Bridge Replacement over Hawkesbury River.

This concurrence is not an approval to the estimate. Approval must be obtained from the appropriate person in accordance with the Delegated Authorities.

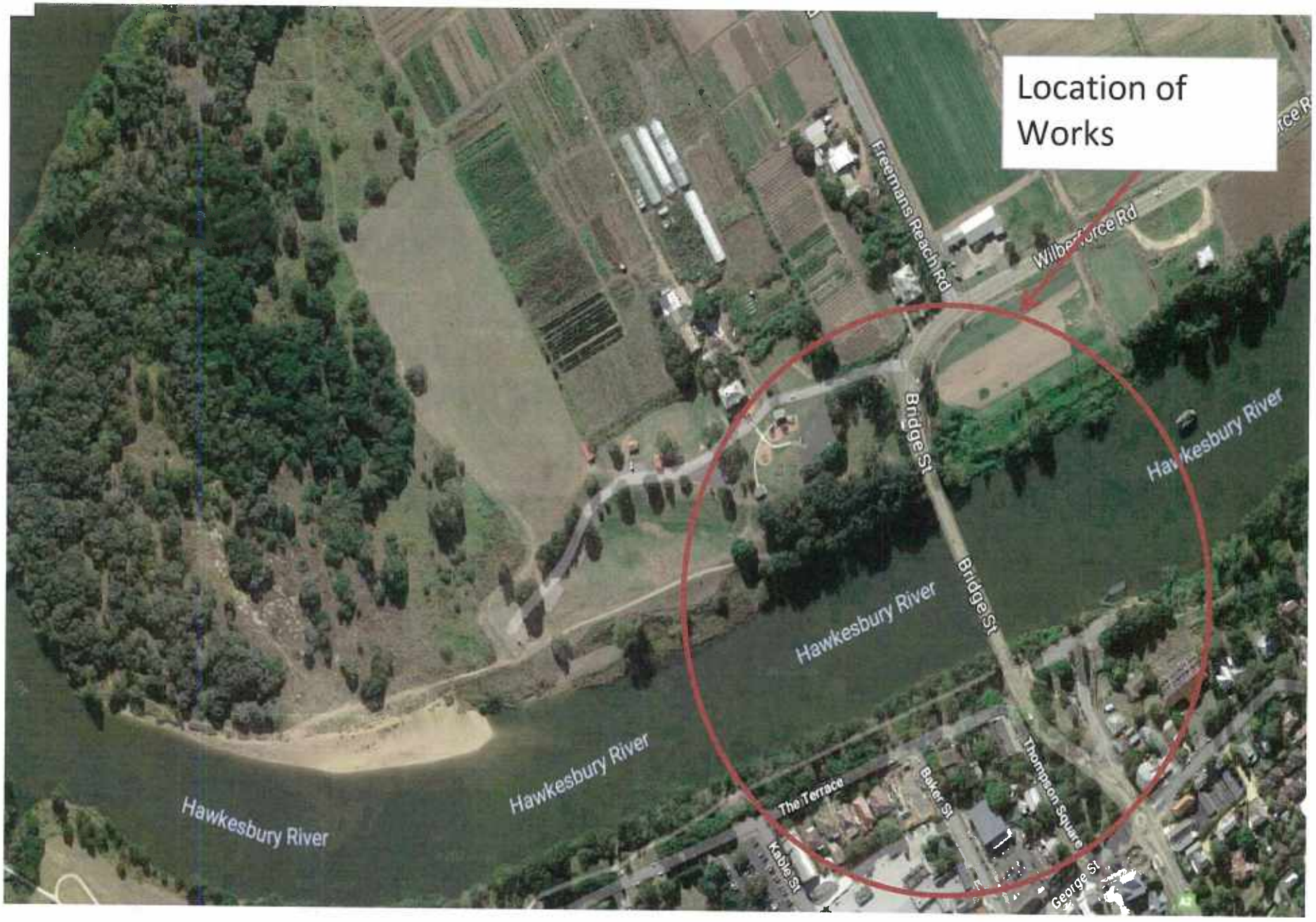
Ankit Sheth
Estimating Officer

Nages Nageswaran
Engineering Estimating Manager
Project Services
Technical and Project Services
Date: 19/04/18

Bruce Taggart
Director Project Support
Project Services
Technical and Project Services
Date: 19/4/18

Appendix I

Location Map


Location of Works
Freemans Reach Rd
Wilberforce Rd
Bridge St
Bridge St
Hawkesbury River
Hawkesbury River
Hawkesbury River
Hawkesbury River
The Terrace
Baker St
Thompson Square
Kable St
George St

Appendix 2

Estimate

- Project Cost Summary
- Deterministic/Empirical Estimate
- Probabilistic Estimate
- Outturn Calculation
- Probabilistic Outturn Calculation

Appendix 3

Risk Register

Appendix 4

Drawings

Transport
Roads & Maritime
Services

HAWKESBURY CITY COUNCIL AREA

MR182 - BRIDGE STREET, WINDSOR

WINDSOR BRIDGE REPLACEMENT

FROM MACQUARIE STREET TO WILBERFORCE ROAD

DETAILED DESIGN
VOLUME 05
PAVEMENT & KERBS

DRAWING DOCUMENTATION

VOLUME	DISCIPLINE DESCRIPTION
01	GENERAL
02	ROADWORKS
03	DRAINAGE & WATER QUALITY
04	UTILITIES
05	PAVEMENT & KERBS
06	PAVEMENT MARKING, SIGNS, BARRIERS AND STREET FURNITURE
07	PROPERTY WORKS
08	GEOTECHNICAL
09	SCOUR PROTECTION
10	MINOR STRUCTURES
11	MAJOR STRUCTURES
12	LANDSCAPE DESIGN
13	SUPPLEMENTARY DRAWINGS

LOCALITY SKETCH
NOT TO SCALE

FOR TENDER

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DRAWING FILE LOCATION / NAME
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LINEAR REFERENCING
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PLOT DATE / TIME 19/10/2017 11:12:16 AM
PLOT BY PARISH, JORDAN

PREPARED BY
JACOBS
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North Sydney SYDNEY NSW 2060
AUSTRALIA
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Web: www.jacobs.com

DESIGNED	REVIEWED	VERIFIED
SIGNED	SIGNED	SIGNED
NAME	NAME	NAME
TITLE	TITLE	TITLE
DATE	DATE	DATE

RMS PROJECT MANAGER
NAME GURJIT SINGH
TITLE PROJECT MANAGER

VALIDATION AND ACCEPTANCE OF THESE DRAWINGS AND THE DESIGN SHOWN THEREON IS TO BE CARRIED OUT UNDER SEPARATE PROCESS

CLIENT
Transport Roads & Maritime Services

PREPARED FOR
GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS COVER SHEET

A3

RMS PROJECT No. P.0011444
DESIGN PROJECT No NB98005
RMS REGISTRATION No DS2012 / 000289
VOL. 05
ISSUE STATUS DETAILED DESIGN - TENDER ISSUE
EDMS No
SHEET No. 0501
2

PAVEMENT & KERBS - DRAWING INDEX

DRAWING NUMBER	DRAWING TITLE
	GENERAL
NB98005-ECC-DG-0501	PAVEMENT & KERBS COVER SHEET
NB98005-ECC-DG-0502	PAVEMENT & KERBS DRAWING INDEX
NB98005-ECC-DG-0503	PAVEMENT & KERBS GENERAL NOTES
	PAVEMENT PLANS
NB98005-ECC-DG-0521	PAVEMENT & KERBS PLAN SHEET 1
NB98005-ECC-DG-0522	PAVEMENT & KERBS PLAN SHEET 2
NB98005-ECC-DG-0523	PAVEMENT & KERBS PLAN SHEET 3
NB98005-ECC-DG-0524	PAVEMENT & KERBS PLAN SHEET 4
NB98005-ECC-DG-0525	PAVEMENT & KERBS PLAN SHEET 5
NB98005-ECC-DG-0526	PAVEMENT & KERBS PLAN SHEET 6
NB98005-ECC-DG-0527	PAVEMENT & KERBS PLAN SHEET 7
NB98005-ECC-DG-0528	PAVEMENT & KERBS PLAN SHEET 8
	PAVEMENT PROFILES
NB98005-ECC-DG-0531	PAVEMENT & KERBS PROFILES SHEET 1
NB98005-ECC-DG-0532	PAVEMENT & KERBS PROFILES SHEET 2
	INTERFACE DETAILS
NB98005-ECC-DG-0541	PAVEMENT & KERBS INTERFACE DETAILS SHEET 1
NB98005-ECC-DG-0542	PAVEMENT & KERBS INTERFACE DETAILS SHEET 2
NB98005-ECC-DG-0543	PAVEMENT & KERBS INTERFACE DETAILS SHEET 3
	EDGE DETAILS
NB98005-ECC-DG-0551	PAVEMENT & KERBS EDGE DETAILS SHEET 1
NB98005-ECC-DG-0552	PAVEMENT & KERBS EDGE DETAILS SHEET 2
NB98005-ECC-DG-0553	PAVEMENT & KERBS EDGE DETAILS SHEET 3
NB98005-ECC-DG-0554	PAVEMENT & KERBS EDGE DETAILS SHEET 4
NB98005-ECC-DG-0555	PAVEMENT & KERBS EDGE DETAILS SHEET 5
NB98005-ECC-DG-0556	PAVEMENT & KERBS EDGE DETAILS SHEET 6
NB98005-ECC-DG-0557	PAVEMENT & KERBS EDGE DETAILS SHEET 7
	RIGID PAVEMENT DETAILS
NB98005-ECC-DG-0561	PAVEMENT & KERBS RIGID PAVEMENT DETAILS SHEET 1
NB98005-ECC-DG-0562	PAVEMENT & KERBS RIGID PAVEMENT DETAILS SHEET 2
NB98005-ECC-DG-0563	PAVEMENT & KERBS RIGID PAVEMENT DETAILS SHEET 3
NB98005-ECC-DG-0564	PAVEMENT & KERBS RIGID PAVEMENT DETAILS SHEET 4
	PAVING DETAILS
NB98005-ECC-DG-0571	PAVEMENT & KERBS PAVING DETAILS SHEET 1
	KERB DETAILS
NB98005-ECC-DG-0581	PAVEMENT & KERBS KERB AND GUTTER DETAILS SHEET 1
	SUBSURFACE DRAINAGE PLANS
NB98005-ECC-DG-0591	SUBSURFACE DRAINAGE PLAN SHEET 1
NB98005-ECC-DG-0592	SUBSURFACE DRAINAGE PLAN SHEET 2
NB98005-ECC-DG-0593	SUBSURFACE DRAINAGE PLAN SHEET 3
NB98005-ECC-DG-0594	SUBSURFACE DRAINAGE PLAN SHEET 4
NB98005-ECC-DG-0595	SUBSURFACE DRAINAGE PLAN SHEET 5
NB98005-ECC-DG-0596	SUBSURFACE DRAINAGE PLAN SHEET 6
NB98005-ECC-DG-0597	SUBSURFACE DRAINAGE PLAN SHEET 7
NB98005-ECC-DG-0598	SUBSURFACE DRAINAGE PLAN SHEET 8

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		DATE
	JP	03.11.17
DRAFTING CHECK		03.11.17
		03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE

CO-ORDINATE SYSTEM: MGA Zone 56 HEIGHT DATUM: A.H.D

25 mm ON A3 ORIGINAL

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NSW GOVERNMENT Transport Roads & Maritime Services

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PROJECT

HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
DRAWING INDEX

STATUS: FOR TENDER

VOLUME	RMS REGISTRATION No	
05	DS2012/000289	
PHASE	DRAWING No	REV
IFT	NB98005-ECC-DG-0502	2

GENERAL

1. THE LIMITS OF WORK SHOWN ON THE PLANS REPRESENT THE EXTENT OF PAVEMENT WORKS. OTHER DESIGN ELEMENTS MAY EXTEND BEYOND THE LIMITS SHOWN AS DETAILED IN OTHER DRAWING VOLUMES.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS, STATIONS AND COORDINATES ARE IN METRES.
3. DO NOT OBTAIN DIMENSIONS BY SCALING FROM THE DRAWINGS.
4. REFER ANY DISCREPANCY TO THE PRINCIPAL BEFORE PROCEEDING WITH THE WORKS.
5. EXISTING PAVEMENT DETAILS ARE NOTIONAL WHERE SHOWN.
6. NOMINATION OF A PROPRIETARY ITEM INDICATES THE REQUIRED PROPERTIES OF THE ITEM AND NOT EXCLUSIVE PREFERENCE.
7. INTERMEDIATE AC20 COURSES OF DEEP STRENGTH ASPHALT PAVEMENTS MUST NOT BE USED AS TEMPORARY WEARING COURSES. WHERE A TEMPORARY WEARING COURSE IS REQUIRED FOR SUCH PAVEMENTS TO SUIT CONSTRUCTION STAGING, SUBSTITUTE THE UPPER 65 MILLIMETRES OF AC20 WITH 65 MILLIMETRES AC14 AR450.
8. ASPHALT WEARING COURSE MUST NOT BE PLACED WHERE TEMPORARY PAVEMENT MARKING IS REQUIRED. PLACE ASPHALT WEARING COURSE IMMEDIATELY PRIOR TO FINAL PAVEMENT MARKING.
9. ALL UTILITY SERVICE FITTINGS AND STORMWATER DRAINAGE PITS POSITIONED WITHIN THE PAVEMENT MUST BE INSTALLED FLUSH WITH FINISHED SURFACE LEVEL.

CONSTRUCTION REQUIREMENTS

10. TEMPORARY PAVEMENTS TO BE CONSTRUCTED IN ACCORDANCE WITH RMS G10.
11. KERBS AND GUTTERS TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R15.
12. TRENCH AND INTERFACE DRAINS TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R33.
13. EARTHWORKS TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R44.
14. UNBOUND PAVEMENT COURSE TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R71.
15. HEAVILY BOUND PAVEMENT COURSE TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R73.
16. PLAIN CONCRETE PAVEMENT (PCP) TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R83.
17. SPRAYED SEALS TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R106.
18. HEAVY DUTY DENSE GRADED ASPHALT COURSE TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R116.
19. LIGHT DUTY DENSE GRADED ASPHALT COURSE TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R117.
20. MEDIANS, APRONS, FOOTWAYS AND DRIVEWAYS TO BE CONSTRUCTED IN ACCORDANCE WITH RMS R173.
21. HEAVY PATCHING OF FLEXIBLE PAVEMENTS TO BE CONSTRUCTED IN ACCORDANCE WITH RMS M250.

MATERIAL REQUIREMENTS

22. VERGE MATERIAL TO BE IN ACCORDANCE WITH RMS R44.
23. CONCRETE FOR MEDIANS, APRONS, KERBS AND GUTTERS, FOOTWAYS, DRIVEWAYS AND BLINDING LAYERS TO BE IN ACCORDANCE WITH RMS R53.
24. CEMENT MORTAR TO BE IN ACCORDANCE WITH RMS R53.
25. WIRE MESH FABRIC TO BE IN ACCORDANCE WITH RMS R53.
26. GEOTEXTILE TO BE IN ACCORDANCE WITH RMS R63.
27. ASPHALT INFILL TO COMPRISE AC20 AR450 IN ACCORDANCE WITH RMS R117.
28. COLD APPLIED ELASTOMERIC JOINT SEALANT TO BE IN ACCORDANCE WITH RMS B312.
29. SPRAYED BITUMINOUS WATERPROOFING MEMBRANE TO BE IN ACCORDANCE WITH RMS B344.
30. DGB20 MATERIAL TO BE IN ACCORDANCE WITH RMS 3051.
31. SELECTED MATERIAL TO BE IN ACCORDANCE WITH RMS 3071.
32. COVER AGGREGATE FOR SPRAYED SEALS TO BE IN ACCORDANCE WITH RMS 3151.
33. AGGREGATES FOR ASPHALT TO BE IN ACCORDANCE WITH RMS 3152.
34. PREFORMED JOINT FILLER TO BE IN ACCORDANCE WITH RMS 3204.
35. NO FINES CONCRETE TO BE IN ACCORDANCE WITH RMS 3222.
36. POLYMER MODIFIED BINDER TO BE IN ACCORDANCE WITH RMS 3252.
37. BITUMEN BINDER TO BE IN ACCORDANCE WITH RMS 3253.
38. CORRUGATED PERFORATED PLASTIC DRAINAGE PIPE TO BE IN ACCORDANCE WITH RMS 3552. CAPS AND OTHER FITTINGS TO CONFORM WITH AUSTRALIAN STANDARD AS2439.1.
39. AGGREGATE FILTER MATERIAL TO BE IN ACCORDANCE WITH RMS 3580.
40. ASPHALT REINFORCEMENT GRID TO COMPRISE HATELIT C 40/17 MANUFACTURED BY HUESKER OR APPROVED EQUIVALENT.
41. BRICKS TO COMPRISE BOWRAL BLUE MANUFACTURED BY AUSTRAL BRICKS OR APPROVED EQUIVALENT. SUBMIT SAMPLE TO THE PRINCIPAL FOR APPROVAL BEFORE USE.
42. BEDDING MATERIAL TO BE IN ACCORDANCE WITH TABLE 1. MOISTURE CONTENT AT TIME OF PLACEMENT TO BE IN THE RANGE OF FOUR TO EIGHT PERCENT.
43. JOINT FILLING MATERIAL TO BE IN ACCORDANCE WITH TABLE 2. AT THE TIME OF PLACEMENT, BOTH JOINT FILLING MATERIAL AND BRICK UNITS MUST BE AS DRY AS PRACTICABLE.

