

RAMM Version 3.6

**COMPUTER USERS
MANUAL**

RAMM COMPUTER USERS MANUAL

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Overview

Database

The inventory makes use of the Informix SQL database program and a broad understanding of the use of this program would be of help to the user of this system.

Terminology

The terminology used for the various road elements is as shown in figures 1, 2 and 3 below.

Figure 1. Typical Urban Cross Section

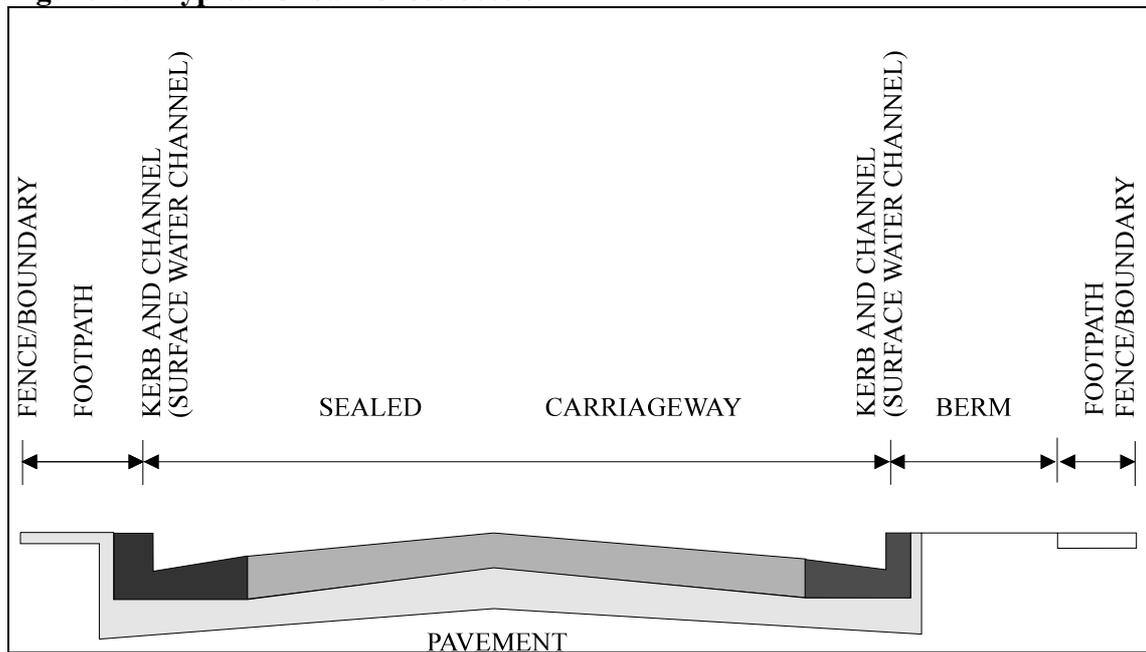


Figure 2. Typical Rural Cross Section

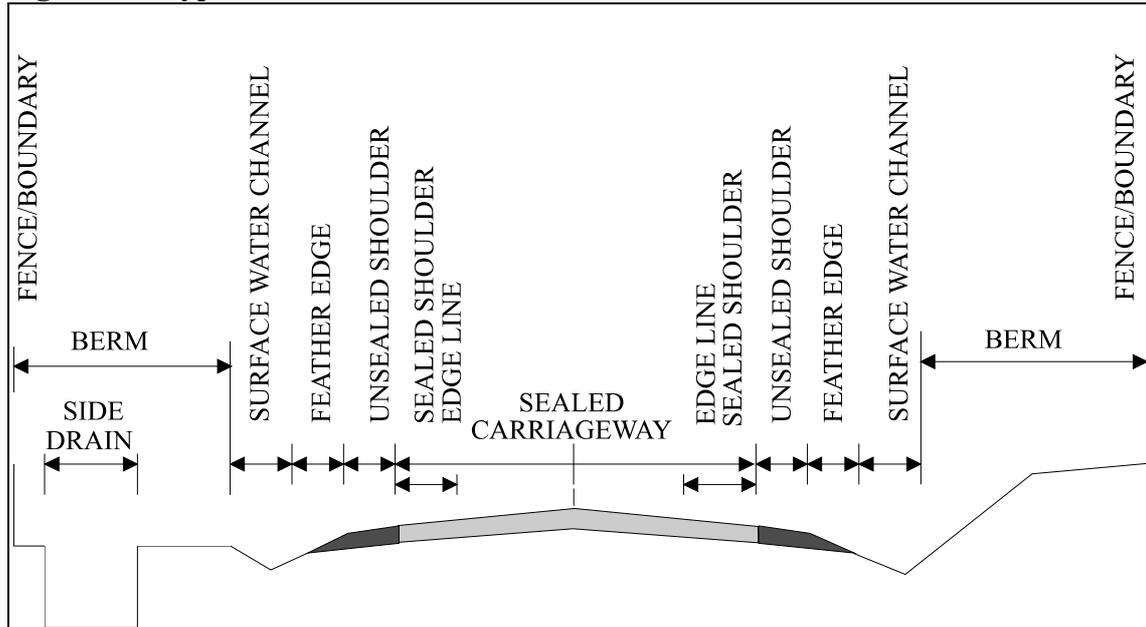
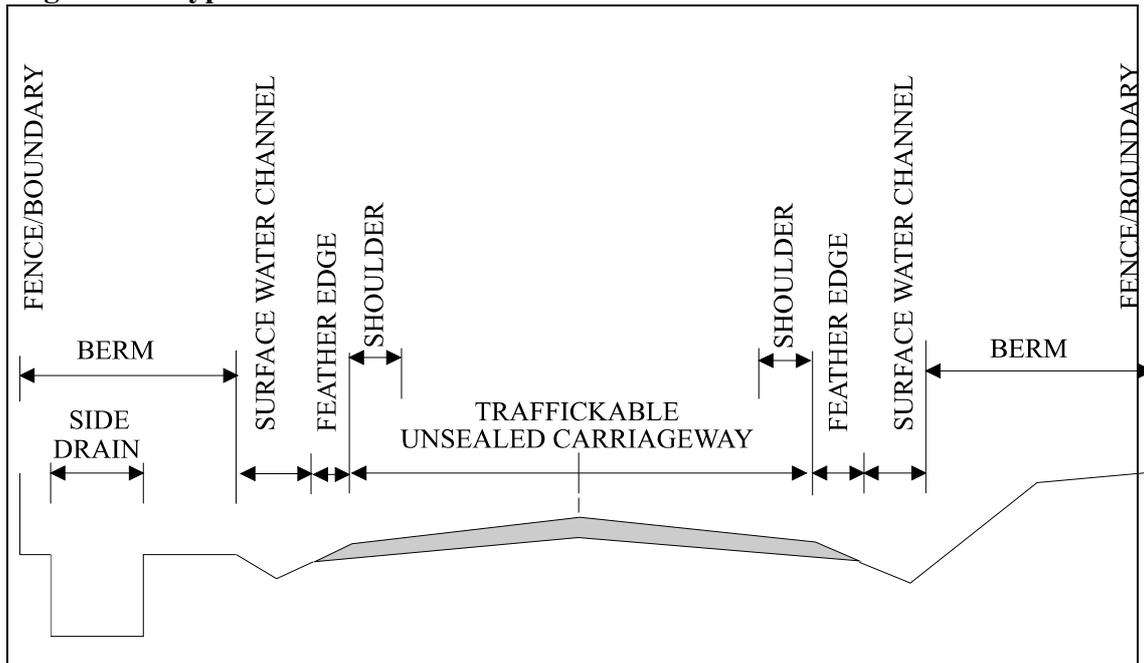


Figure 3. Typical Rural Cross Section



Inventory Structure

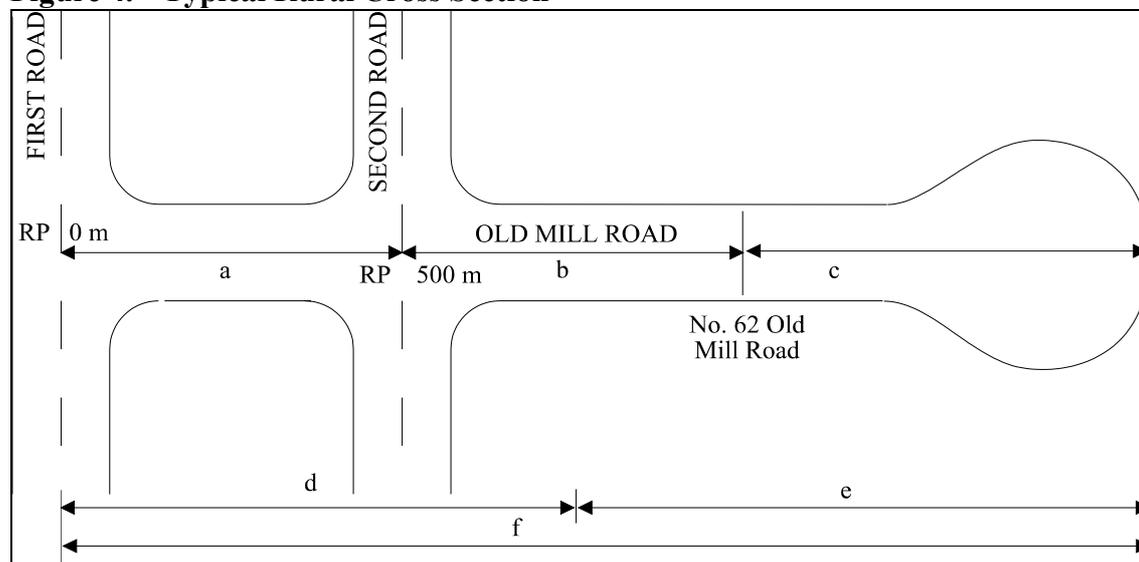
Road data has been grouped into sets with each set relating to a particular aspect of the roadway. This is to allow the gathering of data to be staged to suit the resources available for data collection. The data sets have been further divided into tables (files) where the information is kept in the database. The tables breakdown the data set information. The data sets and tables contained therein are as follows:

| Data Sets | Tables | Information Required | |
|--------------------------------------|------------------------------|---|---|
| Carriageway | roadnames | Names of roads | |
| | carr_way | Description/Dimensions | |
| | traffic | Traffic Volumes | |
| | loading | Pavement Loadings (HCVs) | |
| | rating | Pavement Condition Rating for sealed roads | |
| | rating_unsealed | Pavement Condition Rating for unsealed roads | |
| Shoulders and Surface water channels | rough | Pavement Roughness | |
| | shoulder | Shoulder description and dimensions | |
| | sw_channel | Surface Water Channel description and dimension | |
| Carriageway Surfacing | rating | Shoulders & SWC Condition Rating | |
| | c_surface | Surfacings | |
| | Footpaths, Berms & Crossings | footpath | Footpath description, location and length |
| | | berm | Berm description, location and length |
| | | crossing | Crossing(s) description, location or number |
| Pavement Structure | footpath_surface | Footpath surface description | |
| | c_surface | Surfacings | |
| | pave_layer | Pavement Layer | |
| Drainage | pave_layer_rehab | Rehabilitation | |
| | drainage | Dimensions/Type | |
| Traffic Facilities | | Location/Maintenance | |
| | traf_facil | Location/Type | |
| Route Data | | Quantity/Maintenance | |
| | minor_structure | Minor Structure location, description etc. | |
| | features | Location/Type | |

Identification and Definition of Road Sections

When setting up the road inventory the road network must be divided into sections which are defined and identified as shown in figure 4

Figure 4. Typical Rural Cross Section



NB: Three types of road sections are permitted.

1. Carriageway, traffic loadings, shoulders, footpaths, berms, drainage (a,b,c)
2. Pavement surfacing history (f)
3. Pavement construction (d,e)

Road Identifier

Road Name (eg Old Mill Road).

Section Identifier

Sections are portions of a road and are identified by Road Name and Displacements. The Displacement is the distance along the road at the start and end of the section {eg Section (a) in fig. 4 is Old Mill Road from Displ. 0m to Displ. 500m}. Sections may also be identified by the name of a physical feature at their start and end. {eg In fig. 4 section (a) is Old Mill Road, Displ. 0m (First Road) to RP 500m (Second Road) and section (b) is Old Mill Road Displ. 500m (Second Road) to Displ. 1000m (No. 62 Old Mill Road }.

Section Types

There are three separately identified types of road sections. These are as follows:

- Sections which contain information regarding carriageway, shoulders, surface water channels, footpaths, berms, condition ratings, pavement roughness, traffic flows, traffic loadings, traffic facilities, drainage and features (eg a, b, c in fig. 4).
- Sections which contain information on carriageway pavement surfacings, (eg f in fig. 4).
- Sections which contain information on carriageway pavement structure and rehabilitation (eg d, e in fig. 4).

Table Names

Tables (Files)

The tables have been created to describe and identify each item of data. Forms (screens) have then been designed for each table to allow the data in those tables to be maintained (add or update). Separate screens have been designed to make enquiries from several tables at a time. The tables are named as follows:

| Tables | Table Name |
|--------------------------------|-------------------|
| Road Names Table | roadnames |
| Carriageway Table | carr_way |
| Traffic Table | traffic |
| Loading Table | loading |
| Shoulders | shoulder |
| Surface Water Channel Table | sw_channel |
| Footpath Table | footpath |
| Berms Table | berm |
| Crossings Table | crossing |
| Footpath Surfacing Table | footpath_surface |
| Carriageway Surfacing Table | c_surface |
| Pavement Structure Table | pave_layer |
| Pavement Rehabilitation Table | pave_layer_rehab |
| Drainage Table | drainage |
| Traffic Facilities Table | traf_facil |
| Rating Table (Sealed roads) | rating |
| Rating Table (Unsealed roads) | rating_unsealed |
| Carriageway Roughness Table | rough |
| Route Data Table | features |
| Minor Structures Table | minor_structure |
| NZ Map Grid Co-ordinates Table | nzm_g_coordinate |

Data Acquisition

General

Unless complete and accurate records have been kept manually an initial survey will need to be carried out to gather the dimensional data for the inventory. The Maintenance chapter describes each item of data and these descriptions should be used when training staff for a survey. Not all fields have to be filled and surveys for the data required for each table could be carried out at separate times as resources allow. However, it is recommended that all dimensional data be collected, including drainage and traffic facilities information, if a relatively large scale initial survey is undertaken. This approach is more economic in regard to travel distances.

For non-dimensional data, present records must be searched and this type of work can more economically be carried out on an individual table basis. If the last surfacing date and type is not available then an estimate must be made from a site inspection. This requirement is due to the age of the current surfacing being needed to help in the decision making process for maintenance reporting after a condition rating has been undertaken.

Data Acquisition Forms

It is desirable for the data collection forms to be designed such that they are suitable for both field collection of data and for input into the data entry screens. Scratch boxes should be added where necessary to allow for the collection of several measurements where an average dimension is required over a section length. The final measurements which are to be input should be placed in a prominent place on the form and in the order which the data entry screen accepts the information.

Resources Required for Initial Survey

The equipment required is the forms, clipboards, pens, measuring wheels and a vehicle with an odometer which can be read accurately to 1.0m.

The labour resources required depends on the amount of data to be collected, the size of the network to be inventoried and the time frame in which the work is required.

Preparation for Initial Survey

Before the initial survey can be undertaken it is necessary to define the road sections. This work is best carried out by an officer of the local authority who has some knowledge of the road network and an understanding of the purpose of the road inventory. The road sections chosen should be as homogeneous as possible and in an urban situation it would be advisable to use the street block for each road section. In a rural situation road sections may be any length but lengths over 5000m should only be used if the road is truly homogeneous.

It is also a useful exercise to divide the road network into Local Areas which may be suburbs, wards or ridings. The size of these areas should be such that they are convenient for programming special maintenance work such as reseals, footpath surfacing etc. These areas can be further subdivided into sub-areas which should be of suitable size to program condition rating surveys and general maintenance work.

In rural areas the sub-areas may be used to identify small urban pockets.

Quality Control

It is important to ensure that the data collected in the initial survey is as accurate as possible and therefore one staff member should be allocated the task of controlling the initial survey. Careful training should be given to the people carrying out the work and frequent checks should be made at random for accuracy.

Order of Data Input

The road names table must have all the road names entered first and then the carriageway table must be completed before the other tables have data added. Particular care should be taken to get the information in these tables correct before proceeding with the other tables.

Collection of Non-Dimensional Data

Data such as traffic records, pavement surfacing history, pavement structure etc. will need to be gathered from existing manual records, plans etc. This type of work is often suited to the use of casual or part time staff who can work under the direction of a technical officer. Accuracy is again important if the data is to be useful during later analyses.

Pavement Treatment

The purpose of the Maintenance Treatment Selection program is to analyse data pertaining to road pavements from the RAMM inventory and produce from this analysis a listing of recommended maintenance treatments for the road network. The program is also designed to assist the technical manager with the economic analysis of various maintenance options at the project level. The final result of treatment type and extent for each site is able to be entered by the user and a listing of road sections produced for each type of maintenance.

Maintenance

Table Maintenance Menu

This menu selection is used when the inventory is to have data added or amended.

Instructions on how to navigate through the menu and how to select any of the various options are contained in the section relating to the "Fanfare Menu".

The menu will initially look as follows:

```
1 Maintenance
2 Enquiry
3 Reports
4 Graphs
5 Treatment
6 Maint. Cost
7 Misc.
```

Select "Maintenance" on the first column of the menu. This will cause the second column on the menu to fan out and give the selection of screens available to access the database tables for adding or amending data, (table maintenance).

The menu will look as follows:

```
1 Maintenance 01 Road Names
                02 Carriageway
2 Enquiry      03 Traffic
                04 Shoulder
3 Reports      05 SWC
                06 Verge
4 Graphs       07 Pavement
                08 Drainage
5 Treatment    09 Traf Facils
                10 Condition
6 Maint. Cost  11 Features
                12 Minor Struc
7 Misc.        13 NZ Map Grid
                14 Treatment
                15 Lookups
```

Once a screen has been chosen to access a table, the rows within that table may be selected by keying N for the next row or P for the previous row. The rows will be in increasing order of displacement. eg. the carriageway table contains each road section as a row.

Once a screen has been selected and displayed, data may be added by keying the letter A, or amended by keying the letter U (update). This will cause the cursor to be positioned at the first field on the screen. Data may then be added or amended in that field and the use of the edit keys is allowed within the field. When complete the use of the return key moves the cursor to the next field. Comments regarding the data to be entered in the field at which the cursor is positioned will be displayed at the bottom of the screen.

On the completion of adding or amending data on the screen the escape key is used to execute the addition of data to the table, or amendment of data within the table.

Road Names

Road Names Table Maintenance

This is the first table to have information added when setting up the road inventory. The name of every road which is to be in the inventory should be added to this table. A number for each road is automatically generated when adding road names. The user will be presented with either the **Local Authority** roadname screen or the **State Highway** screen depending on the environment variable **RAMM_DB_TYPE**. See the Appendix on Environment Variables for more details. The two screens and their requirements are presented below.

The naming convention for state highways is different to local authority roads and so two data input screens are provided, one for local authority roads and one for state highways. The data for both is kept in the same table. The fields listed as required pertain only to the relevant data entry screen so that state highway data is not required if the local authority road names screen is being used and vice versa.

The road names table contains the following fields:

| Field | Required |
|-------------------------|------------------------------------|
| Road Number | yes |
| Road Name | yes |
| Suburb | optional |
| Town | optional |
| Postal Code | optional |
| State Highway | yes |
| Station Type | yes |
| Reference Station | yes |
| Displacement as ERP. | yes - if reference station defined |
| Direction | optional |
| Common Sate Highway | optional |
| Ramp Type | optional |
| Local Name | optional |
| Local Authority | optional |
| Region | optional |

Description of Data Held for State Highway Road Names

This is part of the road names table but has a separate screen. Local authority users will only need to use this screen if they are recording information for state highways. For a full description of the requirements for naming state highways contact the Transit New Zealand Regional Manager.

Local Authority Road Names Entry Screen.

```
ROAD NAME:  Query Add Update Delete Next Previous List Output ...
Display the next Road Name in the current list

AAAAAAAAAAAAAAAAAAAA Local Authority - Roadnames Screen AAAAAAAAAAAAAAAAAAAAAA

      Road Number: 7039
              Name: LAKE ROAD

              Suburb: DEVONPORT
              Town:  AUCKLAND
      Postal Code:    13

39 of 59 Road Names found.
```

Description of Data Held for Local Authority Road Names. A full description of the data held in each field for local authority road names is as follows:

Road Number The number automatically generated by the program and allocated to the road when adding the road name.

Road Name The name of the road.

This may be up to 35 characters in length and if longer must be abbreviated. If a road has a dual carriageway then each side must be named as an unique road. This may be done by using the road name with a suffix such as N,S,E,W to describe on which side of the median the section belongs.

An entry is required.

Suburb The name of the suburb in which the road belongs, if appropriate.

This is a 25 character field and an entry is optional.

Town The name of the town in which the road belongs, if appropriate.

This is a 25 character field and an entry is optional.

Postal Code The postal code of the road, if appropriate.

This is a 4 digit field and an entry is optional.

State Highway Road Names Entry Screen

```

ROAD NAME:  Query Add Update Delete Next Previous List Output Exit
List and pick a Road Name from the current list

AAAAAAAAAAAAAAAAAAAA State Highways - Roadnames Screen AAAAAAAAAAAAAAAAAAAAAA

      Road Number: 1611
              Name: 01S-ERP0704/01.30-I
      State Highway: 01S
      Station Type:  ERP Est. Route Position  Direction: I Increasing
Reference Station:  704           Common State Highway:
Displacement for ERP: 1.30           Ramp Type:

      Local Name: GOWLAND STREET
              Suburb:
              Town:
      Local Authority:
              Region:

9 of 59 Road Names found.

```

A full description of the data held in each field for state highway road names is as follows:

Road Number The number automatically generated by the program and allocated to the road when adding the road name.

Road Name Up to 35 character concatenation of previous entries, program generated. Entry is prohibited. This is the form of the road name which will appear on all the detail tables.

State Highway The State Highway number.

This is a three character field with the first two characters numeric and the third alphanumeric. Preceding zeros are to be input. Eg.: 01N, 006, 25A.

An entry is required.

Station Type (RS or ERP)

This is a three character field which indicates if the station is a reference station or an established route position.

An entry is required as follows:

| | |
|-----|----------------------------|
| RS | Reference Station |
| ERP | Established Route Position |

Reference Station The reference station number.

For an ERP the reference station number contained in the route position description is entered. Preceding zeros are entered eg. 0018, 0912, 1015.

This is a 4 digit numeric field and an entry is required.

Displacement for ERP The distance in km to two decimal places to the ERP from the preceding reference station.

This is a 4 digit numeric field and an entry is required if station type is entered as ERP. Entry is prohibited when station type is entered as RS and the cursor skips this field. Preceding zeros are to be input. (Eg. 01.24).

Direction (I/D) Direction of traffic flow with respect to route distance.

This is a single character field and entry is optional. Entries are allowed as follows:

| | |
|---|------------|
| I | Increasing |
| D | Decreasing |

Common State Highway The number of the alternative state highway where a section of road is common to two state highways.

Entry is the same as for the state highway field and is optional.

Ramp Type Eight character field for off and on ramps. Principal ramps from or to the state highway are entered as OFF or ON. An off ramp coming off an off ramp is coded OFF1, OFF2 etc., similarly for on ramps.

An entry is optional.

Local Name The local name of the state highway ie. Street name or other local identifier.

A 25 character field and an entry is optional.

Suburb The suburb through which the road passes in an urban situation.

A 25 character field and an entry is optional.

Town The town through which the road passes in an urban situation.

A 25 character field and an entry is optional.

Local Authority The code and name of the Local Authority through which the section of State Highway passes.

Region The code and name of the Territorial Region in which the section of state highway is located.

Please note that the State Highway Roadnames program has an extra option **Merge**. This allows the current Road to be merged with the

previous road where they have the same Reference Station. What effectively happens is that all rows in all tables that link to the current road will now link to the previous row and the current road is linked.

Carriageway

Update Carriageway Table

This should be the second table to have information added when setting up the inventory.

```
CARRIAGEWAY SECTION:  Query Add Update Delete Next Previous List ...
Update the current Carriageway Section
----- Carriageway Information -----
      Road Number:  741           Name: 01S-0569

Start Displacement:    0 m Start Name: WAITAKI R BR
End Displacement: 13640 m End Name: PUKEURI JN SH83
  Local Area: COASTAL OTAGO
    Sub-Area:  1 WAITAKI                               ID:  599
----- MISCELLANEOUS -----      CARRIAGEWAY ----- Screen 1/2
      Class: 1                               Length: 13640 m Irregular: R
  Urban/Rural: R Rural                       Width:  9.0 m No. of Lanes: 2
    Hierarchy: MOTORWAY                     Res. width:  m Lane width:  m
Pavement Type: T Thin Surfaced Flexible
Pavement Use:  4 ADT 2000-4000                Maint Grouping: 1
Use Category: 1A Urban Arterial A
----- EXTRA AREAS -----      ORGANISATIONS -----
  Bus Bays:  0 m2      Owner Type: C Crown
  Islands:   0 m2      Controlled by: TNZ Transit New Zealand
Intersections: 1300 m2 Maintained by: WCC Works Civil Construction
  Other Areas: 2040 m2 Managed by: WCS Works Consultancy Services
  Comments:
1 of 10 Carriageway Sections found.
```

```
CARRIAGEWAY SECTION:  ... Output Screen eXpand Help Exit
Change the current screen
----- Carriageway Information -----
      Road Number:  741           Name: 01S-0569

Start Displacement:    0 m Start Name: WAITAKI R BR
End Displacement: 13640 m End Name: PUKEURI JN SH83
  Local Area: COASTAL OTAGO      ----- LOADING ----- Screen 2/2
    Sub-Area:  1 WAITAKI                               Status: D Default
                                               Heavy vehicles:  14 %

----- ROUGHNESS -----      ----- TRAFFIC -----
  Minimum NAASRA:  26                               Count:          vehicles/day
  Maximum NAASRA: 143                               Estimate:  3766 vehicles/day
  Average NAASRA:  59                               ESA: 1.03

----- Optional Groupings -----
      Overhanging Trees: HVY Heavily covered
      Litter Problem:  C Clear

1 of 10 Carriageway Sections found.
```

The carriageway (road sections) table contains the following fields:

Those shown as being required must be entered at the time that information is placed in the table. Therefore this listing gives an indication of the minimum amount of data required to set up the carriageway table in the inventory.

| Field | Required |
|-----------------------------|-----------------|
| Road Number | yes |
| Start Displacement | yes |
| End Displacement | yes |
| Start Name | optional |
| End Name | optional |
| Local Area | optional |
| Sub-area | optional |
| Rating Sequence | optional |
| Section ID | yes |
| Class | yes |
| Urban/Rural | yes |
| Hierarchy | optional |
| Pavement Type | yes |
| Pavement Use | yes |
| Use Category | yes |
| Carriageway length | yes |
| Carriageway width | yes |
| Reserve width | optional |
| Irregular width indicator | yes |
| Number of lanes | yes |
| Lane width | optional |
| Maintenance Grouping | optional |
| Area of bus bays | optional |
| Area of islands | optional |
| Extra area at intersections | optional |
| Other Areas | optional |
| Owner Type | yes |
| Controlled by | optional |
| Maintained by | optional |
| Managed by | optional |
| Comments | optional |
| Traffic - Count | auto generated |
| - Estimate | auto generated |
| Loading - Status | auto generated |
| - Heavy vehicles | auto generated |
| - EDA | auto generated |
| Roughness - Minimum NAASRA | auto generated |
| - Maximum NAASRA | auto generated |
| - Average NAASRA | auto generated |
| Optional Group - 1 | optional |
| - 2 | optional |
| - 3 | optional |
| - 4 | optional |
| - 5 | optional |

A full description of the data held in each field is as follows.

Road Number The number of the road in which the section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

Start Displacement The distance in metres from the road origin to the beginning of the road section.

A value in the range 0 to 99999m is required.

This applies to all subsequent start displacements or locational displacements unless specified otherwise.

End displacement The distance in metres from the road origin to the end of the road section.

A value in the range 1 to 99999m is required and the program will not accept an end displacement less than a start displacement.

This applies to all subsequent end displacements unless specified otherwise.

Start Name The name of the road or description of the identifying feature at the start of the road section.

This is a 25 character field and an entry is optional.

End Name The name of the road or description of the identifying feature at the end of the road section.

This is a 25 character field and an entry is optional.

Local Area The name of the local area into which the road section falls within the total road network eg. suburb or ward.

This is a 15 character field and an entry is optional. **F4:List&Pick** is available.

Sub-area The code number for a sub-section of the local area.

This is a two digit field and an entry is optional.
F4:List&Pick is available.

Section ID A unique number allocated to each road section in the carriageway table.

The number is automatically generated by the program when the road section is added and cannot be altered by the user.

Class The road classification ie. 1 or C. The screen defaults to 1 as this is the majority case. C can be entered if the road is class C.

An entry is required.

**Urban/Rural
Indicator**

This entry indicates if the road section is in a rural or urban area as defined in Transfund's Land Transport Programme Development and Management Manual.

An entry is required as follows. **F4:List&Pick** is available.

| | |
|---|-------|
| U | Urban |
| R | Rural |

Hierarchy The functional classification of the road section.

The number of characters allowed is 15 and an entry is optional. Any entry is accepted and an example of the classifications which may be given is as follows.

