SECTION 3

TYPES OF DRAWINGS

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3.1 GENERAL

All drawings produced by the Authority's Bridge Engineering Section are classified into three main categories:

- SKETCHES (including proposals and temporary works)
- REGISTERED DRAWINGS
- STANDARD DRAWINGS

3.2 DEFINITIONS

Sketches shall mean a plan or a set of plans showing graphical information that will not form a permanent part of the work.

Proposal Sketches shall mean a plan or set of plans prepared to depict what is considered to be the most appropriate type of structure for the site under consideration. These types of drawings have two formats ie Concept Sketches and Proposals Sketches. Proposal sketches prepared by the Authority shall be registered in the Bridge Engineering CAD registration system as sketches.
Sketches shall not be provided with Cover Sheets.

Registered Drawings shall mean a plan or a set of plans showing permanent work on any existing or proposed bridge or road asset and shall include a Cover Sheet and Contents Sheet where necessary. These drawings shall carry a Plan Registration Number supplied by the RTA's Micrographics Unit, or other issuing unit. Where possible, the Plan Registration Number shall be obtained prior to the commencement of project detailing.

Standard Drawings shall mean drawings that have been produced by the RTA or consultants to depict the typical detailing required for various items of work, to eliminate repetition of drafting and to ensure that details used are common both in content and presentation.

3.3 SKETCHES

Sketches shall be prepared in accordance with the relevant Sections and Clauses of this Manual.

Sketches prepared by the Authority's Bridge Engineering Section, shall be registered within each project in accordance with Clause 3.7 of this Manual.

Sketches prepared for the Authority by consultants shall be documented in accordance with the Quality System operating within respective offices.

3.4 PROPOSAL SKETCHES

All Proposal Sketches shall be prepared in accordance with Section 18 of this Manual.
Proposal Sketches prepared by the Authority's Bridge Engineering Section shall be registered as Sketches under the Bridge Engineering Section registration system in accordance with Clause 3.6 of this Manual with the label "Registration Number of Plans" in the title block being changed to read "Sketch Number" (see Figures 3.4.1 and 3.4.2).

Proposal Sketches shall not be formally registered with the Authority's Micrographics Unit.

Proposal Sketches prepared for the Authority by consultants shall be documented in accordance with the Quality System operating within respective offices and shall ensure that the requirements as detailed in Section 18 of this Manual are met.

3.5 STANDARD DRAWINGS

3.5.1 RTA Bridge Standard Drawings.

RTA Standard Bridge Drawings are intended to be a source of information and RTA requirements. They are produced in the following three categories:

(i) Standard drawings that may be used without any site-specific adjustment or any other change. A typical example of this category of standard drawings is the standard drawing for Name Plates. Standard drawings of this category are provided to the Contractor in the Tender Documents and are not to be included in any set of bridge drawings.

(ii) Standard drawings that are intended for use with minimal modifications and generally only require additional information to be added. Some typical examples of this category of standard drawings are the Bar Shapes Diagram (which requires the inclusion of Z-shapes), reinforced concrete driven piles (which requires the inclusion of design information in accordance with the Design Information drawings) and other similar standard drawings.

These RTA Standard Bridge Drawings must be included in each set of bridge drawings that has a separate Registration Number and drawings must have a title block consistent with the other drawings in the set. The words "standard drawing" shall not be used in the title block. The name of the drawing will be that describing the contents, i.e. Bar Shapes Diagram, Reinforced Concrete Driven Pile Details" etc.

(iii) Standard drawings intended to be used as a source of information on standard detailing of often used elements and details. Drawings produced on the basis of information provided on this category of RTA standard drawings generally require design input and more extensive modification than category (ii) standard drawings. Typical examples of this category of standard drawings are barrier railing drawings and drawings for prestressed concrete elements (planks, Super-T girders). These need to be modified to depict the appropriate (span) lengths, skew angles, mass of elements, design information, etc.

RTA Standard Bridge Drawings that contain standard details such as small movement joints, dowel details, cast-in-angles etc, are intended to provide standard solutions. Only those details that are applicable for the subject bridge shall be reproduced in the drawings.