STANDARD DRAWINGS

44. ASPHALT JOINTS TO BE IN ACCORDANCE WITH RMS PAVEMENT STANDARD DRAWINGS DS2012/001329 (ED 1, REV 0).
45. SHARED PATH JOINT DETAILS TO BE IN ACCORDANCE WITH RMS PAVEMENT STANDARD DRAWING DS2012/000293 SHEET 1 (ED 1, REV 0).
46. PCP DETAILS TO BE IN ACCORDANCE WITH RMS PAVEMENT STANDARD DRAWINGS DS2012/001191 (ED 4, REV 0).
47. STANDARD KERB AND GUTTER SHAPES TO BE IN ACCORDANCE WITH RMS STANDARD DRAWING R0300-01 SHEET 1 (REV 1).
48. VEHICULAR CHANNEL CROSSINGS TO BE IN ACCORDANCE WITH RMS STANDARD DRAWING R0300-04 SHEET 1 (REV 1).
49. KERB RAMPS TO BE IN ACCORDANCE WITH RMS STANDARD DRAWING R0300-11 SHEETS 1 TO 3 (REV 0).
50. BATTER OUTLET STRUCTURES TO BE IN ACCORDANCE WITH RMS STANDARD DRAWING MD.R33.A04 SHEETS 1 AND 2 (ED D, REV 0).

TABLE 1 - GRADING FOR BEDDING MATERIAL

SIEVE SIZE	% PASSING
9.52mm	100
4.75mm	95 - 100
2.36mm	80 - 100
1.18mm	50 - 85
600µm	25 - 60
300µm	10 - 30
150µm	5 - 15
75µm	0 - 10

TABLE 2 - GRADING FOR JOINT FILLING MATERIAL

SIEVE SIZE	% PASSING
2.36mm	100
1.18mm	90 - 100
600µm	60 - 90
300µm	30 - 60
150µm	15 - 30
75µm	5 - 10

	DATE	DESCRIPTION			APPROVAL
	03.11.17	ISSUED FOR TENDER	SH	BDP	TR
	01.09.17	ISSUED FOR TENDER		BDP	TR
		NOT USED			

TITLE	INITIAL	DATE
	JP	03.11.17
		03.11.17
		03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE

CO-ORDINATE SYSTEM: MGA Zone 56 | HEIGHT DATUM: AHD

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CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

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GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

PROJECT
HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
GENERAL NOTES

STATUS: FOR TENDER

VOLUME: 05 | RMS REGISTRATION No: DS2012/000289

IFT | DRAWING No: NB98005-ECC-DG-0503 | REV: 2

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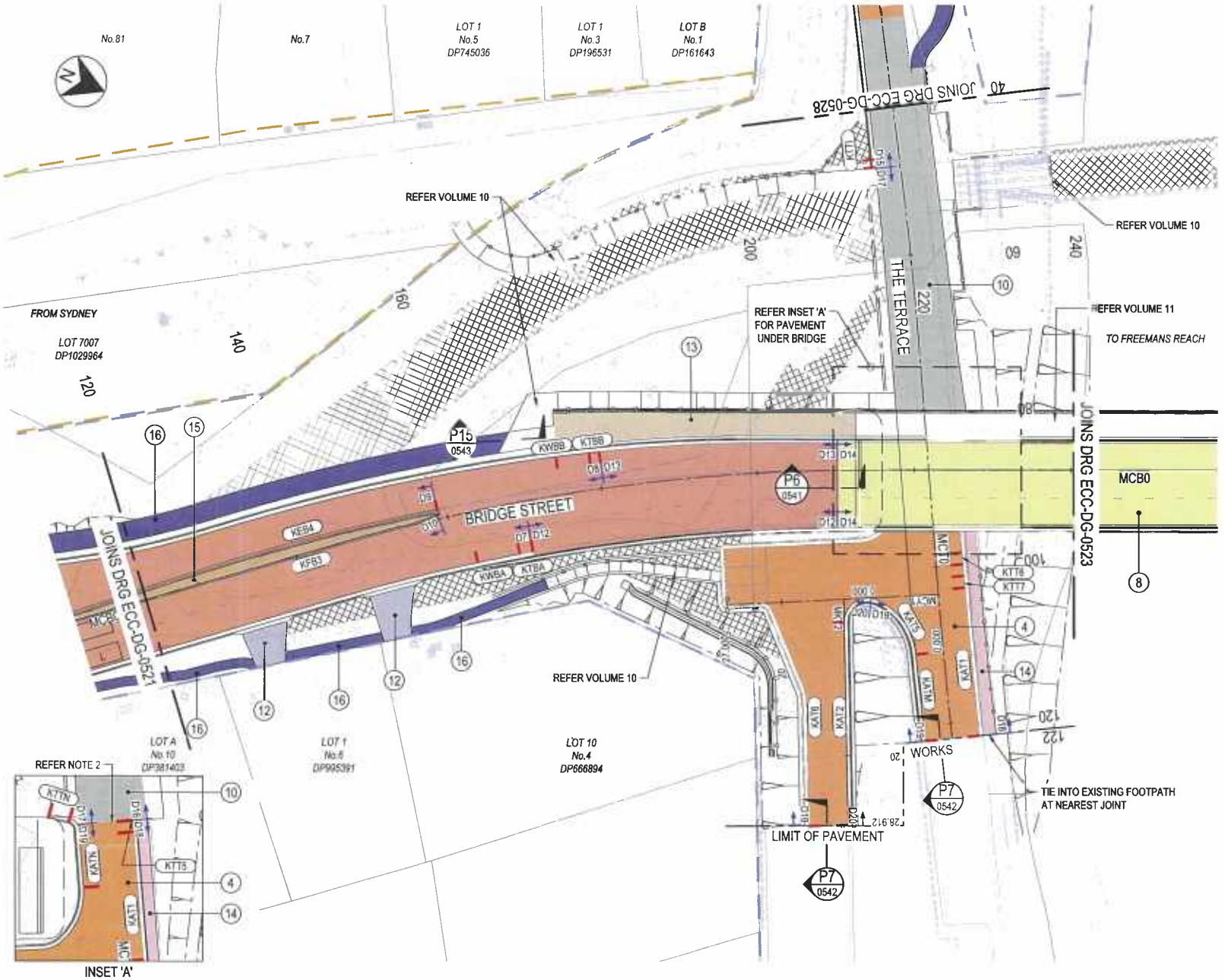


LEGEND

FOR REFERENCE

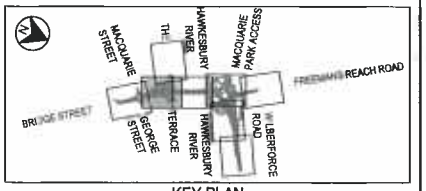
- EXISTING PROPERTY BOUNDARY
- CONSTRUCTION WORK ZONE
- WORKS SUBJECT TO FURTHER COUNCIL AND STAKEHOLDER CONSULTATION
- ARCHAEOLOGICAL DEPOSIT ZONE
- CONTROL LINE

PAVEMENT AND KERBS

- PAVEMENT TYPE 1 - MAIN CARRIAGEWAY
- PAVEMENT TYPE 2 - ROUNDABOUT
- PAVEMENT TYPE 3 - WIDENING
- PAVEMENT TYPE 4 - LOCAL ROAD
- PAVEMENT TYPE 5 - REHABILITATION
- PAVEMENT TYPE 6 - LEVEL CORRECTION
- PAVEMENT TYPE 7 - MILL AND RE-SHEET
- PAVEMENT TYPE 8 - BRIDGE DECK
- PAVEMENT TYPE 9 - ROUNDABOUT APRON
- PAVEMENT TYPE 10 - SHARED ZONE
- PAVEMENT TYPE 11 - RAISED MEDIAN
- PAVEMENT TYPE 12 - DRIVEWAY
- PAVEMENT TYPE 13 - SHARED PATH
- PAVEMENT TYPE 14 - FOOTPATH
- PAVEMENT TYPE 15 - PAVED MEDIAN
- PAVEMENT TYPE 16 - PAVED PATH
- EXISTING PAVEMENT TO BE REMOVED
- (1) PAVEMENT TYPE LABEL (REFER NB98005-ECC-DG-0531 TO 0532)
- PX INTERFACE DETAIL (REFER NB98005-ECC-DG-0541 TO 0543)
- DX|DX EDGE DETAIL START/END (REFER NB98005-ECC-DG-0551 TO 0557)
- KXXX KERB/GUTTER TAG (REFER NB98005-ECC-DG-0581)
- KERB/GUTTER STRING START/END (REFER NB98005-ECC-DG-0581)

NOTES

1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.
2. FOR PAVEMENT TYPE 10 INTERFACE DETAILS REFER NB98005-ECC-DG-561 TO 562.



KEY PLAN

ISSUE	DATE	DESCRIPTION	BOP	TR
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DRAWN	JP	03.11.17
DESIGNED	CW	03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:500 5 0 5 10 AT A3
CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: AHD

DRAWING / DESIGN PREPARED BY
JACOBS
177 Pacific Highway, North Sydney NSW 2060 AUSTRALIA
Tel (02) 9928 2100 Fax (02) 9928 2500
Web www.jacobs.com

CLIENT
NSW GOVERNMENT Transport Roads & Maritime Services
PREPARED FOR
GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

PROJECT
HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PLAN
SHEET 2

DESIGN MODEL FILES USED FOR DOCUMENTATION OF THIS DRAWING
DS2012-000289-DES-WINDSOR-171103

STATUS: FOR TENDER

VOLUME	RMS REGISTRATION No	REV
05	DS2012/000289	
PHASE: IFT	DRAWING No: NB98005-ECC-DG-0522	2

DATE: 30/10/2017 8:54:15 AM LOGIN NAME: PARISH, JORDAN
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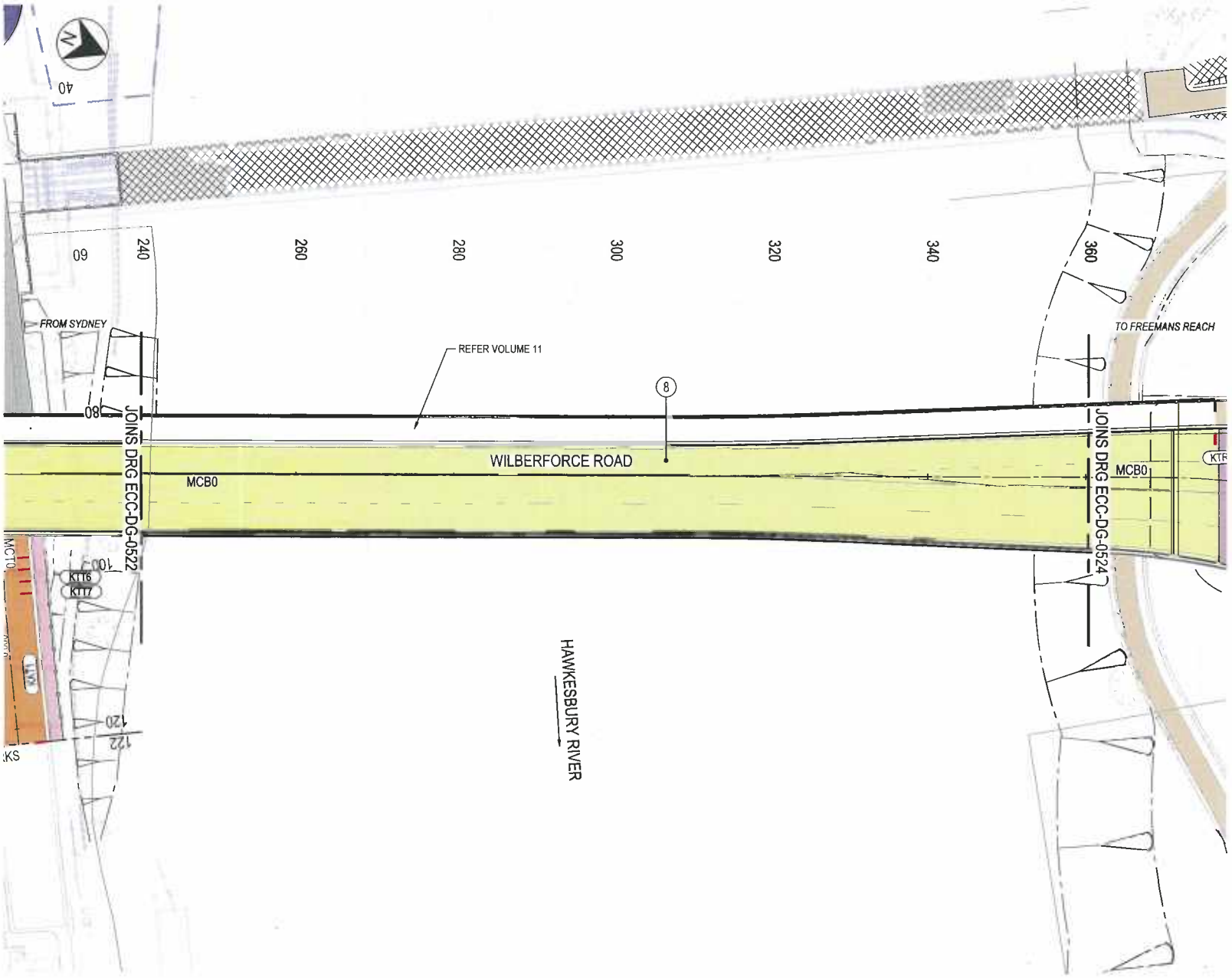

LEGEND

FOR REFERENCE

- EXISTING PROPERTY BOUNDARY
- CONSTRUCTION WORK ZONE
- WORKS SUBJECT TO FURTHER COUNCIL AND STAKEHOLDER CONSULTATION
- ARCHAEOLOGICAL DEPOSIT ZONE
- CONTROL LINE

PAVEMENT AND KERBS

- PAVEMENT TYPE 1 - MAIN CARRIAGEWAY
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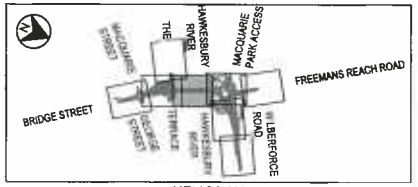
- EXISTING PAVEMENT TO BE REMOVED
- (1) PAVEMENT TYPE LABEL (REFER NB98005-ECC-DG-0531 TO 0532)
- PX INTERFACE DETAIL (REFER NB98005-ECC-DG-0541 TO 0543)
- DX|DX EDGE DETAIL START/END (REFER NB98005-ECC-DG-0551 TO 0557)
- KXXX KERB/GUTTER TAG (REFER NB98005-ECC-DG-0581)
- KERB/GUTTER STRING START/END (REFER NB98005-ECC-DG-0581)

NOTES

1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.