F4:List&Pick is available.

- Strategic
- Arterial
- Distributor
- Local

Pavement Type The pavement type recorded is the predominant structural type eg. a concrete pavement with a chip seal surface is recorded as pavement type concrete, code C.

An entry is required as follows: **F4:List&Pick** is available.

| Pavement Type | Code | Description |
|-------------------------------|------|--------------------------|
| Bridge | B | Bridge |
| Concrete | C | Portland cement concrete |
| Structural Asphaltic Concrete | S | 50mm or more AC |
| Thin Surfaced Flexible | T | Chip seal or < 50mm AC |
| Unsealed | U | Metal surface |

Pavement Use Where equivalent design axle (ESA) values are known then these shall be used to determine the pavement use code, otherwise the average daily traffic (ADT) value is used.

An entry is required as follows: **F4:List&Pick** is available.

| Code | E.S.A.s/lane/day OR | A.D.T |
|------|------------------------|---------------|
| 1 | < 2 | < 100 |
| 2 | 2 - 5 | 100 - 500 |
| 3 | 5 - 20 | 500 - 2000 |
| 4 | 20 - 40 | 2000 - 4000 |
| 5 | 40 - 100 | 4000 - 10000 |
| 6 | 100 - 200 | 10000 - 20000 |
| 7 | > 200 | > 20000 |

Use Category The Road Use Category that this section is classified under.

An entry is required as follows: **F4:List&Pick** is available.

| Code | Description |
|------|---------------------------|
| 1A | Urban Arterial A |
| 1B | Urban Arterial B |
| 2 | Urban Commercial |
| 3 | Urban Industrial |
| 4 | Urban Other |
| 5 | Rural Urban Fringe |
| 6 | Rural Strategic |
| 7A | Rural Summer Recreational |
| 7B | Rural Winter Recreational |
| 8 | Rural Feeder |
| 9 | Urban Residential |
| UN | Unknown |

Carriageway

Length The length of the carriageway within the road section.

A default value is entered which is the difference between the start and end displacements. Where the length is less than the default it should be keyed over the default value. The program will not accept a value greater than the difference between the start and end displacements. A carriageway length of **0** (zero) is allowable if the carriageway section is located on a road which is classified as a State Highway, this should be keyed over the default value.

An entry is required.

**Carriageway
Width**

The width of the carriageway in metres to 1 decimal place.

When the road is kerbed - this is the distance from seal edge to seal edge or between the face of the kerbs on each side of the carriageway. For a non-kerbed surfaced carriageway it is the width of the surfacing including the sealed shoulders. For a non-kerbed, non-surfaced carriageway the width should be defined as the traffickable width.

Note:

- 1) If the carriageway width is irregular sufficient measurements should be taken to be able to calculate an average width which gives an accurate result when calculating area.
- 2) If the width of concrete channels in a kerbed situation is such that it is considered to significantly affect calculation of surfacing areas, the distance between the channel lips could be defined as the carriageway width. Which ever system is chosen it should be used consistently throughout the area of the road controlling authority.

A value in the range 0.5 to 60 is required.

Reserve Width The width of the road reserve in metres to 1 decimal place.

An entry in the range 1 to 60 is optional.

**Irregular Width
Indicator**

This entry indicates if the carriageway is regular in width or not.

An entry is required as follows:

| | |
|---|-----------------|
| R | Regular width |
| I | Irregular width |

The screen defaults to R as the majority of carriageways are regular in width. An "I" must be entered if the carriageway is irregular in width. **F4:List&Pick** is available.

Number of Lanes The number of traffic lanes. Permanent parking lanes are excluded. Clearway lanes are considered to be traffic lanes.

An entry in the range 1 to 9 is required.

Lane width The width in metres of a lane.

An entry is optional but must be less than the width of the carriageway section.

Maintenance Grouping

This is a single digit number to show the maintenance grouping of a state highway as defined by the Transit State Highway Maintenance Standards publication. This field could also be used by a Local Authority to record the maintenance regime required for each road section .

An entry in the range 1 to 4 is optional.

Bus Bays The area of any bus bays on either side of the carriageway in square metres.

These areas would need to be clearly an appendage to the carriageway and not be considered as part of an irregular carriageway width. These areas will be added for any report on carriageway area.

An entry in the range 0 - 9999 is optional and the default value is 0.

Islands The total area of any traffic islands in square metres, within the road section which would significantly influence the calculation of carriageway area. These areas will be deducted for any report on carriageway area.

An entry in the range 0 - 9999 is optional and the default value is 0.

Intersections Any extra area at intersections which would significantly influence the calculation of carriageway area. This field allows negative values for areas of double counting at an intersection.

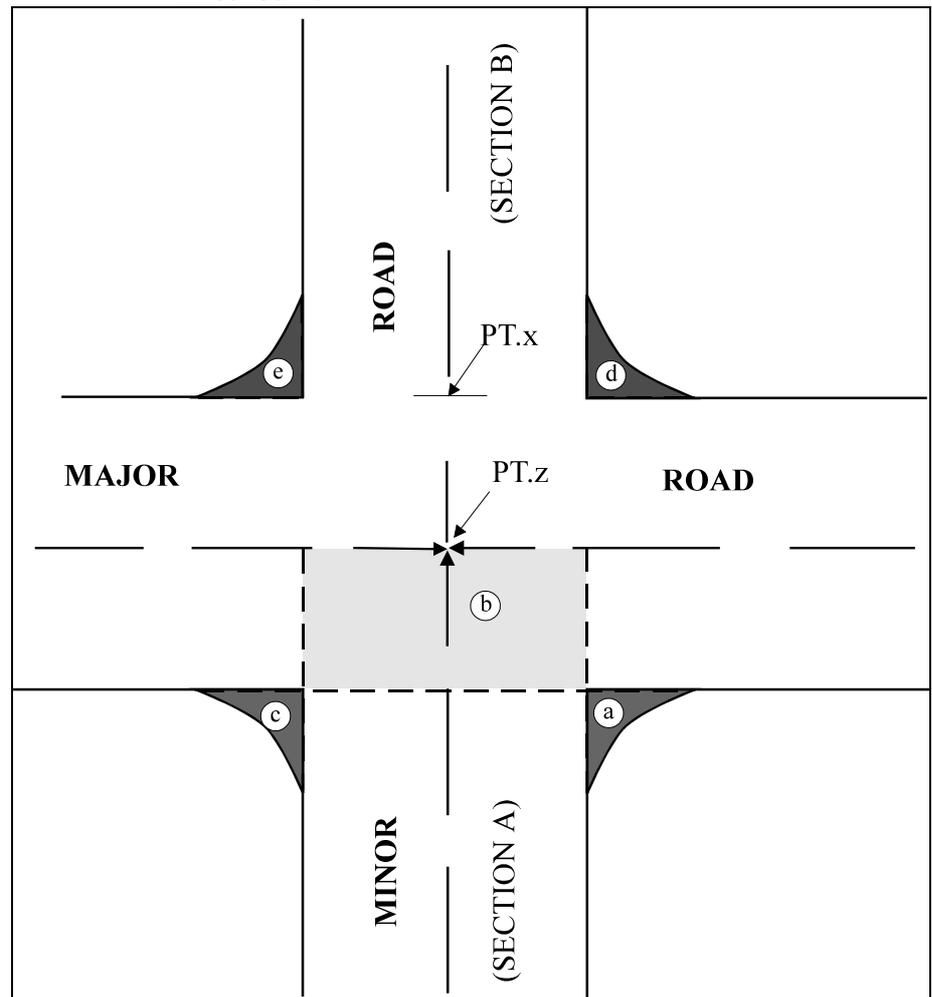
There are a number of different ways of treating intersections and individual roading authorities are free to take whatever approach is felt most appropriate for their situation. It must be pointed out, that whatever approach is taken it must be

carefully thought through and consistently applied throughout the measurement of the network.

The following options (A) to (D) are some of the methods of treating intersections used to date by different authorities. For the urban areas (A) is considered the most appropriate. In rural areas either (A) or (B) is recommended.

The two most common methods of intersection treatment are described in (A) and (B) below and refer to figure 1.

**Figure 1. Treatment of extra areas at intersections.
Method 1.**



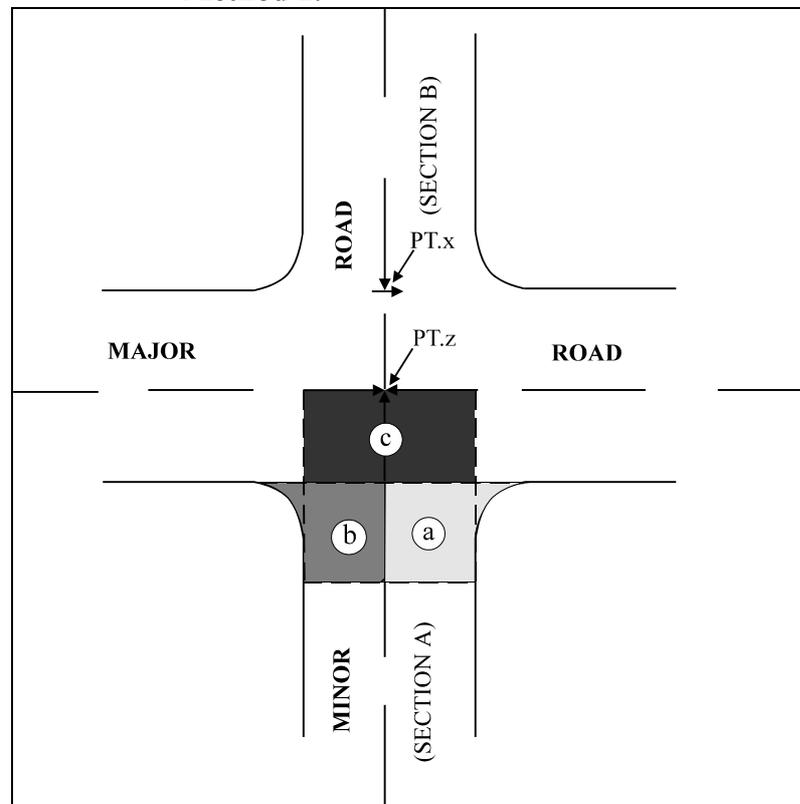
- A) The displacement positions of the road sections in both the major and minor roads are located at point Z. The road section lengths are also taken to point Z which means some double counting occurs for length. In the urban situation with an average section length of 250m this gives an error of 4% for all minor road lengths. For the total network this equates to an error of 2%. In the rural situation with an average section length of 2000m this gives an error of 0.5% for all minor roads. For the total network this equates to an error of 0.25%.

If the extra areas of (a) and (c) and the double counting of area (b) are not taken into account then after (a) and (c) have been netted off from (b) this gives an error in the urban situation of 3.5% for the minor road section area, assuming that the road section is 250m in length and 10m in width. In the rural situation the error would be 0.7%, assuming a section length of 2000m and a width of 6m.

B) The displacement positions of the road sections in both the minor and major roads are located at point Z. The length for the minor road section is taken to the edge of the major road (eg. Point X for section B). Areas (e) and (d) can then be added to section B using the intersections field in the carriageway table. This approach gives accurate lengths and areas for all road sections.

Some roading authorities like to record the area of the minor road intersections in the major road sections because this is the way they surface the road sections. This can be done in two ways as described in (C) and (D) below. and refer to figure 2.

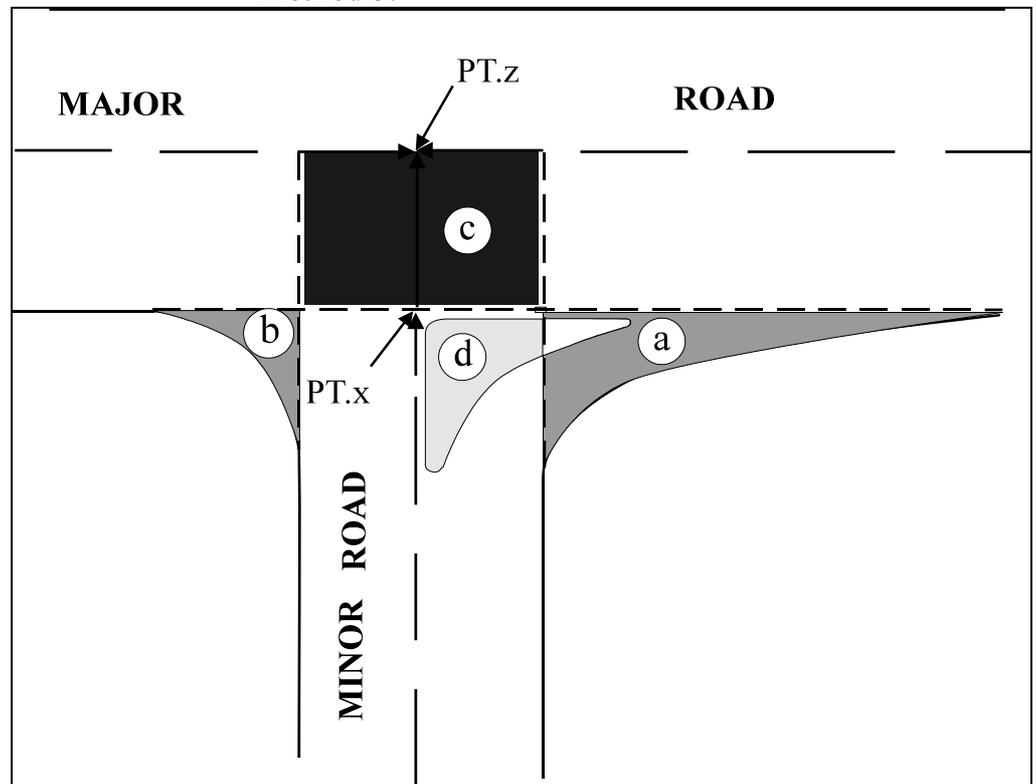
Figure 2. Treatment of extra areas at intersections. Method 2.



- C) If both the displacement positions and the lengths of the minor road section are located at point Z then the minor road section must have areas (a), (b) and (c) deducted by using a minus area value in the intersection field of the carriageway table. The major road must have areas (a) and (b) added.
- D) If the road lengths for the minor road sections are taken to the edge of the major road (eg. point X for section B), this means areas (a) and (b) must be deducted from the minor road section and added to the major road section using the intersections field in the carriageway table.

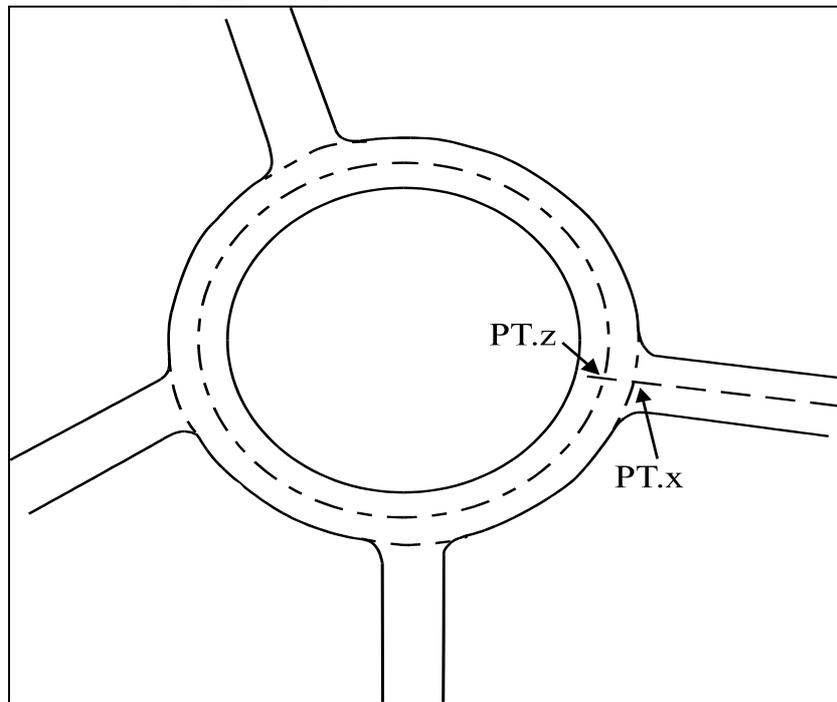
There will be many non-standard intersections. There could be many different types of treatment for each different intersections such as the example shown in figure 3. The approach recommended in this situation is to locate the displacement positions at point Z and for the carriageway length for the minor road section to be taken to point X. Area (d) can be entered in the islands field in the carriageway table and areas (a) and (b) can be entered in the intersections field of the carriageway table. If the carriageway length for the minor road section was taken to point Z then area (c) would have to be netted off (a) + (b) before entering in the intersections field. The report program recognizes that areas in the islands field have to deducted from the carriageway area.

Figure 3. Treatment of extra areas at intersections. Method 3.



A roundabout is to be treated as one road section with multiple intersections. Extra area at each intersection is to be included as part of the intersecting road, as shown in figure 4. The length of the intersecting roads is to start or end at the point x. The length of the roundabout will be the same as the road section length.

Figure 4. Road section and intersection. Treatment at roundabouts.



An entry in the range 0 - 9999 is optional and the default value is 0.

Other Areas Any miscellaneous areas on either side or at the end of the carriageway in square metres eg. taper areas at dual carriageways and parking bays that are not part of the carriageway but are appended to it.

These areas will be added for any report on carriageway area.

An entry in the range 0 - 9999 is optional and the default value is 0.

Owner Type The owner of the road section (ie. Title holder of road reserve).

An entry is required as follows:

| | |
|---|-----------------------------|
| T | Territorial Local Authority |
| P | Private |
| C | Crown |

F4:List&Pick is available.

Controlled by The authority which controls the road section, (eg. TLA, TSA , ARA). This is a 3 character field which looks up the organisation table, **F4:List&Pick** is available.

An entry is optional.

Maintained by The name of the roading authority or contractor who carries out the maintenance work on the road section. This is a 3 character field which is optional. There is a lookup from this column to the organisation table, **F4:List&Pick** is available.

Managed by The name of the roading authority or contractor who manages the road section. This is a 3 character field which is optional. There is a lookup from this column to the organisation table, **F4:List&Pick** is available.

Comments A 60 character field for any general comments in regard to the road section.

An entry is optional.

Traffic - Count The latest Traffic Count for this carriageway section. This column is automatically updated when the latest rows are being flagged, if there is no information this column remains blank. Where there are two latest counts (two different directions) for the same carriageway section then the figure is an average of the two.

Traffic - Estimate The latest Traffic Estimate for this carriageway section. This column is automatically updated when the latest rows are being flagged, if there is no information this column remains blank.

Loading - Status This column is automatically updated when the latest rows are being flagged, if there is no information this column remains blank. This value reflects the status of the latest row.

Loading - Heavy Vehicles The latest loading for percentage heavies for this carriageway section. This column is automatically updated when the latest rows are being flagged, if there is no information this column remains blank.

Loading - EDA The latest Estimated Daily Average of vehicles for the carriage way section. This column is automatically updated when the latest rows are being flagged, if there is no information this column remains blank.

Roughness - Minimum NAASRA The minimum NAASRA value which is marked as latest from the roughness table for the carriageway section. This column is automatically updated when the latest rows are being flagged, if there is no information this column remains blank.

Roughness - Maximum NAASRA The maximum NAASRA value which is marked as latest from the roughness table for the carriageway section. This column is automatically updated when the latest rows are being flagged, if there is no information this column remains blank.

Roughness - Average NAASRA The average NAASRA value from the latest roughness rows for the carriageway section which is marked as latest. This column is automatically updated when the latest rows are being flagged, if there is no information this column remains blank.

Option Group 1 The optional group columns allows the user to group carriageway sections according to individual council requirements. ie. grouping all carriageway sections that have beach frontage. **Refer to Lookups/Carriageway/Opt. Groups**

Option Group 2 The second optional grouping column.

Option Group 3 The third optional grouping column.

Option Group 4 The fourth optional grouping column.

Option Group 5 The fifth optional grouping column.

Traffic

Maintain those tables associated with Traffic

Traffic ♦ Volume

Update Traffic Table

The traffic table contains the data collected from traffic count surveys. The values placed in each row may be actual traffic count values located at a definite point location within a road section or may be estimated values obtained from count stations nearby. The calculated annual average daily traffic (AADT) which pertains generally to the whole road section may also be entered as an estimate. The maintenance treatment selection program requires that an entry be made as an estimate of the AADT for each road section.

Rows must be entered in date order.

```

TRAFFIC COUNT:  Query Add Update Delete Next Previous List ...
Update the current Traffic Count
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Road Number:    25              Name: WAITAWHETA RD
Start Displacement:  4270 m  Start Name: FRANKLIN RD
End Displacement:   4990 m   End Name: MCLEANS RD
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Traffic Count Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
----- COUNT DATA -----                ----- PEAK DATA -----
      Date: 20May1988                          Peak:    25 vehicles/hour
      Status: E Estimate                        Peak Hour: 07:30
Displacement:  4700 m                          Latest: L Latest
      ADT:  150 vehicles/day
      Direction: B  Both lanes

      Comments:

31 of 53 Traffic Counts found.

```

Fields Contained In The Traffic Table.

| Field | Required |
|--------------------------------|--|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Date | yes |
| Status | yes |
| Displacement | yes - if status is defined as a count. |
| Average Daily Traffic (ADT) | yes |
| Direction | yes |
| Peak | optional |
| Peak Hour | yes - if peak has an entry |
| Latest | yes |
| Comments | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Date The date the traffic count was taken or the date at which the traffic flow was estimated. A future date is not permitted.

An entry is required.

Status This indicator gives the status of the value recorded for the traffic flow. The E (estimate) indicator is used for either an estimate of the traffic flow over the entire road section or for recording the calculated AADT (annual average daily traffic) for the road section. The maintenance treatment selection program will use the value entered with the E indicator.

An entry is required as follows:

| | |
|---|----------|
| E | Estimate |
| C | Count |

F4:List&Pick is available.

Displacement The distance from the road origin at which the traffic count was taken.

An entry no greater than the end or less than the start displacement positions for the road section is required if the status is defined as a count. An entry in the range 0 to 99999 is optional if the status is defined as an estimate.

**Average Daily
Traffic (ADT)**

The average traffic flow in vehicles per day for the period of the traffic count or the calculated/estimated AADT (annual

average daily traffic) for the road section when used in conjunction with the "E" indicator.

An entry between 0 and 999,000 is required.

Direction The direction of the traffic when only one side of the road or when flows in different lanes has been counted.

An entry as follows is required.

| | |
|----|-------------------------|
| L | Left Hand Side |
| L1 | Left Hand Side, lane 1 |
| L2 | Left Hand Side, lane 2 |
| L3 | Left Hand Side, lane 3 |
| L4 | Left Hand Side, lane 4 |
| R | Right Hand Side |
| R1 | Right Hand Side, lane 1 |
| R2 | Right Hand Side, lane 2 |
| R3 | Right Hand Side, lane 3 |
| R4 | Right Hand Side, lane 4 |
| B | Both ways |

The default value is B. **F4:List&Pick** is available.

Peak Traffic Flow The peak traffic flow recorded as vehicles per hour.

An entry is optional.

Peak Hour The start time for the hour in which the peak traffic flow was recorded. This is a 5 character field for recording the time as per the 24 hour clock.

An entry is required if there is an entry for Peak.

Latest The latest rating row, "L" indicates that it is the latest, "N" means that the information displayed is not the latest. This is program generated and cannot be changed by the user.

Comments Any text up to 60 characters in length may be entered.

Traffic♦Loading

Update Loading Table

The pavement loading table contains the data collected from commodity surveys. The values placed in each row may be actual commodity survey values located at a point location or estimated values general to the whole road section. Rows should be entered in date order.

```

TRAFFIC LOADING:  Query Add Update Delete Next Previous List ...
Query the Traffic Loading table
----- Road / Section Information -----
      Road Number:  741          Name: 01S-0569
Start Displacement:    0 m  Start Name: WAITAKI R BR
End Displacement: 13640 m  End Name:  PUKEURI JN SH83
----- Traffic Loading Information -----
      Date: 18Jun1997          Percent  ESA/vehicle
      Status: D  Default          Car:  77
Displacement:    0 m          LCV:   9
      Side: B  Both lanes          MCV:   5  0.350
      Latest: L  Latest          HCV-I:  4  0.830
Default Category: RS  Rural Strategic  HCV-II:  5  1.860
----- SURVEY -----          Buses:   0  0.000
      Method:          Total: 100
      Counter:
Duration:          Heavies:  14  1.026
Started:
Comments:
10 Traffic Loadings found.

```

Fields Contained In The Pavement Loading Table

| Field | Required |
|--|----------------------------------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Date | yes |
| Status | yes |
| Displacement | yes - if status is defined as a |
| Count | |
| Side | yes |
| Latest | no entry |
| Default Category | no entry |
| Method | yes - if status is defined as a |
| Count | |
| Counter | yes - if status is defined as a |
| Count | |
| Duration (length) | yes - if status is defined as a |
| Count | |
| Duration (time group) | yes - if status is defined as a |
| Count | |
| Started | yes - if status is defined as a |
| Count and Duration time group is Hours | |
| Car Percent | optional |
| LCV Percent | yes - if Car Percent is not null |
| MCV Percent | yes - if Car Percent is not null |

| | |
|-----------------|--------------------------------------|
| MCV ESA | yes - if Car Percent is not null |
| HCV-I Percent | yes - if Car Percent is not null |
| HCV-I ESA | yes - if Car Percent is not null |
| HCV-II Percent | yes - if Car Percent is not null |
| HCV-II ESA | yes - if Car Percent is not null |
| Buses Percent | yes - if Car Percent is not null |
| Buses ESA | yes - if Car Percent is not null |
| Heavies Percent | yes - if Car Percent is null |
| Heavies ESA | yes - if Heavies Percent is not null |
| Comments | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Date The date the commodity survey was carried out or the date at which the number of heavy commercial vehicles (HCV's) was estimated.

An entry is required and a future date is not permitted.

Status This indicator gives the status of the values recorded for the traffic flow.

An entry is required as follows:

| | |
|---|----------|
| E | Estimate |
| C | Count |

F4:List&Pick is available.

Displacement The distance from the road origin at which the commodity survey was taken.

An entry not greater than the end or less than the start displacement for the road section is required if the status is defined as a count. If the status is defined as an estimate then an entry between 0 and 99999 is optional.

Side The direction of the traffic flow to which the loading information pertains, (ie., side of carriageway).

An entry is required as follows:

| | |
|----|--------------|
| B | Both lanes |
| L | Left lane |
| L1 | Left lane 1 |
| L2 | Left lane 2 |
| L3 | Left lane 3 |
| L4 | Left lane 4 |
| R | Right lane |
| R1 | Right lane 1 |
| R2 | Right lane 2 |
| R3 | Right lane 3 |
| R4 | Right lane 4 |

F4:List&Pick is available.

Latest The latest rating row, "L" indicates that it is the latest, "N" means that the information displayed is not the latest. This is program generated and cannot be changed by the user.

Default Category This column is automatically generated on a Default row and indicates the Default Category used for the loading figures.

An entry is required as follows:

| | |
|----|-----------------|
| RO | Rural Other |
| RS | Rural Strategic |
| UA | Urban Arterial |
| UO | Urban Other |

Method The method the count information was collected.

An entry is required as follows:

| | |
|---|----------------------|
| C | Classifier |
| E | Enforcement Weighing |
| S | Static Weighing |
| U | Unknown |
| V | Visual |
| W | Weigh in motion |

F4:List&Pick is available.

Counter A description of the particular counter used.

An entry is optional, this field will only be entered if the status is Count.

Duration(length) The period length over which the survey was carried out.

An entry is optional, this field will only be entered if the status is Count.

Duration (time group) An indicator with the length that defines the length of the period of the count.

An entry is optional, this field will only be entered if the status is Count. **F4:List&Pick** is available.

| | |
|---|-------|
| D | Days |
| H | Hours |

Started The start time of the survey period. This is important as a survey carried out outside of peak hours may produce different results.

An entry is optional, this field will only be entered if the Duration time group is Hours.

Car Percent The percentage of Cars in the traffic flow.

An entry is optional, if this field is left null then the cursor will skip to Heavies Percent, all other entries must be in the range 0 to 100.

LCV Percent The percentage of Light Commercial Vehicles in the traffic flow.

An entry in the range 0 to 100 is required.

MCV Percent The percentage of Medium Commercial Vehicles in the traffic flow.

An entry in the range 0 to 100 is required.

MCV ESA The average number of Equivalent Single Axles per Medium Commercial Vehicle.