These drawing prepared on the basis of this category of RTA Standard Bridge Drawings must be included in each set of bridge drawings that has a separate Registration Number and must have a title block consistent with other drawings in the set. The words "standard drawing" shall not be used in the title block. The name of the drawing will be that describing the contents, i.e. "10 m Span PSC Plank", or similar.

3.5.2 Project Specific Standard Drawings.

On large projects, such as Design and Construct projects and similar, Project Specific standard drawings may sometimes be prepared to rationalise design, minimise the volume of drawing and reduce the cost of construction through standardisation of structural elements and details.

Where such standard drawings and/or standard details are produced and are used for a number of bridges and culverts, they shall be included in each separate set of bridge or culvert drawings and they shall comply with requirements detailed in Clauses 3.5.1 (i) and (ii) above. In particular, details which vary from bridge to bridge in these Design and Construct and similar projects shall be fully detailed in each set of drawings.

Where such project-specific standard drawings are used for structures such as retaining walls, gantries for signs, etc (these are generally parts of non-bridge drawings), they need not be included in each set of drawings. However, if the standard drawings are not included in each set of drawings, there shall be a cross-reference to the relevant standard drawing sheet and the registration number.

Further, required necessary minor variations to the standard drawings (to suit their application for a particular location) must be shown on the standard drawings.

3.6 REGISTERED DRAWINGS

Registered Drawings for all permanent works shall be prepared by the Authority's Bridge Engineering Section shall be in accordance with the relevant Sections and Clauses of this Manual and shall be registered through the RTA's Micrographics Section. See Clause 3.10 of this Manual.

Registered Drawings for all permanent works shall be prepared by consultants shall be in accordance with the relevant Sections and Clauses of this Manual. A Plan Registration Number shall be obtained from the RTA's Micrographics Unit and supplied to the consultant for inclusion on the drawings.

3.7 REGISTRATION OF SKETCHES AND DRAWINGS IN BRIDGE ENGINEERING

All Sketches and Registered Drawings prepared in the RTA's Bridge Engineering Section shall be registered under the Bridge Engineering Section's registration system in accordance with the following procedure:

For all new projects, a CAD Number shall be obtained from the Leader, CAD Development, the officer responsible for the maintenance of electronic registers for all Sketches and Registered Drawings.

CAD Numbers shall consist of a letter and a one or more digit number with the letter chosen being dependant upon the functional area from which the project originated ie

D denotes Design Functional Area
A denotes Asset Functional Area

Where projects proceed to final design, a Plan Registration number shall be obtained and provided to the Leader, CAD Development.

The Leader, CAD Development shall be advised of all new Registered Drawings and Sketches prepared on the CAD system as well as any drawings / sketches

transfered from one directory to another, in order that the relevant register can be continually updated.
Electronic data received from sources external to Bridge Engineering Section as well as sketches prepared by hand by any officer shall also be registered under the relevant CAD number on the CAD system.

For existing projects, where a Proposal Number has been previously issued, the CAD Number shall be the Proposal Number.

Sketches and drawings prepared by Consultants shall be registered in accordance with the quality system that exists in the respective consultant's office.

3.8 CAD FILE NAMES FOR REGISTERED DRAWINGS

For drawings prepared by the Authority's Bridge Engineering Section, the CAD file name for Registered Drawings shall consist of the CAD Number and a set of alphanumeric characters abbreviating the title of the drawing.
Registered Drawing CAD filenames shall have a maximum of eight characters.
eg D7ACA

where D7 denotes DESIGN CAD NUMBER
where AC denotes ABUTMENT CONCRETE (drawing title)
where A denotes SHEET A (where two or more sheets are used)

See Figure 3.8.1.

For drawings prepared by Consultants, the CAD Filenames used shall conform to the requirements of the quality system operating within the respective consultant's office.

3.9 CAD NUMBERS AND CAD FILE NAMES FOR SKETCHES

Where sketches are required in projects and they are prepared by the Authority's Bridge Enginerering Section, a project sketch number shall be used for all sketches and it shall consist of the letter "K" followed by the CAD number only.

The Project Sketch Number shall be shown in the title block as "KD104" for all sketches in the same project, where "D104" is the CAD Number allocated to the project under the Bridge Section registration system.