KEY PLAN

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	INITIAL	DATE
		03.11.17
		03.11.17
	CW	03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:500 5 0 5 10 AT A3
CO-ORDINATE SYSTEM: MGA Zone 56 | HEIGHT DATUM: AHD

DRAWING PREPARED BY
JACOBS
177 Pacific Highway
North Sydney, SYDNEY, NSW 2060
AUSTRALIA
Tel: (02) 9928 2100 Fax: (02) 9928 2500
Web: www.jacobs.com

CLIENT
NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR
GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

PROJECT
HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PLAN
SHEET 3

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
DS2012-000289-DES-WINDSOR-171103

STATUS
FOR TENDER

VOLUME 05
RMS REGISTRATION No DS2012/000289
DRAWING No NB98005-ECC-DG-0523
REV 2
IFT

DATE: 30/10/2017 8:54:18 AM LOGIN NAME: PARISH, JORDAN
LOCATION: C:\Users\parisj\appdata\local\projectwise\wms_projects\dms00627\NB98005-ECC-DG-0521-0528.dwg

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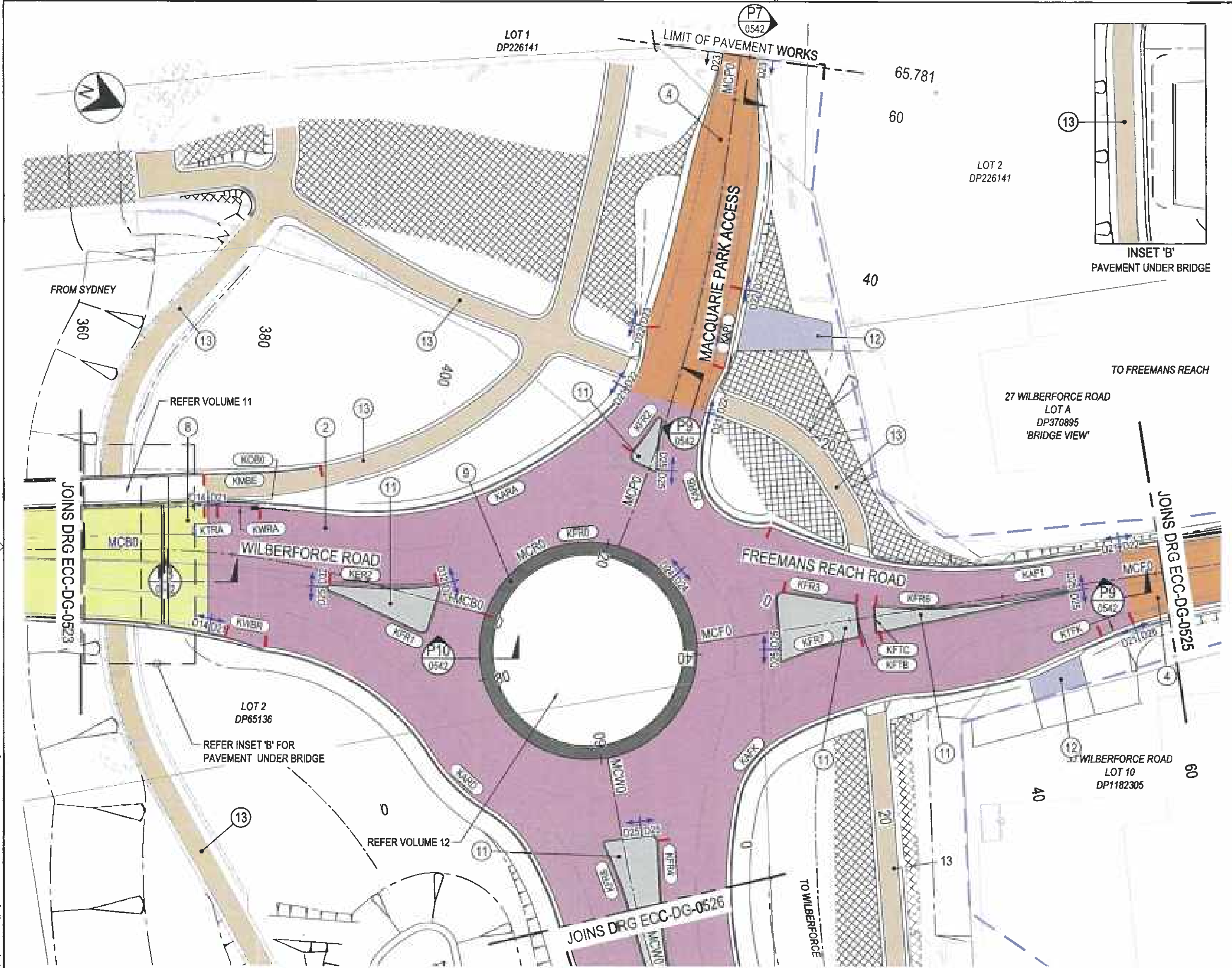

LEGEND

FOR REFERENCE

- EXISTING PROPERTY BOUNDARY
- CONSTRUCTION WORK ZONE
- WORKS SUBJECT TO FURTHER COUNCIL AND STAKEHOLDER CONSULTATION
- ARCHAEOLOGICAL DEPOSIT ZONE
- CONTROL LINE

PAVEMENT AND KERBS

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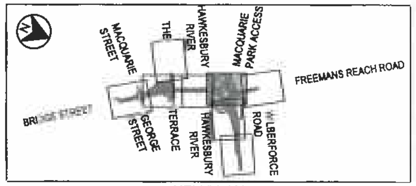
- PX INTERFACE DETAIL (REFER NB98005-ECC-DG-0541 TO 0543)
- DX|DX EDGE DETAIL START/END (REFER NB98005-ECC-DG-0551 TO 0557)
- (KXXX) KERB/GUTTER TAG (REFER NB98005-ECC-DG-0581)
- KERB/GUTTER STRING START/END (REFER NB98005-ECC-DG-0581)

NOTES

1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.



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TITLE	INITIAL	DATE
		03.11.17
DRAFTING CHECK		03.11.17
DESIGNER	CW	03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:500
CO-ORDINATE SYSTEM MGA Zone 56
HEIGHT DATUM AHD

DRAWINGS / DESIGN PREPARED BY
JACOBS
177 Pacific Highway
North Sydney SYDNEY, NSW 2060
AUSTRALIA
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Web www.jacobs.com

CLIENT
NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR
GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

PROJECT
HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PLAN
SHEET 4

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
DS2012-000289-DES-WINDSOR-171103

STATUS
FOR TENDER

VOLUME 05
RMS REGISTRATION No DS2012/000289
IFT
DRAWING No NB98005-ECC-DG-0524
REV 2

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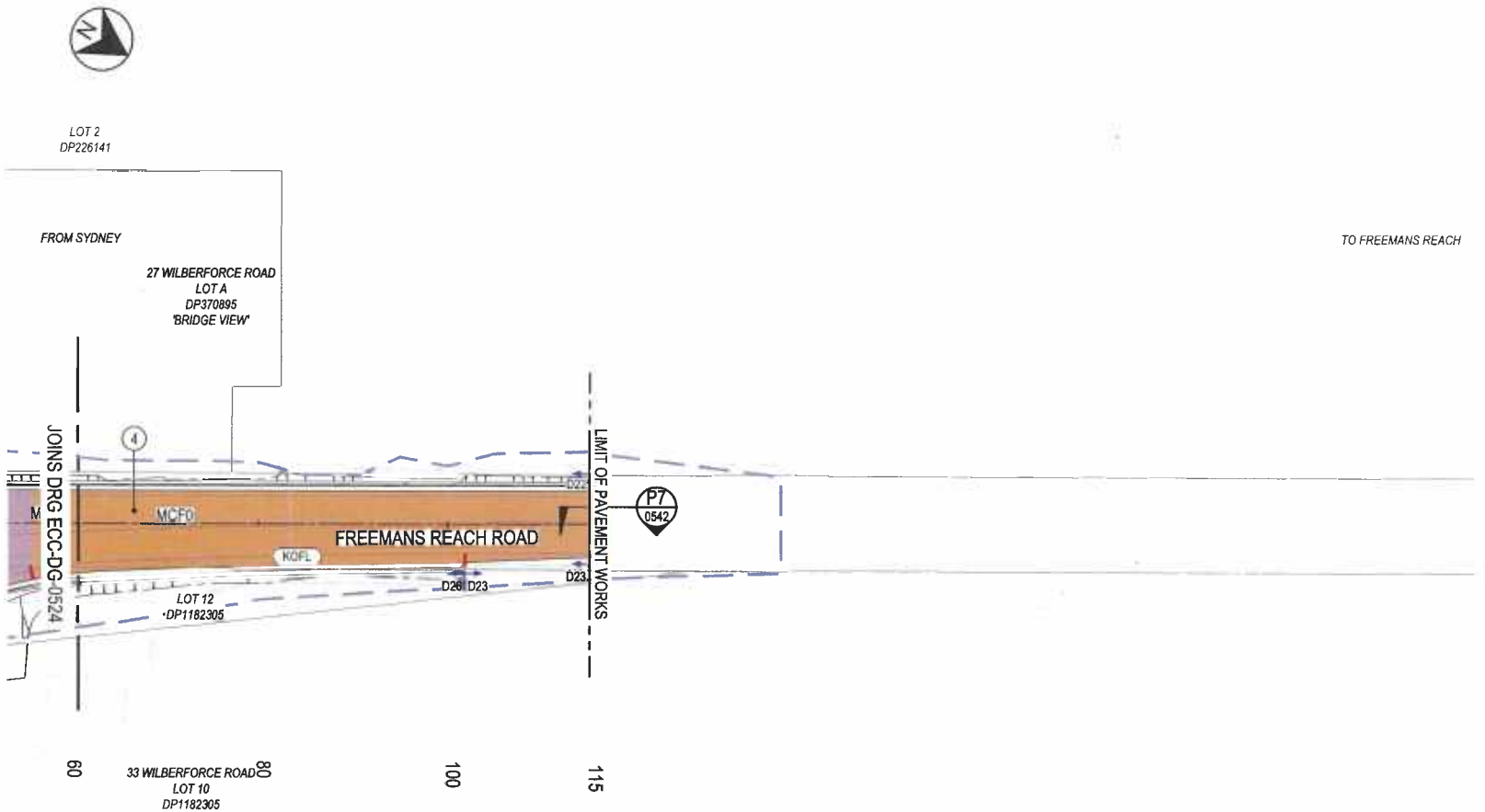
LOCATION: C:\users\parishj\appdata\local\projectwise\rms_projects\rms00827\NB98005-ECC-DG-0521-0528.dwg



LEGEND

FOR REFERENCE

- EXISTING PROPERTY BOUNDARY
- CONSTRUCTION WORK ZONE
- WORKS SUBJECT TO FURTHER COUNCIL AND STAKEHOLDER CONSULTATION
- ARCHAEOLOGICAL DEPOSIT ZONE
- CONTROL LINE

PAVEMENT AND KERBS

- PAVEMENT TYPE 1 - MAIN CARRIAGEWAY
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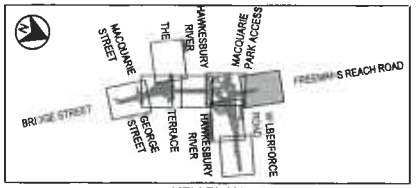
- PX INTERFACE DETAIL (REFER NB98005-ECC-DG-0541 TO 0543)
- DX|DX EDGE DETAIL START/END (REFER NB98005-ECC-DG-0551 TO 0557)
- KXXX KERB/GUTTER TAG (REFER NB98005-ECC-DG-0581)
- KERB/GUTTER STRING START/END (REFER NB98005-ECC-DG-0581)

NOTES

1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.



KEY PLAN

NO	DATE	DESCRIPTION	DRAWN	REVIEWED	APPROVED
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TITLE	INITIAL	DATE
DRAFTSPERSON	JP	03.11.17
DRAFTING CHECK	SH	03.11.17
DESIGN	CW	03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:500 AT A3
CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY
JACOBS
177 Pacific Highway
North Sydney, SYDNEY, NSW 2060
AUSTRALIA
Tel (02) 9928 2100 Fax (02) 9928 2500
Web www.jacobs.com

CLIENT
NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR
GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

PROJECT
HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PLAN
SHEET 5

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
DS2012-000289-DES-WINDSOR-171103

STATUS
FOR TENDER

VERSION	RMS REGISTRATION No	REV
05	DS2012/000289	
IFT	NB98005-ECC-DG-0525	2

DRAWING No

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The Drawing may have been prepared using colour and may be incomplete if copied

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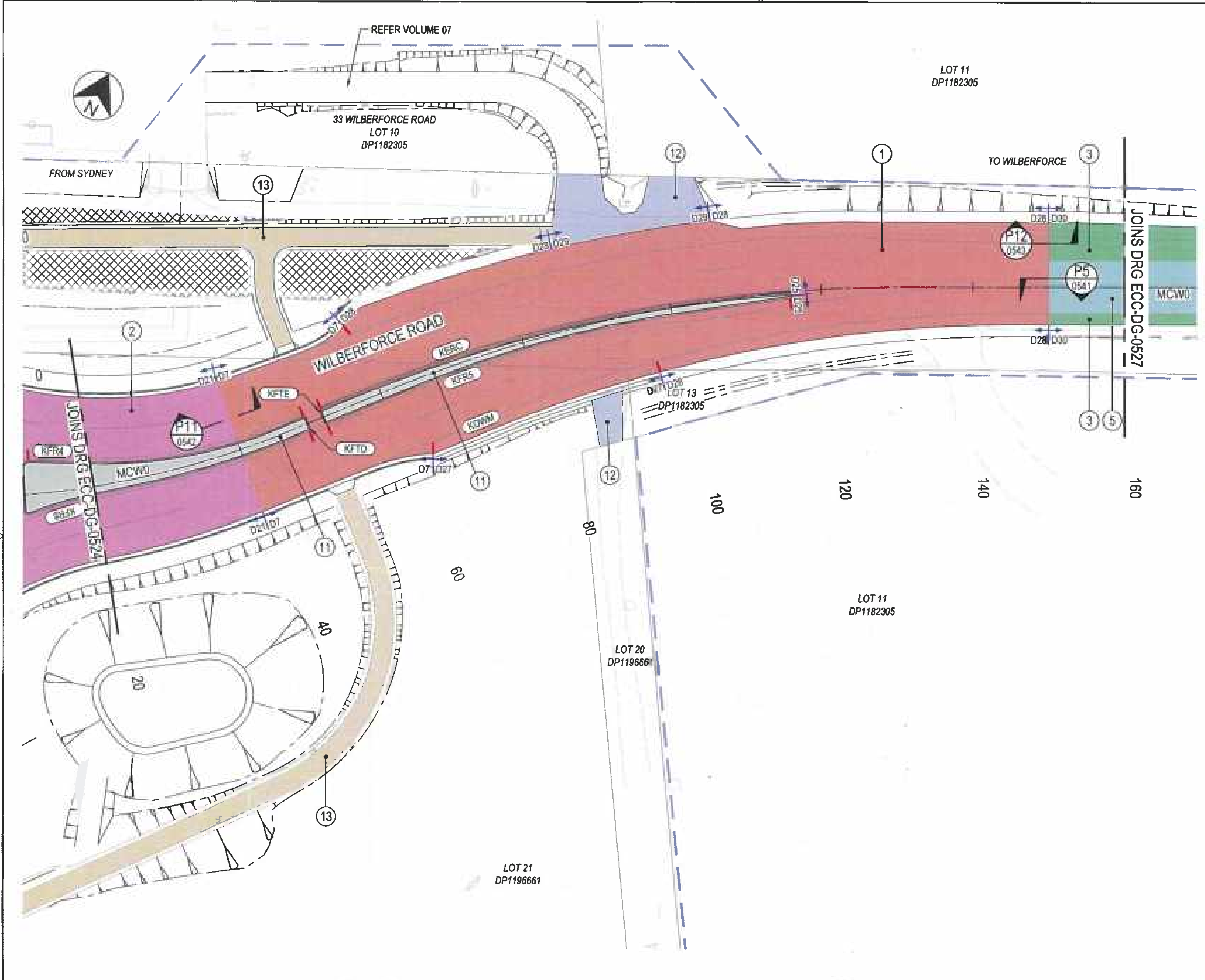
LOGIN NAME: PARISH, JORDAN



LEGEND

FOR REFERENCE

- EXISTING PROPERTY BOUNDARY
- CONSTRUCTION WORK ZONE
- WORKS SUBJECT TO FURTHER COUNCIL AND STAKEHOLDER CONSULTATION
- ARCHAEOLOGICAL DEPOSIT ZONE
- CONTROL LINE

PAVEMENT AND KERBS

- PAVEMENT TYPE 1 - MAIN CARRIAGEWAY
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- PAVEMENT TYPE 3 - WIDENING
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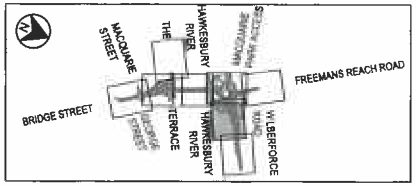
- PAVEMENT TYPE 16 - PAVED PATH
- EXISTING PAVEMENT TO BE REMOVED
- (1) PAVEMENT TYPE LABEL (REFER NB98005-ECC-DG-0531 TO 0532)
- PX INTERFACE DETAIL (REFER NB98005-ECC-DG-0541 TO 0543)
- DX|DX EDGE DETAIL START/END (REFER NB98005-ECC-DG-0551 TO 0557)
- (KXXX) KERB/GUTTER TAG (REFER NB98005-ECC-DG-0581)
- KERB/GUTTER STRING START/END (REFER NB98005-ECC-DG-0581)

NOTES

1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.