An entry in the range 0 to 9.9 is required.

| | |
|------------------------|--|
| HCV-I Percent | The percentage of Heavy Commercial Vehicles - Type I in the traffic flow. An entry in the range 0 to 100 is required. |
| HCV-I ESA | The average number of Equivalent Single Axles per Heavy Commercial Vehicle - Type I. An entry in the range 0 to 9.9 is required. |
| HCV-II Percent | The percentage of Heavy Commercial Vehicles - Type II in the traffic flow. An entry in the range 0 to 100 is required. |
| HCV-II ESA | The average number of Equivalent Single Axles per Heavy Commercial Vehicle - Type II. An entry in the range 0 to 9.9 is required. |
| Buses Percent | The percentage of Buses in the traffic flow. An entry in the range 0 to 100 is required. |
| Buses ESA | The average number of Equivalent Single Axles per Bus. An entry in the range 0 to 9.9 is required. |
| Total | The sum total of Car Percent, LVC Percent, MCV Percent, HCV-I Percent, HCV-II Percent and Buses Percent, must equal 100. |
| Heavies | The percentage of Heavy Commercial Vehicles in the traffic flow. An entry in the range 0 to 100 is optional. |
| Heavies Percent | The average number of Equivalent Single Axles per Heavy Commercial Vehicle. An entry in the range 0 to 9.9 is optional. |
| Comments | Any text up to 60 characters in length may be entered. |

Shoulders

Update Shoulder Table

This table contains general information relating to carriageway shoulder. The road sections used for this table are the same as those for the carriageway table. If the characteristics of the shoulder vary significantly within the road section, more than 1 row for each road section can be entered, with separate displacements given at the beginning and end of each shoulder.

```

SHOULDER:  Query  Add  Update  Delete  Next  Previous  List  Output  ...
Display the next Shoulder in the current list
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Road Number:      3              Name: WILSON RD
Start Displacement:    0 m  Start Name: BEACH RD
End Displacement:     164 m  End Name: BRIDGE
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Shoulder Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Side: L Left
Start Displacement:    0 m
End Displacement:     164 m
      Length: 164 m
      Width: 5.0 m
      Material: METAL
Maintenance Date: 01Jan1990
      Cycle: 52 weeks

Comments:

18 of 139 Shoulders found.

```

Fields Contained In The Shoulders Table

| Field | Required |
|--------------------------------|----------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Side | yes |
| Shoulder Start Displacement | yes |
| Shoulder End Displacement | yes |
| Length | yes |
| Width | yes |
| Material | yes. |
| Maintenance Date. | optional |
| Maintenance Cycle | optional |
| Comments | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

Carriageway

Start Displacement From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Side The side of the carriageway section on which the shoulder is located.

An entry is required. **F4:List&Pick** is available.

| | |
|---|-------|
| L | Left |
| R | Right |

Shoulder

Start Displacement The distance in metres to the start of the shoulder from the road origin.

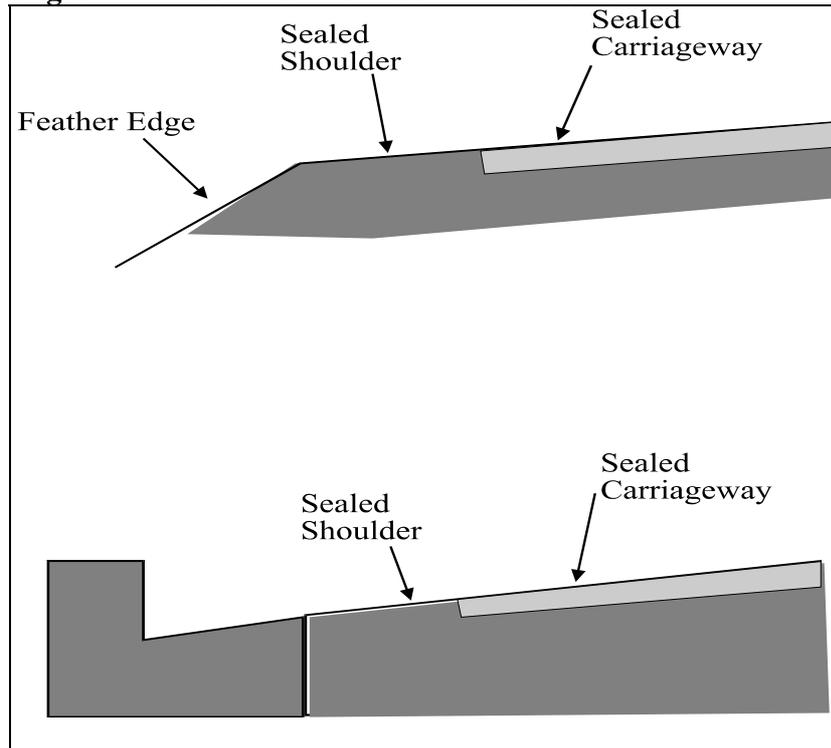
An entry not greater than the end or less than the start displacements for the road section is optional.

If there is a metalled or grass area between the surfaced surface water channel and the edge of the seal, this should be treated as a shoulder (see figure 5).

The following are not to be classified as shoulders:

- If the shoulder has been sealed leaving only a feather edge, the shoulder becomes part of the carriageway width.
- If there is a metalled section of carriageway between the kerb and the channel and the edge of seal as shown.

Figure 5. Areas not classified as shoulders



**Shoulder
End Displacement**

The distance in metres to the end of the shoulder from the road origin.

An entry not greater than the end or less than the start displacements for the road section is required. The program will not accept an end displacement less than a start displacement.

Length

The length of the shoulder in metres. The length of shoulder recorded must lie between the shoulder start and end displacements and the program will default to the difference between these. A different value to the default may be entered if the length is longer due to the presence of intersections with large radii wings or quadrants.

Width

The width of the shoulder in metres to 1 decimal place to the side of the carriageway. This would generally have to be an average value because the shoulder is seldom a constant width.

A rule of thumb to determine the outer edge of the shoulder is that point at which the crossfall becomes too steep for a car to be parked safely.

An entry in the range 0.1 to 9.8m is required.

Material The material showing on the shoulder.

An entry is required as follows:

| |
|-------|
| GRASS |
| METAL |
| OTHER |

F4:List&Pick is available.

Maintenance Date The date of the last major maintenance carried out on the shoulder.

An entry is optional and a future date is not permitted.

Maintenance Cycle The maintenance cycle time in weeks for the shoulder.

This is a three digit field and an entry is optional.

Comments This is a 60 character field for any general comments in regard to the Shoulder.

SWC - Surface Water Channel

Update Surface Water Channel Table

This table contains general information relating to carriageway surface water channels. The road sections used for this table are the same as those for the carriageway table. If the characteristics of the surface water channels vary significantly within the road section, more than 1 row for each road section can be entered, with separate displacements given at the beginning and end of each surface water channel.

```

SURFACE WATER CHANNEL:  Query Add Update Delete Next Previous ...
Update the current Surface Water Channel
----- Road / Section Information -----

      Road Number:  741           Name: 01S-0569

Start Displacement:    0 m  Start Name: WAITAKI R BR
End Displacement: 13640 m  End Name:  PUKEURI JN SH83

----- Surface Water Channel Information -----
      Side: L Left
Start Displacement: 1370 m
End Displacement:  4700 m
      Length:  3330 m
Distance to Seal:    1.5 m
      Constructed: 01Aug1995
      Type: SWCD
      Surface Water Channel (Deep, >200 below seal edge)
Maintenance Date: 15Jun1997
      Cycle:  20 weeks

Comments:
1 of 36 Surface Water Channels found.
  
```

Fields Contained In The Surface Water Channels Table

| Field | Required |
|--------------------------------|----------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Side | yes |
| SWC Start Displacement | yes |
| SWC End Displacement | yes |
| Length | yes |
| Distance to Seal | yes |
| Constructed | optional |
| Type | yes |
| Maintenance Date | optional |
| Maintenance Cycle | optional |
| Comments | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct

road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Side The side of the carriageway section on which the surface water channel is located.

An entry is required. **F4:List&Pick** is available.

| | |
|---|-------|
| L | Left |
| R | Right |

**SWC
Start Displacement**

The distance in metres from the road origin to the start of the Surface Water Channel.

An entry no less than the start or greater than the end displacements for the road section is required.

**SWC
End Displacement**

The distance in metres from the road origin to the end of the Surface Water Channel.

An entry no less than the start or greater than the end displacements for the road section is required. The program will not accept an end displacement which is less than a start displacement.

Length The length of the Surface Water Channel in metres. The length must lie between the SWC start and end displacements and the program will default to the difference between these. A different value to the default may be entered if the length is longer due to the presence of intersections with large radii wings or quadrants.

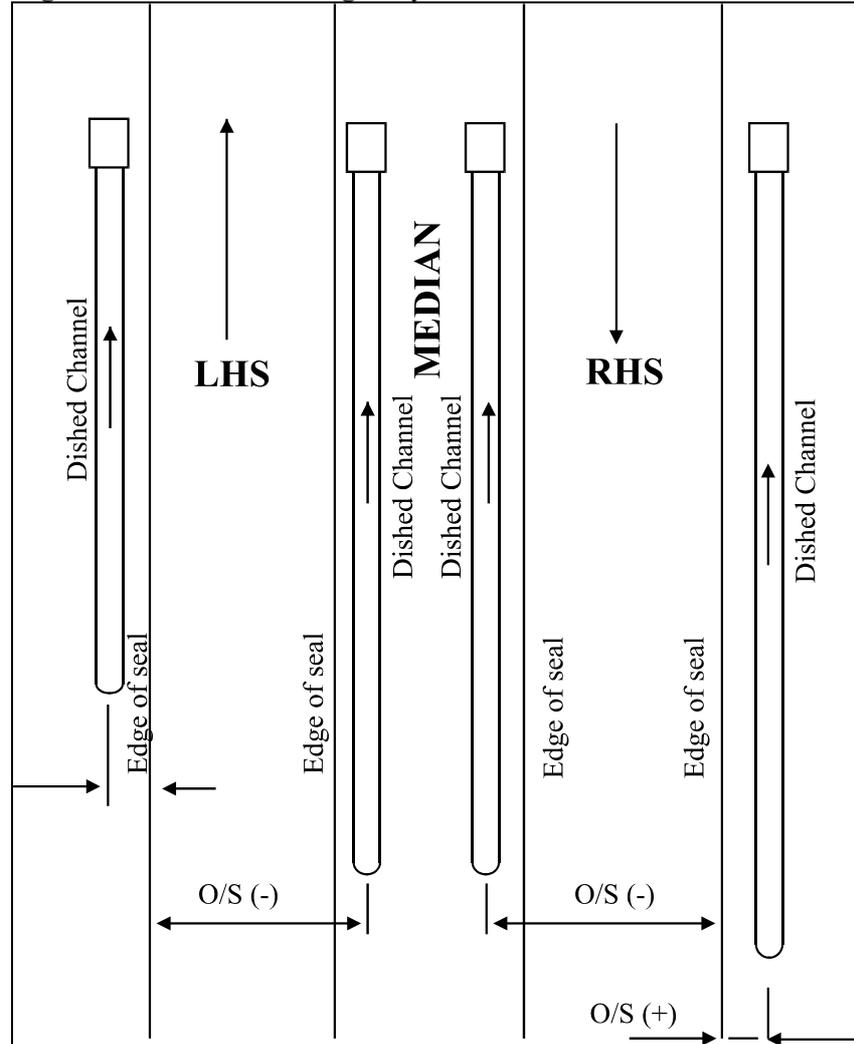
This is a 5 digit field and an entry is required.

Distance To Seal The average distance in metres to one decimal place, from the invert of the surface water channel to the near edge of the surfacing on the carriageway. In a kerbed situation where the

width of the carriageway has been taken as the distance between kerbs the value of zero is acceptable.

Where a dual carriageway situation exists for such a short distance that it has not been identified with a unique road name, SWCs may be present on both sides of each carriageway. In such cases the distance to the seal for the additional SWC shall be recorded with a negative value. Refer to Figure 6. This also applies where the channel is in the carriageway.

Figure 6. Dual carriageway surface water channels.



An entry in the range -20 to 20 is required.

Constructed The date the surface water channel was constructed.

An entry is optional.

Type The type of surface water channel present on the side of the carriageway.

An entry is required. **F4:List&Pick** is available. The valid entries are:

| | |
|-------|---|
| DA | Dished channel (Asphalt) |
| DC | Dished channel (Concrete) |
| DP | Dished channel (Half pipe) |
| DS | Dished channel (Sealed) |
| KC | Kerb only (Concrete) |
| KCC | Kerb and Channel (Concrete) |
| KCS | Kerb and Channel (Stone) |
| KDC | Kerb and dished channel (Concrete) |
| KS | Kerb only (Stone) |
| MKC | Mountable Kerb only (Concrete) |
| MKCC | Mountable Kerb and Channel (Concrete) |
| OTHER | Other |
| SLTC | Slot channel (Concrete) |
| SWCD | Surface Water Channel (Deep, >200mm below seal edge) |
| SWCS | Surface Water Channel (Shallow, <200mm below seal edge) B |

Maintenance Date The date the surface water channel was last maintained or replaced if kerb and channel.

An entry is optional and a future date is not permitted.

Maintenance Cycle The maintenance cycle time in weeks for the Surface Water Channel.

This is a three digit field and an entry is optional.

Comments A 60 character field for any general comments.

An entry is optional.

Verge

Maintain those tables associated with Verge Inventories

Verge ♦ Footpath

Maintain those tables associated with Footpaths

Verge ♦ Footpath ♦ Footpath

Update Footpath and Footpath Top Surface tables

The Footpath table contains general data relating to footpaths. The road sections used for this table are the same as those for the carriageway table. If the characteristics of the footpath vary significantly within the road section, more than one row for each road section may be entered with separate displacements given at the beginning and end of each different section of footpath.

```
FOOTPATH:  Query  Add  Update  Delete  F1-Top-surface  ...
Update the current Footpath
----- Road / Section Information -----
      Road Number:      6          Name: GEORGE STREET

Start Displacement:    0 m  Start Name: SH 2
End Displacement:    6000 m  End Name: BRIDGE

----- Footpath Information -----
      Position: J Accessway (Joins another road)  1 Surfacing Row
      Side: R Right          Use: 3 Medium
Start Disp.:  400 m          Local Name: MALCOLMS TRACK
End Disp.:    m             Start Name:
Length:  500 m             End Name:
Width:  3.0 m             Maintained by: CON Other Contractor

----- JOINS TO ROAD -----
Step Length:  m          Road Number:  63  WAIHI BEACH ROAD
Extra Area:  m2  Cway Start Disp.:  0 m JACKSONS CULVERT
Purpose: F Footpath  Cway End Disp.:  441 m BEAM ROAD
Original: 0          Start Disp.:  200
Footpath ID: 115          Side: L Left          Other ID: 6972
Comments:
7 of 55 Footpaths found.
```

Fields Contained In The Footpath Table

| Fields | Required |
|--------------------------------|-----------------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Position | yes |
| Side | yes |
| Footpath Start Displacement | yes |
| Footpath End Displacement | yes |
| Length | yes |
| Width | yes |
| Step length | optional |
| Extra Area | optional |
| Purpose | yes |
| Original | yes |
| Footpath ID | no entry |
| Use | yes |

| | |
|--|--|
| Local Name | optional |
| Footpath Start name road | yes - if position is Remote from road |
| Footpath End name road or Accessway (ends away from road) | yes - if position is Remote from road |
| Maintained by | optional |
| Other Road Number (joins another road) | yes - if position is Accessway |
| Other Cway Start Displacement (joins another road) | yes - if position is Accessway |
| Other Start Displacement (joins another road) | yes - if position is Accessway |
| Other Side (joins another road) | yes - if position is Accessway |
| Other Footpath ID | no entry |
| Comments | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected. After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Position The position of the footpath in relationship to the road.

An entry is required. **F4:list&Pick** is available.

| | |
|---|---------------------------------|
| B | Boundary |
| E | Accessway (Ends away from road) |
| J | Accessway (Joins another road) |
| K | Kerb |
| L | Loop footpath |
| M | Middle |
| R | Remote from road |

Side The side of the carriageway section on which the footpath is located.

An entry is required. **F4:List&Pick** is available.

| | |
|---|-------|
| L | Left |
| R | Right |

**Footpath
Start Displacement**

The distance in metres from the road origin to the start of the footpath.

An entry no less than the start or greater than the end displacements for the road section is required, unless the position of the footpath is given as **Remote** then this will be null.

**Footpath
End Displacement**

The distance in metres from the road origin to the end of the footpath.

An entry no less than the start or greater than the end displacements for the road section is required. The program will not accept an end displacement less than a start displacement. When the position of the footpath is either **Remote** or an **Accessway (Ends away from road)** this value will be null. When the position of the footpath is an **Accessway (Joins another road)** then the end displacement will be the start displacement of the footpath in the other road.

Length The length of the footpath in metres. The length of footpath recorded must lie between the footpath start and end displacements and the program will default to the difference between these when the position is either **Boundary, Kerb** or **Middle**. A different value to the default may be entered if the length is longer due to the presence of intersections with large radii wings or quadrants.

This is a 5 digit field and an entry is required.

Width The width of the footpath in metres to one decimal place.

An entry in the range 0.5 to 20.0m is required.

Step Length The length of steps constructed in the footpath section.

An entry no greater than the difference between the start and end displacements for the footpath is optional.

Extra Area Any extra areas of footpath, in square metres, within the displacements defined.

This is a 4 digit field and entry is optional.

Purpose The purpose of the footpath.

An entry is required. **F4:List&Pick** is available.

| | |
|---|----------|
| B | Both |
| C | Cycleway |
| F | Footpath |

Original This indicates if this footpath section is an original, or a duplicate. A duplicate occurs when the footpath section joins to another road. This is program generated and cannot be changed by the user.

Footpath ID The unique number of this footpath section. This number is program generated and cannot be changed by the user.

Use An indicator as to the pedestrian density on this section of footpath. 1-Low to 5-High.

An entry is required in this field. **F4:List&Pick** is available.

Local Name The local name that the footpath section is known by.

An entry is optional.

Start Name A description of the start location of the footpath.

An entry is optional unless the position of the footpath has been given as **Remote from road**.

End Name A description of the end location of the footpath.

An entry is optional unless the position of the footpath has been given as **Remote from road** or **Accessway (Ends away from road)**.

Maintained by The name of the roading authority or contractor who carries out the maintenance work on the footpath section. This is a 3 character field which is optional. There is a lookup from this column to the organisation table, **F4:List&Pick** is available.

| | |
|--------------------------------------|--|
| Other Road Number | The Road ID of the road which this footpath joins to. The position must be Accessway (Joins another road) . If the road number is not known the correct road can be easily selected by using either the F1:Quick-query or F2:Full-query options. An entry is optional. |
| Other Cway Start Displacement | The Start displacement of the carriageway section on the other road where this footpath is located. An entry is optional. |
| Other Start Displacement | The distance in metres from the other road origin to the start of the footpath. An entry no less than the start or greater than the end displacements for the other road section is required. |
| Other Side | The Side of the other road where this footpath starts. This is defaulted to the opposite of the original side and may be changed by the user. An entry is optional. F4:List&Pick is available. |
| Other Footpath ID | The unique number of the other footpath section. This number is program generated and cannot be changed by the user. |
| Comments | This is a 60 character field for any general comments in regard to the footpath. |

In addition to the usual options available you are also able to maintain the footpath top surface table by choosing the **F1-Top-surface** menu option, list the footpath top surface rows using the **F2-Top-surface-list** option, view the ratings for this footpath using **F3-Rating** and list the ratings with the **F4-Rating-list** option.

F1-Top-surface

Maintain the footpath top surface information

The footpath top surface table contains a detailed breakdown of the current footpath top surface.

```
FOOTPATH:  Query  Add  Update  Delete  F1-Top-Surface  ...
Maintain the footpath top surface information
----- Road / Section Information -----
      Road Number:      6              Name: GEORGE STREET

Start Displacement:    0 m  Start Name: SH 2
End Displacement:     6000 m  End Name: BRIDGE

+-----+
|FOOTPATH TOP SURFACE:  Add  Update  Delete  F1-Rating  F2-Rating-list  ... |
|Add a new Footpath Top Surface                                         |
|----- Footpath Surface Information -----|
|
| Start Displacement:      0 m
| End Displacement:       500 m
|           Date: 01Jan80
|           Material: C  Concrete
|           Depth:        65 mm
|           Size/Grade:   12 mm
|           Binder: PORT Portland Cement
|
| Comments:
|42 Footpath Top Surfaces found.
+-----+
```

Fields Contained In The Footpath Top Surface Table

| Field | Required |
|------------------------------|-----------------|
| Surfacing Start Displacement | yes |
| Surfacing End Displacement | yes |
| Surfacing Date | yes |
| Material | yes |
| Depth of Material | optional |
| Size/grade of Aggregate | optional |
| Binder Type | optional |
| Comments | optional |

A full description of the data held in each field is as follows:

Surfacing

Start Displacement The distance in metres from the footpath origin to the start of the footpath surfacing.

An entry is required.

Surfacing End Displacement

The distance in metres from the footpath origin to the end of the footpath surfacing.

An entry is required. The program will not accept an end displacement less than a start displacement.

Surfacing Date

The date the surfacing was placed. An entry is required and a future date is not allowed.

Material

The material used to surface the footpath. All valid surfacing materials are found in the footpath surface material table.

An entry is required. **F4:List&Pick** is available.

| Code | Description | Depth Def. | Min | Max | Size Def. | Min | Max |
|------|----------------------------|------------|-----|-----|-----------|-----|-----|
| AB | Asphaltic concrete (black) | 20 | 10 | 150 | 10 | 6 | 20 |
| AR | Asphaltic concrete (red) | 20 | 10 | 150 | 10 | 6 | 20 |
| C | Concrete | 65 | 50 | 200 | 12 | 3 | 20 |
| CB | Concrete (black) | 65 | 50 | 200 | 12 | 3 | 20 |
| CR | Concrete (red) | 65 | 50 | 200 | 12 | 3 | 20 |
| IB | Interlocking blocks | 65 | 40 | 150 | 12 | 3 | 20 |
| M | Metal | 50 | 10 | 500 | 20 | 7 | 40 |
| S | Seal | 0 | 0 | 25 | 6 | 1 | 6 |
| SL | Slurry Seal | 6 | 2 | 25 | 3 | 1 | 12 |

Depth of Material

The depth of the surfacing in mm. The entry must fall within the Minimum and Maximum depth range specified for that material.

An entry in the range 0 to 200mm is required.

Size/grade of Aggregate

The grade of sealing chip or the top size of the aggregate in the asphaltic concrete/portland cement concrete, depending on which material has been used. The entry must fall within the Minimum and Maximum size range specified for that material.

An entry between 1 and 40 is optional.

Binder Type

The type of binder used in the surfacing material. All valid binder types are in the binders table.

An entry is required. **F4:List&Pick** is available.

Comments

This is a 60 character field for any general comments in regard to the surfacing.

F2-Top-surface-list

List the footpath top surface information

```
FOOTPATH: ... F2-Top-Surface-list F3-Rating F4-Rating-list Next ...
List the footpath top surface information
----- Road / Section Information -----
      Road Number:      8          Name: CLARENCE ST 2 OFF FOSTER ST

Start Displacement:    0 m   Start Name: FOSTER ST
End Displacement:    274 m   End Name: RLY STN ENTR / BRICK WALL
-----+-----+
Position: K Kerb      |RETURN to select, arrows to move, DEL aborts
Side: R Right        |F7/F8:Next/Previous page
Start Disp.: 102 m   |----- Footpath Top Surface List -----
End Disp.: 230 m   | Start   End Date   Material
Length: 128 m     |      0    75 25Dec80 Metal
Width: 1.5 m      |      75  128 25Dec80 Asphaltic concrete (black)
-----+-----+
Length of Steps:      m
Extra Area:           m2

Original: 0
Footpath ID: 14003
Comments:
2 Footpath Top Surfaces fou|Footpath Top Surfaces 1 to 2 of 2
-----+-----+
```

F3-Rating

View the footpath rating information

F4-Rating-list

List the footpath rating information

Verge ♦ Footpath ♦ Foot Rating

Maintain those tables associated with Footpath Rating

Verge ♦ Footpath ♦ Foot Rating ♦ Survey Head

Maintain the Footpath Rating Survey Header table

The footpath rating categories have been removed from the sealed rating table and a separate system has been set up to allow more diverse rating categories and more user flexibility. Optional rating columns, the purpose of the four optional rating columns is to allow the user to rate on Council specific categories ie. Overhanging trees, Barefoot Comfort (import in coastal locations). The rating Survey Header Maintenance module is the control tool to create the new rating categories and to specify the categories to rate.

```

FOOTPATH RATING SURVEY HEADER: ... Weightings Next Previous List ...
Maintain the weightings for this survey
----- Footpath Rating Survey Header Information -----

Survey Number:      1          Description: Survey 01Jan1989 - 31Jan1989
Survey Date: 10Jan1989          Minimum Rating Length:  0 m
Carried out by:          Percentage to rate: 100 %
Contract:              Inspection start disp:  0 m
Definitions:

----- Categories to Rate -----
                Length Scabbing
Settle   Bumps   Depress  Cracked  Ravelling  Patches  Potholes
Rate: Y  Yes   Y  Yes   Y  Yes   Y  Yes   N  No     N  No     N  No
                Full Description          ---- Range ---- Column
                Heading          Rate      Unit          Minimum Maximum Headings
Optional 1:
Optional 2:
Optional 3:
Optional 4:
Notes:
1 of 12 Footpath rating survey headers found.

```

The sign type table contains the following fields:

| Field | Required |
|------------------------------------|-------------------------|
| Survey Number | automatically generated |
| Description | yes |
| Survey Date | yes |
| Carried out by | optional |
| Contract | optional |
| Definitions | optional |
| Minimum Rating Length | yes |
| Percentage to rate | yes |
| Inspection start disp. | yes |
| Rate Settle | yes |
| Rate Bumps | yes |
| Rate Depressions | yes |
| Rate Length Cracked | yes |
| Rate Scabbing Ravelling | yes |
| Rate Patches | yes |
| Rate Potholes | yes |
| Rate Settle | yes |
| Optional 1 Heading | optional |
| Optional 1 Rate | optional |
| Optional 1 Unit | optional |
| Optional 1 Rate | optional |
| Optional 1 Range Minimum | optional |
| Optional 1 Range Maximum | optional |
| Optional 1 Column Headings | optional |
| Optional 2 - as per all Optional 1 | optional |
| Optional 3 - as per all Optional 1 | optional |
| Optional 4 - as per all Optional 1 | optional |
| Notes | optional |

A full description of the data held in each field is as follows:

| | |
|--------------------------------------|---|
| Survey Number | The unique number given to each survey which will be used to group rating. An entry is required and will be generated automatically. |
| Description | A description of the survey. A maximum size of 30 characters. An entry is required. |
| Survey Date | The date of the survey. Where the survey is taken over a period of time this should be an approximate date, with the actual survey dates been recorded elsewhere. An entry is required. |
| Carried out by | The name of the Contractor that carried out the survey. An entry is optional, a maximum size of 30 characters. |
| Contract | The Council reference for this Rating Contract. An entry is optional, a maximum size of 18 characters. |
| Definitions | The Definitions column allows for specification information to be recorded for rating categories ie. Depressions > 10mm. An entry is optional to a maximum size of 200 characters. |
| Minimum Rating Length | The minimum length of footpath surface to rate ie. 5m means that all footpath surfaces under 5metres in length are not to be rated. An entry is required. The default of 0 metres means rate all footpath surfaces irrespective of length. |
| Percentage to rate | Allows the user to either rate the entire length of the footpath surface or just a portion of the surface length. An entry is required. The default of 100% means rate the entire footpath length. |
| Inspection Start Displacement | If the Percentage to rate above is less than 100% the value entered here indicates the displacement in the footpath surface to commence rating from ie. 10m indicates that the rating |

length will start 10 metres in from the start of the footpath surface.

An entry is required. This field set to 0 and skipped if the Percentage to rate is 100%.

Rate Settlement A known category to rate. A Yes/No value indicates if this category is to be used in this Rating Survey.

An entry is required. **F4:List&Pick** is available. Default Yes.

Rate Bumps Bumps, a known category to rate. A Yes/No value indicates if this category is to be used in this Rating Survey.

An entry is required. **F4:List&Pick** is available. Default Yes.

Rate Depressions Depressions, a known category to rate. A Yes/No value indicates if this category is to be used in this Rating Survey.

An entry is required. **F4:List&Pick** is available. Default Yes.

Rate Length of Cracked Length of Cracked, a known category to rate. A Yes/No value indicates if this category is to be used in this Rating Survey.

An entry is required. **F4:List&Pick** is available. Default Yes.

Rate Scabbing/Ravelling Scabbing/Ravelling, a known category to rate. A Yes/No value indicates if this category is to be used in this Rating Survey.

An entry is required. **F4:List&Pick** is available. Default No.

Rate Patches Patches, a known category to rate. A Yes/No value indicates if this category is to be used in this Rating Survey.

An entry is required. **F4:List&Pick** is available. Default No.

Rate Potholes Potholes, a known category to rate. A Yes/No value indicates if this category is to be used in this Rating Survey.

An entry is required. **F4:List&Pick** is available. Default No.

Optional 1 Heading Optional rating category, the heading that will appear on the footpath rating maintenance screen.

An entry is optional. Maximum size 18 characters.

Optional 1 Rate Optional rating category, is this category to be rated in the current survey.

An entry is required if Optional 1 Heading is not null.
F4:List&Pick is available.

Optional 1 Unit Optional rating category, the unit that the rating is to be carried out in. Metres - the number of metres that fulfil the rating criteria, Count - the number of occurrences of the rating criteria or N/A for use with assessment categories.

An entry is required if Optional 1 Heading is not null.
F4:List&Pick is available.

**Optional 1
Range Minimum**

Optional rating category, the minimum value that can be entered for this rating category.

An entry is optional.

**Optional 1
Range Maximum**

Optional rating category, the maximum value that can be entered for this rating category.

An entry is optional, this field is not entered if the Minimum value is null.

**Optional 1
Column Headings**

Optional rating category, the Column Headings that will appear on the Footpath Rating form.

An entry is required if Optional 1 Heading is not null, two lines of six characters each.

Notes This is a 60 character field for any general comments in regard to the Rating Survey.