Where there is more than one sketch for a particular project, the individual CAD Filename for each sketch shall have a unique number and this shall be recorded below the bottom left hand corner of the title block.

Typical CAD Filenames within a project could be shown as:

"KD104CONSA" where "CONSA" denotes Concept Sketch - Sheet A

"KD104CONSB" where "CONSB" denotes Concept Sketch - Sheet B

"KD1O4CONSO1A" where "CPO1A" denotes Concept Sketch Option 1 – Sheet A

"KD1O4CONSO1B" where "CPO1B" denotes Concept Sketch Option 1 – Sheet B

The CAD file name for Sketches shall consist of the letter 'K' followed by the CAD Number and a set of alphanumeric characters abbreviating the title of the sketch.
Sketch CAD filename should have as few characters as is necessary.
eg KD10PROPS(CONS)
where 'K' denotes it is a sketch
where D10 denotes DESIGN CAD NUMBER
where PROPS denotes PROPOSAL SKETCH (title of the sketch)
where CONS denotes CONCEPT SKETCH (title of the sketch)

See Figures 3.4.1 and 3.4.2.

KA10BBA

where 'K' denotes it is a sketch
where A10 denotes ASSET CAD NUMBER
where BB denotes BAILEY BRIDGE (title of the sketch)
where A denotes SHEET A

See Figure 3.9.1.

Where sketches are required in projects and they are prepared by Consultants, they shall be numbered in accordance with the quality system operating within respective consultant's office.

3.10 REGISTRATION OF DRAWINGS WITH MICROGRAPHICS

All drawings for permanent works produced by the Authority's Bridge Engineering Section or by Consultants for the Authority for bridges and structures that will become the property of the Authority, shall be formally registered with the RTA's Micrographics Section. The following information shall be provided to the Micrographics staff at the beginning of the project in order that a "Registration Number of Plans" can be reserved:

Highway, Main Road, Freeway or Motorway Number
Local Government Area Name eg Shire of Singleton / City of Greater Taree
The name of the river/creek/road/railway line etc that the structure crosses
The location of the structure eg the distance from the nearest major town

Where drawings are being prepared for the widening or rehabilitation of an existing structure, the "Registration Number of Plans" of the existing structure shall be provided to Micrographics staff so that all plans for the same structure can be cross referenced appropriately.

Where drawings for permanent works are prepared by consultants, the consultant shall be supplied with a Registration Number which has been sourced from the RTA's Micrographics Unit.