KEY PLAN

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
DS2012-000289-DES-WINDSOR-171103

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	01.08.17	ISSUED FOR TENDER	SH	BDP	
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		DATE
	JP	03.11.17
DRAFTING CHECK	SH	03.11.17
	CW	03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:500 AT A3
CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY
JACOBS
AUSTRALIA
Tel (02) 9928 2100 Fax (02) 9928 2500
Web www.jacobs.com

NSW GOVERNMENT Transport Roads & Maritime Services
PREPARED FOR
GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

PROJECT
HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PLAN
SHEET 6

STATUS: FOR TENDER
VOLUME: 05
RMS REGISTRATION No: DS2012/000289
PHASE: IFT
DRAWING No: NB98005-ECC-DG-0526
REV: 2

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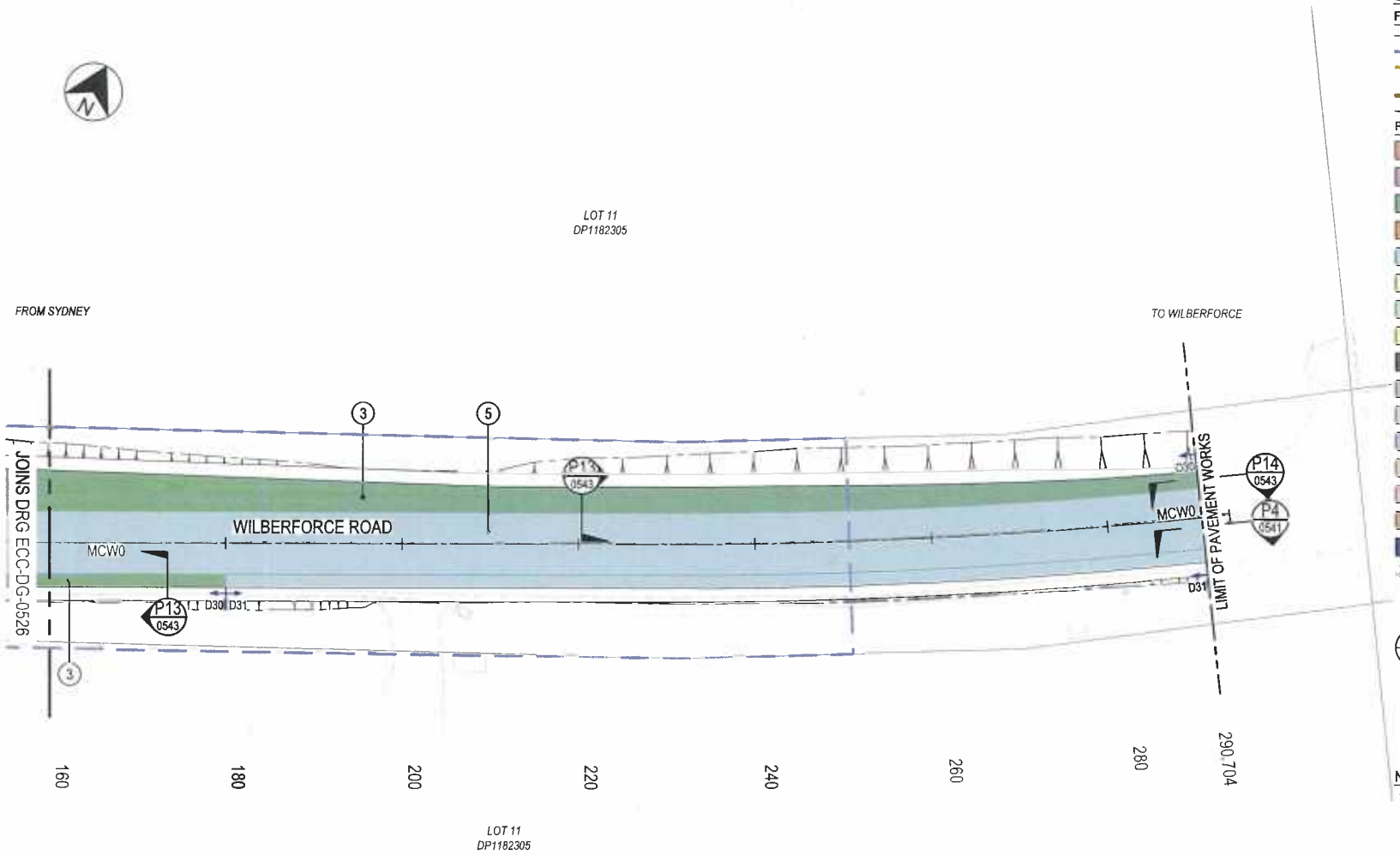

LEGEND

FOR REFERENCE

- EXISTING PROPERTY BOUNDARY
- CONSTRUCTION WORK ZONE
- WORKS SUBJECT TO FURTHER COUNCIL AND STAKEHOLDER CONSULTATION
- ARCHAEOLOGICAL DEPOSIT ZONE
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PAVEMENT AND KERBS

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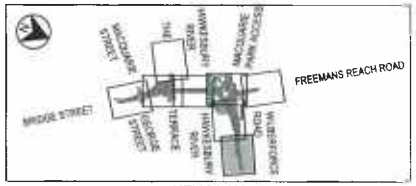
- KXXX KERB/GUTTER TAG (REFER NB98005-ECC-DG-0581)
- KERB/GUTTER STRING START/END (REFER NB98005-ECC-DG-0581)

NOTES

1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.



KEY PLAN

REV		DESCRIPTION		REVIEWED	APPROVED
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1	01.09.17	ISSUED FOR TENDER		BDP	TR
0		NOT USED			

		DATE
DRAFTSPERSON	JP	03.11.17
DRAFTING CHECK		03.11.17
	CW	03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:500 5 0 5 10 15 20 25 mm AT A3
CO-ORDINATE SYSTEM: MGA Zone 56 HEIGHT DATUM: A.H.D

DRAWINGS / DESIGN PREPARED BY
JACOBS
177 Pacific Highway, North Sydney, NSW 2060, AUSTRALIA
Tel: (02) 9928 2100 Fax: (02) 9928 2500
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SYDNEY OUTER

HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PLAN
SHEET 7

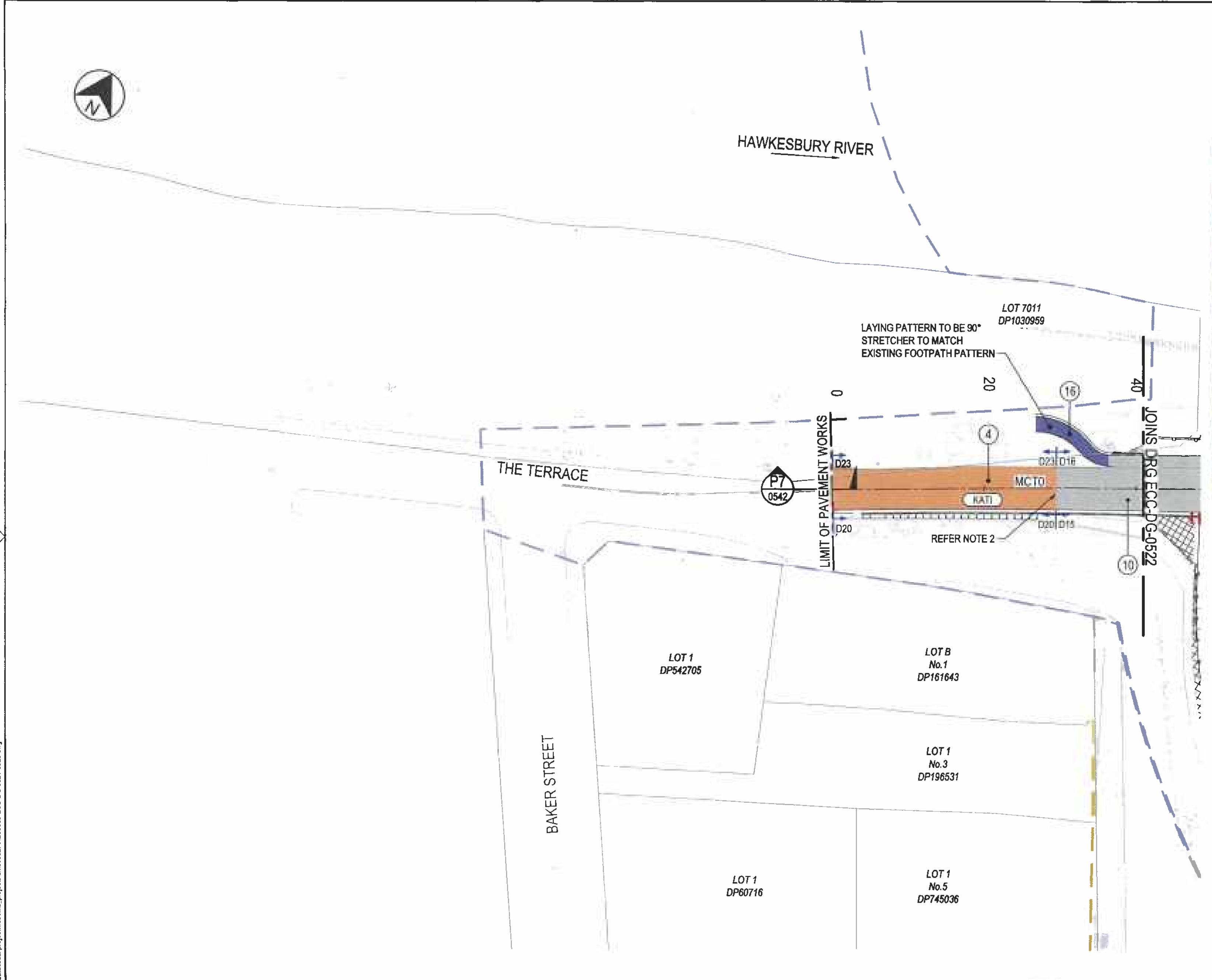
DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
DS2012-000289-DES-WINDSOR-171103

STATUS
FOR TENDER

ISSUE	05
RMS REGISTRATION No	DS2012/000289
PHASE	IFT
DRAWING No	NB98005-ECC-DG-0527
REV	2

DATE: 23/10/2017 10:08:59 AM LOGIN NAME: PARISH, JORDAN
LOCATION: C:\users\parishj\appdata\local\projectwise\wrms_projects\dms00527\NB98005-ECC-DG-0521-0528.dwg

Drawing may have been prepared using colour and may be incomplete if copied



LEGEND

FOR REFERENCE

- EXISTING PROPERTY BOUNDARY
- CONSTRUCTION WORK ZONE
- WORKS SUBJECT TO FURTHER COUNCIL AND STAKEHOLDER CONSULTATION
- ARCHAEOLOGICAL DEPOSIT ZONE
- CONTROL LINE

PAVEMENT AND KERBS

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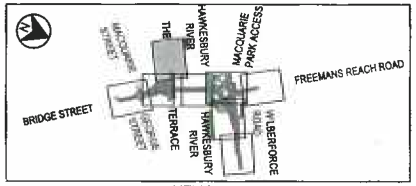
- PAVEMENT TYPE 11 - RAISED MEDIAN
- PAVEMENT TYPE 12 - DRIVEWAY
- PAVEMENT TYPE 13 - SHARED PATH
- PAVEMENT TYPE 14 - FOOTPATH
- PAVEMENT TYPE 15 - PAVED MEDIAN
- PAVEMENT TYPE 16 - PAVED PATH
- EXISTING PAVEMENT TO BE REMOVED
- (1) PAVEMENT TYPE LABEL (REFER NB98005-ECC-DG-0531 TO 0532)
- PX INTERFACE DETAIL (REFER NB98005-ECC-DG-0541 TO 0543)
- DX|DX EDGE DETAIL START/END (REFER NB98005-ECC-DG-0551 TO 0557)
- (XXXX) KERB/GUTTER TAG (REFER NB98005-ECC-DG-0581)
- KERB/GUTTER STRING START/END (REFER NB98005-ECC-DG-0581)

NOTES

1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.
2. FOR PAVEMENT TYPE 10 INTERFACE DETAILS REFER NB98005-ECC-DG-561 TO 562.



KEY PLAN

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LOGIN NAME: PARISH, JORDAN
LOCATION: C:\users\parishj\appdata\local\projectwise\rms_projects\dms00627\NB98005-ECC-DG-0521-0528.dwg

REV	DATE	DESCRIPTION			REVIEWED	APPROVED
2	03.11.17	ISSUED FOR TENDER		BOP	TR	
1	01.09.17	ISSUED FOR TENDER			TR	
0		NOT USED				

TITLE	INITIAL	DATE
DRAFTSPERSON	JP	03.11.17
DRAFTING CHECK		03.11.17
DESIGNER		03.11.17
DESIGN CHECK		03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE — SCALE 1:500 AT A3
CO-ORDINATE SYSTEM: MGA Zone 56 — HEIGHT DATUM: AHD

0 | 10 | 15 | 20 | 25 mm ON A3 ORIGINAL — This Drawing may have been prepared using colour and may be incomplete if copied

DRAWING/DESIGN PREPARED BY

JACOBS
177 Pacific Highway
North Sydney, SYDNEY, NSW 2060
AUSTRALIA
Tel: (02) 9928 2100 Fax: (02) 9928 2500
Web: www.jacobs.com

CLIENT: NSW GOVERNMENT — Transport Roads & Maritime Services

PREPARED FOR
GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

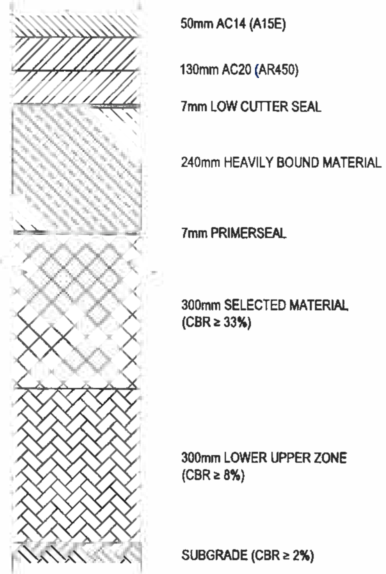
PROJECT:
HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PLAN
SHEET 8

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2012-000289-DES-WINDSOR-171103

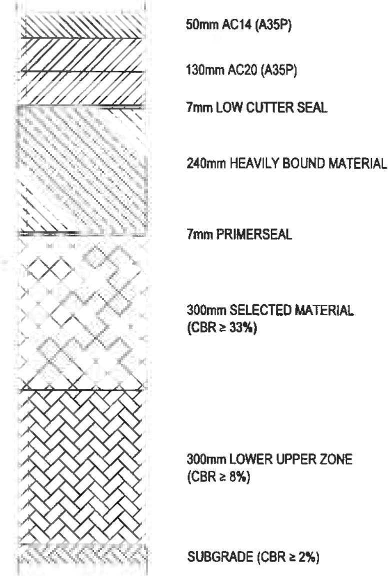
STATUS: FOR TENDER

VOLUME	RMS REGISTRATION No
05	DS2012/000289

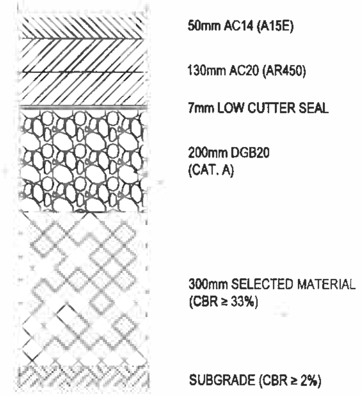
	DRAWING No	REV
IFT	NB98005-ECC-DG-0528	2



