SECTION 21

GENERAL ARRANGEMENT
DRAWINGS
21  GENERAL ARRANGEMENT DRAWINGS

21.1  GENERAL

In all cases, Sheet No 2 of each set of bridge construction drawings prepared by the Authority, by Consultants for the Authority or for bridges that will become the property of the Authority, shall be the “General Arrangement” drawing. Where more than one sheet is necessary to show all the required details, a suite of General Arrangement drawings shall be created and the titles General Arrangement - Sheet A, General Arrangement - Sheet B etc shall be used.

The “General Arrangement” gives an overall view of the bridge as it will appear once constructed and it shall include a plan, an elevation, a typical cross section, a site plan, a suitable skew diagram and/or vertical alignment diagram as appropriate and a list of “General Notes” which apply to the entire set of drawings.

The General Arrangement drawing shall contain a note which describes the thickness and composition of the bituminous surfacing and waterproofing system on the structure.

The General Arrangement drawing shall not contain any construction sequence information or any construction requirement information.

Typical General Arrangement drawings for a variety of bridge construction types are shown in Figures 21.1.1(a), 21.1.1(b), 21.1.1(c) and 21.1.1(d).

21.2  PLAN VIEW

Plan views shall contain the following information:

- An outline of the structure
- The watercourse, railway line or road under the structure
- Any existing structures including the Reduced Level of the deck
- The location of any public utilities
- The Base centreline and Carriageway centreline as appropriate
- Chainages on the Base centreline at the ends of deck and at each pier centreline together with the reduced level at each location
- The bearing or radius of the Base centreline as appropriate
- For bridges over roads, the coordinates of the intersection point of the control line for the bridge and the centreline of the underlying roadway, as well as the chainage on the control line for the bridge structure at that point
- The outline of parapets, footways and railings as appropriate
- Joints in the deck surface
- The position of name plates
- The outlines of the structural elements ie abutments, piers, piles, footings and columns etc where the scale of the drawing permits
- Horizontal clearances as appropriate
- The location of any vertical clearance referenced from the Elevation
- Contours of the existing surface
- Shapes and slopes of any embankments
- Extent of any embankment protection required
- Extent of any channel excavation required
- The direction of flow of the watercourse or conventional tidal representation
- The compass direction of True North indicated by a northpoint
- The outline of concrete safety barrier extensions, approach slabs and steel safety barriers in the approaches as appropriate
21.3 ELEVATION

Elevations shall contain the following information as appropriate:

- The outline of the elevation face of the structure projected from the Plan view showing foundation type, abutments, piers, superstructure and railings.
- The overall length of deck
- The number and length of spans
- The grade on the deck (represented by an arrow and % sign) or the reduced level of the deck as appropriate
- The normal water level or stream condition ie normally dry etc
- Mean High Water Springs and Mean Low Water Springs for tidal waters.
- Navigational clearances above Mean High Water Springs for navigable waterways
- The calculated High Flood Levels - both the 1 in 100 year ARI and 1 in 2000 year ARI values
- The reported High Flood Level, including the date of occurrence
- Vertical and horizontal clearances for structures over roads and/or railways including the approximate design surface level of any road or railway line under the structure at the Base centreline
- Vertical and horizontal clearances for opening span bridges both open and closed
- The existing surface on the Base centreline projected from contour lines.
- Proposed cross section for channel excavation
- Form and extent of any embankments and any required embankment protection whether above or below the existing natural surface, parapet extensions, approach slabs and steel safety barriers in the approaches
- Contract levels of foundation elements
- Bearing articulation in the longitudinal direction represented by the letters “F” for fixed, “R” for restrained and “E” for expansion
- Expansion joint locations, represented by the letters “EJ”
- Joints in the superstructure represented by a single heavy line
- Chainages, existing surface levels and design surface levels at the ends of deck and at each pier on the Control Line or Base centreline given in a Datum block beneath the Elevation
- Structure location with respect to nearest major towns ie FROM / TO

21.4 TYPICAL CROSS SECTION

Typical cross sections shall contain the following information:

- General form of the piers or abutments including foundation elements
- Outline of the superstructure elements
- Overall width of the superstructure
- Width between concrete safety barriers
- Height of traffic barrier railings above deck level
- Widths of concrete safety barriers and/or footways
- Clear width of footways
- Base centreline and/or Carriageway centreline and/or Control Line
- Crossfall or superelevation represented by an arrow and % sign
- Type of wearing surface
- Indication of orientation with respect to stream flow or compass point ie UPSTREAM or DOWNSTREAM, NORTH or SOUTH.