An entry is optional.

The ring menu offers three further options **F1-Autorate**, **F2-Rating-forms** and **Weightings**.

F1-Autorate

The user can **select to rate either footpaths or footpath surfaces**, a selection of both cannot occur in the same survey. This function automatically calculates the rating sections and inspection lengths and inserts a row in the **footpath_rating** table for footpaths. When rating on footpaths data from the footpath table is used. For rating footpath surfaces the data in the footpath top surface table is used.

Rating rows can be generated for **All** footpath or footpath surfaces or a **Selection** can be made using the selection window.

```
FOOTPATH AUTORATE:  All Selection Exit
Input selection criteria for footpaths to be rated
----- Footpath Rating Survey Header Information -----

Survey Number:      1          Description: Survey 01Jan1989 - 31Jan1989
Survey Date: 10Jan1989          Minimum Rating Length:  0 m
Carried+-----+00 %
C|FOOTPATH RATING SELECTION: ESC executes DEL aborts      | 0 m
Defi|F4:List&Pick
|----- Footpath Rating Selection Criteria -----|
|-----|          Area:          |-----|
|          Sub area:          |
Se|          Roadname:          |holes
Rate: Y |          |          |No
| Footpath Usage:          |mn
|Surface Material:          |ings
Optional|          |
Optional+-----+
Optional 3:
Optional 4:
Notes:
1 of 13 Footpath rating survey headers found.
```

All columns offer the **F4:List&Pick** option.

The standard options for Area, Sub area, Roadname are offered.

The Footpath Usage Category allows you to restrict the insertion of blank rating rows to footpath surfaces with a specific Use value.

The Surface Material Category is only available when the base rating table is footpath top surface and allows for the generation of rating rows specific to a surface material.

The program creates a blank rating row for each footpath/footpath surface fulfilling the selection criteria.

F2-Rating-forms

This menu selection generates the rating forms for use in the current footpath rating survey. Rating forms are printed for all rating rows with the current survey number.

Weightings

This menu selection opens a window displaying the weighting for each category to be applied to the rating results and thereby generating a priority value. Weightings can be applied to the Use column and to the Surface Material column (only where the table footpath top surface table is being rated). When adding a new Survey header the previous Survey headers Weightings are copied across.

```

FOOTPATH RATING SURVEY HEADER:  ... Weightings Next Previous List ...
+-----+
|MAINTAIN WEIGHTINGS:  Use Surface-Material Exit  | -
|Maintain the footpath use weightings             |
+-----+----- Survey Weightings -----+
|
|      Use  Weighting
|      1    1.00
|      2    1.25
|      3    1.50
|      4    2.00
|      5    3.00
|Surf Set Bump Depr Crac Scab Pat Pot Bare      Age
|Mat. tle s  ess ked Ravl chs hols Feet        Max Wght Cost
| AB 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0 0.00 $0.00
| AR 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0 0.00 $0.00
| C  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0 0.00 $0.00
| CB 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0 0.00 $0.00
| CR 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0 0.00 $0.00
| IB 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0 0.00 $0.00
| M  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0 0.00 $0.00
|
+-----+
13 of 13 Footpath rating survey headers found.

```

Weightings can be applied to either of both Use and Surface Material type. The values that appear in the Use and Surface material types are those that are currently in the Use and Footpath Surface Material type tables. Weightings can also be entered for the maximum age of a footpath surface and the cost per metre of the surface material. Weightings allow the user to place importance on Rating Categories specific to their current environment.

Verge ♦ Footpath ♦ Foot Rating ♦ Rating

Update the Footpath Rating Table

This table contains the data collected during the footpath rating survey.

```

FOOTPATH RATING:  Query  Update  Delete  Next  Previous  Fast-entry  ...
Query the Footpath rating table
----- Road / Section Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:      0 m  Start Name: LONG START
End Displacement:  1230 m  End Name: LONGER END SECTION NAME

----- Footpath Rating Information -----
      Survey Number:      16
      Rating ID:         163          ----- INSPECTION -----
Start Displacement:      0 m          Start Displacement:      20 m
End Displacement:      500 m          End Displacement:      70 m
      Date: 01Jun1995
      Latest: N Not latest          Notes: ORID 379
      Side: L Left

      Settlement:      0 m          Scabbing/
      Bumps:      0 no.          Ravelling:      m
      Depressions:      0 no.          Patches:      no.
Length Cracked:      0 m          Potholes:      no.

250 Footpath ratings found.

```

Fields Contained In The Condition Rating Table

| Fields | Required |
|--------------------------------|------------------------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Rating Start Displacement | yes |
| Rating End Displacement | yes |
| Inspection Start Displacement | yes |
| Inspection End Displacement | yes |
| Survey number | yes |
| Rating Date | yes |
| Latest | yes |
| Side | yes |
| Notes | optional |
| Settlement | yes |
| Bumps | yes |
| Depressions | yes |
| Length Cracked | yes |
| Scabbing/Ravelling | yes |
| Patches | yes |
| Potholes | yes |
| Option 1 Rating | yes, if Option 1 rated |
| Option 2 Rating | yes, if Option 2 rated |
| Option 3 Rating | yes, if Option 3 rated |
| Option 4 Rating | yes, if Option 4 rated |

An entry is required in all the above fields even if the value of a particular fault is 0. To assist with keying the data a default of 0 is inserted with the use of the ENTER

key. Note: The rating column is only entered if that rating category was flagged as rate in the Survey Rating Header.

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

**End Displacement
For Rating Section**

The distance in metres from the road origin to the end of the rating section.

This field will have a default value placed by the Autorate program which automatically generates the rating sections and will not be able to be altered.

**Start Displacement
For Inspection
Length**

The distance in metres from the road origin to the start of the inspection length.

This field will have a default value placed by the Autorate program which automatically generates the rating sections. If the inspection length calculated by the program is located on a bridge or some other structure which is not suitable, the default value may be changed.

**End Displacement
For Inspection
Length**

The distance in metres from the road origin to the end of the inspection length.

This field will have a default value placed by the program which automatically generates the rating sections.

If the inspection length calculated by the program is located on a bridge or some other structure which is not suitable, the default value may be changed.

Survey number The unique number given to the Survey that this rating was carried out under.

An entry is required. The **F4:List&Pick** option is available.

Rating Date The date on which the road rating was carried out.

An entry is required. A future date and a date older than one year is not permitted.

Latest The latest rating row, "L" indicates that it is the latest, "N" means that the information displayed is not the latest. This is program generated and cannot be changed by the user.

Side The side of the carriageway section on which the footpath surface is located.

An entry is required. **F4:List&Pick** is available.

| | |
|---|-------|
| L | Left |
| R | Right |

Settlement The length in metres of settlement or continuous depression (greater than 3m in length) in the footpath surface inspection length.

An entry is required.

Bumps The number of bumps in the footpath surface inspection length which would cause discomfort to a pedestrian.

An entry is required.

Depressions The number of depressions in the footpath surface inspection length which would cause discomfort to a pedestrian.

An entry is required.

Scabbing/Ravelling The length of footpath in metres in the footpath surface inspection length where Scabbing/Ravelling is observed in the surfacing material.

An entry is required.

Patches The number of patches in the footpath surface inspection length.

An entry is required.

Potholes The number of potholes in the footpath surface inspection length.

An entry is required.

Option 1 Rating The correct heading will be displayed to the left of this column if this column was rated.

An entry is required if optional 1 rating is used.

Option 2 Rating The correct heading will be displayed to the left of this column if this column was rated.

An entry is required if optional 2 rating is used.

Option 3 Rating The correct heading will be displayed to the left of this column if this column was rated.

An entry is required if optional 3 rating is used.

Option 4 Rating The correct heading will be displayed to the left of this column if this column was rated.

An entry is required if optional 4 rating is used.

The ring menu offers a further options **Fast-entry**.

Fast-entry

This function is designed to allow for entry of footpath rating results directly from the rating forms. The user is prompted to select the road for which the rating data is to be entered. Using the roadname gives an added check on the data being input.

```
FOOTPATH RATING:  Query  Update  Delete  Next  Previous  Fast-entry  ...
Enter rating data by road
----- Road / Section Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:      0 m  Start Name: LONG START
+-----+-----+-----+-----+-----+-----+-----+-----+
|ROAD NAME QUERY: ESC accepts, DEL aborts.  |
|Enter the Query conditions                  |
|----- Local Authority - Roadnames Screen -----|
|      Road Number:                          |TION -----|
|      Name:                                  |ment:      20 m|
|      Suburb:                               |ment:      70 m|
|      Town:                                  |              |
|      Postal Code:                          |              |
|Name of the road                            |              |
+-----+-----+-----+-----+-----+-----+
      Bumps:      0 no.          Patches:      no.
      Depressions: 0 no.        Potholes:      no.
      Length Cracked: 0 m

250 Footpath ratings found.
```

When a single road has been selected the Fast-entry window is opened. The rating results are keyed by Rating ID and the rating category values. The cursor will only expect a value on those categories rated. Only those categories rated will appear on the rating form whereas the screen allow for all rating categories.

```

FOOTPATH RATING:  Query  Update  Delete  Next  Previous  Fast-entry  ...
Enter rating data by road
----- Road / Section Information -----
      Road Number:    1              Name: WAIHI BEACH RD

+-----+
|FOOTPATH RATING FAST ENTRY: ESC exits, DEL aborts
|F7/F8:Next/Previous screen
|----- Footpath Rating Results -----
|Rating
|  ID  Settle  Bump  Dpress  Crackd  Scab/   Pot
|  45   0    3    0    2    Ravel  Patch  Hole
|  47   2    3    0    1
|
|
|
+-----+

```

Verge ♦ Footpath ♦ Priority

Maintain those tables associated with Generating Footpath Priorities

Verge ♦ Footpath ♦ Priority ♦ Pre Priority

Pre Prioritizing Report

This report lists all footpath top surfaces where there are no rating rows and all footpath ratings that are over two years old.

Verge ♦ Footpath ♦ Priority ♦ Calculation

Calculate the Footpath Priorities

This option will calculate the priorities for all footpath top surfaces using the latest rating figures for each surface where available. A check is made to ensure that the Footpath Rating are the latest, if not then the user is prompted to run this option before continuing. The user is asked to confirm that this module is to run and as processing occurs the number of rows processed and the number of rows to go will be displayed at the bottom of the screen. The age of the footpath_surface is calculated as (today - surface_date). The formula used for arriving at the priority value is:

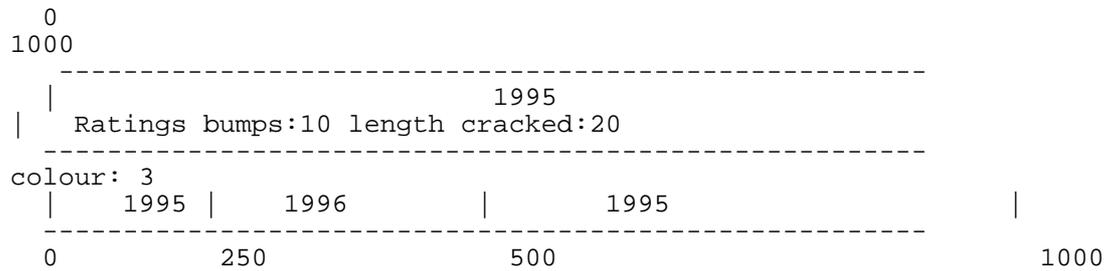
$$\begin{aligned}
 &(((\text{settlement} \times \text{settlement weighting}) + \\
 &(\text{bumps} \times \text{bumps weighting}) + \\
 &(\text{depressions} \times \text{depressions weighting}) + \\
 &(\text{cracked} \times \text{cracked weighting}) + \\
 &(\text{scabbing} \times \text{scabbing weighting}) + \\
 &(\text{patches} \times \text{patches weighting}) + \\
 &(\text{potholes} \times \text{potholes weighting}) + \\
 &(\text{option}_1 \times \text{option}_1 \text{ weighting}) + \\
 &(\text{option}_2 \times \text{option}_2 \text{ weighting}) + \\
 &(\text{option}_3 \times \text{option}_3 \text{ weighting}) + \\
 &(\text{option}_4 \times \text{option}_4 \text{ weighting})) * \\
 &\text{use_weighting}) * \text{age weighting})
 \end{aligned}$$

Example:

| AC | Con. (weighting) | | % rating | | Use |
|-------------|---------------------|------------|-------------|---------------|-----------|
| factor of 5 | | | | | |
| | 2 | settlement | 5 | 10 | |
| | 2 | bumps | 10 | 20 | |
| | 10 | depression | 10 | 100 | |
| | 10 | crack | 5 | 50 | |
| | | | | 180 * 3 = 540 | (3 is the |
| use | | | | | factor |
| weighting) | | | | | |

Where the length of the footpath top surface is no longer the same as the length that was rated the same rating figures will apply. The inspection length is taken and divided by 1000 to give a standard base. All rating values are then divided by this standard base. By using a base figure surfacing of varying lengths can be compared.

Example: 100% rating



The section from 250-500 is replaced in 1996 after the 1995 survey, none of these sections are rated in the 1996 year so the 1995 rating values will apply. The weighting value of 1.5 applies to all categories.

The priority value for the original 1995 section is
inspection length (1000) / 1000 = 1
bumps 10/1 * 1.5 = 15
length_cracked 20/1 * 1.5 = 30
colour 3 * 1.5 = 4.5
(15 + 30 + 4.5 = 49.5)

The priorities for the 1996 year are also 49.5 for the sections 0-250 and 500-1000 the same rating row is being used. The new section is unrated so will no have no priority value.

Where there is a cost per m2 for material, an estimated cost is given for replacing the complete footpath surface.

Verge ♦ Footpath ♦ Priority ♦ Report Prty

Produced the Prioritized list

This report will produce a list of footpath surface in descending priority order. The user can select what surfaces to be included in the report and the number of pages to produce or the lowest priority level to go to (a range of valid priorities is shown. Where the user has entered an alternative priority or cost this value is used in preference to the calculated value.

Verge ♦ Footpath ♦ Priority ♦ Maint Prty

Maintain the priority list

Once the priorities have been calculated the user can go in and enter either a different Priority value or Cost. When the Priority Report is rerun these values will be used instead of the calculated values. This screen only give access to the Entered Priority, Entered Cost and Priority notes columns.

```
FOOTPATH TOP SURFACE:  Query Add Update Delete Next Previous List ...
Display the next Footpath Top Surface in the current list
----- Road / Section Information -----
      Road Number:      3          Name: AKAROA ST

Start Displacement:    0 m   Start Name: OHOKA RD
End Displacement:     703 m   End Name: FULLER ST

----- Footpath Information -----
      Footpath ID:      3          Length:  151 m
Start Displacement:    7 m          Side: L Left
End Displacement:     158 m        Position: K Kerb

----- Footpath Top Surface Information -----
Start Displacement:    7 m          Priority          Cost
End Displacement:     158 m        Calculated:
      Date: 01Jan1988          Entered:
      Material: C      Concrete

Warning                                     Priority Notes

3 of 1332 Footpath Top Surfaces found.
```

Verge ♦ Berm

Update Berm Table

The berm table contains general data relating to berms. The road sections used for this table are the same as those for the carriageway table. If the characteristics of the berm vary significantly within the road section, more than one row for each road section may be entered with separate displacements given at the beginning and end of each different section of berm.

```

BERM:  Query Add Update Delete Next Previous List Output eXpand ...
Query the Berm table
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Road Number:      1              Name: WAIHI BEACH RD
Start Displacement:    0 m  Start Name: LONG START SECTION NAME -
End Displacement:    1230 m  End Name: LONGER END SECTION NAME
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Berm Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Side: L Left              Maintenance Type: MOWER
Start Displacement:    1000 m      Date: 12Dec1988
End Displacement:    1230 m      Cycle: 52 weeks
      Length: 230 m
      Width: 10.0 m
      Type: B Bank
      Plants: FSC Flowers, Shrubs, Cover
      Trees: 20

Comments:

8 Berms found.

```

| Field | Required |
|--------------------------------|----------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Side | yes |
| Berm Start Displacement | yes |
| Berm End Displacement | yes |
| Length | yes |
| Width | yes |
| Type | yes |
| Plants | optional |
| Trees | optional |
| Maintenance Type | optional |
| Maintenance Date | optional |
| Maintenance Cycle | optional |
| Comments | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct

road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Side The side of the carriageway section on which the berm is located.

An entry is required. **F4:List&Pick** is available.

| | |
|---|-------|
| L | Left |
| R | Right |

**Berm
Start Displacement**

The distance in metres from the road origin to the start of the berm.

An entry no less than the start or greater than the end displacements for the road section is required.

**Berm
End Displacement**

The distance in metres from the road origin to the end of the berm.

An entry no less than the start or greater than the end displacements for the road section is required. The program will not accept an end displacement less than a start displacement.

Length The length of the berm in metres. The length of berm recorded must lie between the berm start and end displacements and the program will default to the difference between these. A different value to the default may be entered if the length is longer due to the presence of intersections with large radii wings or quadrants.

This is a 5 digit field and an entry is required.

Width The width of the berm in metres to one decimal place.

An entry in the range 0.5 to 20.0m is required.

Type An indicator as to the slope of the berm.

An entry is required in this field. **F4:List&Pick** is available.

| | |
|---|-------|
| B | Bank |
| L | Level |

Plants The type of planting on the berm.

An entry is optional. **F4:List&Pick** is available.

| | |
|------|-------------------------------|
| C | Cover |
| F | Flowers |
| FC | Flowers, Cover |
| FS | Flowers, Shrubs |
| FSC | Flowers, Shrubs, Cover |
| G | Grass |
| GC | Grass, Cover |
| GF | Grass, Flowers |
| GFS | Grass, Flowers, Shrubs |
| GFSC | Grass, Flowers, Shrubs, Cover |
| GS | Grass, Shrubs |
| S | Shrubs |
| SC | Shrubs, Cover |

Trees The number of trees growing in the berm.

An entry is optional.

Maintenance Type This is a 6 character field which can be used to identify the general type of maintenance required for the berm eg. MOWER.

An entry is optional.

Maintenance Date The date on which maintenance was last carried out on the berm.

An entry is optional.

Maintenance Cycle The cycle time in weeks required between maintenance activities on the berm.

This is a 3 digit field and an entry is optional.

Comments This is a 60 character field for any general comments in regard to the berm.

Verge ♦ Crossing

Update Crossing Table

The crossing table contains general data relating to vehicle entrances. The road sections used for this table are the same as those for the carriageway table. If the characteristics of the crossing vary significantly within the road section, more than one row for each road section may be entered with separate locations.

```

CROSSING:  Query  Add  Update  Delete  Next  Previous  List  Output  ...
Display the next Crossing in the current list
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA

      Road Number:    63              Name: CRAIG'S TEST ROAD 1

Start Displacement:  441 m  Start Name: NEVA STREET
End Displacement:   912 m   End Name:  ARKLOW LANE

AAAAAAAAAAAAAAAAAAAAAAAAAAAA Crossing Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA

      Side: L  Left
Displacement:      780 m
House No:
Type: BK Beveled Kerb crossing
Quantity:         1
Complies: U  Unknown
Condition: U  Unknown

Comments:

9 of 17 Crossings found.

```

Fields Contained In The Crossing Table

| Fields | Required |
|--------------------------------|----------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Side | yes |
| Displacement | optional |
| House Number | optional |
| Type | yes |
| Quantity | yes |
| Complies | yes |
| Condition | yes |
| Comments | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Side The side of the carriageway section on which the crossing is located. If a **displacement** is entered then this value cannot be **Both**.

An entry is required. **F4:List&Pick** is available.

| | |
|---|-------|
| B | Both |
| L | Left |
| R | Right |

Displacement The distance in metres from the road origin where the vehicle crossing is located.

This is a 5 digit field and an entry is optional. A null value in this field indicates multiple vehicle crossings within the carriageway section. A displacement value must lie within the carriageway section.

House Number The house number where this vehicle crossing occurs.

Entry is optional.

Type The type of vehicle crossing being entered. All valid crossing types are found in the crossing type table.

An entry is required. **F1:Quick-query** and **F4:List&Pick** are available.

| | |
|----|--------------|
| BK | Beveled Kerb |
| B | Bridge |
| HD | Heavy Duty |
| SL | Slot |

Quantity The number of drives of this type.

An entry no less than 1 and no greater than 99 is required. Where a displacement value has being entered the only valid value is 1.

Complies Does this vehicle crossing comply with regulations.

An entry is required. **F4:List&Pick** is available.

| | |
|---|---------------|
| C | Compliant |
| N | Non-compliant |
| U | Unknown |

Condition The condition of the vehicle crossing.

An entry is required in this field in the range 1 to 5 or Unknown. The values can be used by the user as they determine. **F4:List&Pick** is available.

Comments This is a 60 character field for any general comments in regard to the crossing.

Pavement

Maintain those tables associated with Pavements

Pavement ♦ Surfacing

Update Carriageway Surfacing Table

This table contains the information relating to carriageway surfacing history. The road sections for this table can be different from the carriageway (road sections) table. This is to allow for the probability of surfacings being placed over several road sections (as defined for carriageway table) at any one time.

```

CARRIAGEWAY SURFACE:  Query Add Update Delete Next Previous ...
Display the next Carriageway Surface in the current list
----- Pavement Surfacing Information -----
      Road Number:   17          Name: KALMA RD

Start Displacement:    0 m  Start Name: GOLDEN VALLEY RD
End Displacement:   390 m   End Name: END

----- General -----
      Date: 29Nov1983   Material: COAT2 Second coat seal
Life Cycle:      yrs          Depth:  0 mm
      Width:  4.6 m     Size/Grade:  3
      Offset:  0.0 m    Source: WAITAWHETA
Sealed Area:      m2   Surfaced by:
Surface ID:      49   Contract/Item:
- Quantity pph -  ----- Types -----
Cutter:  0          Cutter:
Adhesion:  1.0     Adhesion:  RDIZ Redicote Z
Additive:  0       Additive:
Flux:  2          Binder: E180 Bitumen emulsion, penetration grade 180/200
Res. App. Rate:  2.08
Comments: Fine, hot.
48 of 90 Carriageway Surfaces found.

```

Fields Contained In The Carriageway Surfacing Table

| Field | Required |
|--|-----------------------------|
| Road Number | yes |
| Start Displacement | yes |
| End Displacement | yes |
| Start Name | optional |
| End Name | optional |
| Surfacing Date | yes |
| Life Cycle | optional |
| Width | optional |
| Offset | optional |
| Sealed Area | optional |
| Surface ID | no entry |
| Material | yes |
| Depth of Material | yes |
| Size of Aggregate | yes |
| Size of 2nd Aggregate TWO2 or TWORS | required if material = TWO1 |
| Source of Aggregate | optional |
| Surfaced by | optional |
| Contract/Item | optional |

| | |
|---|--|
| Cutter Quantity | optional |
| Cutter Type defined | required if cutter quantity is defined |
| Adhesion Agent Quantity | optional |
| Adhesion Agent Type quantity is defined | required if adhesion agent quantity is defined |
| Additive Quantity | optional |
| Additive Type defined | required if additive quantity is defined |
| Flux Quantity | optional |
| Binder Type | yes |
| Residual Application Rate | optional |
| Comments | optional |

A full description of the data held in each field is as follows:

- Road Number** The number of the road in which the road section is located.
- This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.
- Start Displacement** The distance in metres from the road origin to the start of the section of surfacing.
- A value in the range 0 to 99999m is required.
- End Displacement** The distance in metres from the road origin to the end of the section of surfacing.
- A value in the range 1 to 99999m is required. The program will not accept an end displacement less than a start displacement.
- Start Name** A 25 character field for the name of a readily identifiable physical feature such as an intersecting road, a bridge, a culvert, etc.
- An entry is optional.
- End Name** A 25 character field for the name of a readily identifiable physical feature such as an intersecting road, a bridge, a culvert, etc.
- An entry is optional.
- Surfacing Date** The date the surfacing was placed.
- An entry is required and a future date is not allowed.
- Life Cycle** The expected life cycle of the surfacing in years.

If a number is entered in this field then this value is taken as the life of the surface and used in the Treatment Selection process. If this field is left blank then the default value is obtained using the surface material type and the first chip size from the surface_life table. The table below shows the initial set of default values loaded into this table. Values may be altered to reflect actual conditions.

This value will have to be established for each roading authority based on the performance history data available for surfacings placed in the past. Allowance will need to be made for the type of surfacing placed and the traffic conditions imposed upon it. The average values obtained should be established and set down in a readily useable chart. The following is an example chart.

| Surfacing | Use 1 | Use 2 | Use 3 | Use 4 | Use 5 | Use 6 | Use 7 |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Portland Cement Concrete | 60 | 60 | 50 | 50 | 40 | 40 | 40 |
| Structural Asphaltic Concrete | 20 | 20 | 19 | 19 | 18 | 17 | 16 |
| Friction Course | 12 | 11 | 10 | 9 | 8 | 7 | 6 |
| Thin Asphaltic Concrete | 12 | 11 | 10 | 9 | 8 | 7 | 6 |
| Slurry Seal | 8 | 7 | 6 | 5 | 4 | 3 | 2 |
| Open Graded Emulsion Mix | 12 | 11 | 10 | 9 | 8 | 7 | 6 |
| Grade 6 Seal | 6 | 5 | 4 | 3 | 2 | 1 | 1 |
| Grade 5 Seal | 8 | 7 | 6 | 5 | 4 | 3 | 2 |
| Grade 4 Seal | 12 | 10 | 8 | 7 | 6 | 5 | 4 |
| Grade 3 Seal | 14 | 12 | 10 | 9 | 8 | 7 | 6 |
| Grade 2 Seal | 16 | 14 | 12 | 11 | 10 | 9 | 8 |
| First Coat Seal(grade 4) | 3 | 2 | 1 | 1 | 1 | 1 | 1 |
| First Coat Seal(grade 3) | 4 | 3 | 2 | 1 | 1 | 1 | 1 |
| Prime and Seal (grade 4) | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Two Coat First surface (grades 2/3, 2/4, 2/5) | 10 | 8 | 6 | 5 | 4 | 3 | 2 |
| Two Coat First surface (grades 3/4, 3/5, 3/6) | 8 | 6 | 5 | 4 | 3 | 2 | 1 |
| Two Coat First surface (grades 4/5, 4/6) | 6 | 4 | 3 | 2 | 2 | 1 | 1 |
| Two Coat Second surface (grades 2/3, 2/4, 2/5) | 18 | 16 | 14 | 13 | 12 | 10 | 9 |
| Two Coat Second surface (grades 3/4, 3/5, 3/6) | 16 | 14 | 12 | 11 | 10 | 8 | 6 |
| Two Coat Second surface (grades 4/5, 4/6) | 14 | 12 | 10 | 9 | 8 | 6 | 4 |
| Two Coat Reseal (grades 2/3, 2/4, 2/5) | 18 | 16 | 14 | 13 | 12 | 10 | 9 |
| Two Coat Reseal (grades 3/4, 3/5, 3/6) | 16 | 14 | 12 | 11 | 10 | 8 | 6 |
| Two Coat Reseal (grades 4/5, 4/6) | 14 | 12 | 10 | 9 | 8 | 6 | 4 |
| Bicouche/Sandwich | 14 | 12 | 10 | 9 | 8 | 6 | 4 |
| Metal | 3 | 2 | 1 | | | | |

| | | | | | | | |
|-------------------------|----|----|----|----|----|----|---|
| BOLIDT Polyurethane Mix | 18 | 16 | 14 | 12 | 11 | 10 | 8 |
|-------------------------|----|----|----|----|----|----|---|

Surfacing Width The average width of the surfacing in metres to one decimal place. This allows for part width sealing strips and does not have to be the same as the carriageway width. A null may be left in this field if the surfacing being recorded is a resurfacing which is the full width of the carriageway section. During the **Update Top Surface** program if this field is null then the width is taken as being that of the carriageway section relevant to the surface record.

An entry in the range 0.5 to 60.0 is optional.

Offset The offset in metres to one decimal place from the left hand side of the sealed carriageway to the left hand side of the surfacing being recorded.

This field defaults to 0 and should remain as such if the left hand side of the surfacing being recorded coincides with the left hand side of the carriageway. This also applies in the case of seal widening where the outside edge of the widening becomes the new left hand side of the surfacing.

NOTE: In the case of seal widening, it will be necessary to change the width in the carriageway table also, bearing in mind that the road sections in the carriageway table are not necessarily the same as the sections defined in the surfacing table.

An entry in the range 0 to 60 is optional.

Sealed Area The actual area covered by the seal. This value is not always (end_m - start_m x width), this column allows the user to input the actual area covered. This value is not used in any calculations and there are no checks made on the value entered in this column.

An entry is optional.

Surface ID The unique number of the surface generated upon entry by the program. This number is carried through to the top_surface table and users can now view the c_surface row from the top_surface entry using the **eXpand** option..

Material The material used to surface the carriageway.