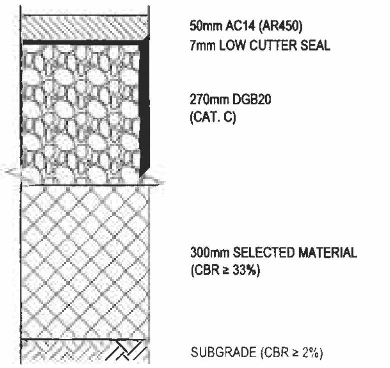
PAVEMENT TYPE 1
MAIN CARRIAGEWAY



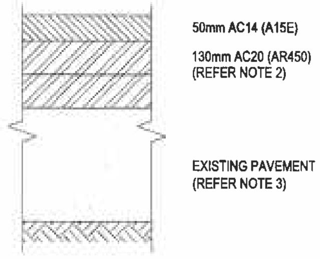
PAVEMENT TYPE 2
ROUNDABOUT



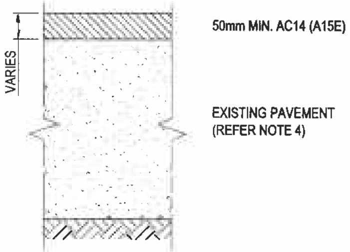
PAVEMENT TYPE 3
WIDENING



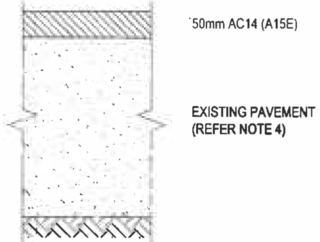
PAVEMENT TYPE 4
LOCAL ROAD



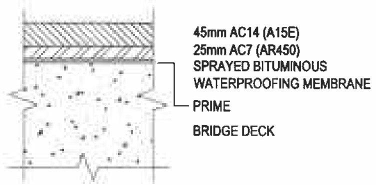
PAVEMENT TYPE 5
REHABILITATION



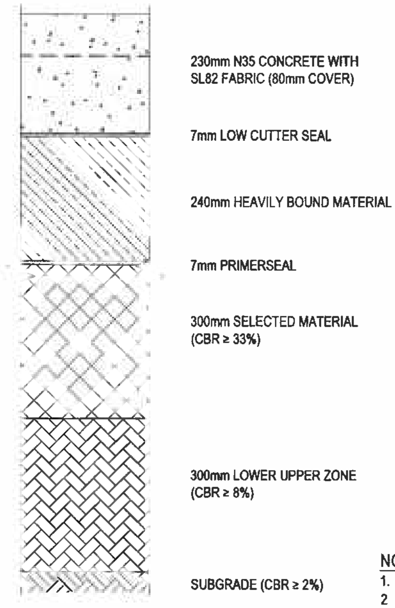
PAVEMENT TYPE 6
LEVEL CORRECTION



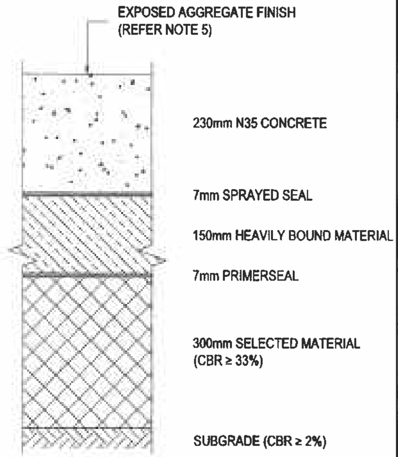
PAVEMENT TYPE 7
MILL AND RE-SHEET



PAVEMENT TYPE 8
BRIDGE DECK



PAVEMENT TYPE 9
ROUNDABOUT APRON



PAVEMENT TYPE 10
SHARED ZONE

NOTES

1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.
2. PLACE ASPHALT REINFORCEMENT GRID BETWEEN AC20 LAYERS AT INTERSECTION OF BRIDGE STREET AND GEORGE STREET. EXTENT TO BE DETERMINED BY THE PRINCIPAL FOLLOWING DEMOLITION OF EXISTING RAISED MEDIANS AND ROUNDABOUT.
3. MILL EXISTING PAVEMENT TO THE DEPTH NECESSARY TO ENABLE PLACEMENT OF AC14 AND AC20 TO MATCH DESIGN LEVELS.
4. MILL EXISTING PAVEMENT TO THE DEPTH NECESSARY TO ENABLE PLACEMENT OF AC14 TO MATCH DESIGN LEVELS.
5. FOR EXPOSED AGGREGATE FINISH DETAILS REFER NB98005-ECC-DG-0561.

DATE: 19/10/2017 11:13:01 AM LOGIN NAME: PARISH, JORDAN
LOCATION: C:\Users\parishj\AppData\Local\projectwise\...\NB98005-ECC-DG-0531-0532.dwg

REV	DATE	DESCRIPTION		REVIEWED	
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1	01.09.17	ISSUED FOR TENDER		BDP	TR
0		NOT USED			

	INITIAL	DATE
	JP	03.11.17
	WH	03.11.17
	CW	03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

0 5 10 15 20 25 mm ON A3 ORIGINAL — Drawing may have been prepared using colour and may be incomplete if copied

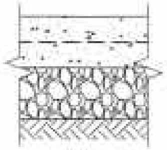
ORIGINAL DRAWING AT A3 SIZE — SCALE 1:10 — 100mm 0 100mm 200mm AT A3
CO-ORDINATE SYSTEM: MGA Zone 56 — HEIGHT DATUM: A.H.D.

JACOBS
177 Pacific Highway
North Sydney, SYDNEY, NSW 2060
AUSTRALIA
Tel (02) 9928 2100 Fax (02) 9928 2500
Web www.jacobs.com

CLIENT: NSW GOVERNMENT — Transport Roads & Maritime Services
PREPARED FOR: GREATER SYDNEY PROJECT OFFICE SYDNEY OUTER

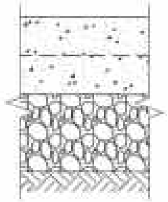
PROJECT: HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PROFILES
SHEET 1

STATUS: FOR TENDER
VOLUME: 05 — RMS REGISTRATION No: DS2012/000289
IFT — DRAWING No: NB98005-ECC-DG-0531 — REV: 2



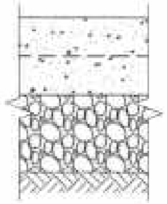
100mm N25 CONCRETE
WITH SL82 FABRIC
(50mm COVER)
100mm DGB20
(CAT. D)

PAVEMENT TYPE 11
RAISED MEDIAN



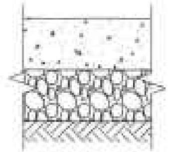
150mm N25 CONCRETE
WITH SL82 FABRIC
(75mm COVER)
150mm DGB20
(CAT. D)

PAVEMENT TYPE 12
DRIVEWAY



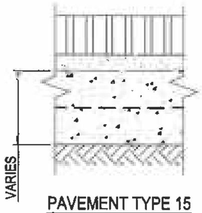
150mm N32 CONCRETE
WITH SL82 FABRIC
(75mm COVER)
150mm DGB20
(CAT. D)

PAVEMENT TYPE 13
SHARED PATH



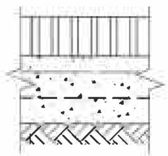
100mm N20 CONCRETE
100mm DGB20
(CAT. D)

PAVEMENT TYPE 14
FOOTPATH



76mm BRICKS WITH
JOINT FILLING MATERIAL
30mm BEDDING MATERIAL
145mm MIN. N25 CONCRETE
WITH SL82 FABRIC
(PLACED CENTRALLY)

PAVEMENT TYPE 15
PAVED MEDIAN



76mm BRICKS WITH
JOINT FILLING MATERIAL
30mm BEDDING MATERIAL
100mm N25 CONCRETE
WITH SL82 FABRIC
(50mm COVER)

PAVEMENT TYPE 16
PAVED PATH

NOTES
1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.

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LOCATION: C:\Users\parishj\AppData\Local\projectwise\ms_projects\dms00627\NB98005-ECC-DG-0531-0532.dwg

REV	DATE	DESCRIPTION		REVIEWED	
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	01.09.17	ISSUED FOR TENDER	SH	BDP	
		NOT USED			

TITLE		DATE
DRAFTSPERSON		03.11.17
DRAFTING CHECK		03.11.17
DESIGNER	CW	03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:10 100mm 0 100mm 200mm AT A3
CO-ORDINATE SYSTEM: MGA Zone 56 HEIGHT DATUM: AHD

0 10 20 25 mm ON A3 ORIGINAL
This Drawing may have been prepared using colour and may be incomplete if copied

DRAWINGS / DESIGN PREPARED BY
JACOBS
177 Pacific Highway
North Sydney SYDNEY, NSW 2060
AUSTRALIA
Tel (02) 9928 2100 Fax (02) 9928 2500
Web www.jacobs.com

CLIENT
NSW GOVERNMENT Transport Roads & Maritime Services
PREPARED FOR
GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

PROJECT
HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PROFILES
SHEET 2

STATUS
FOR TENDER
VOLUME 05
RMS REGISTRATION No DS2012/000289
IFT
DRAWING No NB98005-ECC-DG-0532
REV 2

Transport Roads & Maritime Services

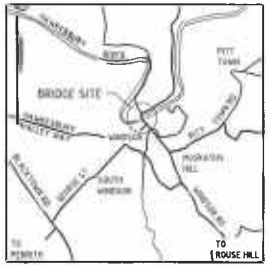
NSW GOVERNMENT

MAIN ROAD No 182

CITY OF HAWKESBURY

BRIDGE OVER HAWKESBURY RIVER

AT WINDSOR



LOCALITY PLAN
NOT TO SCALE
THE BRIDGE SITE IS APPROXIMATELY 56km BY ROAD FROM SYDNEY.

BEARING REPLACEMENT

MAXIMUM CALCULATED JACKING LOAD: 1650kN SLS (200T JACK)
DESIGN JACKING LOAD IS BASED ON SM1600 TRAFFIC LOAD LOCATED WITHIN CENTRAL 2 TRAFFIC LANES.
A DYNAMIC LOAD ALLOWANCE OF 0.1 AND AN ULTIMATE LIMIT STATE FACTOR OF 1.8 HAVE BEEN CONSIDERED IN DESIGN.
AN ULTIMATE LOAD FACTOR OF 1.2 HAS BEEN APPLIED TO PERMANENT AND SUPERIMPOSED DEAD LOADS.
DESIGN TRAFFIC SPEED RESTRICTED TO 40km/h.
HLP400 LOADING SHALL NOT BE PERMITTED ON THE BRIDGE DURING BEARING REPLACEMENT.
ALL JACKS AT EACH ABUTMENT AND PIER SHALL BE HYDRAULICALLY LINKED AND HAVE A CONTROL MECHANISM TO ENSURE THAT THE SAME VERTICAL DISPLACEMENTS OCCUR AT EACH JACKING POINT AT ALL TIMES DURING JACKING UP OPERATIONS.
STEEL PLATES SHALL BE PLACED BETWEEN CONCRETE BEARING SURFACE AND HYDRAULIC JACK.
MAXIMUM ALLOWABLE CONTACT PRESSURE BETWEEN CONCRETE SURFACE AND STEEL PLATE SHALL BE 18MPa.
MAXIMUM ALLOWABLE LIFT SHALL BE 10mm

NEW BRIDGE - 2016
BRIDGE No. 11386
DESIGN FILE : 5M4408
DESIGN STANDARD : AS 5100 - BRIDGE DESIGN
TRAFFIC LOADING :
SM1600 - 3 DESIGN LANES
HLP400 LOCATED WITHIN THE CENTRAL 15.6m OF ROADWAY
NUMBER OF HEAVY VEHICLES PER LANE PER DAY: 706
ROUTE FACTOR : 0.5
DESIGN TRAFFIC SPEED : 50 km PER HOUR
TRAFFIC BARRIER PERFORMANCE LEVEL : REGULAR
EARTHQUAKE LOADING :
BRIDGE CLASSIFICATION - TYPE III
IMPORTANCE FACTOR : 1.25
ACCELERATION COEFFICIENT : 0.08
SITE FACTOR : 1.0
DESIGN CATEGORY : BEDC-2 STRUCTURAL RESPONSE FACTOR : 2
WIND LOADING :
WIND TERRAIN CATEGORY : 2
AVERAGE RECURRENCE INTERVAL ULS = 48 m/s
AVERAGE RECURRENCE INTERVAL SLS = 37m/s
NET PRESSURE COEFFICIENTS IN ACCORDANCE WITH D2 OF AS 1170.2
VESSEL IMPACT LOAD
60T VESSEL TRAVELLING AT 2.1 m/s (4 KNOTS)
FLOOD DATA :
100 YEAR FLOW VELOCITY : 3.0 m/s
2000 YEAR FLOW VELOCITY : 2.5 m/s
100 YEAR FLOOD LEVEL : RL 17.77
2000 YEAR FLOOD LEVEL : RL 23.19
DESIGN DEBRIS DEPTH: 1.5m
DESIGN SCOUR: 6.1m ULS
CONSTRUCTION LOADING :
CONSTRUCTION LIVE LOAD: 2kPa

FOR TENDER

JACOBS

WINDSOR DOCUMENT CONTROL NoN898005-DG-BR-0001

REGN. No. OF PLANS

DS2012/000155

BRIDGE NUMBER 11386

ISSUE STATUS TENDER

SHEET No. 1 No. OF 142 SHEETS ISSUE 1

Rev	Date	Description	By	Ch'd	App'd
1	01.09.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.
0	13.04.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.

ACCEPTED

PRINCIPAL BRIDGE ENGINEER

DATE

SCHEDULE OF DRAWINGS

Rev.	Date	Description	By	Ch'd	App'd
1	01.09.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.
0	13.04.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.

