

**APPENDIX C**

**Data Management**

### **C.3 Form for Recording Information Obtained During a Site Visit**

A sample form for recording information collected during a site visit is included in Appendix B. The form is written in Microsoft Word 97 and is available on diskette. It is likely that variations to the sample will be needed to suit particular structures in some cases, and appropriate forms should be drawn up as necessary.

### **C.4 Forms 1 to 5 (See Appendix B)**

All forms are available in electronic form and are available on diskette.

#### **C.4.1 Forms in Word-processing Format**

Forms 1, 2, 3 and 5 are written in Microsoft Word 97. They may be completed by hand but it is recommended that they are completed electronically.

#### **C.4.2 Form in Spreadsheet Format**

Form 4 is written in Microsoft Excel 97. All cells are protected except for those into which information is to be inserted. Calculation of the weighted ratings, indices and SAG is automatic once the rating values are entered.

(iii) Insert rows as necessary for each bridge so as to provide one row per risk event. Copy the formulae from an existing row to all the new rows. Copy the state highway, route position and bridge name to each row that applies to the bridge. This will ensure that identity is maintained after the table is sorted;

(iv) Copy the information on seismic zone factor, risk event number, description and consequences, PGA, codes for likelihood, consequence and level of risk, and treatment options and rough order cost (ROC) from the risk register (Form 5) for each risk event into columns D to N. Enter the depreciated and replacement values into columns O and P. Enter the necessary information into columns X to AF inclusive, and column AL. The depreciated and replacement values shall be based on the annual valuation of the state highway network, updated to the current year. This information is available from the Regional Manager, Transit New Zealand. Note that risk events with a level of risk of "Low" or "Medium" will not have treatment options assessed, and some of the above information, as listed in note 6 on the spreadsheet, is not then required.

The spreadsheet will calculate and enter the ratios of ROC to depreciated and replacement values into columns Q and R, and the value of the ERI into column S.

(v) Assign a risk ranking to each risk event for which a treatment option has been determined (Section 3.9.3.6), and enter in column T;

(vi) Insert the information on the approach settlement slabs in column V;

(vii) Sort the whole table, including columns X to AT, in order of highest to lowest risk rank, using "Data", "Sort":

- Set primary sort on risk rank, ascending;
- Set secondary sort on state highway, ascending;
- Set tertiary sort on route position, ascending;
- Execute "Sort";

(viii) Print the output from columns A to T inclusive.

This provides a list of risk events in order of reducing ranking, which is useful for ranking the list of bridges that are considered to warrant detailed seismic assessment.

Note that, in addition to the sorted spreadsheet showing all risk events, a table listing the *bridges* in reducing order of ranking is required in the final report, as included in Appendix G. This can be achieved, after the risk rankings have been determined, by assigning the bridge rankings in column U and sorting the list with primary sort of "bridge rank", ascending, secondary sort on "risk rank". For clarity, when the list has been sorted by bridge ranking, titles and other information for the bridges should be rationalised in accordance with Note 5 on the spreadsheet. A heavy horizontal line should separate the blocks of rows that apply to individual bridges. For this table columns U and V should be included in the printed output.

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(iii) Copy the data into the lower table :

- Copy the data in the state highway, route position, bridge name and yes/no columns (columns A, B, C and D) from all rows of the upper table into the corresponding columns and rows of the lower table;
- Copy the data in the SAG column from the upper table (column E) from all rows of the upper table into the corresponding column and rows of the lower table. *Note that the data in the upper table is derived from a formula, and must be copied to the lower table as a Value, using "Edit - Copy", "Edit - Paste Special", "Values", "OK".*

(iv) Sort the data in the lower table using "Data", "Sort":

- Disable the sheet protection mode;
- Highlight columns A, B, C, D and E of the lower table;
- Set primary sort on SAG (column E) Descending;
- Set secondary sort on bridge name (column C) ascending;
- Execute "Sort";
- Enable the sheet protection mode.

(v) Print the output.

## **C.2 Spreadsheet to Summarise the Risk Assessment, Ranking Indicators and Bridge Rankings for Detailed Assessment**

### **C.2.1 General**

A spreadsheet has been prepared for recording and sorting the summary of information on risk assessment, ranking indicators and general items. The spreadsheet is written in Microsoft Excel 97 and is available on diskette. Figure 6 illustrates the spreadsheet and Appendix F includes an example. The spreadsheet is to be presented in two forms in the report:

- sorted by risk event in decreasing order of ranking in accordance with 3.11.2;
- sorted by bridge in decreasing order of ranking in accordance with 3.11.3.2.

### **C.2.2 Steps for Completing the Table**

- (i) Enter the Transit New Zealand region number and the appropriate names and dates into cells J2, D5 and D7;
- (ii) Copy the state highway, route position and bridge name into columns A, B and C from the SAG spreadsheet (see Figure 5) for all bridges not excluded from the ranking procedure (3.9.3.2);

## C. DATA MANAGEMENT

### C.1 Spreadsheet to Record and Sort the Seismic Attributes Grading (SAG) Values

#### C.1.1 General

A spreadsheet has been prepared for recording and sorting the SAG values. It is written in Microsoft Excel 97 and is available on diskette. Figure 5 illustrates the layout of the spreadsheet and Appendix F includes an example.

The upper half of the table is developed by entering the individual bridge highway route position and name, and the index attribute ratings determined during the rating procedure. The spreadsheet automatically calculates the values of hazard, importance and vulnerability indices, and the SAG value for each bridge.

The lower half of the table is completed by copying the relevant columns from the top half, and then sorting them into descending order of SAG value.

More detailed steps for completing the tables are set out below.

#### C.1.2 Steps for Completing the Tables

- (i) Adjust the table to the number of lines needed to accommodate the bridges being considered:
  - Disable the sheet protection with "Tools", "Protection", "Unprotect Sheet", "OK";
  - Add the necessary number of rows to the bottom of the upper and the lower tables with "Insert", "Rows". Delete rows by highlighting the rows and clicking "Edit" "Delete";
  - Copy the existing formulae in columns E, F, G, H and AA in the upper table into each of the new rows of the upper table; Copy the existing formula in column F of the lower table into each of the new rows of the lower table;
  - Enable the sheet protection with "Tools", "Protection", "Protect Sheet", "OK".
- (ii) Insert the data into the upper table:
  - Enter the Transit New Zealand Region number in Cell H2;
  - Enter the appropriate names and dates in Cells D4 and D6;
  - Enter the state highway number, route position, bridge name, yes/no, and index attribute rating values for each bridge into columns A, B, C and D, and I to Z respectively. The values of the hazard, importance and vulnerability indices, and the SAG will be calculated automatically. Note that columns E, F, G, H and AA in the upper table are protected.