An entry is required as follows:

| Code | Description | Depth | | | Size | | |
|-------|--|-------|-----|-----|------|-----|-----|
| | | Def. | Min | Max | Def. | Min | Max |
| AC | Asphaltic concrete | 25 | 10 | 500 | 10 | 5 | 40 |
| B/S | Bicouche/Sandwich | 0 | | | 0 | | |
| BOLID | BOLIDT Polyurethane Mix | 0 | 0 | 0 | 10 | 5 | 20 |
| COAT1 | First coat seal | 0 | 0 | 0 | 6 | 1 | 6 |
| COAT2 | Second coat seal | 0 | 0 | 0 | 6 | 1 | 6 |
| CONC | Concrete | 200 | 75 | 500 | 12 | 6 | 40 |
| FC | Friction course | 25 | 10 | 100 | 10 | 5 | 40 |
| INBLK | Interlocking concrete blocks | 80 | 50 | 150 | 0 | 0 | 40 |
| LOCK | Locking Coat Seal | 0 | 0 | 0 | 6 | 1 | 6 |
| METAL | Metal running course | 100 | 40 | 500 | 40 | 7 | 40 |
| OGEM | Open graded emulsion mix | 25 | 10 | 100 | 10 | 5 | 40 |
| OTHER | Other material type | 0 | 0 | 500 | 0 | 0 | 40 |
| PSEAL | Prime and seal | 0 | 0 | 0 | 6 | 1 | 6 |
| RCHIP | Red Chip Seal (McCullum) | 0 | | | 0 | | |
| RSEAL | Reseal | 0 | 0 | 0 | 6 | 1 | 6 |
| SLRY | Slurry Seal | 6 | 2 | 25 | 3 | 1 | 12 |
| TEXT | Texturising Seal | 0 | 0 | 0 | 6 | 1 | 6 |
| TWO1 | Two coat seal at 1st surfacing | 0 | | | 0 | | |
| TWO2 | Two coat seal as a 2 nd surfacing | 0 | | | 0 | | |
| TWORS | Two coat seal as a reseal | 0 | | | 0 | | |
| VFILL | Void fill seal | 0 | 0 | 0 | 6 | 1 | 6 |

Layers of asphaltic concrete are recorded in the surfacing table even though they may be of sufficient depth to form a structural layer of the pavement. Asphaltic concrete laid in separate layers during the same construction phase and with the same material type need not be recorded as separate layers. With this one exception all other layers of AC should be recorded as separate surfacings.

Depth of Material The depth of the surfacing in mm if other than a seal coat. If the material is a seal coat a value of 0 should be entered. The entry must fall within the Minimum and Maximum depth range specified for that material.

An entry in the range 0 to 500mm is required.

Size of Aggregate The grade of sealing chip (1 to 6) or the top size of the aggregate (mm) in a surfacing mix, depending on which material has been used. The entry must fall within the Minimum and Maximum size range specified for that material.

An entry in the range 1 to 40 is required.

**Size
of 2nd Aggregate**

The grade of the 2nd sealing chip (1 to 6). An entry can only be made when the **Material** is **TWO1**, **TWO2**, **TWORS** or **B/S**. The allowable combinations are found under in the **Life Cycle** table. Only valid combinations will be accepted.

Aggregate Source

The source of aggregate for the chips or the mix. The name of the quarry or pit should be used and not the name of the supplier because some suppliers have several different sources of aggregate. All valid sources are found in the pavement layer type material source table.

An entry is optional. **F4:List&Pick** is available.

Surfaced by

The name of the roading authority or contractor who carried out the surfacing work.

An entry is optional, **F4:List&Pick** is available.

Contract/Item

The contract and item number that the work was carried out under. Details entered in this column are not verified. The column is free format 10 characters.

An entry is optional.

Cutter Quantity

The amount of cutter in the binder expressed as parts of cutter per hundred parts of bitumen, (pph). The average amount of cutter should be recorded in the surfacing length if there was a variation due to a temperature change.

An entry in the range 0 to 20 is optional and the default value is 0.

Cutter Type

The type of cutter used in the binder as shown in the following table. This field defaults to "KERO" but may be overwritten with other valid types of cutter.

An entry as follows is required if cutter quantity is defined. **F4:List&Pick** is available.

| | |
|------|------------|
| KERO | Kerosene |
| TURP | Turpentine |
| OTHR | Other |

**Adhesion Agent
Quantity**

The amount of adhesion agent in the binder expressed as parts of adhesion agent, per hundred parts of bitumen, (pph). This value may be to one decimal place.

An entry in the range 0 to 5.0 is required if the type of adhesion agent has been defined and the default value is 0.

Adhesion Agent

Type The type of adhesion agent used in the binder.

An entry is required if adhesion agent quantity is defined. **F4:List&Pick** is available. Codes allowed for adhesion agent type are as follows:

| | |
|------|----------------------|
| BP50 | BP50C |
| BTRN | Bitran H |
| CECA | CECA EXP 3747 |
| D184 | Dinaram 184 |
| DHBG | Diamin HBG |
| DMPL | Duomeen T (Pastille) |
| DMPS | Duomeen T (Paste) |
| DOLB | Diamin OLB |
| MGA1 | Megamine 100 |
| MGBA | Megamine BA |
| N422 | Redicote N422 |
| N561 | Redicote N561 |
| N606 | Redicote N606 |
| P200 | Polyram L200 |
| RDIZ | Redicote Z |
| SHTA | Shell Tenicon A |
| TAA3 | Tomah 3000 |
| WTFX | Wetfix C |

NOTE: The above list does not necessarily constitute the current list of Transit approved adhesion agents.

Additives Quantity

The amount of additive in the binder expressed as parts of additive per hundred parts of bitumen, (pph).

An entry in the range 0 to 99 is required , default is 0.

Additives Type The type of additive, if any, in the binder. **F4:List&Pick** is available. An entry is required if additives quantity is greater than 0. Codes for additives type are as follows:

| | |
|------|----------------------------------|
| NRLX | Natural Rubber Latex |
| PEEH | Techniflex EH (Polymer Emulsion) |
| PM01 | Techniflex PMB 101 |
| PM05 | Techniflex PMB 105 |
| PM30 | Techniflex PMB 130 |
| PMB1 | Techniflex PMB 100 |
| PMB4 | Techniflex PMB 400 |
| PMB6 | Techniflex PMB 600 |
| PMB8 | Techniflex PMB 800 |
| POL1 | Polybilt 101 |
| POL2 | Polybilt 102 |
| POL3 | Polybilt 103 |
| SAMC | Sam C |
| SAMF | Samfilla |
| SBR | Styrene butadiene rubber |
| SX50 | Fulton Hogan Paveflex SX50 |
| SX60 | Fulton Hogan Paveflex SX60 |
| XCS4 | XCS 104 |

Flux The amount of flux in the binder expressed as parts of diesel (automotive gas oil - AGO), per hundred parts of bitumen, (pph).

An entry in the range 0 to 9 is optional and the default value is 0.

Binder Type The type of binder used in the surfacing material.

An entry is required as follows. **F4:List&Pick** is available.

| | |
|------|---|
| B130 | Hot bitumen binder, penetration grade 130/150 |
| B180 | Hot bitumen binder, penetration grade 180/200 |
| B60 | Hot bitumen binder, penetration grade 60/70 |
| B80 | Hot bitumen binder, penetration grade 80/100 |
| E180 | Bitumen emulsion, penetration grade 180/200 |
| E80 | Bitumen emulsion, penetration grade 80/100 |
| PORT | Portland Cement |
| WATR | Water (metal surface) |
| UNKN | No record of binder type |

Residual Application Rate The application rate of the binder in litres/m² in a seal coat or the percentage of binder in an asphaltic concrete mix.

An entry in the range 0.2 to 7.0 is optional.

Comments This is a 60 character field for any general comments in regard to the surfacing. This field should also be used for special treatments carried out to a surfacing during its life, eg. The use of the burner, reclamite, gilsabind, fog coat etc.

When recording special treatments in this field it is advisable to always begin with a word that would allow a sort to be done for special treatments at a later date. eg. Start the comment with the word SPECIAL and then the trade name of the product used.

An entry up to 60 characters in length is optional.

Pavement ♦ Layer

Update Pavement Layer and Rehabilitation tables

This table contains the data related to the structural layers of the pavement. The road sections for this table can be different from the carriageway table. This is to allow for the probability of pavements being continuously constructed over several road sections that have been defined for the carriageway (road sections) table.

Multiple rows for a road section defined for the pavement layer table are allowed. Layers are ordered by date, the latest date being the top layer.

Rehabilitation's are attached as required to each Layer/Subgrade. Where a rehabilitation has been carried out on a Subgrade or Layer the main screen will show the number of rehabilitation's that have occurred. Rehabilitation's can be accessed using either **F1-Rehabilitation** for the adding or updating of rehabilitation information or **F2:-Rehab-list** to list the rehabilitation's for the Subgrade or Pavement Layer currently on display.

```

PAVEMENT LAYER:  Query Add Update Delete Remove-layer ...
Update the current Pavement Layer
----- Road Information -----
      Road Number: 1089           Name: BEACH ROAD (KATIKATI)
----- Pavement Layer/Subgrade Information -----
Start Displacement:    0 m Start Name: RUA ROAD
End Displacement:    450 m End Name: FRANKLIN ROAD
      Layer ID: 133                Offset: 0.0 m
      Type: L Pavement Layer        Width: 8.0 m
      Date: 01Jan1994              1 Rehabilitation
----- SUBGRADE -----          ----- LAYER -----
Material:              Material: GAP40
  CBR: %                Graded all passing 40mm sieve
                        Depth: 50 mm
                        Source: Quarry
Comments:
1 of 2 Pavement Layers found.
  
```

Fields Contained In The Carriageway Pavement Layer Table

| Field | Required |
|--------------------|--------------------------|
| Road Number | yes |
| Start Displacement | yes |
| End Displacement | yes |
| Start Name | optional |
| End Name | optional |
| Layer ID | yes |
| Type | yes |
| Date | yes |
| Offset | optional |
| Width | optional |
| Subgrade Material | yes -if type is Subgrade |

| | |
|----------------|--------------------------------|
| Subgrade CBR | yes -if type is Subgrade |
| Layer Material | yes -if type is Pavement Layer |
| Layer Depth | yes -if type is Pavement Layer |
| Layer Source | yes -if type is Pavement Layer |
| Comments | optional |

A full description of the data held in each field is as follows

- Road Number** The number of the road in which the road section is located.
- This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.
- Start Displacement** The distance in metres from the road origin to the start of the section of pavement construction.
- A value in the range 0 to 99999m is required.
- End Displacement** The distance in metres from the road origin to the end of the section of pavement construction.
- A value in the range 1 to 99999m is required. The program will not accept an end displacement less than a start displacement.
- Start Name** A 25 character field for the name of a readily identifiable physical feature such as an intersecting road, a bridge, a culvert, etc.
- An entry is optional.
- End Name** A 25 character field for the name of a readily identifiable physical feature such as an intersecting road, a bridge, a culvert, etc.
- An entry is optional.
- Layer ID** The unique number of the pavement layer. This number is program generated and cannot be changed by the user.
- Type** The type of pavement information being entered.
- An entry is required. **F4:List&Pick** is available.
- | | |
|---|----------------|
| L | Pavement Layer |
| S | Subgrade |
- Date** The date the subgrade was tested or the date the Layer was constructed.
- An entry is required and a future date is not permitted.

Offset The offset in metres to one decimal place from the left hand side of the carriageway to the left hand side of the pavement.

If the full carriageway width has been constructed this field should remain with a 0 value. An entry in the range 0 to 60.0m is optional.

Width The average width of the pavement construction in metres to one decimal place.

An entry in the range 1 to 60.0 is optional.

Subgrade Material The type of material present in the subgrade. All valid subgrade types are found in the pavement subgrade type table.

An entry is required if type is Subgrade. **F1:Quick-query** and **F4:List&Pick** are available.

| |
|----------|
| BOULDERS |
| CLAY |
| GRAVEL |
| ORGANIC |
| ROCK |
| SAND |
| SILT |
| UNKNOWN |

Subgrade CBR The CBR value of the subgrade material.

An entry is required if type is Subgrade. Entries may be as follows.

| | |
|------------|--|
| U01 to U99 | Lab unsoaked CBR values from 1% to 99% |
| S01 to S99 | Lab soaked CBR values from 1% to 99% |
| F01 to F99 | Field CBR values from 1% to 99% |

Layer Material The type of material from which the pavement layer was constructed. All valid materials are found in the pavement layer type table.

An entry is required if type is Pavement Layer. **F1:Quick-query** and **F4:List&Pick** are available.

| Code | Description | Default | Minimum | Maximum |
|--------|----------------------------------|---------|---------|---------|
| AP7 | All passing 7mm sieve | 20 | 10 | 300 |
| AP20 | All passing 20mm sieve | 25 | 20 | 500 |
| AP40 | All passing 40mm sieve | 75 | 50 | 1000 |
| AP65 | All passing 65mm sieve | 100 | 75 | 1200 |
| AP100 | All passing 100mm sieve | 150 | 125 | 5000 |
| AP150 | All passing 150mm sieve | 250 | 200 | 5000 |
| BOLDER | Boulders - Uncrushed Random Size | 500 | 300 | 5000 |
| CR | Crusher Run | 300 | 150 | 5000 |
| GAP7 | Graded all passing 7mm sieve | 20 | 10 | 200 |
| GAP20 | Graded all passing 20mm sieve | 25 | 20 | 500 |
| GAP40 | Graded all passing 40mm sieve | 100 | 50 | 1000 |
| GAP65 | Graded all passing 65mm sieve | 100 | 75 | 1200 |
| GAP100 | Graded all passing 100mm sieve | 150 | 125 | 1200 |
| GAP150 | Graded all passing 150mm sieve | 250 | 175 | 1200 |
| LIME | Lime Rock | 150 | | |
| M3 | M3 Specification | 75 | 40 | 1000 |
| M4 | M4 Specification | 75 | 40 | 1000 |
| M5 | M5 Specification | 75 | 40 | 1000 |
| ROP300 | Run of Pit - Graded Max 300mm | 500 | 300 | 5000 |
| ROP500 | Run of Pit - Graded Max 500mm | 750 | 500 | 5000 |
| RR | River Run | 0 | | |
| ROR300 | Run of River - Graded Max 300 | 0 | | |
| ROR500 | Run of River - Graded Max 500 | 0 | | |
| SAP7 | Scoria all passing 7mm sieve | 20 | 10 | 200 |
| SAP20 | Scoria all passing 20mm sieve | 25 | 20 | 500 |
| SAP40 | Scoria all passing 40mm sieve | 75 | 40 | 1000 |
| SAP65 | Scoria all passing 65mm sieve | 100 | 65 | 1200 |
| SAP100 | Scoria all passing 100mm sieve | 150 | 100 | 1200 |
| SAP150 | Scoria all passing 150mm sieve | 200 | 150 | 1200 |
| STRIP | Quarry Strippings - Ungraded | 150 | 50 | 1200 |

Layer Depth The depth of the pavement layer in mm. The entry must fall within the Minimum and Maximum size range specified for that material.

An entry in the range 20 to 999mm is required if type is Pavement Layer.

Layer Source The source of the material used in the pavement layer construction. All valid sources are found in the pavement layer type material source table.

An entry is required if type is Pavement Layer. **F1:Quick-query** and **F4:List&Pick** are available.

A full description of the data held in each field is as follows

Date The date the rehabilitation work was carried out on the pavement layer.

An entry is required and a future date is not permitted.

Start Displacement The distance in metres from the road origin to where the rehabilitation work was started.

A value in the range 0 to 99999m is required and must be between the start and end displacements of the pavement.

End Displacement The distance in metres from the road origin to the end of the section of rehabilitation.

A value in the range 1 to 99999m is required. The program will not accept an end displacement less than a start displacement and the end displacement must be between the start and end displacements of the pavement.

Offset The offset in metres to one decimal place from the left hand side of the carriageway to the left hand side of the rehabilitation.

If the full carriageway width has been rehabilitated this field should remain with a 0 value. An entry in the range -9.0 to 60.0m is required.

Width The width of the layer in metres to one decimal place.

An entry in the range 0.5 to 60 is required.

Rehabilitation Type The type of rehabilitation work carried out to the pavement layer.

An entry is required. **F4:List&Pick** is available.

| | |
|---|-----------------|
| R | Rip and Reshape |
| S | Stabilization |

Depth The depth to which the layer has been stabilized in mm.

An entry in the range 50 to 400 is required if rehabilitation type has been defined as stabilization.

Stabilization Agent The agent used to stabilize the pavement material. All valid agents are found in the pavement rehabilitation stabilizing agents table.

An entry is required if rehabilitation type has been defined as stabilization. **F1:Quick-query** and **F4:List&Pick** are available.

Quantity of Agent The percentage of stabilization agent used. Where two agents are used, input the total quantity of agents used and record the separate amounts of each one in the comments field.

An entry in the range of 1 to 10 is required if rehabilitation type has been defined as stabilization.

Comments Any text up to 60 characters in length, eg. Use this field to indicate CBR values after stabilization, other types of rehabilitation used, different quantities of each type of rehabilitation agent used when there is more than one type, etc.

Drainage

Update Drainage Table

This table contains information regarding drainage within the road reserve but not surface water channels at the edge of the carriageway which are in a separate table. The road sections used for this table are the same as those used for the carriageway table. Each drainage feature will create a new row and therefore multiple rows may be kept for each road section.

```

DRAIN:  Query Add Update Delete Next Previous List Output ...
Display the next Drain in the current list
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAAAAAAA

      Road Number:   41           Name: WEST ST

Start Displacement:   0 m Start Name: PACIFIC ST
End Displacement:   250 m End Name: SEAVIEW TCE

AAAAAAAAAAAAAAAAAAAAAAAAAAAA Drainage Information AAAAAAAAAAAAAAAAAAAAA Screen 1/2
      Type: SFP Sump Footpath           Length: 123.0 m
      Date: 01Jan1993                   Diam./Height: mm
      Number: 12.00                       Intake: G Yes with a Gratin
      Displacement: 100 m                 Outlet: N No
      Offset: 12.0 m                      Material: AC Asbestos cement
      Side: L Left                        Waterway Name:

----- CULVERT DATA -----
      Type:
      Width: mm
      Area: m2

9 of 21 Drains found.

```

```

DRAIN:  ... Screen eXpand Help Exit
Change the current screen
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAA

      Road Number:   41           Name: WEST ST

Start Displacement:   0 m Start Name: PACIFIC ST
End Displacement:   250 m End Name: SEAVIEW TCE

AAAAAAAAAAAAAAAAAAAAAAAAAAAA Drainage Information AAAAAAAAAAAAAAAAAAAAA Screen 2/2

----- MAINTENANCE -----
      Type:
      Date:
      File:
      Maint Cycle:
      Organisation:

      Comments:

----- INSPECTIONS -----
      Date:
      Hazard: N No
      Adequate:

9 of 21 Drains found.

```

Fields Contained In The Drainage Table

| Fields | Required |
|--------------------------------|----------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Type | yes |

| | |
|-------------------------|-------------------------------------|
| Date | optional |
| Number | optional |
| Displacement | yes |
| Offset | optional |
| Side | yes - if offset has a value entered |
| Length | yes - if type is defined as CUL, |
| SIDE or SUB. | |
| Diam./Height | yes - if type is defined as CUL, |
| SIDE or SUB. | |
| Intake | yes - if type is defined as |
| CUL or SUB. | |
| Outlet | yes - if type is defined as |
| CUL or SUB. | |
| Material | yes - if type is defined as |
| CUL or SUB. | |
| Waterway Name | optional |
| Culvert Type | yes - if type is defined as CUL. |
| Culvert Width | yes - if culvert type is not |
| defined as CIRC. | |
| Waterway Area | yes - if culvert type is not |
| defined as CIRC. or BOX | |
| Maintenance Type | optional |
| Maintenance Date | optional |
| File | optional |
| Maintenance Cycle | optional |
| Organisation | optional |
| Comments | optional |
| Inspection Date | optional |
| Hazard | yes - if inspection date is defined |
| Adequate | yes - if inspection date is defined |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

Carriageway
Start Displacement From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Type The type of drainage feature present.

An entry is required as follows:

| | |
|-------|----------------------|
| CP1 | Catchpit type 1 |
| CP2 | Catchpit type 2 |
| CP3 | Catchpit type 3 |
| CUL | Culvert |
| DAM | Dam |
| DCHM | Drop Chamber |
| DWELL | Deep well shaft |
| FLUME | Flume |
| GRID | Debris catching grid |
| MHOLE | Manhole |
| OTHER | Other |
| SCOUR | Scour Protection |
| SD | Sump Double |
| SFP | Sump Footpath |
| SIDE | Side drain |
| SP | Soak Pit |
| SPILL | Spillway |
| SSE | Sump Side Entry |
| SUB | Subsoil drain |
| SUMP | Sump |
| WEIR | Weir |
| WR | Water Race |

F4:List&Pick is available.

Date The date the drainage feature was constructed.

An entry is optional and a future date is not permitted.

Number The number of the drainage feature (eg. culverts may be numbered for easy identification). The number allows two decimal places for culverts placed after the numbering system has been established.

An entry is optional.

Displacement The location of the drainage feature in metres from the road origin.

This location distance should be to the centre of a drainage feature which crosses the carriageway, or a point location at the side of the carriageway, or to the start of a drainage feature which runs parallel with the carriageway.

An entry not less than the start nor greater than the end displacements for the road section is required.

Offset The offset distance in metres to one decimal place from the carriageway centre to the centre of a drainage feature which runs parallel with the carriageway. A value of 0 may be used for when a drainage feature such as a sump is present on the centreline at the end of a cul-de-sac.

An entry in the range 0.1 to 99.9 is optional.

Side The side of the carriageway on which the drainage feature is located if it runs parallel with the carriageway.

If a value has been entered for offset an entry is required as follows.

| | |
|---|-------|
| E | End |
| L | Left |
| R | Right |

F4:List&Pick is available.

Length The length of the drainage feature in metres to one decimal place where applicable.

An entry in the range 1 to 15,000m is required if type is defined as CUL, SIDE or SUB.

Diam./Height The diameter of a circular culvert or subsoil drain, the height of a box or arch culvert, or the depth of a catchpit, soak pit or side drain in mm.

An entry in the range 50 to 9000mm is required if type is defined as CUL, SIDE or SUB.

Intake This indicator shows if an intake structure is present and if that structure is one with a grating.

An entry is required if type is defined as CUL or SUB. **F4:List&Pick** is available. Entries may be as follows.

| | |
|---|--------------------|
| G | Yes with a Grating |
| N | No |
| Y | Yes |

Outlet This indicator shows if an outlet structure is present.

An entry is required if type is defined as CUL or SUB. **F4:List&Pick** is available. Entries may be as follows.

| | |
|---|-----|
| N | No |
| Y | Yes |

Material The material from which the drainage feature is constructed.

An entry is required and entries may be as follows:

| | |
|-------|---------------------|
| AC | Asbestos Cement |
| ALUM | Aluminium |
| ARMCO | Armco |
| CON | Concrete |
| EW | Earthenware |
| FAB | Fabric |
| HDPE | H Density Polyethyl |
| NG | Natural Ground |
| PVC | Poly Vinyl Chloride |
| STEEL | Steel |
| STONE | Stone |
| WOOD | Wood |

F4:List&Pick is available.

Waterway Name The name of the waterway if applicable.

An entry of up to 20 characters is optional.

Culvert Type The type of culvert present if drainage feature is a culvert.

The default value for this field is CIRC and need only be altered if the culvert is other than circular.

If drainage feature type is defined as CUL an entry is required
F4:List&Pick is available.

| | |
|-----------|-----------------------|
| ARCH | Arch culvert |
| BOX | Box culvert |
| CIRC | Circular culvert |
| OTHER | Other |
| TWIN-ARCH | Twin arch culvert |
| TWIN-BOX | Twin box culvert |
| TWIN-CIRC | Twin circular culvert |
| WATERDRV | Water Drive |

Culvert Width The width of the culvert in mm if the culvert is not circular or twin circular.

An entry in the range 100 to 9000 is required if Culvert Type is not defined as CIRC or TWIN-CIRC.

Waterway Area The area of the waterway in m2 to two decimal places. If the culvert is not circular, twin circular, box or twin box an entry in the range 0.01 to 200 is required. If Culvert Type is defined as CIRC, TWIN-CIRC, BOX or TWIN-BOX the program automatically calculates and enters the waterway area.

Maintenance Type The type of maintenance which is considered to be most appropriate for the drainage feature.

F4:List&Pick is available. The following entries are optional:

| | |
|--------|--------------|
| DIGGER | Digger |
| GRADER | Grader |
| HAND | By Hand |
| SP | Suction Pump |

Maintenance Date The date the drainage feature was last maintained.

An entry is optional.

File This is a 10 character field which allows the recording of a file reference for joint organisation agreements.

Maintenance Cycle The cycle time in weeks for maintenance of the drainage feature.

An entry in the range 1 to 999 is optional.

Organisation This indicator shows who is responsible for maintenance of the drainage feature.

An entry is required. **F4:List&Pick** is available.

Comments Any text up to 60 characters can be entered in this field for comments regarding inspections of the drainage feature.

Inspection Date The date of the last inspection of the drainage feature.

An entry is optional and a future date is not permitted.

Hazard This indicator shows if the drainage feature was considered during the last inspection to be a hazard to motorists.

If the inspection date is defined an entry is required. **F4:List&Pick** is available. The options are as follows:

| | |
|---|---------|
| N | No |
| U | Unknown |
| Y | Yes |

Adequate This indicator shows if the drainage feature was considered during the last inspection to be adequate for the situation in which it is placed.

If the inspection date is defined an entry is required.
F4:List&Pick is available.

Traffic Facilities

Maintain those tables associated with Traffic Facilities

Traf Facils ♦ Traf Facil

Update Traffic Facilities Table

This table contains information regarding facilities for traffic such as signs, markings, barriers and guard rails. The road sections used for this table are the same as those used for the carriageway table. Multiple rows may be kept for each road section and each traffic facility or group of facilities will create a new row.

```

TRAFFIC FACILITY:  Query Add Update Delete Next Previous List ...
Update the current Traffic Facility
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Road Number:      1              Name: WAIHI BEACH RD

Start Displacement:  6440 m Start Name: BECKS BRIDGE
End Displacement:   7000 m End Name: RAILWAY CROSSING

AAAAAAAAAAAAAAAAAAAAAAAAAAAA Traffic Facilities Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Type: M3850   Speed circle 50km/h
Quantity:
      Size:      mm
Displacement:  2000 m
      Side: C Centreline
      Offset:  40.0 m
      Length:  280 m
----- MAINTENANCE -----
      Date: 12Dec1988
      Cycle: 52 weeks
Organisation: WKS Works Consultancy Services

      Date:
Reference:
Date:

Comments:

1 of 3 Traffic Facilities found.

```

Fields Contained In The Traffic Facilities Table

| Fields | Required |
|--------------------------------|--------------------------------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Type | yes |
| Quantity | optional |
| Size | optional |
| Displacement | yes - if number is not defined |
| Side | yes - if number is not defined |
| Offset | yes - if number is not defined |
| Length | optional |
| Maintenance Date | optional |
| Maintenance Cycle | optional |
| Maintenance Organisation | optional |
| Comments | optional |
| Resolution Reference | optional |
| Resolution Date | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement** From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Type The type of traffic facility present.

The codes are the same as those used in the joint Land Transport Safety Authority (LTSA) and Transit Manual of Traffic Signs and Markings with an allowance for the speed value to be added as a suffix. In the case of hazard markings and road markings the manual does not provide codes and so codes have been allocated for the purposes of this inventory.

New codes can be added and existing ones changed in the lookup table for Traffic Facilities. **F4:List&Pick** is available.

An entry is required as follows:

Hazard Markings

| | |
|-----|-------------------------|
| H09 | Edge Marker Post |
| H11 | Reflective Material |
| H15 | Illuminated Island Nose |
| H16 | Sheet Bollard |
| H17 | Zetka Bollard |

Miscellaneous

| | |
|----|------------|
| FK | False Kerb |
|----|------------|

Quantity This is the length of markings of one type contained within the road section where the recording of individual facilities is not required.

Where a record is to be kept of individual facilities this field should remain null.

Size The nominal size of a sign in mm. eg. 600, 750, 900. An entry in the range 0 to 9999 is optional.

Displacement The location of an individual facility in metres from the road origin.

An entry no less than the start or greater than the end displacements for the road section is required if number is not defined. If the facility has significant length such as a marking or barrier, the location is taken at the beginning. In all other cases the location is taken at the support or centre of the facility.

Side The side of the centreline on which an individual facility is placed.

If number is not defined an entry is required as follows:

| | |
|---|-----------------|
| L | Left hand side |
| R | Right hand side |
| C | Centreline |

F4:List&Pick is available.

Offset The offset distance to an individual facility in metres to one decimal place from the road centreline.

An entry in the range 0 to 60.0m is required if number is not defined.

Length The length of an individual facility if applicable, (eg. barrier, marking etc.).

An entry no greater than the difference between the start and end displacements for the road section is optional.

Maintenance Date The date that the traffic facility or group of facilities was last maintained.

An entry is optional and a future date is not permitted.

| | |
|---------------------------------|---|
| Maintenance Cycle | The maintenance cycle in weeks for the traffic facility or group of facilities. An entry in the range 1 to 999 weeks is optional. |
| Maintenance Organisation | The party responsible for the maintenance of the traffic facility. An entry is optional. F4:List&Pick is available. |
| Comments | Any text up to 30 characters in length regarding material, manufacturer, support type etc. which is considered useful. An entry is optional. |
| Resolution Reference | A 10 character field to record a reference to any Council resolution in regard to signs and markings. An entry is optional. |
| Resolution Date | The date of the Council resolution if applicable. An entry is optional and a future date is not permitted. |

Traf Facils ♦ Signs

Update Signs Table

This table contains information about signs, once a sign has been selected information about the supports for this sign can be viewed and if required added or updated. To access the support information use **F1-Support** or to list the attached brackets use **F2-Support-list**, see below for a fuller description on these two options. Entering support/post information is optional, see menu option **Input-toggle** below for more details. When adding a sign and you are recording support data then the **F1-Support** window is automatically opened after a sign has been successfully added. Multiple rows may be kept for each road section and each traffic facility or group of facilities will create a new row.