FOR TENDER

JACOBS

WINDSOR DOCUMENT CONTROL No NB98005-DG-BR-0001

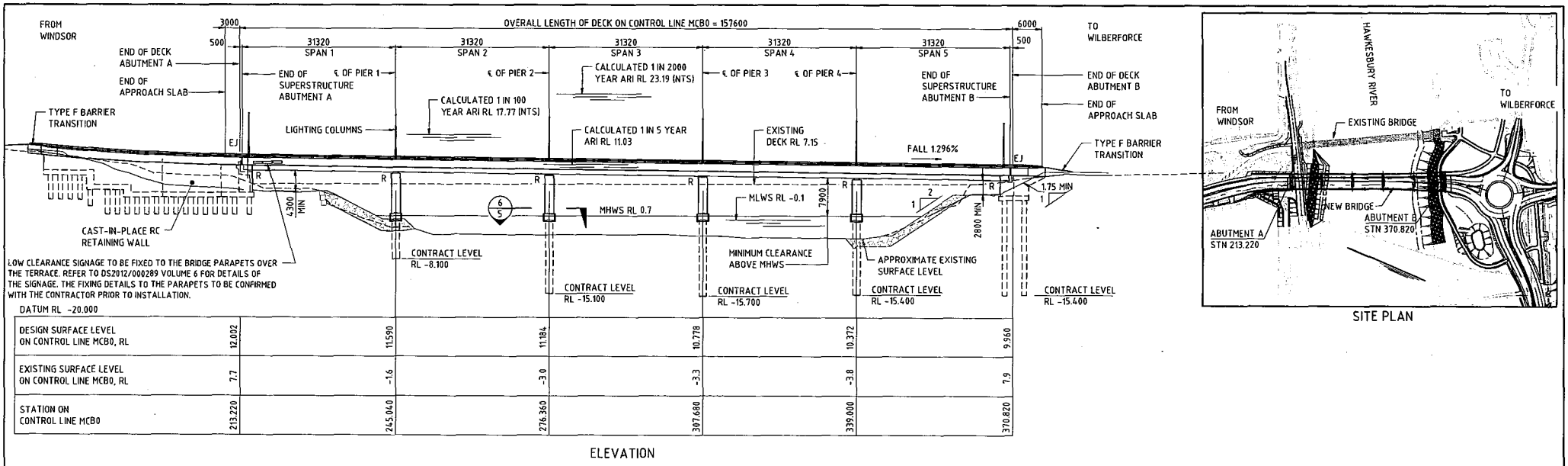
REGN. No. OF PLANS

DS2012/000155

BRIDGE NUMBER 11386

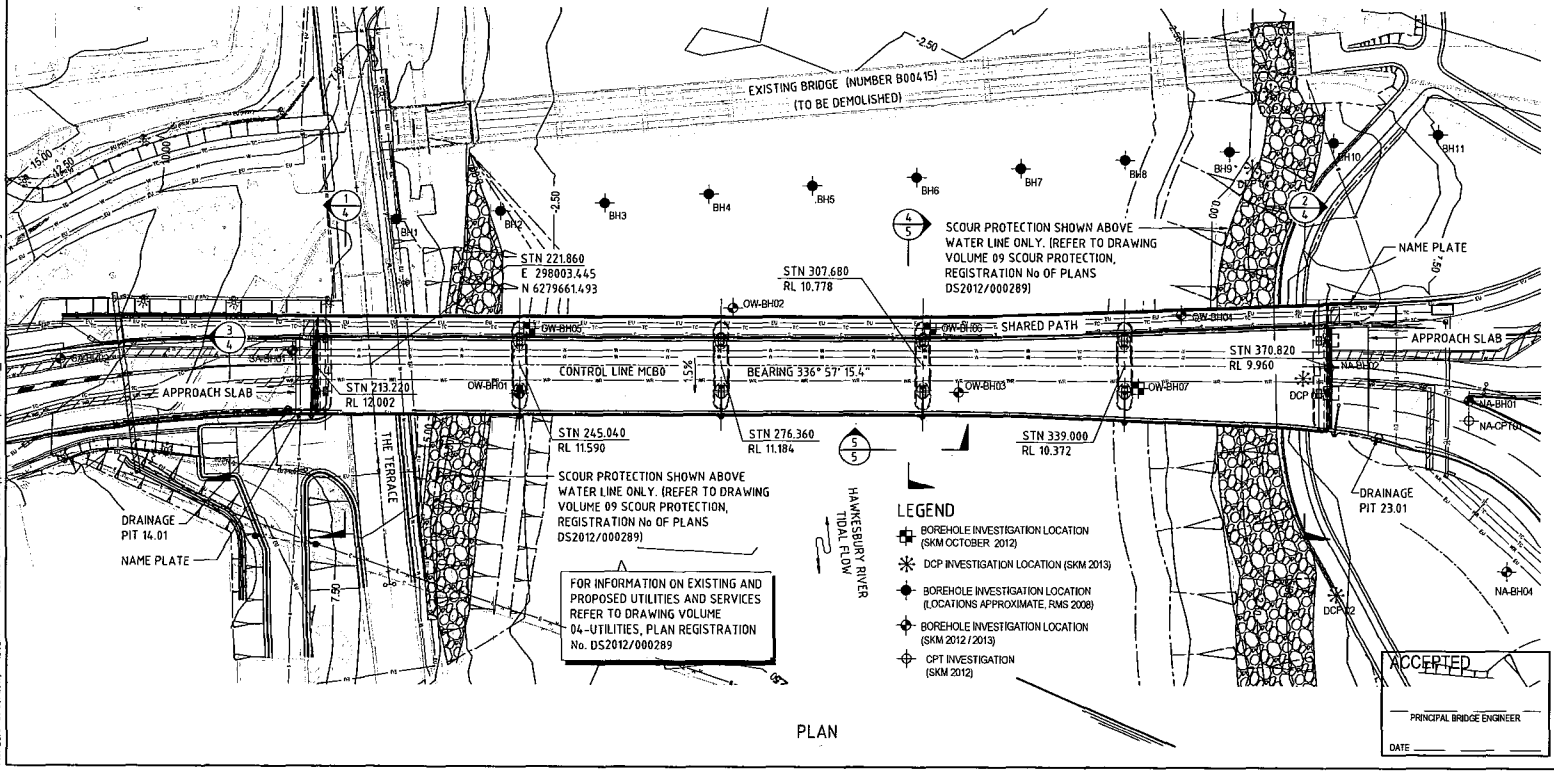
ISSUE STATUS:TENDER

SHEET No. 2 No. OF 142 SHEETS ISSUE 1



ELEVATION

SITE PLAN



PLAN

FOR TENDER

GENERAL NOTES

SCALE 0 5 10 15 20 25m OR AS SHOWN

DIMENSIONS ARE IN MILLIMETRES.
STATIONS AND REDUCED LEVELS ARE IN METRES.
REDUCED LEVELS ARE TO AUSTRALIAN HEIGHT DATUM.
EJ DENOTES EXPANSION JOINT
R DENOTES RESTRAINED BEARING.
TBC DENOTES TO BE CONFIRMED.
FOR UTILITIES SEE SHEET No. 6
FOR HORIZONTAL AND VERTICAL ALIGNMENT DIAGRAMS SEE SHEET No 5
THE BOREHOLES AND CPT INVESTIGATION ARE SHOWN FOR INFORMATION ONLY

Rev.	Date	Description	By	Chkd	Appd
2	03.11.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.
1	01.09.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.
0	13.04.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.

MAIN ROAD No 182 — CITY OF HAWKESBURY

BRIDGE OVER HAWKESBURY RIVER

AT WINDSOR

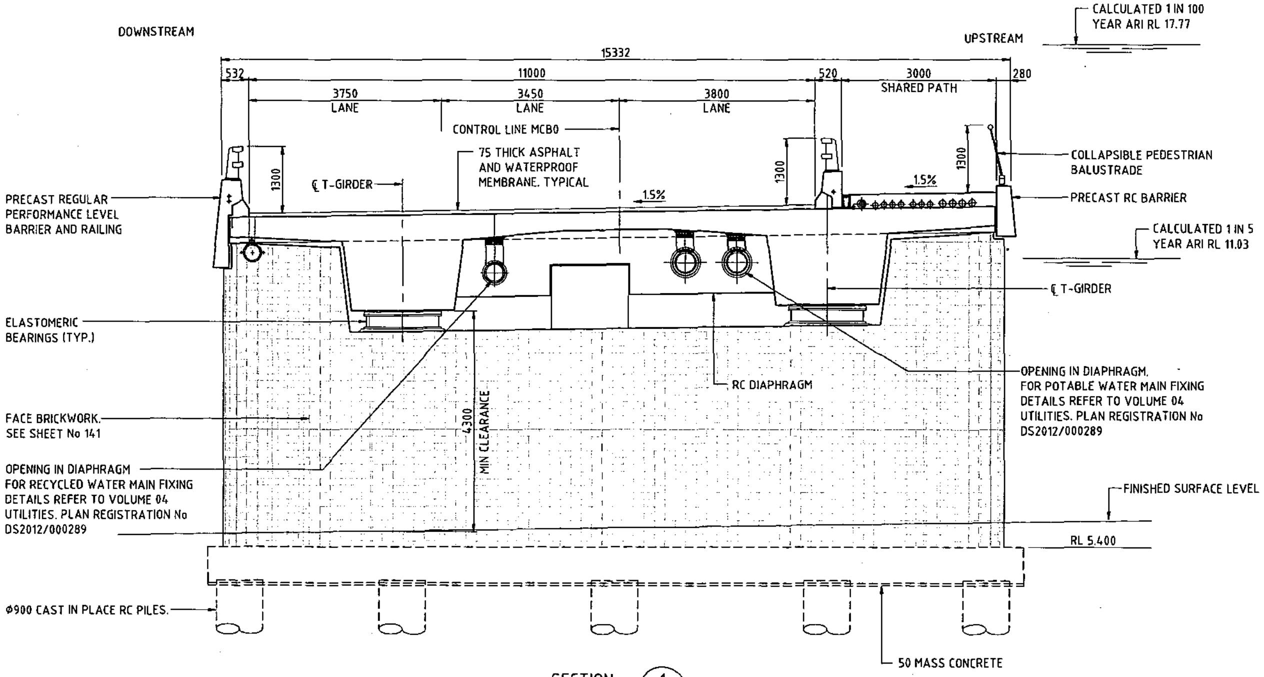
GENERAL ARRANGEMENT - SHEET A

ACCEPTED
PRINCIPAL BRIDGE ENGINEER
DATE

JACOBS
NB98005-DG-BR
Transport Roads & Maritime Services
ROADS AND MARITIME SERVICES
SYDNEY REGION OFFICE
27 ARGYLE ST, PARRAMATTA
PO BOX 3035 PARRAMATTA
NSW 2124
PHONE 02 8849 2069
FACSIMILE 02 8849 2818

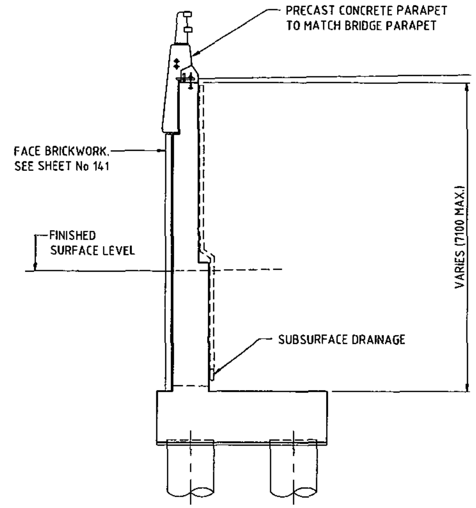
PREPARED	CHECKED	REGISTRATION No. OF PLANS
DESIGN H.N.	A.M.	DS2012/000155
DRAWING I.C.	I.T.	BRIDGE NUMBER 11386
APPROVED DESIGN QA RECORDS		ISSUE STATUS: TENDER
DIRECTOR		SHEET No. 3 ISSUE 2

Plot Date: 26 Oct 2017 - 12:02:19
Cad File: C:\Users\adhikas\appdata\local\temp\AcPublish_8972\NB98005-ECP-DG-1003.dwg



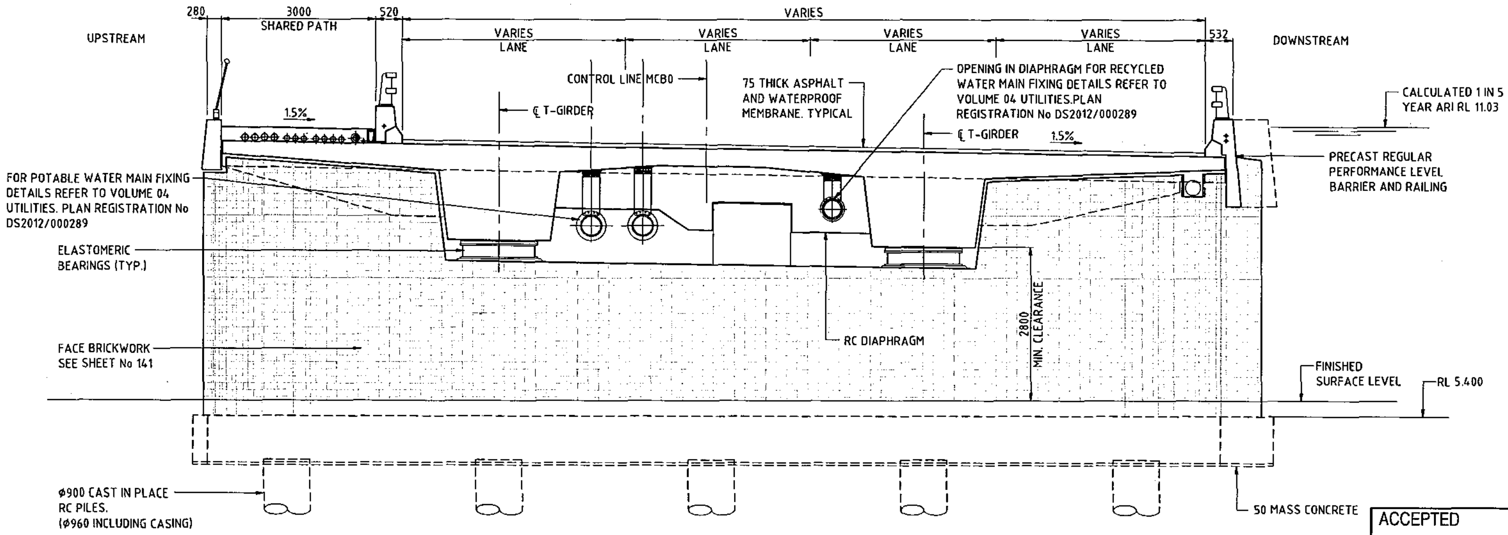
SECTION 1/3

ABUTMENT A



SECTION 3/3

SOUTHERN APPROACH EMBANKMENT RETAINING WALL



SECTION 2/3

ABUTMENT B

FOR TENDER

GENERAL NOTES

SCALE 0 0.5 1 2 3m OR AS SHOWN.

FOR GENERAL NOTES SEE SHEET No 3.

Rev.	Date	Description	By	Ch'd	App'd
1	01.09.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.
0	13.04.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.

MAIN ROAD No 182 — CITY OF HAWKESBURY

BRIDGE OVER HAWKESBURY RIVER AT WINDSOR

GENERAL ARRANGEMENT - SHEET B

JACOBS — NSW Transport Roads & Maritime Services

NB98005-DG-BR

ROADS AND MARITIME SERVICES
SYDNEY REGION OFFICE
27 ARGYLE ST, PARRAMATTA
PO BOX 3035 PARRAMATTA
NSW 2124
PHONE 02 8849 2069
FACSIMILE 02 8849 2818

	PREPARED	CHECKED
DESIGN	H.N.	A.M.
DRAWING	I.C.	I.T.