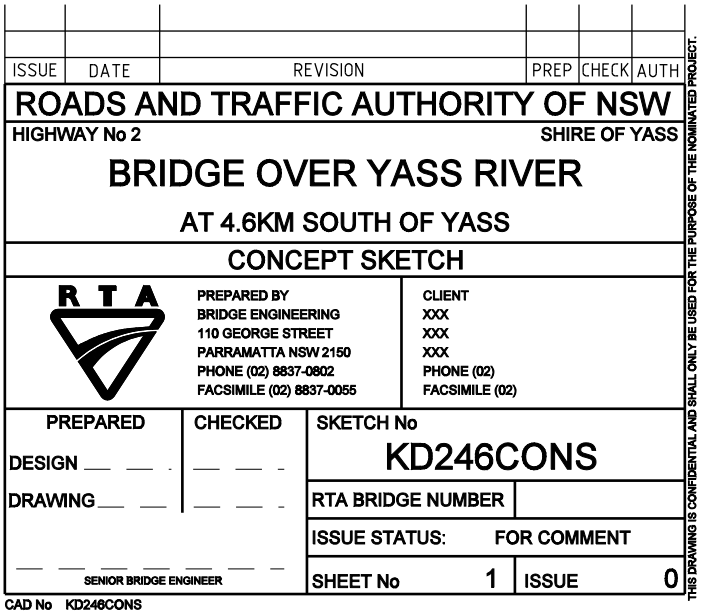

FIGURE 3.4.1

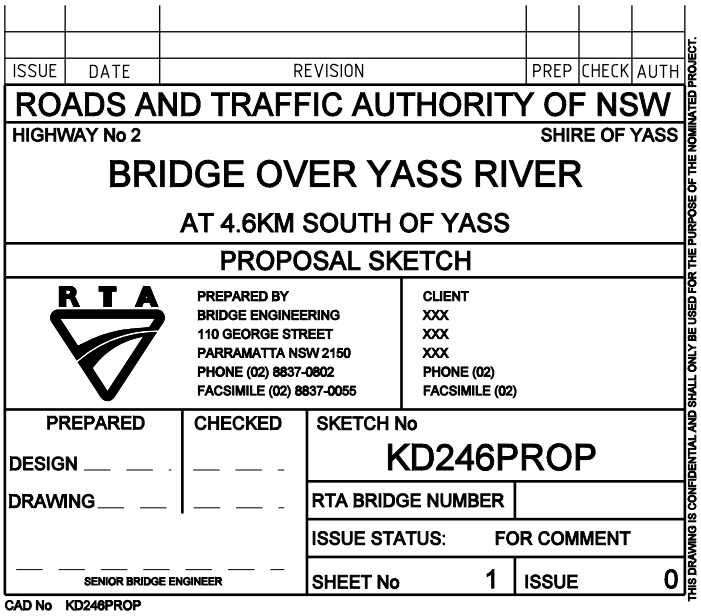

FIGURE 3.4.2

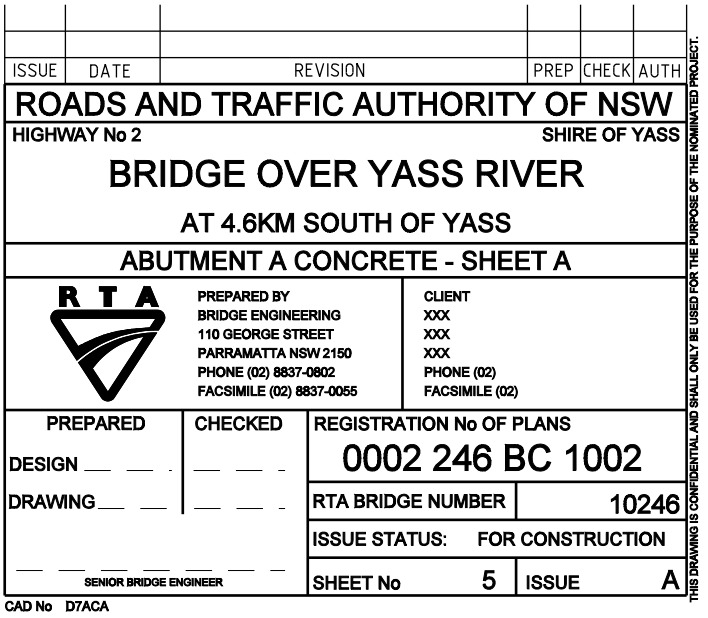

FIGURE 3.8.1

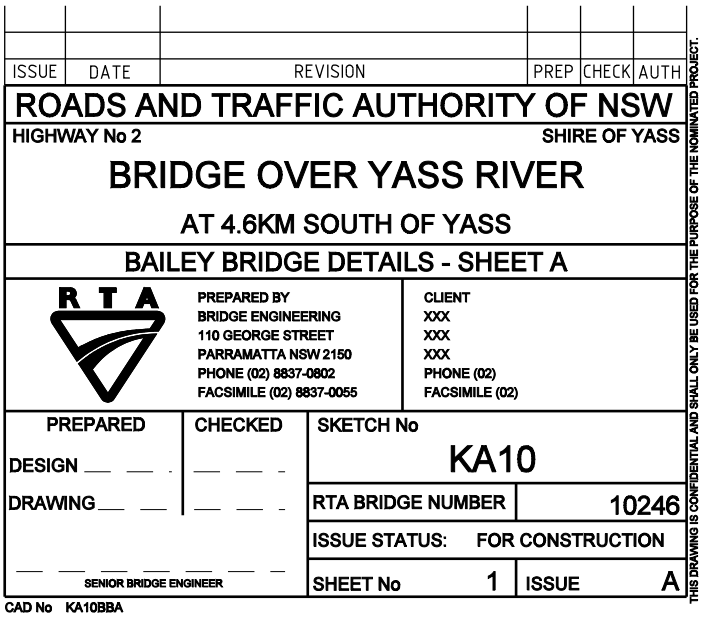

FIGURE 3.9.1