When a sign has been removed and not replaced the **Delete** option should be used this will flag the current sign as removed in the reason column. All the assets attached to the removed sign will be similarly marked. When the sign information is displayed on the screen, the word **Removed** will appear alongside the Sign ID indicating that the asset is no longer there.

The **Replace** option should be used when a sign has been replaced. The cursor moves to the Replacement fields on the second screen, defaulting the Replacement Date to the current date, the Contract ID and Dispatch details should be entered and the Replacement Reason selected from the valid list. Other sign information can be updated whilst in this mode, if details about the current sign were not complete updating information at this point enables a more complete history to be built up. Once ESC has been pressed the sign screen will be refreshed allowing for the inputting of the replacement signs' details, the information about the location of the sign will remain the same. Only those signs that have a Replacement Date of null can be replaced. Any assets that the replaced sign is attached to will be automatically attached to the new sign unless otherwise replaced.

When a sign has been replaced or deleted the previous information is kept thus creating a history of the location, the sign and supports. To view supports for a sign that belong to history (have been replaced), use the **History-toggle** option, see below for a fuller explanation of how this works. On initial entry to the program the History-toggle will be turned off, so queries made will only reflect the current situation.

```

SIGN: ... Next Previous List Output Screen eXpand ...
Display the next Sign in the current list
----- Road / Section Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:      0 m Start Name: LONG START
End Displacement:    1230 m End Name: LONGER END SECTION NAME
----- Traffic Sign Information ----- Screen 1/3
      Sign ID: 1921                      Supports: 1
      Class: I Information signs          Photo ref.:
      Type: I10 THANK YOU
      Group:
      Quantity: 1
      Displacement: 34 m
      Side: R Right
      Offset: m
      Latest: L Latest
      Sign Owner: LA Local Authority
      House No: 4
      Legend: THANK YOU
Reverse side:
Comments:
6 of 1281 Signs found.

```

```

SIGN: ... Next Previous List Output Screen eXpand ...
Change the current screen
----- Road / Section Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:      0 m Start Name: LONG START
End Displacement:    1230 m End Name: LONGER END SECTION NAME
----- Traffic Sign Information ----- Screen 2/3
      Material          Colour
      Legend: DG Diamond grade (diamond shape) BK Black
Background: DG Diamond grade (diamond shape) YE Yellow
      Substrate: AL Aluminium
      Frame: N
----- INSTALLATION -----
      Installed: 13Oct1995
      Dispatch ID: /
Reason:
----- INTERSECTS WITH ROAD -----
      Road No.:
Start Disp: m
End Disp: m
Disp: m
Side:
Original: O
----- REPLACEMENT -----
      Replaced:
      Dispatch ID: /
Reason:
6 of 1281 Signs found.

```

```

SIGN: ... Next Previous List Output Screen eXpand ...
Change the current screen
----- Road / Section Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:      0 m Start Name: LONG START
End Displacement:    1230 m End Name: LONGER END SECTION NAME
----- Traffic Sign Information ----- Screen 3/3

      Legend: 20km/h

Reverse Side:

6 of 42 Signs found.

```

Fields Contained in The Signs Table

| Fields | Required |
|---------------------------------|--|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Sign ID | yes |
| Class | yes |
| Type | yes |
| Group | yes - if Type is required to be |
| part of a group | |
| Quantity | yes |
| Displacement | yes - if quantity is 1 |
| Side | yes - if quantity is 1 |
| Offset | yes - if quantity is 1 |
| Latest | yes |
| Sign Owner | yes |
| House No and feature | optional |
| Legend (60 characters) | yes |
| Reverse Side (60 characters) | optional |
| Photo Ref. | optional |
| Comments | optional |
| Width | optional |
| Height | optional |
| From ground | optional |
| Angle | optional |
| Direction | yes |
| Legend Material | yes |
| Legend Colour | yes |
| Background Material | yes |
| Background Colour | yes |
| Substrate | yes |
| Frame | yes |
| Intersects Road Number | optional |
| Intersecting Start Displacement | yes - if Intersecting Road Number is not null |
| Intersecting Displacement | yes - if Intersecting Road Number is not null |
| Intersecting Side | yes - if Intersecting Road Number is no null |
| Original | yes |
| Installation | |
| Installed | optional |
| Dispatch ID | optional |
| Reason | yes - if Dispatch ID is not null |
| Replacement | |
| Replaced | optional |
| Dispatch ID | optional |
| Reason | yes - if Replaced is not null |
| Legend (255 characters) | yes |

Reverse Side (255 characters) optional

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement** From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Sign ID The unique number of the sign. This number is program generated and cannot be changed by the user.

Class The classification of the sign type.

The **F4:List&Pick** option is available, an entry is required as follows:

| | |
|-----|---------------------------|
| G | Guide |
| H | Hazard Markings |
| I | Information signs |
| IG | Information General |
| IM | Information Miscellaneous |
| IMW | Information Motorway |
| LA | Local Authority |
| M | Miscellaneous |
| MS | Motorist Services |
| OS | Obsolete signs |
| PW | Permanent Warning |
| RG | Regulatory General |
| RH | Regulatory Heavy Vehicle |
| RP | Regulatory Parking |
| T | Tourist |
| UN | Unknown |
| WM | Warning Miscellaneous |
| WMW | Warning Motorway |

Type The type of traffic facility present.

The codes are the same as those used in the joint Land Transport Safety Authority (LTSA) and Transit Manual of Traffic Signs and Markings with an allowance for the speed value to be added as a suffix. In the case of hazard markings and road markings the manual does not provide codes and so codes have been allocated for the purposes of this inventory.

New codes can be added and existing ones changed in the lookup table for Traffic Facilities. **F4:List&Pick** is available.

An entry is required as follows:

H Hazard Markings

| | |
|---------|--|
| H01 | Chevron Board |
| H01-15 | Chevron board - Advisory speed 15km/h |
| H01-25 | Chevron board - Advisory speed 25km/h |
| H01-35 | Chevron board - Advisory speed 35km/h |
| H01-45 | Chevron board - Advisory speed 45km/h |
| H01-55 | Chevron board - Advisory speed 55km/h |
| H01-65 | Chevron board - Advisory speed 65km/h |
| H01-75 | Chevron Board - Advisory speed 75km/h |
| H01-85 | Chevron board - Advisory speed 85km/h |
| H01-95 | Chevron board - Advisory speed 95km/h |
| H01Y | Chevron Board (yellow reflectorised) |
| H01Y-15 | Chevron board (yellow) - Advisory speed 15km/h |
| H01Y-25 | Chevron board (yellow) - Advisory speed 25km/h |
| H01Y-35 | Chevron board (yellow) - Advisory speed 35km/h |
| H01Y-45 | Chevron board (yellow) - Advisory speed 45km/h |
| H01Y-55 | Chevron board (yellow) - Advisory speed 55km/h |
| H01Y-65 | Chevron board (yellow) - Advisory speed 65km/h |
| H01Y-75 | Chevron board (yellow) - Advisory speed 75km/h |
| H01Y-85 | Chevron board (yellow) - Advisory speed 85km/h |
| H01Y-95 | Chevron board (yellow) - Advisory speed 95km/h |
| H04 | Single Chevron |

H05 Hazard Marker
H07 Bridge End Marker

I Information Signs

I02 STOPPING RESTRICTION ENDS
I04 PASSING LANE 400m
I04-1 PASSING LANE 1km
I04-2 PASSING LANE 2km
I04-5 PASSING LANE 5km
I05 PASSING BAY " _____ "m
I06 NO EXIT
I08 CONSTRUCTION ZONE
I09 FREE TURN
I10 THANK YOU
I11 WORKS END
I12 BELLS OFF (Railway level crossing)
I13 HEAVY TRAFFIC BY PASS " _____ "m
I14 HEAVY TRAFFIC BY PASS
I20 NATIONAL STATE HIGHWAY ROUTE MARKER
I21 PROVINCIAL STATE HIGHWAY ROUTE MARKER
I22 ADVANCE DIRECTION (Cross Roads)
I23 ADVANCE DIRECTION(T Intersect tail on side)
I24 ADVANCE DIRECTION(T Intersect head of T ahead)
I25 ADVANCE DIRECTION (Skew Intersection)
I26 ADVANCE DIRECTION (Cross Roads)
I27 DESTINATION (Stack)
I28 CONFIRMATORY DESTINATION
I29 PLACE NAME
I30 FINGER BOARD
I31 END OF STATE HIGHWAY
I32A INFORMATION CENTRE " _____ "m (km)
I32B INFORMATION CENTRE
I33 DESTINATIONS (Flag)
I34 INTERSECTION ADVANCE WARNING
I40 HOTEL(S)
I41 MOTEL(S)
I42 MOTOR CAMP(S)
I43 REST AREA 400m
I44 REST AREA
I45 " _____ " LOOKOUT 400m
I46 " _____ " LOOKOUT
I47 HISTORIC PLACE 400m
I48 HISTORIC PLACE
I49A ON LEFT
I49B ON RIGHT
I50 PARKING BUILDING
I51 CAR PARK
I52 TOILET
I60 CITY/DISTRICT BOUNDARY
I61 RIVER/STREAM
I62 " _____ " SUMMIT " _____ "m
I63 ELEVATION " _____ "m
I64 " _____ " FALLS
I65 " _____ " RAPIDS
I66 HOT SPRINGS
I67 THERMAL AREA

IM Information Miscellaneous Signs

IM01 Speedo Test Warning
IM02 Speedo Test Start
IM03 Speedo Test End
IM04 ROAD INFORMATION
IM05 CHECK YOUR LIGHTS
IM06 Information (Miscellaneous Sign) - User Defined
IM07 *555 Traffic Patrol

IM10 HOSPITAL
 IM11 Motorist Amenities
 IM12 Caravan Park
 IM13 Caravan Waste Disposal
 IM14 Camping Area
 IM15 Emergency Telephone
 IM21 Airport Direction (pictorial)
 IM22 Flucal CHILDREN CROSSING
 IM23 NO HORSES
 IM24 FUNERAL

IMW Information Motorway Signs

IMW01 Advance Exit
 IMW02 Exit Direction
 IMW03 EXIT
 IMW4 Bus LANE AHEAD
 IMW5 Bus LANE ENDS
 IMW6 Bus LANE " _____ " (Specific time)
 IMW10 Advance Exit (Overhead)
 IMW11 Exit Direction (Overhead)
 IMW12 Exit (Overhead)
 IMW20 Confirmatory Destination
 IMW30 MOTORWAY BEGINS
 IMW31 MOTORWAY ENDS 400 m
 IMW32 MOTORWAY ENDS
 IMW33 MOTORWAY (ramp)
 IMW34 MOTORWAY ENDS (ramp)

MS Motorist Services Signs

MS1.1 One service " _____ "m ON left/right
 MS1.2 Two services " _____ "m ON left/right
 MS1.3 Three services " _____ "m ON left/right
 MS1.4 Four services " _____ "m ON left/right
 MS2.1 One service TURN left/right " _____ "m
 MS2.2 Two services TURN left/right " _____ "m
 MS2.3 Three services TURN left/right " _____ "m
 MS2.4 Four services TURN left/right " _____ "m
 MS3.1 One service with chevron
 MS3.2 Two services with chevron
 MS3.3 Three services with chevron
 MS3.4 Four services with chevron
 MS4.1 One service with arrow
 MS4.2 Two services with arrow
 MS4.3 Three services with arrow
 MS4.4 Four services with arrow
 MSR Radio Information

PW Permanent Warning Signs

PW1 Stop Ahead " _____ " m
 PW2 Give Way Ahead " _____ " m
 PW3 Traffic Signals
 PW4 Merging Traffic
 PW5 Diverge
 PW6 Two Way
 PW7 Two Way Ahead " _____ " m
 PW8 Rotary Junction
 PW9 Cross Roads - Controlled (priority route ahead)
 PW9.1 Cross Roads - Controlled (priority route turns)
 PW10 Tee Junction - Controlled
 PW10.1 Tee Junction - Uncontrolled
 PW11 Side Road Junction - Controlled
 PW11.1 Side Road Junction - Uncontrolled
 PW12 Y-Junction - Controlled

PW12.1 Y-Junction - Uncontrolled
 PW13 Railway Crossing On Side Road - Controlled
 PW13.1 Railway Crossing On Side Road - Uncontrolled
 PW13.2 Railway Crossing At Tee Junction - Controlled
 PW13.3 Railway Crossing At Tee Junction - Uncontrolled
 PW14 RAILWAY CROSSING
 PW15 RAILWAY "_____" TRACKS
 PW16 Sharp Curve - Approx 90 degrees
 PW17 Curve - 15 To 90 degrees
 PW18 Curve - 90 To 120 degrees
 PW19 Curve - Greater Than 120 degrees
 PW20 Reverse Curve - Less Than 60 degrees
 PW21 Reverse Curve - Greater Than 60 degrees
 PW22 Reverse Curve - Decreasing Radii
 PW23 Reverse Curves (less than 1km in extent)
 PW24 Winding Road NEXT "_____" km
 PW25 Curve Advisory Speed (never erected separately)
 PW25-05 Curve Advisory Speed 5km/h
 PW25-15 Curve Advisory Speed 15km/h
 PW25-25 Curve Advisory Speed 25km/h
 PW25-35 Curve Advisory Speed 35km/h
 PW25-45 Curve Advisory Speed 45km/h
 PW25-55 Curve Advisory Speed 55km/h
 PW25-65 Curve Advisory Speed 65km/h
 PW25-75 Curve Advisory Speed 75km/h
 PW25-85 Curve Advisory Speed 85km/h
 PW25-95 Curve Advisory Speed 95km/h
 PW26 Concealed Exit On Curve
 PW27 Steep Grade - Downgrade
 PW27.1 Steep Grade - Upgrade
 PW28 TRUCKS USE LOW GEAR (PW27 Supplementary)
 PW29 Pedestrians
 PW30 Pedestrian Crossing
 PW31 Children
 PW32 SCHOOL
 PW33 SCHOOL Crossing
 PW34 SCHOOL BUS ROUTE
 PW34A SCHOOL BUS TURNS
 PW35 Cyclists
 PW36 Horses
 PW37 Stock (Cattle)
 W37.1 Stock (Sheep)
 PW38 Sudden Dip
 PW39 Hump
 PW40 Uneven Surface
 PW41 Slippery Surface (never erected separately)
 PW41.1 Slippery Surface - WHEN FROSTY
 PW41.1A Slippery surface - WHEN FROSTY - next "_____" km
 PW41.2 Slippery Surface - IF WET
 PW41.3 Slippery Surface - GRAVEL ROAD
 PW42 Slips/Falling Debris
 PW43 Road Narrows (Left or Right Side Narrowing)
 PW43.1 Road Narrows (Both Sides Narrowing)
 PW43.2 Road Narrows Ahead "_____"m
 PW44 Narrow Bridge

PW44.1 Narrow Bridge - CAUTION WIDE VEHICLES
 PW45 Low Clearance - Advance Warning
 PW46 Low Clearance On Structure Or Tunnel
 PW47 Overhead Electric Cable (never erected separately)
 PW48 Wind Gusts
 PW49 Fire Station
 PW50 Trucks
 PW51 Aircraft
 PW52 Tunnel
 PW53 Other Hazard (never erected separately)
 PW54 Other Hazard - FORD
 PW55 Other Hazard - CATTLE STOP
 PW56 Other Hazard - GATE
 PW57 Train
 PW57.1 Railway Level Crossing "--" Ahead
 PW58 Railway Level Crossing Flashing Light Signals Ahead
 PW59 Railway Level Crossing "Look For Trains"
 PW60 Railway Level Crossing Substantially at a Right Angle
 PW60.1 Railway Level Crossing at an Oblique Angle
 PW60.1 Railway Level Crossing at an Oblique Angle
 PW61 Railway Level Crossing Intermediate Advance Warning
 PW62 Railway Level Crossing on a Side Road Advance Warning
 PW99 Kiwi Crossing

WM Warning Miscellaneous Signs

WM01 RESIDENTIAL AREA
 WM02 AGED PERSONS
 WM03 Warning (Miscellaneous Sign) - User Defined
 WM04 Warning (Miscellaneous Sign) - User Defined
 WM05 SPEED CAMERA AREA
 WM06 WEIGH STATION AHEAD
 WM07 TRUCKS STOP - Weighstation
 WM08 NO TRUCKS

WMW Warning Motorway Signs

WMW02 EXIT (Advisory Speed)
 WMW03 LANE ENDS 200 metres

RG Regulatory General Signs

RG1 Speed Limit
 RG1-20 Speed Limit 20km/h
 RG1-30 Speed Limit 30km/h
 RG1-50 Speed Limit 50km/h
 RG1-60 Speed Limit 60km/h
 RG1-70 Speed Limit 70km/h
 RG1-80 Speed Limit 80km/h
 RG2 Speed Limit 100km/h
 RG2.1 Derestriction
 RG3 Limited Speed Zone
 RG4 Speed Limit - TEMPORARY
 RG4-20 Temporary Speed Limit 20km/h
 RG4-30 Temporary Speed Limit 30km/h
 RG4-50 Temporary Speed Limit 50km/h
 RG4-60 Temporary Speed Limit 60km/h
 RG4-70 Temporary Speed Limit 70km/h
 RG5 STOP
 RG6 GIVE WAY
 RG6.1 "_____"TRAFFIC (RG6 supplementary)
 RG6.2 STRAIGHT AHEAD TRAFFIC (RG6 supplementary)
 RG6.3 RIGHT TURNING TRAFFIC (RG6 supplementary)
 RG7 No Right Turn
 RG8 No Left Turn
 RG9 NO ENTRY

| | |
|---------|---|
| RG10 | No Turns |
| RG11 | Turn |
| RG12 | Turn Left |
| RG13 | Turn Right |
| RG14 | ONE WAY |
| RG15 | No U Turn |
| RG16 | ROAD CLOSED |
| RG17 | Keep Left - Single Disc |
| RG17.1 | Keep Left - Twin Disc |
| RG18 | WRONG WAY |
| RG19 | Single Lane Bridge - Give Way (symbolic) |
| RG19.1 | Single Lane Bridge - Supplementary GIVE WAY |
| RG19.1A | Road Narrows - Supplementary GIVE WAY |
| RG19A | Road Narrows - Give Way (symbolic) |
| RG20 | Single Lane - Priority |
| RG20A | Road Narrows - Priority |
| RG21 | Low Clearance At Electrified Railway Crossing |
| RG22 | USE LEFT LANE UNLESS PASSING |
| RG23 | No Pedestrians |
| RG24 | No Cycling |
| RG25 | Pedestrians |
| RG26 | Cycle Route |
| RG26.1 | Cycle Route - BEGINS |
| RG26.2 | Cycle Route - ENDS |
| RG26.3 | Cycle Route - "_____" |
| RG26.4 | Cycle Route - Arrow |
| RG27 | Turning traffic give way to pedestrians |
| RG28 | SCHOOL PATROL |
| RG29 | Overhead Lane Use Arrows |
| RG30 | Stop on Red Signal |
| RG31 | Railway Level Crossing Give Way |
| RG32 | Railway Level Crossing Stop |
| RG33 | Railway Level Crossing Flashing Light Signal |

RH Regulatory Heavy Vehicles Signs

RH1 Road Classification - Heavy Vehicles
RH2 HEAVY VEHICLES - MAX LENGTH
RH4 HEAVY VEHICLE - BRIDGE LIMITS
RH5 Heavy Vehicle - RH4 Supplementary - " _ "m
RH6 HEAVY VEHICLE - AXLE LIMIT

RP Regulatory Parking Signs

RP1 No Stopping
RP1.1 No Stopping At All Times
RP1.2 No Stopping FOR " _____ " km
RP1.3 No Stopping - ENDS (RP1 Supplementary)
RP2 No Stopping - Specified Period
RP2.1 Late Night Extension - (RP2 Supplementary)
RP3 CLEARWAY - Single Peak Period
RP3.1 CLEARWAY - Two Peak Period
RP3.2 BEGINS (RP3, RP3.1 Supplementary)
RP3.3 ENDS (RP3, RP3.1 Supplementary)
RP3.4 MON-FRI (Clearway Supplementary)
RP3.5 CLEARWAY With Parking Restriction
RP4 Restricted Parking - Standard Hours
RP4.1 Restricted Parking - Non Standard Hours
RP4.2 Restricted Parking - Other Times
RP4.3 Restricted Parking - Late Night Extension
RP5 BUS STOP
RP5.1 BUS STOP - With Arrow
RP6 TAXI STAND
RP6.1 TAXI STAND - With Arrow
RP7 LOADING ZONE
RP7.1 LOADING ZONE - With Arrow
RP7.2 Loading Zone - GOODS VEHICLES ONLY (Supplementary)
RP8 Motorcycle Parking
RP8.1 Motorcycle Parking - With Arrow
RP9 Cycle Stand
RP9.1 Cycle Stand - With Arrow

IG Information General

IG-8 SLOW VEHICLE BAYS NEXT " _____ " km
IG-9 SLOW VEHICLE BAY " _____ "m
IG-10 SLOW VEHICLE BAY with arrow

G Guide Signs

G-ADS1 Advance direction (Stack) - Cross roads
G-ADS2 Advance direction (Stack) - Skew intersection
G-ADS3 Advance direction (Stack) - "T" intersection
G-ADS4 Advance direction (Map) - "T" or cross roads
G-ADS5 Advance direction (Map) - Roundabout
G-ADSN Advance Direction - Street name sign
G-ALDS1 Advance lane direction - Arrow
G-ALDS2 Advance lane direction - Message
G-CDS1 Confirmation Destination
G-IDS1 Intersection Direction
G-IDS1A Intersection Direction sign with Street name sign
G-IDS2 Intersection Direction - with arrow
G-IDS2A Intersection Direction - with arrow and St. name sign
G-IDS3 Intersection Direction - with route marker
G-IDS3A Intersection Direction - route marker with St. name sign
G-IDS4 Intersection Direction - Urban
G-IDS4A Intersection Direction - Urban with Street name sign
G-IDS5 Intersection Direction - "T"
G-IDS5A Intersection Direction - "T" with Street name sign
G-IDSN Intersection Direction - Street name sign
G-PNS1 Place name
G-RMS1 Route Marker - Single numeral
G-RMS2 Route Marker - Double numeral
G-RMS3 Route BEGINS
G-RMS4 Route ENDS

T Tourist Signs

THT Tourist Heritage Trail
TR1 Tourist route marker - arrow only
TR2 Tourist route marker - arrow and route number
TR3 Tourist route marker - END and route number
TR4 TOURIST DRIVE TURN side "_____"m
TR5 TOURIST DRIVE with Route marker and Chevron
TR6 TOURIST Drive "_____"km FOLLOW route marker
TS1 Feature "_____"m ON left/right
TS2 Feature TURN left/right "_____"m
TS3A Position sign - One line description with chevron
TS3B Position sign - Two line description with chevron
TS4 Feature name with arrow
TS5 Major tourist attractions - special information
TSW Welcome To

M **Miscellaneous**

| | |
|-----|-------------------------------|
| AAH | Adopt A Highway |
| BRP | Bridge Route Position |
| CPM | Culvert Position Marker |
| DOC | Department of Conservation |
| DRP | Dumping of Rubbish Prohibited |
| ERP | Established Route Position |
| FH | Fire Hazard (Grapefruit sign) |
| LNF | LIGHT NO FIRES |
| RPM | Route Position Marker |
| RS | Reference station |
| SR | Sight Rail |

OS **Obsolete signs**

| | |
|-----|--|
| OS1 | Obsolete Sign (TRAFFIC ISLANDS) |
| OS2 | Obsolete Sign (DETOUR) |
| OS3 | Obsolete Sign (NO FISHING FROM BRIDGE) |
| OS4 | Obsolete Sign (THREE LANE ROAD) |
| OS5 | Obsolete Sign (STOP FOR RED SIGNAL) |

Sign Group This is the group that this sign is part of.

When the sign type selected can stand alone then this column can remain null, otherwise the sign must be part of a group, the **F4:List&Pick** option is available and a valid group from the list displayed (all those groups that the entered sign type is valid in) must be selected.

Quantity This is the number of signs of one type contained within the road section where the recording of individual facilities is not required.

This will default to 1.

Displacement The location of an individual facility in metres from the road origin.

An entry no less than the start or greater than the end displacements for the road section is required if quantity is greater than 1. The location is taken at the support or centre of the facility.

Side The side of the centreline on which an individual facility is placed.

If quantity = 1, then an entry is required as follows:

| | |
|---|-----------------|
| C | Centreline |
| L | Left hand side |
| R | Right hand side |
| U | Unknown |

F4:List&Pick is available.

Offset The offset distance to an individual facility in metres to one decimal place from the road centreline.

An entry in the range 0 to 60.0m is required if quantity = 1.

Latest The latest sign, “L” indicates that it is the latest, “N” means that the information displayed is not the latest. This is program generated and cannot be changed by the user.

Sign Owner The owner of the current sign.

An entry is required, all valid owners are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|---------------------|
| LA | Local Authority |
| PR | Private |
| TN | Transit New Zealand |
| UN | Unknown |

House No and feature The first column is for the house number that the sign is situated outside of, the following field is for any predominate feature in the location of the sign .

An entry is optional.

Legend The first 60 characters of the legend that appears on the face of the sign. When the sign type has being selected this will default to the corresponding legend. If the legend for the sign type is marked Permanent this means that this wording cannot be altered and this field will be skipped, if the sign is marked Indicative then this field will be entered and the wording altered accordingly. All changes in this field will be shown in the full legend on the third screen.

An entry is required, up to a maximum of 60 characters.

Reverse Legend The first 60 characters of the legend that appears on the reverse side of the sign. This field is handled in the same way as Legend above.

An entry is optional, up to a maximum of 60 characters.

Comments Any text up to 60 characters can be entered in this field for comments.

Posts The number of supports required to support the sign, this will default to 1. The number in this column when ESC is entered determines the number of times the support window will be opened. 0 is a valid number.

An entry is required.

Photo Ref. A reference column to a photograph of the sign held in an externally database.

An entry is optional, to a maximum of 15 characters.

Width The width of the sign in millimetres (mm).

An entry is optional.

Height The height of the sign in millimetres (mm).

An entry is optional.

From ground The height of the sign from the ground in millimetres (mm).

An entry is optional.

Angle The angle of the bracket in degrees, clockwise from the centre of the road in the forward direction.

An entry is optional.

Direction The direction indicated by the sign.

An entry is required, all valid options are available using the **F4:List&Pick**.

| | |
|---|---|
| L | The sign is indicating the direction is left |
| N | Not applicable |
| R | The sign is indicating the direction is right |

Legend Material The material that the legend is written in.

An entry is required, all valid materials are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|--|
| NR | Non-reflective |
| EG | Engineering grade (no pattern) |
| HI | High intensity (honey comb type pattern) |
| DG | Diamond grade (diamond shape pattern) |
| UN | Unknown |

Legend Colour The colour that the legend is written in.

An entry is required, all valid colours are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|-----------|
| RE | Red |
| BR | Brown |
| BU | Blue |
| BK | Black |
| WH | White |
| YE | Yellow |
| GR | Green |
| UP | Unpainted |
| UN | Unknown |

**Background
Material**

The material that makes up the background of the current sign.

An entry is required, all valid materials are available using the **F1:Quick-query** and **F4:List&Pick** options. See Legend Material for valid list.

Background Colour

The colour of the background is written in. The background colour must be different to the Legend colour.

An entry is required, all valid colours are available using the **F1:Quick-query** and **F4:List&Pick** options. See Legend Colour for valid list.

Substrate The substrate that makes up the current sign.

An entry is required, all valid substrates are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|---|
| AL | Aluminium |
| FI | Fiberglass |
| TI | Timber (to include combination materials) |
| PL | Plastic |
| ST | Steel |
| UN | Unknown |

Frame Is the sign framed or not.

An entry is required, the **F4:List&Pick** option is available.

| | |
|---|--------------------|
| F | The sign is framed |
| N | Not framed |
| U | Unknown |

Intersects with

Road Number The Road Number of the other road if the pole is located on an intersection. Select a road using the **F1:Quick-query** **F2:Full-query** and **F3:Expand** options.

An entry is optional.

**Intersecting
Start Displacement**

The carriageway section of the other road when the pole is located on an intersection. Select a carriageway section using the **F3:Expand** and **F4:List&Pick** options.

An entry is optional.

**Intersecting
Displacement**

The distance from the road origin of the intersecting road to where the pole is situated.

An entry no greater than the end or less than the start displacement positions for the intersecting road section is required if the Intersects with Road Number is not null and the Intersecting Start Displacement is not null. An entry is in the range 0 to 99999 or null.

Intersecting Side The side of the other carriageway on which the pole is situated. The default is the opposite of the side entered for the original road.

An entry is required if the intersects with Road Number is not null, the **F4:List&Pick** option is available:

| | |
|---|---------|
| C | Centre |
| L | Left |
| R | Right |
| U | Unknown |

Original This indicates if this sign is an original, or a duplicate. A duplicate occurs when the sign is situated on the corner of two roads. This is program generated and cannot be changed by the user.

Installed The date the sign was installed.

An entry is optional.