APPROVED DESIGN QA RECORDS

DIRECTOR

REGISTRATION No. OF PLANS: DS2012/000155

BRIDGE NUMBER: 11386

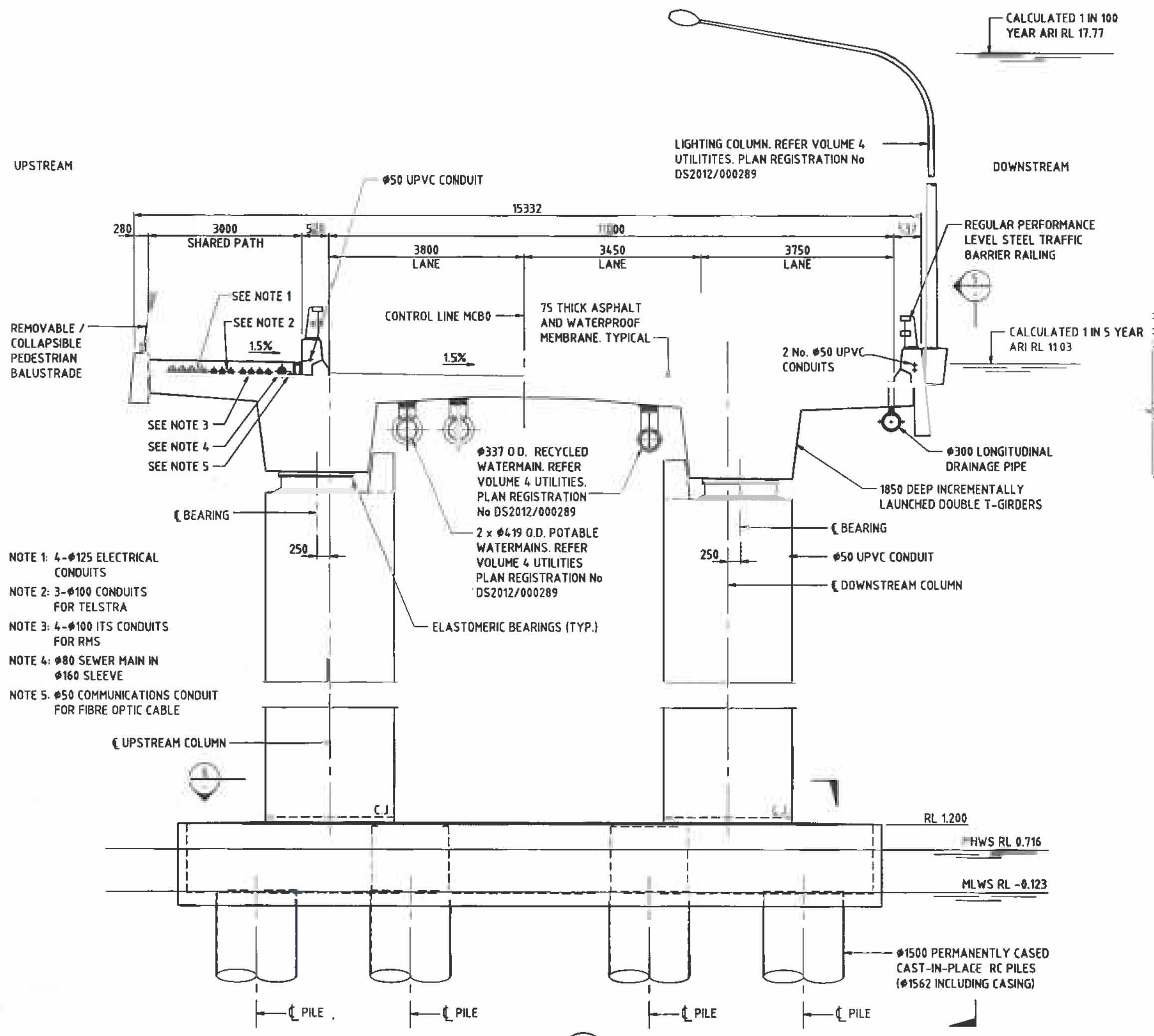
ISSUE STATUS: TENDER

SHEET No. 4 — ISSUE 1

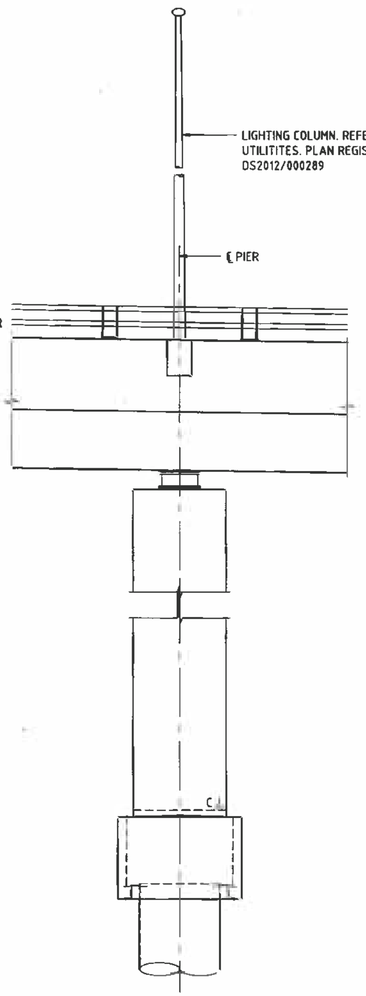
ACCEPTED

PRINCIPAL BRIDGE ENGINEER

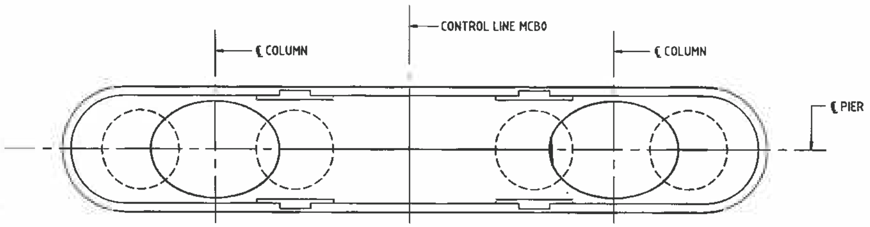
DATE



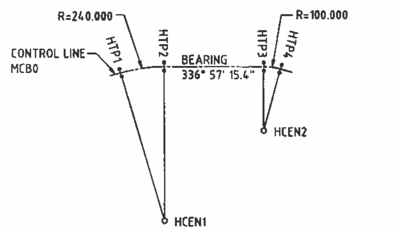
SECTION 4/3



VIEW 5/-



SECTION 6/-

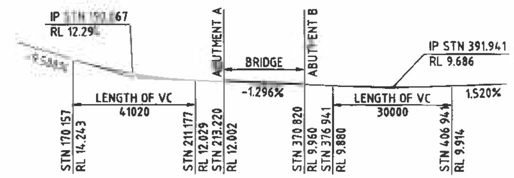


HORIZONTAL ALIGNMENT DIAGRAM

NOT TO SCALE

HORIZONTAL ALIGNMENT DATA FOR CONTROL MCB0

POINT	LOCATION	EASTING	NORTHING
HCEN1	CENTRE OF CIRCLE	298227.362	6279748.226
HTP1	STN 145.309	298042.038	6279595.731
HTP2	STN 214.020	297971.383	6279741.202
HCEN2	CENTRE OF CIRCLE	298037.974	6279835.779
HTP3	STN 368.724	297945.955	6279796.633
HTP4	STN 395.219	297938.915	6279822.095



VERTICAL ALIGNMENT DIAGRAM

NOT TO SCALE

FOR TENDER

GENERAL NOTES

SCALE 0 0.5 1 2 3m OR AS SHOWN.

FOR GENERAL NOTES SEE SHEET No 3.

Rev	Date	Description	By	Ch'd	App'd
1	01.09.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.
0	13.04.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.

MAIN ROAD No 182 — CITY OF HAWKESBURY

BRIDGE OVER HAWKESBURY RIVER

AT WINDSOR

GENERAL ARRANGEMENT - SHEET C

JACOBS — NSW Transport Roads & Maritime Services

ROADS AND MARITIME SERVICES
SYDNEY REGION OFFICE
27 ARGYLE ST. PARRAMATTA
PO BOX 3035 PARRAMATTA
NSW 2124
PHONE 02 8849 2088
FACSIMILE 02 8849 2818

NB98005-DG-BR

	PREPARED	CHECKED
DESIGN	H.N.	A.M.
DRAWING	I.C.	I.T.

APPROVED DESIGN QA RECORDS

DIRECTOR

REGISTRATION No. OF PLANS: DS2012/000155

BRIDGE NUMBER: 11386

ISSUE STATUS: TENDER

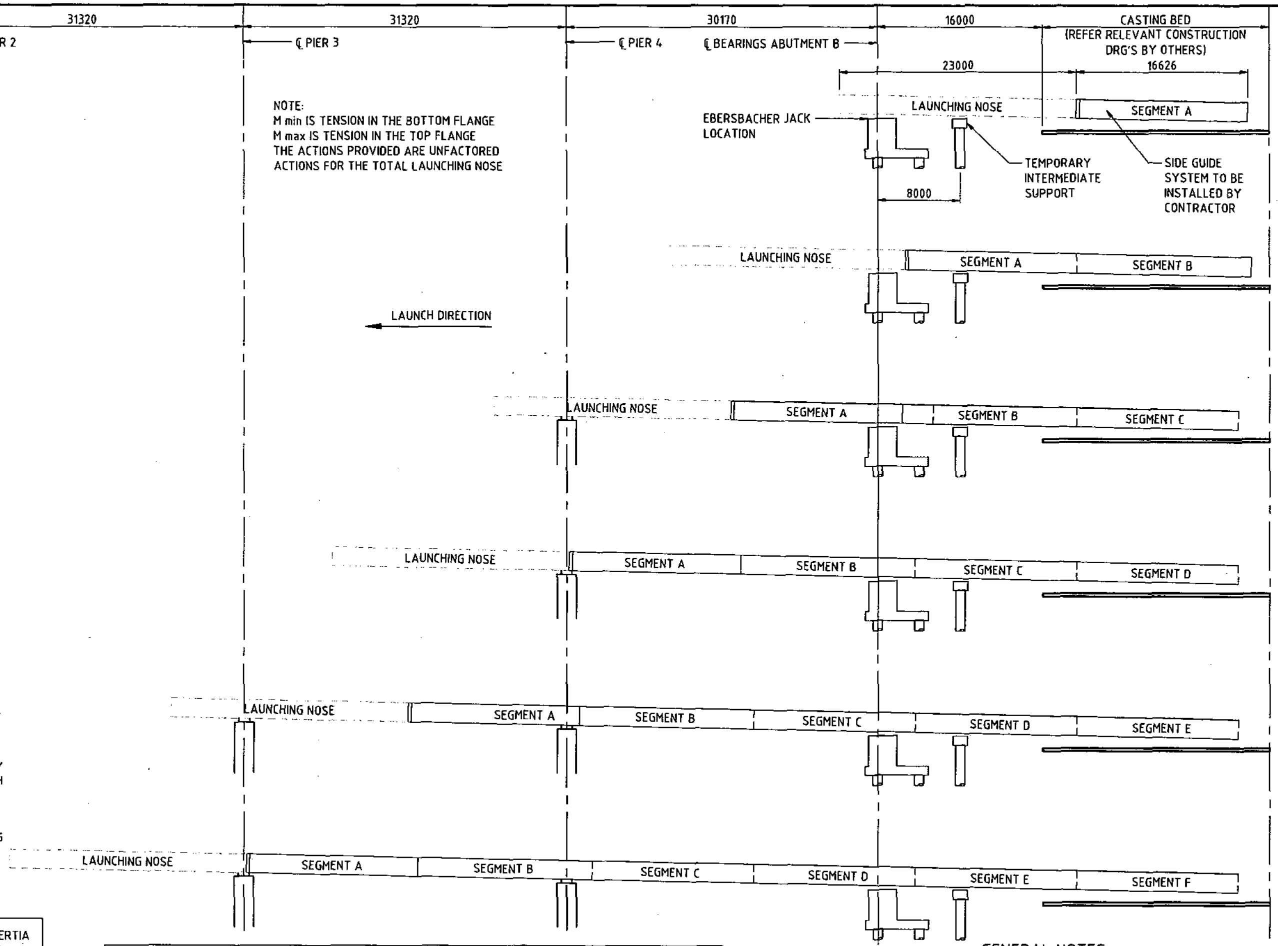
SHEET No. 5 — ISSUE 1

ACCEPTED

PRINCIPAL BRIDGE ENGINEER

DATE

Plot Date: 31 Aug 2017, - 12:16:52



LAUNCHING SEQUENCE

1. POUR CASTING BED AND SURVEY TO ENSURE DESIGN LEVELS MATCH DRAWINGS.
2. POSITION LAUNCHING NOSE ON CASTING BED AND ABUTMENT B.
3. INSTALL EBERSPACHER JACKS AND ALL TEMPORARY WORKS.
4. a. CAST SEGMENT A. MATCH CAST AGAINST LAUNCHING NOSE
   b. STRESS LONGITUDINAL TENDONS IN SEGMENT A IN THE SEQUENCE PROVIDED ON SHEET No. 81 AND GROUT TENDONS.
   c. CONNECT LAUNCHING NOSE AND STRESS HIGH STRENGH STRESS BARS.
   d. LAUNCH SEGMENT A.
   e. INSTALL BRAKING SADDLE AND TEMPORARY GUIDES AT ABUTMENT.
5. a. CAST SEGMENT B.
   b. STRESS LONGITUDINAL TENDONS IN SEGMENT B IN THE SEQUENCE PROVIDED ON SHEET No. 81 AND GROUT TENDONS.
   c. CAST DIAPHRAGM AT END OF SEGMENT A (DIAPHRAGM TO BE CAST AT OR PRIOR TO REACHING ABUTMENT B).
   d. LAUNCH SEGMENT B.
   e. INSTALL TEMPORARY GUIDES AT THE INSIDE OF EACH PIER COLUMN FOR LAUNCHING.
   f. CONTRACTOR TO SURVEY THE BRIDGE DECK SOFFIT AT THE PIERS AFTER EVERY LAUNCH AND ENSURE SETTLEMENT / DEFLECTIONS ARE WITHIN ± 5mm AT THE ABUTMENT AND WITHIN ± 10mm AT THE PIERS.
   g. REPEAT STEPS 3a, b & d FOR SEGMENTS C, D, E, F & G.
6. a. CAST SEGMENT H.
   b. STRESS LONGITUDINAL TENDONS IN SEGMENT H IN THE SEQUENCE PROVIDED ON SHEET No. 81 AND GROUT TENDONS.
   c. LAUNCH SEGMENT H.
   d. STRESS TRANSVERSE TENDONS IN SEGMENT H IN SEQUENCE PROVIDED ON SHEET.
8. REPEAT STEPS 5a, b, c & d FOR SEGMENTS I & J.
9. LAUNCH BRIDGE TO FINAL POSITION AND REMOVE LAUNCHING NOSE AND SURVEY BRIDGE LEVELS.
10. CAST DIAPHRAGM AT END OF SEGMENT J.
11. STRESS AND GROUT CONTINUITY TENDONS IN SEQUENCE PROVIDED ON SHEET No. 81.
    COMPRESSIVE STRENGTH OF CONCRETE IN SEGMENT J SHALL BE AT LEAST 45 MPa. PRIOR TO STRESSING.
12. CAST END FACE AT ABUTMENT B AND POCKETS AT ABUTMENT A.
13. REMOVE EBERSPACHER JACKS AND SEAT SUPERSTRUCTURE ON PERMANENT BEARINGS AT ABUTMENT B. MAKE GOOD REBATES IN ABUTMENT.
    CONSTRUCT ABUTMENT A AND B END WALLS. COMPRESSIVE STRENGTH OF GROUT IN TENDONS SHALL BE AT LEAST 32 MPa. PRIOR TO JACKING.
14. RAISE SUPERSTRUCTURE AT EACH SUPPORT TO COMPLETE INSTALLATION OF PERMANENT BEARINGS. SUPERSTRUCTURE SHALL BE RAISED BY AN EQUAL AMOUNT (3mm MAXIMUM) UNDER EACH GIRDER AT ONE SUPPORT (PIER OR ABUTMENT) AT THE SAME TIME. COMPRESSIVE STRENGTH OF CONCRETE IN DIAPHRAGM SHALL BE AT LEAST 30 MPa. PRIOR TO JACKING.
15. REMOVE BEARING SLIDE PADS. FIX AND GROUT PERMANENT BEARING TOP PLATES.
16. LAUNCHING NOSE AND SIDE GUIDES ARE TO BE DESIGNED BY THE CONTRACTOR, TAKING INTO ACCOUNT FLOOD LOAD AND DEBRIS LOAD DURING A FLOOD EVENT.

ASSUMED LAUNCH NOSE PROPERTIES

LOCATION	WEB THICKNESS (mm)	TOP AND BOTTOM FLANGE THICKNESSES (mm)	OVERALL BEAM DEPTH (mm)	BOTTOM FLANGE WIDTH (mm)	TOP FLANGE WIDTH (mm)	CROSS SECTIONAL AREA (mm²)	MOMENT OF INERTIA (E+10⁴mm)
0.0m	20	40	1850	750	900	101400	6.3007
1.0m	20	40	1850	750	900	101400	6.3007
2.0m	20	40	1850	500	500	75400	4.2003
3.0m	20	40	1850	500	500	75400	4.2003
4.0m	20	40	1850	500	500	75400	4.2003
5.0m	20	40	1850	500	500	75400	4.2003
6.0m	20	40	1850	500	500	75400	4.2003
7.0m	20	40	1850	500	500	75400	4.2003
8.0m	20	40	1850	500	500	75400	4.2003
9.0m	20	40	1850	500	500	75400	4.2003
10.0m	20	40	1850	500	500	75400	4.2003
11.0m	20	40	1850	500	500	75400	4.2003
12.0m	20	40	1850	500	500	75400	4.2003
13.0m	20	40	1850	500	500	75400	4.2003
14.0m	20	40	1850	500	500	75400	4.2003
15.0m	20	40	1850	500	500	75400	4.2003
16.0m	20	40	1850	500	500	75400	4.2003
17.0m	20	40	1850	500	500	75400	4.2003
18.0m	20	40	1850	500	500	75400	4.2003
19.0m	20	40	1850	500	500	75400	4.2003
20.0m	20	40	1850	500	500	75400	4.2003
21.0m	20	40	1850	500	500	75400	4.2003
22.0m	20	40	1850	500	500	75400	4.2003
23.0m	20	40	1850	500	500	75400	4.2003

LAUNCHING NOSE ACTIONS

LOCATION	CHAINAGE (m)	M min (kNm)	M max (kNm)	V max (kN)
AT INTERFACE WITH SEGMENT	0.000	-18000	2315	2605
	1.900	-13900	2090	1810
	3.800	-10500	1676	1915
	5.700	-7755	1317	1335
	7.700	-5465	1009	1050
	9.600	-3650	750	930
	11.500	-2410	532	590
	13.500	-1506	357	420
	15.300	-960	254	815
	17.300	-621	144	508
	19.200	-325	67	299
	21.100	-115	21	165
AT START OF LAUNCHING NOSE	23.000	0	0	0

SEQUENCE NOTES

1. PRECAST BARRIERS SHALL NOT BE PLACED ON SEGMENTS A OR B DURING LAUNCHING. PRECAST BARRIERS MAY ONLY BE PLACED IN THEIR POSITIONS ON SEGMENTS C TO J DURING LAUNCHING.
2. WATERMAIN PIPES CAN BE ATTACHED TO THE DECK IN THEIR FINAL POSITIONS PRIOR / DURING THE LAUNCHING PROCESS.
3. THE CONCRETE STRENGTH OF A SEGMENT AT TRANSFER TO BE A MINIMUM OF 30MPa PRIOR TO THE STRESSING OF THE LAUNCHING TENDONS. THE MINIMUM CONCRETE STRENGTH OF THE SEGMENT IMMEDIATELY ADJACENT TO THE CASTING BED (SEGMENT BEHIND ABUTMENT B) SHALL BE 45MPa PRIOR TO LAUNCHING.
4. AFTER LAUNCHING IS COMPLETE AND CONTINUITY TENDONS ARE STRESSED AND GROUTED, THE PRECAST BARRIER IS TO BE ADJUSTED FOR LINE AND LEVEL. THE STITCH POUR WILL THEN BE CAST. IN THE EVENT OF FLOODING PRIOR TO CASTING OF STITCH POUR, THE BARRIER REINFORCEMENT IN THE STITCH POUR SHALL BE STRAPPED TO THE DECK KERB STARTER BARS.

FOR TENDER

GENERAL NOTES
SCALE 0 2.5 5 10 15m OR AS SHOWN

Rev.	Date	Description	By	Chk'd	App'd
1	01.09.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.
0	13.04.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.