21.5 SKEW DIAGRAM
Skew Diagrams shall be in the following format:

- A right angle triangle with the base parallel to the Control Line or Base Centreline, the hypotenuse parallel to the abutment and pier centrelines and with the skew angle designated at the apex of the triangle.

Skew Diagrams shall contain the following information:

- A dimension for the vertical side of the triangle (normally 10,000). A dimension for the base and hypotenuse of the triangle calculated from the vertical dimension and the skew angle.

Conventional Skew Diagrams, for both right and left hand skews are shown in Figure 21.5.

21.6 VERTICAL ALIGNMENT DIAGRAM

Vertical alignment diagrams shall contain the following information:

- The length of the curve.
- The grade on the road at each end of the curve.
- The chainage and reduced level at each end of the curve.
- The position of the bridge indicated by a heavy line together with a chainage and reduced level at each end of the bridge.
- The chainage and reduced level of the intersection point of the approach grades on the Base centreline.

21.7 SITE PLAN

- Base centreline, including the position of any Tangent Points etc.
- The position and chainage of each end of the bridge.
- The existing bridge (if applicable) including the RL of the existing deck.
- Survey Marks and Bench Marks (including RL).
- Road boundaries.
- The location of any existing public utilities.
- The location and description of any nearby features that are likely to affect the construction of the new bridge.
- Northpoint.

21.8 GENERAL NOTES

The General Notes on the General Arrangement Drawing shall be in the format shown on the current issue of RTA Standard Bridge Drawing No RTAB029 with the blank spaces being filled in with the appropriate information. Any necessary additional information may be added as required.
THE BRIDGEWORKS DO NOT INCLUDE DEMOLITION OF EXISTING BRIDGE, EMBANKMENT PROTECTION, STEEL SAFETY BARRIERS, SPRAYED SAM SEAL OR ANY WORK IN THE APPROACHES EXCEPT THE APPROACH SLABS.
EXISTING BRIDGE 1961

BRIDGE WORKS DO NOT INCLUDE SPRAYED SAM DOUBLE DOUBLE SEAL, STEEL SAFETY BARRIER, EMBANKMENT FILL AND PROTECTION OR ANY WORKS IN THE APPROACHES EXCEPT APPROACH SLABS.

MAIN ROAD No 246
SHIRE OF HUME
BRIDGE OVER FRENCH'S CREEK
AT 1.9km SOUTH OF HOWLONG

ELEVATION

GENERAL NOTES

Dimensions are in millimetres, chainages and reduced levels are in metres, reduced levels are related to AHD.
R denotes restrained bearing.

THE BRIDGEWORKS DO NOT INCLUDE SPRAYED SAM DOUBLE DOUBLE SEAL, STEEL SAFETY BARRIER, EMBANKMENT FILL AND PROTECTION OR ANY WORKS IN THE APPROACHES EXCEPT APPROACH SLABS.

PLAN

FIGURE 21. 1. 1(b)
**Regarding the Bridge Over McKenzies Creek**

- **Alignment and Profile:** Chainages and reduced levels are in meters. Dimensions are in millimeters.
- **Surface and Groundwater:** Designed and reduced levels are in accordance with RTA's Preliminary Work and Provisional Design.
- **Waste Disposal:** Waste Disposal is to be done in accordance with RTA's Waste Disposal Guidelines.
- **General Arrangement:** The General Arrangement includes details of new channel alignment, profile, and safety protection for downstream.
- **Foundation:** Foundation material is sand/sandy clay.
- **Contract Levels:** Contract levels are RL 6.000 to RL 6.440.
- **Approximate Existing Surface:** Approximate existing surface level is not to scale.
- **Channels:** Channels are to be shaped to the design profile as shown on Sheet No 14.
- **Base of Channel:** The base of the channel shall be protected with 230 thick trapezoidal profile as shown on Sheet No 14.
- **Skeg Diagram:** The skeg diagram is not to scale.
- **Figure 21.1.1(c):** Details are shown for integration with existing channel.
- **APPENDIX:** Details of new channel alignment, profile, and safety protection for downstream.

**Note:** This drawing is confidential and shall only be used for the purpose of the nominated project.
RIGHT HAND SKEW

DIRECTION OF INCREASING CHAINAGE

LEFT HAND SKEW

DIRECTION OF INCREASING CHAINAGE

IN BOTH CASES, ‘L1’ AND ‘L2’ ARE CALCULATED BY THE USE OF THE GIVEN DIMENSIONS AND THE SKEW ANGLE

SKEW DIAGRAMS

FIGURE 21.5