Dispatch ID The Contract ID and the Dispatch ID that the installation was carried out under. This information is updated at the time of the previous sign being replaced.

An entry is optional.

Reason The reason why the previous sign was replaced.

An entry is optional.

Replaced The date the sign was replaced.

An entry is optional.

Dispatch ID The Contract ID and the Dispatch ID that the replacement work was carried out under.

An entry is optional.

Reason The reason why the sign was replaced.

An entry is required if the Sign has being replaced, the **F4:List&Pick** option is available.

Legend The full legend that appears on the face of the sign.

An entry is required, up to a maximum of 255 characters.

Reverse Legend The full legend that appears on the reverse side of the sign.

An entry is optional, up to a maximum of 255 characters.

Input-toggle

Toggles the requirement for Support/Post entry data when adding signs

This opens a window through which the status of the Input-toggle can be turned off or on. On initial setting up of the system the toggle will be turned on, therefore requiring support information to be entered. If this is not the case then turn the toggle off, select the **Turn-off** option. The toggle will remain turned off until it is turned on.

```
SIGN:  ... History-toggle Input-toggle Exit
Toggles the requirement for Support/Post entry data when adding signs
----- Road / Section Information -----
+-----+
|SUPPORT/POST TOGGLE:  Leave  Turn-off
Start |Leave the Support/Post toggle as is
End   |
-----|
|                The toggle is currently ON                |screen 1/3
|
|  When the Support/Post toggle is ON, the Support/Post screen
|  will automatically open, allowing for the inputing of
Q| Support information, when it is OFF no Support/Post
Displ| information is requested, the post_count column will still
|  reflect the number of Supports/Posts required for the sign.
|
|
Sig|
H+-----+
Legend: Chevron Board (yellow reflectorised)
Reverse side:
Photo ref.:
Comments:
1 of 1 Signs found.
```

History-toggle

Include history information in the Queries

This opens a window through which the status of the History-toggle can be turned off or on. On initial entry to the program the toggle will be off, to turn it on, select this option and the window displayed below will be opened. Select the **Turn-on** option and the toggle is turned on, the reverse option is shown when the toggle is already turned on.

```
SIGN:  ... History-toggle Input-toggle Exit
Include history information in the Queries
----- Road / Section Information -----
+-----+
|HISTORY TOGGLE:  Leave  Turn-on
Start |Leave the history toggle as is
End   |
-----|
|                The toggle is currently OFF
|
|  When the history toggle is ON, queries will incorporate
|  those assets that have being replaced.  When it is OFF only
Q|  the current assets will be queried and displayed.
Displ|
|
|
Sig|
H+-----+
Legend:
Reverse side:
Photo ref.:
Comments:
```

F2-Support-list

List the Support information

This opens a window in the bottom right of the sign screen and lists all the supports attached to this sign. Support information can be accessed through the **F1-Support** option.

```
SIGN:  Query Add Update Delete Replace F1-Support F2-Support-list ...
List the Support/Post information
----- Road / Section Information -----
Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:  0 m  Start Name: LONG START
End Displacement:  1230 m  End Name: LONGER END SECTION NAME
----- Traffic Sign Information ----- Screen 1/3

Sign ID:      42          Posts:  2
Type: BRP      bridge route position
Group:
Quantity:      1          ----- DIMENSIONS -----
Displacement:  12 m +-----+
Side: R      Right|RETURN to select, arrows to move, DEL aborts
Offset:      m  |F7/F8:Next/Previous page
Latest: L      Lates|----- Support/Post List -----
Sign Owner: LA Local| Type          Seq  Installed  ID
House No: 44      | Backing          1      38
Legend: bridge r  | Bridge End          2      39
Reverse side:
Photo ref.:
Comments:
2 Supports found.  | Sign Posts 1 to 2 of 2
+-----+
```

F1-Support

Maintain the Support/Post information for this sign

This opens a window and displays information on supports attached to this sign. Support information can be added and updated through this window. This window is opened automatically when adding a new sign and support information is being recorded .

When a support has being removed and not replaced the **Delete** option should be used this will flag the current support as removed in the reason column. When the support information is displayed on the screen, the word **Removed** will appear alongside the Support ID indicating that the asset is no longer there.

The **Replace** option should be used when a support has being replaced. The cursor moves to the Replacement fields, defaulting the Replacement Date to the current date, the Contract ID and Dispatch details should be entered and the Replacement Reason selected from the valid list. Other information can be updated whilst in this mode. Once ESC has being pressed the support screen will be refreshed allowing for the inputting of the replacement support details. Only those supports that have a Replacement Date of null can be replaced.

```
SIGN:  Query Add Update Delete Replace F1-Support F2-Support-list ...
+-----+
|SUPPORT:  Add Update Delete Replace Other-signs Next Previous ...
|Add a new Support
|----- Support/Post Information -----
| Support ID: 38 Bracket Type: BC Ball and chain
|Sequence No: 1 Number: 4
| Owner: LA Local Authority
| Support: BU Post Type: BA Backing
| Building Material: AL Aluminium
|Description: Shape: RE Rectangular
| BNZ Tower Make: TT Thompson and Thomas
| Model:
| Bracket: DB Mount: BF Bolted flange
| Double Back hinge Plant Type: DI Direct in the ground
| Number: 3 Ground Type: FT Footpath
| Frangible Joint Type: NA Not applicable
| Installed: Replaced:
|Dispatch ID: / Dispatch ID: /
| Reason: Reason:
|
| Comments:
|1 Support found.
+-----+
```

The support table contains the following fields:

| Field | Required |
|--------------|-----------------|
| Support ID | yes |
| Sequence No. | yes |
| Bracket Type | yes |
| Number | optional |
| Owner | yes |
| Support | optional |
| Description | optional |
| Bracket | optional |
| Number | optional |
| Post Type | optional |

| | |
|----------------------|----------------------------------|
| Material | optional |
| Shape | optional |
| Make | optional |
| Model | optional |
| Mount | optional |
| Plant Type | optional |
| Ground Type | optional |
| Frangible Joint Type | optional |
| Installation | |
| Installed | optional |
| Dispatch ID | optional |
| Reason | yes - if Dispatch ID is not null |
| Replacement | |
| Replaced | optional |
| Dispatch ID | optional |
| Reason | yes - if Replaced is not null |
| Comments | optional |

A full description of the data held in each field is as follows:

Support ID A unique number is automatically generated by the program and allocated to the support when it is originally entered.

Sequence No The sequence number of the support for the sign when there is more than one support required for the sign. This number is maintained internally.

Bracket Type The type of bracket that joins the sign to the support. All valid types are found in the Bracket Type lookup table.

An entry is required, all valid bracket types are available using the **F1:Quick-query** and **F4:List&Pick** options.

Number The number of brackets of the above type used to secure the sign.

An entry is optional.

Owner The owner of the support.

An entry is required, all valid owners are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|---------------------|
| LA | Local Authority |
| PR | Private |
| TN | Transit New Zealand |
| UN | Unknown |

Support The support or attachment type that the sign is located on.

An entry is optional, all valid support are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|---------------------|
| BR | Bridge End |
| BU | Building |
| GT | Gantry |
| NA | Not applicable |
| OB | Overbridge |
| SL | Street Light pole |
| TR | Tree |
| TS | Traffic Signal pole |
| UN | Unknown |
| UT | Utility pole |
| WA | Wall |

Description A description about the above support.

An entry is optional, up to a maximum of 30 characters.

Bracket The type of bracket that joins the post to the support. All valid types are found in the Bracket Type lookup table.

An entry is optional.

Number The number of brackets of the above type used to secure the post.

An entry is optional.

Post Type The type of post that the sign is attached to. All valid types are found in the Post Type lookup table. Profiles can be set up for different post types see Maintenance of the Post Type lookup table.

An entry is optional, all valid types are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|-----------------------|
| SA | Standalone |
| JO | Jockey |
| BA | Backing |
| PA | Parasite |
| SU | Supported |
| NA | Not applicable (None) |
| UN | Unknown |

Material The major material the post is constructed in.

An entry is optional, all valid support are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|----------------|
| AL | Aluminium |
| FI | Fibreglass |
| PL | Plastic |
| ST | Steel |
| TI | Timber |
| UN | Unknown |
| NA | Not applicable |

Shape The shape of the post.

An entry is optional, all valid support are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|----------------|
| RO | Round |
| SQ | Square |
| RE | Rectangular |
| UN | Unknown |
| NA | Not applicable |

Make The make (manufacturer) of the post.

An entry is optional, all valid makes are available using the **F1:Quick-query** and **F4:List&Pick** options.

Model The model of the post within the make.

An entry is optional, all valid models are available using the **F1:Quick-query** and **F4:List&Pick** options.

Mount The type of mount used for a standalone post.

An entry is optional, all valid support are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|--------------------|
| RS | Round socket |
| RE | Rectangular socket |
| GP | Ground plant |
| CO | Concrete |
| BF | Bolted flange |
| NA | Not applicable |
| UN | Unknown |

Plant Type A description of how the post is erected in the ground.

An entry is optional, all valid plant types are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|--------------------------------|
| DI | Direct in the ground |
| RS | Round socket in concrete |
| RE | Rectangular socket in concrete |
| DY | Dynabolts |
| HD | Hold down bolts |
| NA | Not applicable |
| UN | Unknown |

Ground Type The type of ground the post is situated in.

An entry is optional, all valid ground types are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|----------------|
| IS | Island |
| FT | Footpath |
| GR | Grass berm |
| NA | Not applicable |
| UN | Unknown |

Frangible Joint Type The type if any of the frangible joint type found in the post.

An entry is optional, all valid joint types are available using the **F1:Quick-query** and **F4:List&Pick** options.

| | |
|----|-------------------------|
| Q1 | Quick-fix (screw type) |
| Q2 | Quick-fix (collar type) |
| SS | Sawn slot |
| SE | Self erecting |
| SJ | Slip joint |
| NA | Not applicable |
| UN | Unknown |

Installed The date the support was installed.

An entry is optional.

Dispatch ID The Contract ID and the Dispatch ID that the installation was carried out under. This information is updated at the time of the previous support being replaced.

An entry is optional.

Reason The reason why the previous support was replaced.

An entry is optional.

Replaced The date the support was replaced.

An entry is optional.

Dispatch ID The Contract ID and the Dispatch ID that the replacement work was carried out under.

An entry is optional.

Reason The reason why the support was replaced.

An entry is required if the Support has being replaced, the **F4:List&Pick** option is available.

Comments Any text up to 60 characters can be entered in this field for comments.

An entry is optional.

F3-Maintenance-list

List the Maintenance information

This opens a window in the bottom right of the sign screen and lists all the maintenance carried out on this sign. Maintenance can be entered through the **F3-Maintenance** option.

```
SIGN: ... F3-Maintenance F4-Maintenance-list Next Previous List ...
List the Maintenance information
----- Road / Section Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:    0 m  Start Name: LONG START
End Displacement:    1230 m  End Name: LONGER END SECTION NAME
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
Sign ID:    118  |RETURN to select, arrows to move, DEL aborts |
Class: I    Info|F7/F8:Next/Previous page          |
Type: I29   |----- Sign Maintenance List -----|
Group:      | Date          Reason                          |
Quantity:  5  | 19Jun1997    Graffiti                         |
Displacement:  m | 13Jun1997    Graffiti                         |
Side: L Left | 15May1997    Graffiti                         |
Offset:      m |
Latest: N Not l|
Sign Owner: UN Unkno|
House No: 1      |
Legend: ["place  |
Reverse side:    |
Comments:       |
3 Sign Maintenances found|Sign Maintenances 1 to 3 of 3
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
```

F3-Maintenance

Maintain the Sign Maintenance information

This opens a window and displays maintenance recorded against the current sign. The user can record different types of maintenance carried out on a sign as it is performed. This allows the user to track particular areas prone to sign damage or those signs that are continually being obscured by vegetation.

If the maintenance data is being entered through the Maintenance Contractor system then the Contract ID and Dispatch ID will be inserted from that system.

```
SIGN: ... F3-Maintenance F4-Maintenance-list Next Previous List ...
Maintain the Sign Maintenance information
----- Road / Section Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:    0 m Start Name: LONG START
End Displacement:    1230 m End Name: LONGER END SECTION NAME
----- Traffic Sign Information ----- Screen 1/3
+-----+
|SIGN MAINTENANCE:  Add Update Delete Next Previous ...|
|Display the next Sign Maintenance in the current list|
|----- Sign Maintenance Information -----|
|
|  Maintenance Reason: GR Graffiti
|                    Date: 19Jun1997
|
|          Dispatch ID: 0 /      0
|
|          Comments: VRBX - same as previous
|
|
|3 of 3 Sign Maintenances found.
+-----+
```

The sign maintenance table contains the following fields:

| <u>Field</u> | <u>Required</u> |
|--------------------|---------------------------|
| Maintenance Reason | yes |
| Date | yes |
| Dispatch ID | maintained by the program |
| Comments | optional |

A full description of the data held in each field is as follows:

Maintenance Reason The main reason that maintenance was performed on this sign.

An entry is required, all valid reason are available using the **F4:List&Pick** option.

Date The date the maintenance was performed. The current date is the default but can be altered to an earlier date. Dates in the future are not accepted.

An entry is required.

Dispatch ID The Contract ID and Dispatch ID that the maintenance was carried out under. The default will be 0 in both columns

unless access to this screen is through Maintenance Contractor then these values will default for the current Dispatch.

Entry is not permitted in these columns.

Comments Any text up to 60 characters can be entered in this field for comments.

An entry is optional.

Other-signs

Display information about other signs on this support

This opens a window in the bottom right of the sign screen and lists all the supports attached to this sign. Support information can be accessed through the **F1-Support** option. This option is only valid where there is more than one sign on a support, if there is then the words **More signs** appears in reverse video in the lower left of the support screen.

```
SIGN:  Query  Add  Update  Delete  Replace  F1-Support  F2-Support-list  ...
+-----+
|SUPPORT:  Add  Update  Delete  Replace  Other-signs  Next  Previous  ...  |
|Display information about other signs on this support  |
+-----+
|SIGN ENQUIRY:  Next  Previous  List  eXpand  Exit  |
|Display the next Sign in the current list  |
+-----+
|----- Traffic Sign Information -----|
|      Sign ID:      9                      Posts:  1  |
|      Type: RGl      Speed Limit          |
|      Group: RGl-20  Speed Limit 20km/h    |
|      Quantity:     1                      |
|Displacement:     500 m                    |
|      Side: R Right                               |
|      Offset:      m                        |
|      Latest: N Not latest                    |
|      Sign Owner: LA Local Authority          |
|      House No: 5                               |
|      Legend: Speed Limit                    |
|Reverse side:                               |
|      Photo ref.:                               |
|      Comments:                               |
|2 Signs found.                               |
+-----+
```

Traf Facils ♦ Railings

Update Railings Table

This table contains general information relating to railings. The roads used for this table are the same as those for the roadnames table.

```

RAILINGS:  Query  Add  Update  Delete  Next  Previous  List  Output  ...
Update the current Railings
----- Road / Location Information -----
      Road Number:      6              Name: GEORGE STREET
Start Displacement: 4960 m  Start Name: PRIMARY SCHOOL
End Displacement:  5000 m  End Name:
----- General -----
      Type: GR      Guard rail
      Length: 40 m   Ground fixture: TP3M  Timber posts 3 metre intervals
      Side: R Right Attachments: RD  Reflectorised disks
      Offset: 3.0 m  Colour: UN  Unknown
      Installed:12May1996  Material: ARMCO ARMCO
      Width: 45 m   Make:
Ground height: 60 m  ----- INTERSECTS WITH ROAD -----
      Shape: T straight  Road Number:
Rail start: B Bull nose  Disp.: m
Rail end: B Bull nose   Side:
Purpose:

Comments:School children
3 of 12 Railings found.

```

Fields Contained In The Railings Table

| Field | Required |
|---------------------------|---|
| Road Number | yes |
| Start Displacement | yes |
| End Displacement | optional |
| Start Name | optional |
| End Name | optional |
| Type | yes |
| Length | optional |
| Side | yes |
| Offset | yes |
| Installed | optional |
| Width | optional |
| Ground height | optional |
| Shape | optional |
| Rail start | optional |
| Rail end | optional |
| Make | optional |
| Material | optional |
| Ground fixture | optional |
| Attachments | optional |
| Colour | optional |
| Material | optional |
| Intersects Road Number | optional |
| Intersecting Displacement | yes - if Intersecting Road Number is not null |

| | |
|-------------------|---|
| Intersecting Side | yes - if Intersecting Road Number is not null |
| Purpose | optional |
| Comments | optional |

A full description of the data held in each field is as follows:

- Road Number** The number of the road in which the road section is located.
- This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.
- Start Displacement** The distance in metres from the road origin to the start of the Railing.
- An entry no less than the start or greater than the end displacements for the road section is required.
- End Displacement** The distance in metres from the road origin to the end of the Railing.
- An entry no less than the start or greater than the end displacements for the road section is required. The program will not accept an end displacement which is less than a start displacement.
- Start Name** A 25 character field for the name of a readily identifiable physical feature such as an intersection road, a bridge, a culvert etc.
- An entry is optional.
- End Name** A 25 character field for the name of a readily identifiable physical feature such as an intersection road, a bridge, a culvert etc.
- An entry is optional.
- Type** The type of railing erected.
- An entry is required. **F4:List&Pick** is available. The valid entries are:

| | |
|-------|-----------------------------|
| BARR | Barrier |
| BCT | Barrier Cable Terminal unit |
| GR | Guard rail |
| GREAT | GREAT System Crash units |
| HR | Hand rail |
| NJ | New Jersey barrier |
| SDCC | Steel Drum Crash Cushion |
| SIBC | Steel Medium Barrier - IBC |
| SR | Sight rail |
| STP | Steel Tube and Post barrier |
| SWR | Steel Wire Rope barrier |
| TBGR | THRIE Beam Steel Guard rail |
| TEA | Trailing End Anchor units |
| TRIC | TRIC Block Concrete barrier |
| WGR | W Section Guard rail |

Length The length of the Railing in metres. The length must be equal to the difference between the start and end displacements +/- 10, where the railing does not occur at an intersection. This value will default but can be changed.

This is a 5 digit field and an entry is required.

Side The side of the carriageway section on which the Railing is located.

An entry is required. **F4:List&Pick** is available.

| | |
|---|-------|
| L | Left |
| R | Right |

Offset The offset distance to an individual facility in metres to one decimal place from the road centreline.

An entry in the range 0 to 60.0m is required if quantity = 1.

Installed The date the railing was installed.

An entry is optional and a future date is not permitted.

Width The width of the railing in millimetres (mm).

An entry is optional.

Ground height The height of the railing from the ground in millimetres (mm).

An entry is optional.

Shape The general shape of the railing.

An entry is optional. **F4:List&Pick** is available.

| | |
|---|----------|
| C | Curved |
| S | S bend |
| T | straight |

Rail start The type of nose found at the start of the railing.

An entry is optional. **F4:List&Pick** is available.

| | |
|---|------------------------|
| B | Bull nose |
| C | Cable end |
| F | Fishtail/Butterfly end |
| T | Terminal end |
| U | Unknown |

Rail end The type of nose at the end of the railing.

An entry is optional. **F4:List&Pick** is available. The options are as for Rail start.

Make The manufacturer of the railing.

An entry is optional.

Material The manufacturer of the railing.

An entry is optional.

Ground Fixture The method that has been used to fix the railing in the ground.

An entry is optional. **F4:List&Pick** is available.

Attachments The type of attachments if any that have been applied to the railing.

An entry is optional. **F4:List&Pick** is available.

Colour The main colour of the railing.

An entry is optional. **F4:List&Pick** is available.

Intersects with

Road Number The Road Number of the other road if the pole is located on an intersection. Select a road using the **F1:Quick-query** **F2:Full-query** and **F3:Expand** options.

An entry is optional.

**Intersecting
Displacement**

The distance from the road origin of the intersecting road to where the railing is situated.

An entry no greater than the end or less than the start displacement positions for the intersecting road section is required if the Intersects with Road Number is not null and the Intersecting Start Displacement is not null. An entry is in the range 0 to 99999 or null.

Intersecting Side

The side of the other carriageway on which the railing is situated. The default is the opposite of the side entered for the original road.

An entry is required if the intersects with Road Number is not null, the **F4:List&Pick** option is available:

| | |
|---|---------|
| L | Left |
| R | Right |
| U | Unknown |

Purpose

The purpose that the railing was erected.

A 100 character field. An entry is optional.

Comments

A 60 character field for any general comments.

An entry is optional.

Traf Facils ♦ Markings

Update Markings Table

This table contains general information relating to markings. The roads used for this table are the same as those for the roadnames table.

```

MARKINGS:  Query  Add  Update  Delete  Next  Previous  List  Output  ...
Update the current Markings
----- Road / Location Information -----

      Road Number:      1              Name: WAIHI BEACH RD
Start Displacement:    134 m Feature Start: STANFORDS CORNER
End Displacement:     225 m Feature End: CUMMINGS ROAD

----- General ----- Screen 1/2
      Type: M01          Centreline 100mm continuous
Material: PT Paint
Quantity: 1              Application Date:
Length: 91 m
Side: C Centre          Resolution Reference:
Offset: 0.0 m           Date:

----- Comments -----

3 of 435 Markings found.

```

```

MARKINGS:  ... Screen eXpand Exit
Change the current screen
----- Road / Location Information -----

      Road Number:      1              Name: WAIHI BEACH RD
Start Displacement:     6 m Feature Start: STANFORDS CORNER
End Displacement:     34 m FEature End: CUMMINGS ROAD

----- Markings Details ----- Screen 2/2
      Angle:              Individual Length:  m
      Colour: WH White    Interval:  m
      Thickness: 60 microns
Attachments: AXCDRP Apex ceramic dome, radial patt
----- Paint -----
Manufacturer: FH Fulton Hogan Ltd
Brand: ACWH
      Acrylic road marking white
Reflectorised: R Reflectorised
Application Type: 3A Drop-on/Intermix/Visibead
Application Rate: 1000 m2

1 of 3716 Markings found.

```

Fields Contained In The Markings Table

| Field | Required |
|--------------------|----------|
| Road Number | yes |
| Start Displacement | yes |
| End Displacement | yes |
| Start Name | optional |
| End Name | optional |
| Type | yes |
| Material | yes |

| | |
|----------------------|--|
| Quantity | yes |
| Length | optional |
| Side | yes |
| Offset | optional |
| Applied Date | optional |
| Resolution Reference | optional |
| Resolution Date | optional |
| Comments | optional |
| Angle | optional |
| Colour | optional |
| Thickness | optional |
| Attachments | optional |
| Individual length | optional |
| Interval | yes - if Individual length is not null |
| Manufacturer | optional |
| Brand | yes - if Manufacturer is not null |
| Reflectorised | optional |
| Application Type | yes - if Reflectorised is not null |
| Application Rate | yes - if Reflectorised is not null |

A full description of the data held in each field is as follows:

- Road Number** The number of the road in which the road section is located.
- This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.
- Start Displacement** The distance in metres from the road origin to the start of the Marking.
- An entry no less than the start or greater than the end displacements for the road section is required.
- End Displacement** The distance in metres from the road origin to the end of the Marking.
- An entry no less than the start or greater than the end displacements for the road section is required. The program will not accept an end displacement which is less than a start displacement.
- Start Name** A 25 character field for the name of a readily identifiable physical feature such as an intersection road, a bridge, a culvert etc.
- An entry is optional.

End Name A 25 character field for the name of a readily identifiable physical feature such as an intersection road, a bridge, a culvert etc.

An entry is optional.

Type The type of marking painted.

An entry is required. **F4:List&Pick** is available. The valid default entries are:

| | |
|------|---------------------------------------|
| M01 | Centreline 100mm continuous |
| M02 | Centreline 100mm 3 x 7 |
| M03 | No Overtaking 100mm continuous |
| M04 | No Overtaking advance 100mm 13 x 7 |
| M05 | RPM non-reflective |
| M06 | RRPM yellow mono-directional |
| M07 | RRPM white mono-directional |
| M08 | RRPM white bi-directional |
| M09 | RRPM white/yellow bi-directional |
| M10 | RRPM yellow bi-directional |
| M11 | RRPM red (edge line) mono-directional |
| M12 | Lane 100mm 3 x 7 |
| M13 | Edge 150mm continuous |
| M14 | Edge 75mm continuous |
| M15 | Edge 100mm continuous |
| M15A | Edge 200mm continuous |
| M16 | Painted shoulder |
| M17 | Painted island |
| M18 | Island pre warn |
| M19 | Right turn bay |
| M20 | Pedestrian crossing |
| M21 | Pedestrian crossing diamond |
| M22 | Signalised mid-block crosswalk |
| M23 | Signalised intersection crosswalk |
| M24 | Railway crossing |
| M25 | Emerg exit sig sh white |
| M26 | CROSS ROADS |
| M28 | SLOW |
| M29 | ONE LANE BRIDGE |
| M30 | STOP |
| M31 | GIVE WAY |
| M32 | NO LEFT TURN |
| M33 | NO RIGHT TURN |
| M34 | ONE WAY |
| M35 | NO ENTRY |
| M36 | NO TURNS |

| | |
|-------|--|
| M37 | NO EXIT |
| M38 | Speed circles |
| M3850 | Speed circle 50km/h |
| M3870 | Speed circle 70km/h |
| M40 | Straight arrow |
| M41 | Right turn arrow |
| M42 | Left turn arrow |
| M43 | Combination arrows |
| M44 | TURN LEFT |
| M45 | TURN RIGHT |
| M46 | KEEP CLEAR |
| M47 | DISABLED PARKING |
| M48 | NO PARKING |
| M49 | CHILDREN |
| M50 | STOP AHEAD |
| M51 | GIVE WAY AHEAD |
| M52 | PED. CROSS AHEAD |
| M53 | SCHOOL PATROL |
| M55 | Destination Legend |
| M56 | SCHOOL |
| M57 | SPEED HUMP |
| M58 | Painted Speed Hump |
| M59 | Intersection Continuity Lines (150mm 1 x 3) |
| M60 | No Stopping Line (yellow) 100mm 1 x 1 |
| M61 | Loading zone |
| M62 | Bus stop |
| M63 | Taxi stand |
| M64 | Other zone |
| M65 | Park Limit Lines parallel |
| M66 | Park meter bays |
| M67 | Park bays angle |
| M70 | Fire hydrant |
| M71 | CAUTION |
| M72 | CYCLE LANE |
| M73 | Cycle symbol |
| M74 | Flush Median |
| M75 | BUS LANE |
| M76 | BUS LANE ENDS |

Material The type of material used for the marking.

An entry is required. **F4:List&Pick** is available.

Quantity This is the number of markings of one type contained within the road section where the recording of individual marking is not required.

Where a record is to be kept of individual marking the value will be 1.

Length The length of the Marking in metres. The length must be equal to the difference between the start and end displacements +/- 10. This value will default but can be changed.

This is a 5 digit field and an entry is required where quantity = 1.

Side The side of the carriageway section on which the Railing is located.

An entry is required. **F4:List&Pick** is available.

| | |
|---|-------|
| L | Left |
| R | Right |

Offset The offset distance to an individual facility in metres to one decimal place from the road centreline.

An entry in the range 0 to 60.0m is required if quantity = 1.

Resolution

Reference A 10 character field to record a reference to any Council resolution in regard to signs and markings.

An entry is optional.

Resolution Date The date of the Council resolution if applicable.

Comments A 250 character field for any general comments.

An entry is optional.

Angle Angle of the marking in degrees, clockwise from the centre of the road in the forward direction.

An entry is optional.

Colour The predominant colour of the marking.

An entry is optional.

Thickness The thickness of the marking in microns.

An entry is optional.

- Attachments** The type of attachments used of the marking.
An entry is optional.
- Individual length** The individual length for multiple markings in metres.
An entry is optional.
- Interval** The interval between multiple markings in metres.
An entry is optional.
- Manufacturer** The manufacturer of the paint used for the marking.
An entry is optional. **F4:List&Pick** is available.
- Brand** The brand name of the paint within the manufacturer.
An entry is optional. **F4:List&Pick** is available.
- Reflectorised** Is the marking reflectorised.
An entry is optional. **F4:List&Pick** is available.
- Application type** The application type.
An entry is optional. **F4:List&Pick** is available.

| | |
|----|---------------------------|
| 3A | Drop-on/Intermix/Visibead |
| DI | Drop-on/Intermix |
| DO | Drop-on |
| DV | Drop-on/Visibead |
| IM | Intermix |
| IV | Intermix/Visibead |
| VB | Visibead |

- Application rate** The application rate used per m².
An entry is optional. **F4:List&Pick** is available.