MAIN ROAD No 182 — CITY OF HAWKESBURY

BRIDGE OVER HAWKESBURY RIVER
AT WINDSOR

LAUNCHING SEQUENCE - SHEET A

JACOBS — NSW Transport Roads & Maritime Services

ROADS AND MARITIME SERVICES
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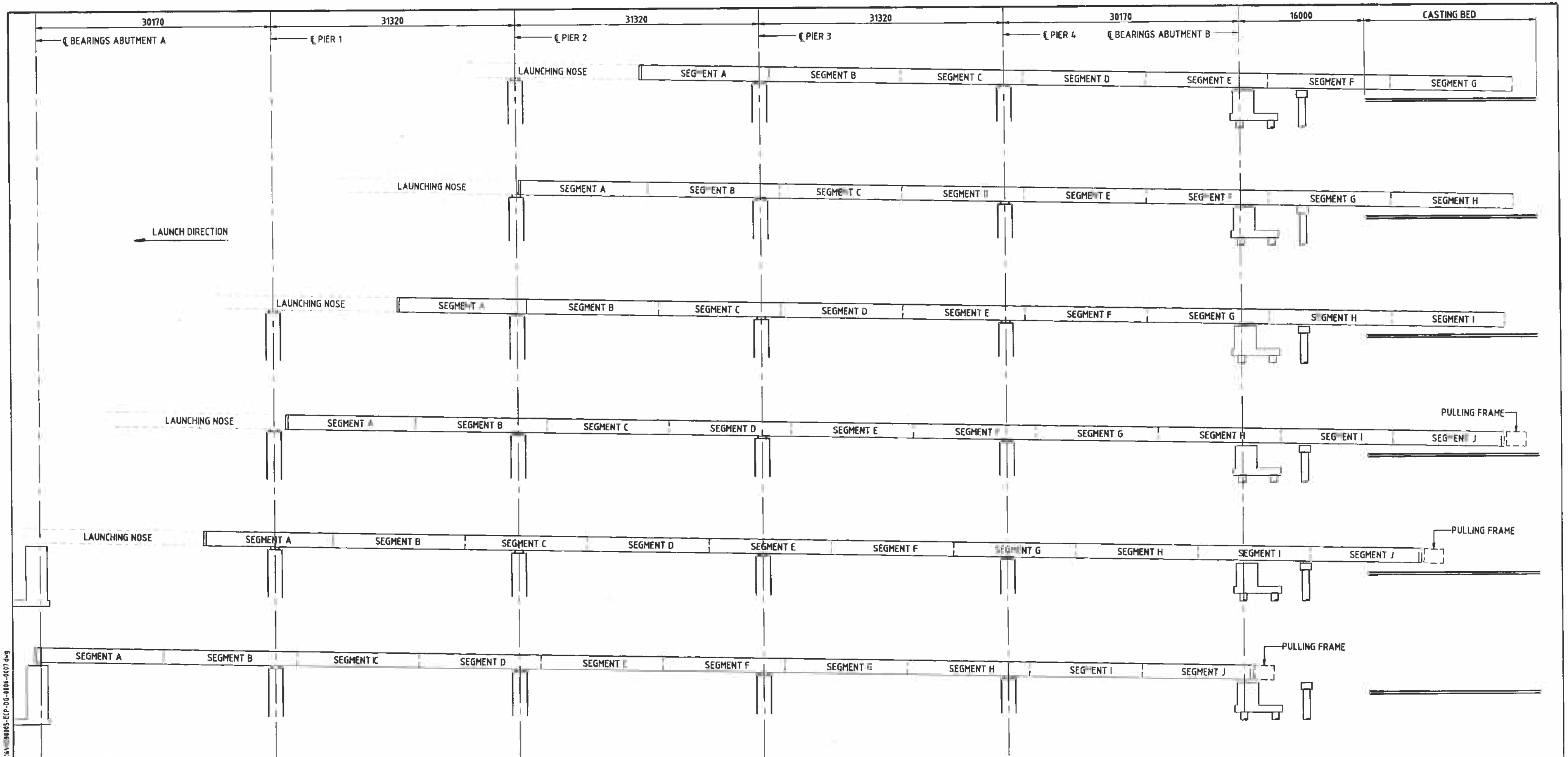
27 ARGYLE ST. PARRAMATTA
PO BOX 3035 PARRAMATTA
NSW 2124
PHONE 02 8849 2069
FACSIMILE 02 8849 2818

NB98005-DG-BR

	PREPARED	CHECKED
DESIGN	P.L.	A.M.
DRAWING	S.R.	I.T.

APPROVED DESIGN QA RECORDS
DIRECTOR

REGISTRATION No. OF PLANS: DS2012/000155
BRIDGE NUMBER: 11386
ISSUE STATUS: TENDER
SHEET No. 6 — ISSUE 1



FOR TENDER

GENERAL NOTES

SCALE 0 2.5 5 10 15m OR AS SHOWN

FOR CONSTRUCTION SEQUENCE NOTES REFER SHEET No. 6

Rev	Date	Description	By	Ch'd	App'd
1	01.09.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.
0	13.04.17	ISSUED FOR TENDER	A.S.	J.S.	J.S.

MAIN ROAD No 182 — CITY OF HAWKESBURY

BRIDGE OVER HAWKESBURY RIVER
AT WINDSOR
LAUNCHING SEQUENCE - SHEET B

JACOBS — NSW Transport Roads & Maritime Services

NB98005-DG-BR

ROADS AND MARITIME SERVICES
SYDNEY REGION OFFICE
27 ARGYLE ST. PARRAMATTA
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NSW 2124
PHONE 02 8849 2069
FACSIMILE 02 8849 2818

	PREPARED	CHECKED
DESIGN	P.L.	A.M.
DRAWING	S.R.	I.T.

APPROVED DESIGN QA RECORDS

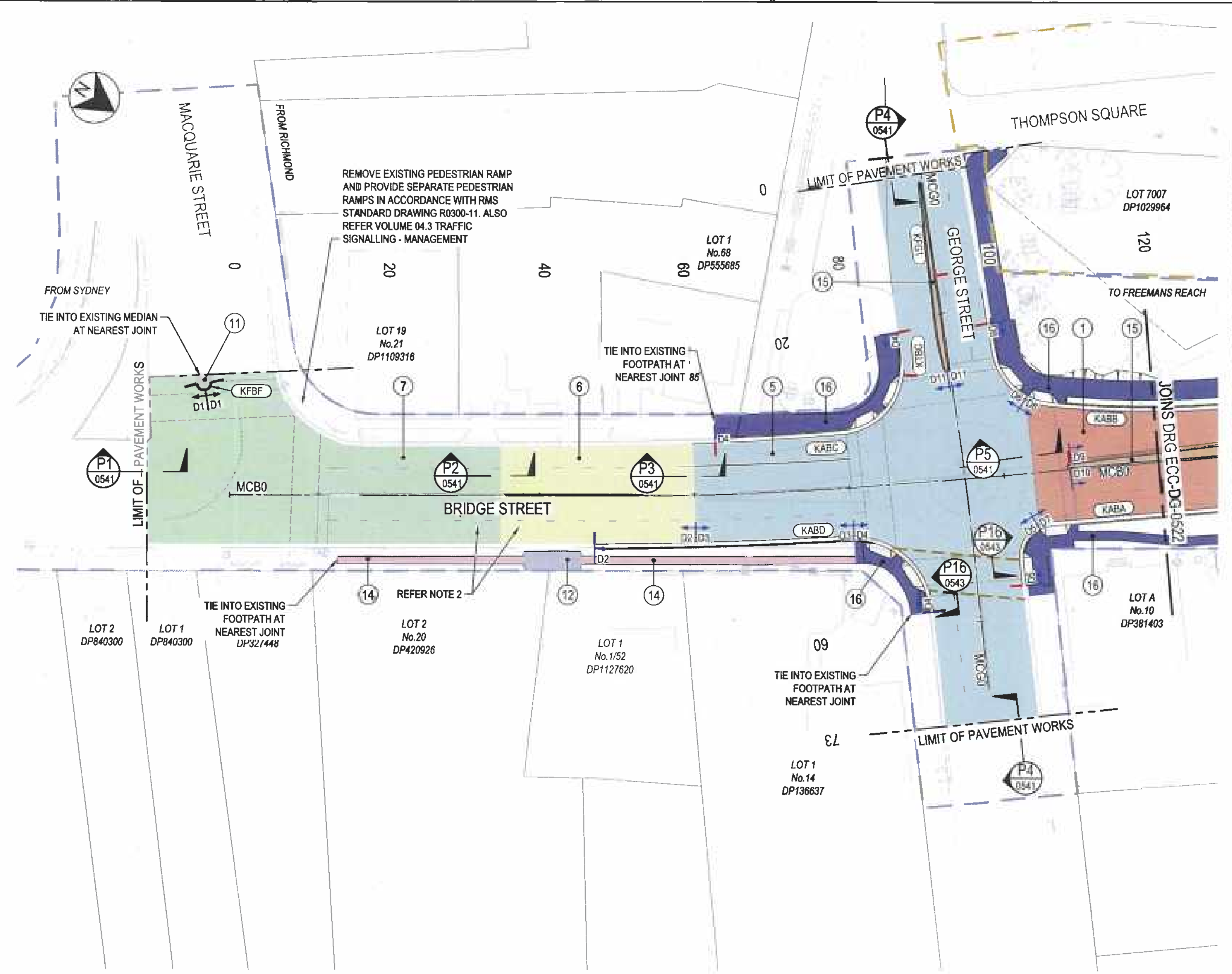
DIRECTOR

REGISTRATION No. OF PLANS: DS2012/000155

BRIDGE NUMBER: 11386

ISSUE STATUS: TENDER

SHEET No. 7 — ISSUE 1



LEGEND

FOR REFERENCE

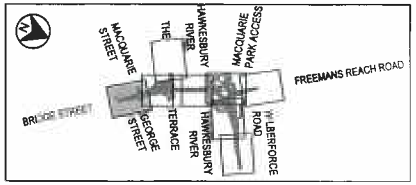
- EXISTING PROPERTY BOUNDARY
- CONSTRUCTION WORK ZONE
- WORKS SUBJECT TO FURTHER COUNCIL AND STAKEHOLDER CONSULTATION
- ARCHAEOLOGICAL DEPOSIT ZONE
- CONTROL LINE

PAVEMENT AND KERBS

- PAVEMENT TYPE 1 - MAIN CARRIAGEWAY
- PAVEMENT TYPE 2 - ROUNDABOUT
- PAVEMENT TYPE 3 - WIDENING
- PAVEMENT TYPE 4 - LOCAL ROAD
- PAVEMENT TYPE 5 - REHABILITATION
- PAVEMENT TYPE 6 - LEVEL CORRECTION
- PAVEMENT TYPE 7 - MILL AND RE-SHEET
- PAVEMENT TYPE 8 - BRIDGE DECK
- PAVEMENT TYPE 9 - ROUNDABOUT APRON
- PAVEMENT TYPE 10 - SHARED ZONE
- PAVEMENT TYPE 11 - RAISED MEDIAN
- PAVEMENT TYPE 12 - DRIVEWAY
- PAVEMENT TYPE 13 - SHARED PATH
- PAVEMENT TYPE 14 - FOOTPATH
- PAVEMENT TYPE 15 - PAVED MEDIAN
- PAVEMENT TYPE 16 - PAVED PATH
- EXISTING PAVEMENT TO BE REMOVED
- (1) PAVEMENT TYPE LABEL (REFER NB98005-ECC-DG-0531 TO 0532)
- PX INTERFACE DETAIL (REFER NB98005-ECC-DG-0541 TO 0543)
- DX|DX EDGE DETAIL START/END (REFER NB98005-ECC-DG-0551 TO 0557)
- (KXXX) KERB/GUTTER TAG (REFER NB98005-ECC-DG-0581)
- KERB/GUTTER STRING START/END (REFER NB98005-ECC-DG-0581)

NOTES

1. FOR GENERAL NOTES REFER NB98005-ECC-DG-0503.
2. REMOVE AND HEAVY PATCH ALL AREAS OF CRACKED, REVELLED OR OXIDISED ASPHALT PRIOR TO CONSTRUCTION OF PAVEMENT TYPES 6 AND 7. EXTENTS TO BE DETERMINED BY THE PRINCIPAL DURING CONSTRUCTION.



KEY PLAN

DATE: 3/11/2017 9:28:27 AM LOGIN NAME: PARISH, JORDAN

REV	DATE	DESCRIPTION		REVIEWED	
2	03.11.17	ISSUED FOR TENDER	SH	BDP	TR
1	01.09.17	ISSUED FOR TENDER	SH	BDP	TR
0		NOT USED			

		DATE
	JP	03.11.17
DRAFTING CHECK		03.11.17
	CW	03.11.17
DESIGN CHECK	BDP	03.11.17
PROJECT MANAGER	TR	03.11.17

ORIGINAL DRAWING AT A3 SIZE

SCALE 1:500 AT A3

CO-ORDINATE SYSTEM MGA Zone 56 | HEIGHT DATUM AHD

0 5 10 15 20 25 mm ON A3 ORIGINAL — This Drawing may have been prepared using colour and may be incomplete if copied

DRAWINGS / DESIGN PREPARED BY

JACOBS

177 Pacific Highway, North Sydney, AUSTRALIA
Tel: (02) 9928 2100 Fax (02) 9928 2500
Web: www.jacobs.com

NSW Transport Roads & Maritime Services

PREPARED FOR
GREATER SYDNEY PROJECT OFFICE
SYDNEY OUTER

PROJECT

HAWKESBURY CITY COUNCIL AREA
MR182 - BRIDGE STREET, WINDSOR
WINDSOR BRIDGE REPLACEMENT
PAVEMENT & KERBS
PLAN
SHEET 1

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2012-000289-DES-WINDSOR-171103

STATUS: FOR TENDER

05 | RMS REGISTRATION No: DS2012/000289

IFT | DRAWING No: NB98005-ECC-DG-0521 | REV: 2

Appendix 5

Estimate Approval & Acceptance Form

Transport Roads & Maritime Services

Estimate Approval

Infrastructure projects

Project description	Windsor Bridge Replacement over Hawkesbury Road from Macquarie Street to Wilberforce Road		
Equip Project No:	P.0011444	**INSW project tier**	Tier 3
Customer Division:	Sydney	**Project Office:**	Greater Sydney PO
Funding source	State Funded	**Delivery method**	Construct
Scope description	Construction of New Bridge over Hawkesbury River and Demolition of the Existing Bridge		
Estimate status:	Post-Tender	**Date:**	**12/04/2018**
P50 Cost Estimate (current $)	$124 million ($ March 2018)	**P50 Cost Estimate (outturn $)**	$130 million (Construction period June-2018 to August-2021)
P90 Cost Estimate (current $)	$131million ($ March 2018)	**P90 Cost Estimate (outturn $)**	$137 million (Construction period June-2018 to August-2021)

Preparation of project estimate

I have undertaken a peer review of the project estimate, including the project scope definition, risk register, project cost and schedule reports, in accordance with the RMS Estimating Manual and ProjectPack Estimating procedure:

Name: Graham Standen Signed: ..... Date: 16.04.18
Senior Project Manager (Delivery)

I recommend that the estimate amounts are approved.

Name: Gurjit Singh Signed: ..... Date: 13/04/2018
Project Manager

Estimate review

Director ~~of the responsible delivery Office and~~ for the project (Level 4)

Tier 1&2:
Director, Project Services, TPS

I have reviewed the estimate based on the estimate concurrence report and I recommend the estimate values.

Name: Ian Allan. Signed: ..... Date: 26.4.18.
Position: Director Program Mgmt, GSPO

Recommendation

Tier 3&4:
Director, Project Support, TPS
Tier 5&6:
Engineering Estimating Manager

I recommend concurrence with the project estimate values.

Name: BRUCE TAGGART Signed: ..... Date: 19/4/18
Position: DIRECTOR PROJECT SUPPORT

Estimate concurrence

Delegation 5510

Tier 1&2 – ED Technical and Project Services
Tier 3&4 – Director Project Services
Tier 5&6 – N/A

I concur with the project estimate values in accordance with RMS Delegation 5510.

Name: C. Delahunty Signed: ..... Date: 4-5-18
Position: A/Director Project Services

Estimate Approval

Delegation 5510

Tier 1&2 – Level 2
Tier 3&4 – Level 3
Tier 5&6 – Level 4

I approve the project estimate values in accordance with RMS Delegation 5510.

Name: C. Delahunty Signed: ..... Date: 4-5-18
Position: A/Director Project Services

Note that Delegation 5520 requires separate customer division approval of project objectives, scope, allocated (P50) announced (P90) project budgets and changes.