Berry Bypass Urban Design Strategy

Community Workshop –
Berry Bridge and Northern Interchange Precinct

28 March 2012
<table>
<thead>
<tr>
<th>Berry Bridge</th>
<th>Northern Interchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philosophy</td>
<td>Philosophy</td>
</tr>
<tr>
<td>Vantage Points</td>
<td>Vantage Points</td>
</tr>
<tr>
<td>Coordinated Project Elements/Palette</td>
<td>Landscape Approach – Cross Sections</td>
</tr>
<tr>
<td>Technical Criteria</td>
<td></td>
</tr>
<tr>
<td>Clearances</td>
<td></td>
</tr>
<tr>
<td>Bridge Pier/Parapet Study</td>
<td></td>
</tr>
<tr>
<td>Safety Barriers</td>
<td></td>
</tr>
<tr>
<td>Abutments</td>
<td></td>
</tr>
</tbody>
</table>
Berry Bridge + Northern Interchange Plan
Berry Bridge - Design Philosophy

• Appropriate to its place – a picturesque rural setting.
• In scale with the township, landforms and existing landscape.
• Not draw attention to itself – a grand statement is inappropriate.
• The emphasis should be the dramatic backdrop of escarpment, the attractive pastoral valley/floodplain and creek-line vegetation.
• No tack-on decoration.
• Should have clean lines and neat detailing – not be fussy or cluttered.
The architectural expression should be one of simplicity and straightforward structural expression.

Respond to creek and floodplain environment.

Viaduct-like in character – rhythm of piers/columns – not a forest.

Columns/piers - consider how they pick up the light/shadow.

Should age and weather well - minimise maintenance/design for self cleaning surfaces, design that deters graffiti/vagrancy.

Get the details right: surfaces with texture, expressing the forms with light and shade, reinforce linear expression.
Berry Bridge – Cultural/Heritage Response

- Alignment relocated further away from township to respect heritage.
- Screened from township by existing vegetation along creekline.
- Relocate the Alexander/David Berry Memorial.
- Mark the turn off into Berry township with appropriate signage.
- Draw inspiration for finishes palette from locally available stone and timber.
- Incorporate endemic landscape themes and cultural plantings.
Main vantage points are from Woodhill Mountain Road

- South abutment undercroft seen up close by pedestrians
- Top deck of bridge seen by drivers continuing south
- Looking north from Bundewallah Creek
- Seen briefly in part by northbound on-ramp users

Summary: the bridge is only ever seen in parts

Seen in part from a limited number of adjoining properties.
Berry Bypass Project –
A ‘Family’ of Coordinated Project Elements + Finishes

Coordination of all project elements including:
• Interchange, Bridges & Throw Screens
• Cut and Fill Batters, Retaining Walls, Noise Walls/Mounds
• Lighting, Township Placemaking Signage
• Corridor Endemic/Cultural Landscape (e.g. poplars)
Materials, Colours + Finishes Strategy

- A low key approach.
- Complementing the natural environment.
- ‘Natural’ finishes preferred rather than applied.
- Utilising locally sourced stone and timber.
- Selecting finishes that weather and age well.
- Detailing that minimises staining and is self cleaning.
Berry Bridge – Technical Criteria

- 550-600m long and 26.5m wide.
- Has an ‘S’ shaped double curvature in plan – serpentine in nature.
- Results in super-elevation one way then the other.
- Varying horizontal alignment – coming off the ridge high (at north abutment) and then sweeps down quickly to become very low (at south abutment/Connelly’s Creek).
- Bridge clearance varies between high of 11.7m and low of 2.6m.
- Super ‘T’ beam structure.
- Most efficient structure with least columns.
- 33m spans, 1.5m deep beam.
Aerial view from northeast towards Berry
Berry Bridge – Clearances

Maintain 3m clearance wherever possible (u/s bridge Super ‘T’s to ground level) to:

• Deter graffiti
• Deter vagrancy
• Safe passage of pedestrians
• Maximise light and rain penetration to undercroft
• Properly ventilate
Berry Bridge – Generic Bridge Pier Study

- Circular columns - integrated headstock.
- Portal Frame – integrated headstock.
- Circular columns – recessed headstock.
- Circular columns - expressed headstock
- Double ‘V’ shaped piers.
- Double ‘T’ shaped piers.
Example of recessed crossbeam
Sydney Airport Flyover
Berry Bridge – Pier and Parapet Options
Original Pier Option (Refined)
View south from Woodhill Mountain Road
Berry Bridge – Pier and Parapet Options
Floodplain Expressed Coursing
Berry Bridge – Pier and Parapet Options
Floodplain Expressed Coursing
Berry Bridge – Pier and Parapet Options
Contemporary Portal Frame
Berry Bridge – Pier and Parapet Options
Contemporary Portal Frame
View from Woodhill Mountain Road

View from North

View from South
Mehi River Bridge, Moree
Berry Bridge – Pier and Parapet Options
Flared Capital/Integrated Headstock
Berry Bridge – Pier and Parapet Options
Flared Capital/Integrated Headstock
View south from Woodhill Mountain Road
Pacific Highway, Bonville
Berry Bridge – Safety Barriers/Rails

**Type MAO**
Outer Traffic Barrier Type MAO shown, Inner Traffic Barrier Type MAI similar.
(Part of Fig. 2.04.2.2)

**Type MBO**
Outer Traffic Barrier Type MBO shown, Inner Traffic Barrier Type MBI similar.
(Part of Fig. 2.04.2.2)

**Type MCO**
Outer Traffic Barrier Type MCO shown, Inner Traffic Barrier Type MCI similar.

**General Notes**
- Scale: 1:25
- The following assumptions have been used in this design:
  - Concrete Exposure Classification: B1
  - Minimum 28 Day Compressive Strength of Concrete 40MPa
  - Minimum nominal thickness nearest to the concrete surface 40mm
  - Steel plate shall conform to AS/NIOS 3678 - 156.
  - Rectangular hollow sections shall conform to AS 1163 - C350/60.
  - High strength steel bolts shall be property class B 8.8 to AS/NIOS 152.
  - High strength steel nuts shall be property class K 10 to AS/NIOS 152.
  - Bolting category for high strength steel bolts shall be B8/8 in accordance with AS 5100.6.
  - Steel washers, large series, shall conform to AS 1231.5, product grade A.
  - All steel components shall be hot-dip galvanized after fabrication in accordance with AS 3826.1.
  - Bolts, nuts and washers shall be hot-dip galvanized in accordance with AS 1231.5.
  - All welding shall conform to AS/NIOS 1554.1 with additional requirements as given in RTA Specification B14.
  - The weld category shall be SP in accordance with AS/NIOS 1554.1.
  - All weld symbols comply with AS 1993.
  - Indicative reinforcement shown only, the size and spacing of reinforcement must be determined by the design engineer.
  - Maximum post spacing = 2.34m.

*Denotes Nominal Value.
† Denotes Minimum Dimension.
NCF Denotes No Chamfer or Fillet.
Berry Bridge – Safety Barriers/Rails

Proposed twin rail safety barrier with modified Type F solid concrete upturn:

• Reduces unnecessary parapet depth & heaviness.
• Provides a lighter/contrasting top profile.
• Emphasizes the bridge’s streamlining/horizontal lines.
• Provides a sense of openness and views when driving over.
• Provides some acoustic attenuation.
Berry Bridge – North Abutment

- Spill through type.
- Seen up close from northbound on-ramp.
- Continues as a 2H:1V cut batter within interchange.
- Rock face bridge undercroft area with local stone.
- Integrate maintenance access in abutment design.
Berry Bridge – South Abutment

- Spill through type.
- Riparian setback to creek bank required.
- Seen close up by pedestrians along Connolly’s Creek.
- Angled to follow creek alignment.
- Scour protection may be required.
- Rock face with local stone in bridge undercroft.
- Integrate maintenance access in abutment design.
Northern Interchange – Design Philosophy

- Minimise the visual presence of interchange structures.
- Minimise impacts on existing properties and access.
- Minimise the interchange footprint.
- Retain mature trees wherever possible.
- Consider the sequential views on the northern approach.
- Contribute to the township arrival/departure experience.
- Develop strategy for Berry township entry signage.
- Frame rural and township views from elevated vantage points.
View 3 - View from Berry Bypass South Bound Exit Lane looking West
View 4 - View from Berry Bypass North Bound Entry Lane Looking North
Section A