Condition

Maintain those tables associated with the road conditions

Condition ♦ Roughness

Maintain those tables associated with Roughness

Condition ♦ Roughness ♦ Survey Head

Maintain the Roughness Survey Header table

The Survey Header table is a way of logically grouping survey data together. Each survey header row contains information for each unique survey number. A Survey Header row must be in created before survey data can be loaded using RAMMload.

```
ROUGHNESS SURVEY HEADER:  ... Next Previous List Output Help Exit
Display the next Roughness Survey Header in the current list
----- Roughness Survey Header Information -----

Survey Number:      2
Description: Survey 01Jan89 - 31Jan89

Survey Date: 01Jan89

Carried out by:
Contract:

Notes:

2 of 8 Roughness Survey Headers found.
```

The Survey Header module includes the **Merge** option which allows for two surveys to be merged together. This option should be used after the creation of this table from existing roughness data where the boundaries of the split do not reflect what actually occurred. A further option **Summary** opens a window showing detailed count information about the roughness rows for the current survey.

```
ROUGHNESS SURVEY HEADER:  Query Add Update Delete Merge Summary ...
Summary of header data
----- Roughness Survey Header Information -----

Survey Number:      7
Description: Survey 01Jan95 - 31Jan95

+-----+
|HEADER SUMMARY :   Exit|
|Exit this menu      |
|----- Survey Summary -----|
| Number of Data Rows:   5898|
|           Minimum Date: 01Jan95|
|           Maximum Date: 11Jan95|
+-----+

7 of 8 Roughness Survey Headers found.
```

Condition ♦ Roughness ♦ Roughness
Update Carriageway Roughness Table

This table contains the information from a roughness survey carried out using a NAASRA roughness meter. The road sections used for this table are the same as those used for the carriageway table. Each roughness value entered creates a new row and therefore multiple rows may be kept for each road section. There are no audit detail columns on this table.

```

ROUGHNESS READING:õ Query Add Update Delete Next Previous Summary ...
Display the next Roughness Reading in the current list
----- Road / Section Information -----

      Road Number:      1              Name: WAIHI BEACH RD

Start Displacement: 2780 m Start Name: TRIG RD NORTH
End Displacement:  5550 m End Name:  LARGE CULVERT

----- Roughness Survey Information -----

Survey number:      7
      Date: 25Dec1993
Start Displacement: 2780 m
End Displacement:  2880 m
      Side: B      Both lanes
      Value: 90
      Speed: 30 km/h
Event Code: A      Post-Survey Added value

      Latest: L      Latest

25 of 2311 Roughness Readings found.

```

Fields Contained in The Carriageway Roughness Table

| Fields | Required |
|--------------------------------|-----------------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Survey number | yes |
| Date | yes |
| Start Displacement | yes |
| End Displacement | yes |
| Side | yes |
| Roughness Value | yes |
| Speed | optional |
| Event Code | optional |
| Latest | yes |

A full description of the data held in each field is as follows.

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Survey number The unique number given to the Survey that this rating was carried out under.

An entry is required. The **F4:List&Pick** option is available.

Date The date the roughness survey was carried out.

An entry is required and a future date is not permitted.

Start Displacement The start distance in metres from the road origin at which the roughness reading commenced.

A value no less than the start or greater than the end displacements for the road section is required.

An interval between readings of 100m is recommended.

End Displacement The end distance in metres from the road origin at which the roughness reading concluded.

A value greater than the start displacement is required.

Side The side of the carriageway on which the vehicle measuring roughness was travelling.

An entry as follows is required. **F4:List&Pick** is available.

| | |
|----|-------------------------|
| L | Left Hand Side |
| L1 | Left Hand Side, lane 1. |
| L2 | Left Hand Side, lane 2 |
| L3 | Left Hand Side, lane 3 |
| L4 | Left Hand Side, lane 4 |
| R | Right Hand Side |
| R1 | Right Hand Side, lane 1 |
| R2 | Right Hand Side, lane 2 |
| R3 | Right Hand Side, lane 3 |
| R4 | Right Hand Side, lane 4 |
| B | Both Lanes |

Roughness Value This value is the accumulated carriageway roughness over the preceding interval, measured in NAASRA counts/km.

It is imperative that only NAASRA values are entered and not the values obtained directly from the vehicle. The vehicle values have to be adjusted to give a correlated NAASRA value.

A value in the range 10 to 999 is required in this field.

Speed The average speed at which the measuring vehicle travelled over the preceding interval between roughness measurements.

A value in the range 1 to 120 is optional.

Event Code A code used to record an event which would significantly effect the roughness value recorded, eg. A bridge, railway crossing, intersection, etc.

The following codes are optional:

| | |
|---|-----------------------------------|
| A | Post-Survey Added value |
| B | BRIDGE, Abutment end (Both) |
| D | Detour route |
| E | END OF RUN |
| G | GRID (eg. Cattle Stop) |
| H | Speed humps |
| I | INTERSECTION (Side road) |
| L | Logging begins (after detour) |
| P | PAVEMENT Surfacing begins |
| R | SPEED RESTRICTIONS (LSZ, 50-70) |
| S | Stop (compulsory, stock etc.) |
| T | Traffic impeding |
| U | UNSEALED Road Begins |
| W | WORKS (Road works, markings etc.) |
| X | RAILWAY CROSSING |
| Z | Raised zebra crossing |

F4:List&Pick is available.

Latest The latest traffic row, "L" indicates that it is the latest, "N" means that the information displayed is not the latest. This is program generated and cannot be changed by the user.

An entry is required.

Condition ♦ Rating

Maintain those tables associated with Rating

Condition ♦ Rating ♦ Seal Rating

Maintain those tables associated with Sealed Road Rating

Condition ♦ Rating ♦ Seal Rating ♦ Survey Head

Maintain the Sealed Rating Survey Header table

Details of Sealed Carriageway Rating surveys. See the fanfare menu option

Condition ♦ Roughness ♦ Survey Head for more detail.

The ring menu offers two other options **F1-Autorate** and **F2-Rating-forms**

F1-Autorate

With this release the user has the choice to either use the existing Treatment Selection process and therefore the rating are created using the Carriageway table or use the new Treatment Selection process in Windows which creates rating rows from treatment lengths. For this option to work the treatment lengths need to be created prior to this step in the RAMM for Windows Administration program. The choice on which table to rate against is made once on the first time F1-Autorate is run.

If using the Carriageway table, this automatically calculates the rating sections and inspection lengths and inserts a row in the **rating** table for selected sealed carriageway sections. Rating sections will only be produced for road sections recorded in this table. The user will be prompted to select which carriageway sections to rate and then the size of the inspection length. Either 50m per rating section (Default) or the full rating section (Whole).

If using the treatment length table, the user will be prompted to select the treatment lengths to rate. The following prompt will PREVIOUS INSPECTION LENGTHS allows the user to reuse previously changed inspection displacements. Where there is a match between road_id and rating.start_m and the inspection lengths are within 30% then the previous inspection displacements will be used in the rating row being generated. A new feature is also available allowing inspections to be carried out more frequently over a smaller distance. The user will be prompted to enter a minimum rating length (100-500m), minimum inspection length (>= 10 metres) and a percentage to rate(10-100%). A sampling percentage of 100 will rate the complete length. The default values are a rating interval of 500m with a 10% sampling. The current convention of stepping in 20 metres from the beginning of a carriageway section will remain true for treatment lengths except in those cases where the total length is less than 20meters. The rating parameters are set once for each survey on the first time F1-Autorate is selected.

Note: there is a separate flag in the treatment_length table that allows for 100% rating on a treatment length, this can be set in RAMM for Windows. This flag, if set will override the parameters set above for the flagged Treatment length only.

```

PREVIOUS INSPECTION LENGTHS:  Use Ignore Exit
Use the previous Inspection Displacements where possible
----- Rating Survey Header Information -----

      Survey Number:   24
      Description:    dasfdas
+-----+
|TREATMENT LENGTH RATINGS: ESC executes, DEL aborts |
|----- Rating Inspection Parameters -----|
|
|      Minimum Rating Length: 500 m
|
|      Minimum Inspection Length: 10 m
|
|      Percentage to rate: 10 %
|The rating interval any length between 100 and 500 met|
|res.
+-----+

24 of 24 Rating Survey Headers found.

```

Rating rows for can be generated for **All** sealed sections from the base table selected or a **Selection** can be made using the selection window.

```

TREATMENT LENGTH AUTORATE:  All Selection Exit
Input selection criteria for treatment lengths to be rated
----- Rating Survey Header Information -----

      Survey Number:   25
      Description:    sggadsgdagsda
+-----+
|SEALED TREATMENT LENGTHS RATING SELECTION: ESC executes DEL aborts |
|F4:List&Pick
|----- Carriageway Rating Selection Criteria -----|
|
|      Area:
|      Sub area:
|      Owner:
|      Roadname:
|Pavement type:
| Pavement use:          thru
|      Hierarchy:
|      Urban/Rural:
|
+-----+

25 of 25 Rating Survey Headers found.

```

All columns offer the **F4:List&Pick** option.

The standard options for Area, Sub area, Owner, Roadname are offered.

The Pavement Type allows you to specify the type of sealed pavement to rate and the Pavement Use can either be left blank, a single value entered or a range by entering a from and too value. Hierarchy and Urban/Rural allows for the selection to be made depending on other groupings.

The program creates a blank rating row for each carriageway section/treatment length fulfilling the selection criteria.

F2-Rating-forms

This option replaces the Rate forms option offered under Misc/Rating. This generates a report which prints the header inspection information for the forms to be used in the rating survey. The forms

generated are best suited to use with preprinted stationary. Rating forms are printed for all rating rows with the current survey number.

Condition ♦ Rating ♦ Seal Rating ♦ Sealed Road

Update Rating Table for Sealed roads

This table contains the data collected during the pavement condition rating survey.

```

RATING:  Query Update Delete Input-order Next Previous ...
Update the current Rating
----- Road / Section Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:      m Start Name:
End Displacement:      m End Name:

----- Rating Information ----- Screen 1/2
      Rating ID: 15665          ----- INSPECTION -----
Start Displacement: 1130 m          Start Displacement: 1150 m
End Displacement: 1230 m          End Displacement: 1160 m
Survey number: 29
Date: 01Jun1997                      Latest: N Not latest

----- SURFACE WATER CHANNELS AND SHOULDERS -----
--- Surfaced -- Left -- Right -          ----- Earth --- Left -- Right -
Broken:      0 m      0 m          Blocked:      0 m      0 m
High Lip:    0 m      0 m          Inadequate:   0 m      0 m
Broken Surface: 0 m      0 m      Ineffective Shoulder: 0 m      0 m
Blocked:     0 m      0 m
Uphill Grade: 0 m      0 m
1 of 158 Ratings found.

```

```

RATING:  ... Graph-unload List Output Screen eXpand Toggle Exit
Change the current screen
----- Road / Section Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement:      m Start Name:
End Displacement:      m End Name:

----- Rating Information ----- Screen 2/2
      Rating ID: 15665          ----- INSPECTION -----
Start Displacement: 1130 m          Start Displacement: 1150 m
End Displacement: 1230 m          End Displacement: 1160 m
Survey number: 29
Date: 01Jun1997                      Latest: N Not latest

----- CARRIAGEWAY -----
Traffic Lanes: 2 no.          Alligator Cracks: 0 m          Potholes: 0 no.
Rutting:      0 m          L and T Cracks: 0 m          Pothole Patches: 0 no.
Shoving:     0 m          Joint Cracks: 0 m          Edge Break: 0 m
Scabbing:    0 m2          Edge Break Patches: 0 m
Flushing:    0 m
Comments:
1 of 158 Ratings found.

```

Rating based on the carriageway table

When the road sections in the carriageway table are shorter than 800m, the rating sections will be the same as used for the carriageway table. When the road sections in the carriageway table are longer than 800m the rating sections will be 500m in length, grouped within the road sections as defined in the carriageway table. (see fig. 15)

NOTE: The rating sections are created by running the function to automatically create the rating sections (Aurate). This program can be run from the Maintenance Condition Rating Sealed SH function in the menu after all the information has been

added to the Road Names and Carriageway tables. The rating information is then added to the rating table using the UPDATE facility and the ADD option is not available.

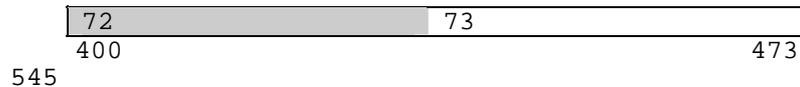
The portion of the carriageway in the rating section which is inspected is called the inspection length. The default value for the inspection length is 50m but in the urban situation the user may elect to have the inspection length the full length of the carriageway. The surface water channels are rated for the full length of the rating section.

When the 50m inspection length is selected it will start 20m in from the beginning of the first rating section in the road section. For each subsequent rating section it starts at the beginning of the section until the end of the road section, (see figure 7)

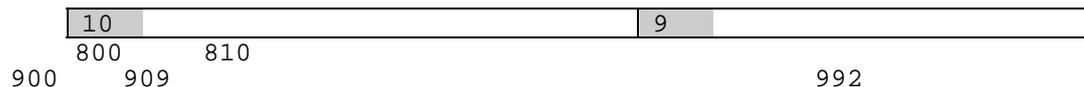
Rating based on the treatment length table

The variables, percentage (%) of rating and inspection length, are set in the Rating Survey Header table. The **Autorate** procedure will ensure that rating lengths are not too small when they are at the end of a treatment length. To stop this the procedure may create a rating length which is larger than the normal rating length but less than 160% of the normal rating length. When a smaller section is created the % rating will apply to the shortened length.

Example 1. In this example rating lengths are 100m with a 50% sampling. The remaining length is 145m and as this is less than 160m (100 times 1.6) the entire 145 will be made into one rating length and the first 50% (72m) will be sampled.

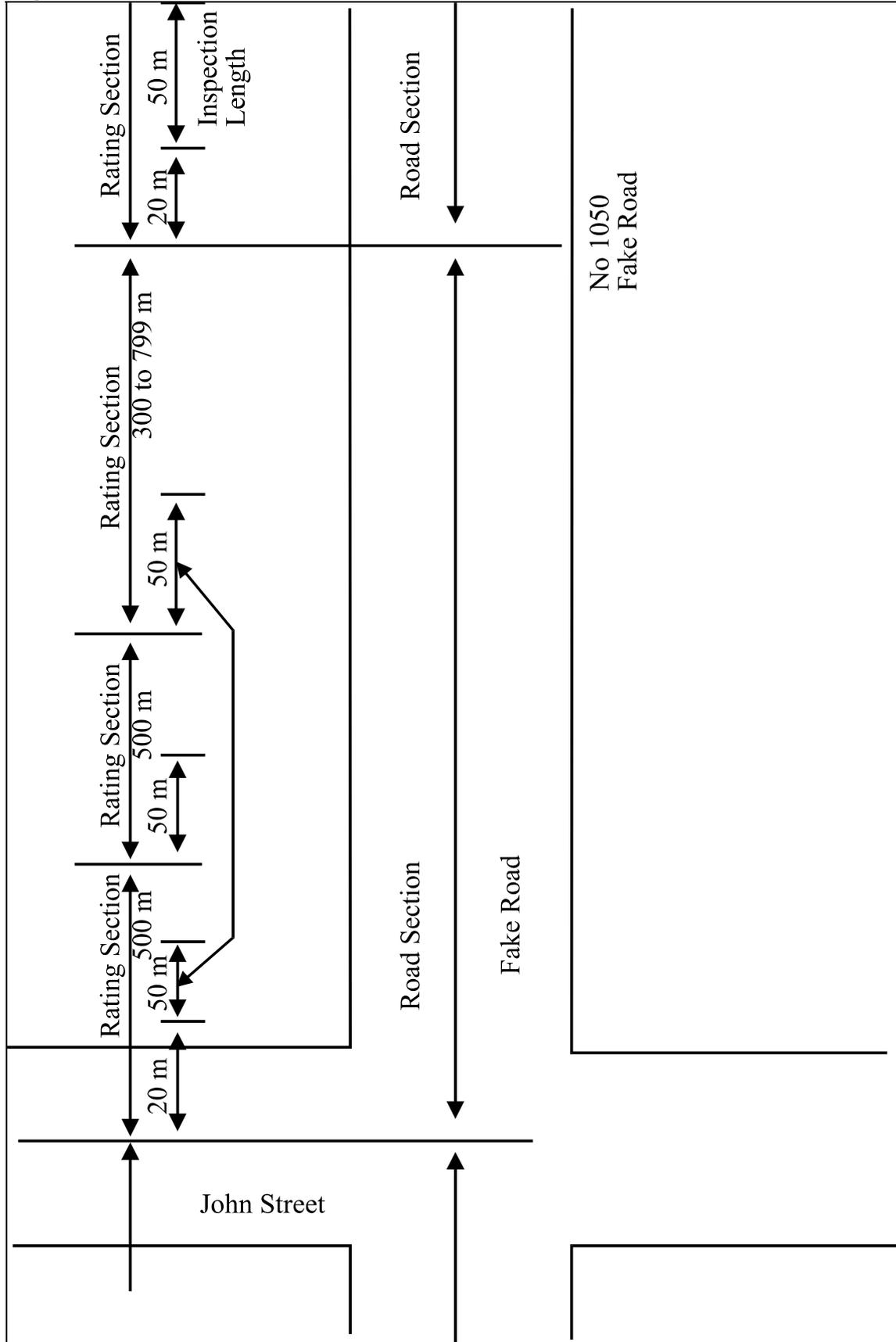


Example 2. In this example rating lengths are 100m with a 10% sampling. The remaining length is 192m and as this is greater than 160m (100 times 1.6) the remaining length will be split in 2 with one length of 100m and the second of 92m.



The shaded sections are the inspection lengths.

Figure 7. Section Definitions



It is necessary that a pavement condition survey be carried out every year for high use (use code 3,4,5) pavements and every two years for low use (use code 1,2) pavements or else the long period between surveys will remove the ability of the system to detect and report preventative maintenance treatments.

Fields Contained In The Condition Rating Table

| Fields | Required |
|-------------------------------------|--------------------------------|
| Road Number | yes |
| Carriageway Start Displacement | yes, if rating are base on the |
| Rating Start Displacement | yes |
| Rating End Displacement | yes |
| Inspection Start Displacement | yes |
| Inspection End Displacement | yes |
| Survey number | yes |
| Rating Date | yes |
| Latest | yes |
| LHS Surfaced SWC Broken | yes |
| LHS Surfaced SWC High Lip | yes |
| LHS Surfaced SWC Broken Surface | yes |
| LHS Surfaced SWC Blocked | yes |
| LHS Surfaced SWC Uphill Grade | yes |
| LHS Earth SWC Blocked | yes |
| LHS Earth SWC Inadequate | yes |
| LHS Earth SWC Ineffective Shoulder | yes |
| Carriageway Number of Traffic Lanes | yes |
| Carriageway Rutting | yes |
| Carriageway Shoving | yes |
| Carriageway Scabbing | yes |
| Carriageway Flushing | yes |
| Carriageway Alligator Cracks | yes |
| Carriageway L & T Cracks | yes |
| Carriageway Joint Cracks | yes |
| Carriageway Pot Holes | yes |
| Carriageway Pot Hole Patches | yes |
| Carriageway Edge Break | yes |
| Carriageway Edge Break Patches | yes |
| RHS Surfaced SWC Broken | yes |
| RHS Surfaced SWC High Lip | yes |
| RHS Surfaced SWC Broken Surface | yes |
| RHS Surfaced SWC Blocked | yes |
| RHS Surfaced SWC Uphill Grade | yes |
| RHS Earth SWC Blocked | yes |
| RHS Earth SWC Inadequate | yes |
| RHS Earth SWC Ineffective Shoulder | yes |

An entry is required in all the above fields even if the value of a particular fault is 0. To assist with keying the data a default of 0 is inserted with the use of the ENTER key.

A full description of the data held in each field, including photographs to help identify the various distress types, is contained in the road rating manual. Courses are run regularly to train surveyors on how to identify and record the extent of the various distress types. The accuracy of this work is crucial to the reporting of maintenance requirements and therefore this section of this manual should not be used for training surveyors to undertake road rating surveys.

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected. This column will be null if the ratings were against the treatment selection table, leave this column blank.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

**End Displacement
For Rating Section**

The distance in metres from the road origin to the end of the rating section.

This field will have a default value placed by the Autorate program which automatically generates the rating sections and will not be able to be altered.

**Start Displacement
For Inspection
Length**

The distance in metres from the road origin to the start of the inspection length.

This field will have a default value placed by the Autorate program which automatically generates the rating sections. If the inspection length calculated by the program is located on a bridge or some other structure which is not suitable, the default value may be changed.

**End Displacement
For Inspection
Length**

The distance in metres from the road origin to the end of the inspection length.

This field will have a default value placed by the program which automatically generates the rating sections.

If the inspection length calculated by the program is located on a bridge or some other structure which is not suitable, the default value may be changed.

Survey number The unique number given to the Survey that this rating was carried out under.

An entry is required. The **F4:List&Pick** option is available.

Rating Date The date on which the road rating was carried out.

An entry is required. A future date and a date older than one year is not permitted.

Latest The latest rating row, "L" indicates that it is the latest, "N" means that the information displayed is not the latest. This is program generated and cannot be changed by the user.

**LHS Surfaced Surface
Water Channel**

(SWC) - Broken The length of surfaced SWC in metres on the LHS of the carriageway for the rating length which is ineffective because it is broken.

An entry is required.

**LHS Surfaced SWC
with High Lip of Channel**

The length of surfaced SWC in metres on the LHS of the carriageway for the rating length which is ineffective because it has a high channel lip.

An entry is required.

**LHS Surfaced SWC
with Broken Surface
at Channel Lip**

The length of surfaced SWC in metres on the LHS of the carriageway for the rating length which is ineffective because there is a break in the carriageway surfacing along the pavement/channel boundary.

An entry is required.

**LHS Surfaced SWC
with Blocked
Channel**

The length of surfaced SWC in metres on the LHS of the carriageway for the rating length which is ineffective because the channel is blocked.

An entry is required.

**LHS Surfaced SWC
with Grade of
Channel Incorrect**

The length of surfaced SWC in metres on the LHS of the carriageway for the rating length which is ineffective because the grade of the channel is uphill to the catchpit.

An entry is required.

**LHS Earth
SWC - Blocked**

The length of earth SWC in metres on the LHS of the carriageway for the rating length which is blocked by vegetation and/or soil such that water ponds and the SWC is not able to effectively channel water away from the pavement to a cutout or culvert.

An entry is required.

**LHS Earth
SWC - Inadequate**

The length of earth SWC in metres on the LHS of the carriageway for the rating length which is below the standard set by the road controlling authority. This could also be a length where an SWC is required but does not exist.

An entry is required.

Ineffective Shoulder

The length of shoulder in metres on the LHS of the carriageway for the rating length which will not allow the free flow of water from the road surface to the SWC.

An entry is required.

**Carriageway -Number of
Traffic Lanes**

The number of traffic lanes in the inspection length.

An entry is required.

**Carriageway -Rutting/
Wheeltracking**

The length of wheelpath in metres in the inspection length which has rutted to a depth of 30mm or greater as measured by a 2m straight edge placed transversely across a wheelpath.

An entry is required.

Carriageway -Shoving

The length of wheelpath in metres in the inspection length which is exhibiting shoving.

| | |
|---|---|
| | An entry is required. |
| Carriageway -Scabbing | The area of carriageway in square metres in the inspection length where the seal has lost more than 10% of the sealing chip. In the case of asphaltic concrete surfaces this will be the area of pavement showing signs of ravelling (surface attrition). |
| | An entry is required. |
| Carriageway -Flushing | The length of wheelpath in metres in the inspection length where the carriageway surface has flushed. |
| | An entry is required. |
| Carriageway - Alligator Cracks | The length of wheelpath in metres in the inspection length which is exhibiting alligator (fatigue) cracking. |
| | An entry is required. |
| Carriageway - Longitudinal and Transverse Cracks | The length in metres in the inspection length of longitudinal and transverse cracking. |
| | An entry is required. |
| Carriageway - Joint Cracks | The length in metres in the inspection length of joint cracking. |
| | An entry is required. |
| Carriageway -Potholes | The number of potholes in the inspection length. |
| | An entry is required. |
| Carriageway - Pothole Patches | The number of pothole patches in the inspection length. |
| | An entry is required. |
| Carriageway -Edge Break | The length of carriageway edge in metres in the inspection length showing signs of edge break where there is no surfaced channel. |
| | An entry is required. |
| Carriageway - Edge Break Patches | The same criteria apply here as for edge break except that the edge break has been patched. |
| SWCs and Shoulder | The same criteria apply here as for the LHS. |
| Input -order | |

This function is designed to allow for entry of rating results in the order that they appear on the rating form. With the removal of the footpath rating specific categories the number of rating screens was able to be reduced. Selecting this option enables the person to enter the data in the order Shoulder and SWC's for the left hand side, then the carriageway rating details then the data pertaining to the right hand Shoulders and SWC's.

Condition◆Rating◆Unseal Rate

Maintain those tables associated with Unsealed Road Rating

Condition◆Rating◆Unseal Rate◆Survey Head

Maintain the Unsealed Rating Survey Header table

Details of Unsealed Carriageway Rating surveys. See the fanfare menu option

Condition◆Roughness◆Survey Head for more detail.

The ring menu offers two other options **F1-Autorate** and **F2-Rating-forms**

F1-Autorate

With this release the user has the choice to either use the existing Treatment Selection process and therefore the rating are created using the Carriageway table or use the new Treatment Selection process in Windows which creates rating rows from treatment lengths. For this option to work the treatment lengths need to be created prior to this step in the RAMM for Windows Administration program. The choice on which table to rate against is made once on the first time F1-Autorate is run.

If using the Carriageway table, this automatically calculates the unsealed rating sections and inspection lengths and inserts a row in the **rating_unsealed** table for selected unsealed carriageway sections. Rating sections will only be produced for road sections recorded in this table. The user will be prompted to select which carriageway sections to rate and then the size of the inspection length. The default inspection length of will apply.

If using the treatment length table, the user will be prompted to select the treatment lengths to rate. The following prompt will PREVIOUS INSPECTION LENGTHS allows the user to reuse previously changed inspection displacements. Where there is a match between road_id and rating.start_m and the inspection lengths are within 30% then the previous inspection displacements will be used in the rating row being generated. The default inspection length of will apply.

```
TREATMENT LENGTH AUTORATE: All Selection Exit
Input selection criteria for treatment lengths to be rated
----- Unsealed Rating Survey Header Information -----

Survey Number: 5
Description: FWD Yearly Survey
+-----+
|UNSEALED TREATMENT LENGTHS RATING SELECTION: ESC executes DEL aborts|
|F4:List&Pick|
|----- Carriageway Rating Selection Criteria -----|
|
| Area:
| Sub area:
| Owner:
| Roadname:
| Pavement type: U Unsealed
| Pavement use: thru
| Hierarchy:
| Urban/Rural:
|
+-----+
5 of 5 Unsealed Rating Survey Headers found.
```

All columns offer the **F4:List&Pick** option.

The standard options for Area, Sub area, Owner, Roadname are offered.

The Pavement Type is restricted to Unsealed Pavements only (U).

The program creates a blank rating_unsealed row for each carriageway section/treatment length fulfilling the selection criteria.

F2-Rating-forms

This option replaces the Rate forms option offered under Misc/Rating. This generates a report which prints the header inspection information for the forms to be used in the rating survey. The forms generated are best suited to use with preprinted stationary. Rating forms are printed for all rating rows with the current survey number.

Condition ♦ Rating ♦ Unseal Rate ♦ Unsealed Rd

Update Rating Table for Unsealed Roads

This table contains the data collected during the rating of unsealed roads.

```

UNSEALED RATING:  Query  Update  Delete  Next  Previous  Graph-unload  ...
Display the next Unsealed Rating in the current list
----- Road / Section Information -----
      Road Number:      6          Name: GEORGE STREET

Start Displacement:    0 m  Start Name: SH 2
End Displacement:    6000 m  End Name: BRIDGE

----- Unsealed Rating Information ----- Screen 1/3
      Rating ID:      490          ----- INSPECTION -----
Start Displacement:    5500 m          Start Displacement:    5500 m
End Displacement:    6000 m          End Displacement:    5550 m
Survey number:      1
      Date: 01Jan1993          Latest: L Latest
Traffic Lanes: 2 no.

----- POTHOLES -----
Depth:  100-300mm Dia.  300-600mm Dia.  600-900mm Dia.  >900mm Dia.
25-50 mm      2 no.      1 no.      0 no.      0 no.
50-100mm      0 no.      0 no.      2 no.      0 no.
>100mm        0 no.      1 no.      0 no.      4 no.

4 of 133 Unsealed Ratings found.

```

```

UNSEALED RATING:  ... List Output Screen eXpand Toggle Exit
Change the current screen
----- Road / Section Information -----
      Road Number:      6              Name: GEORGE STREET

Start Displacement:    0 m  Start Name: SH 2
End Displacement:    6000 m  End Name: BRIDGE

----- Unsealed Rating Information ----- Screen 2/3
      Rating ID:      490              ----- INSPECTION -----
Start Displacement:  5500 m              Start Displacement:  5500 m
End Displacement:   6000 m              End Displacement:   5550 m
Survey number:      1
Date: 01Jan1993                      Latest: L Latest

Improp X-Sect:    2 no.      - Corrugations -      Loose Aggregate
Scour:           1 m2       25-75mm:  23 m2          50-100mm:   0 m
Shove:           2 m        >75mm:  23 m2          >100mm:   0 m
Rut:             2 m                          Top Size:  40 mm

4 of 133 Unsealed Ratings found.

```

```

UNSEALED RATING:  ... List Output Screen eXpand Toggle Exit
Change the current screen
----- Road / Section Information -----
      Road Number:      6              Name: GEORGE STREET

Start Displacement:    0 m  Start Name: SH 2
End Displacement:    6000 m  End Name: BRIDGE

----- Unsealed Rating Information ----- Screen 3/3
      Rating ID:      490              ----- INSPECTION -----
Start Displacement:  5500 m              Start Displacement:  5500 m
End Displacement:   6000 m              End Displacement:   5550 m
Survey number:      1
Date: 01Jan1993                      Latest: L Latest

SURFACE WATER CHANNELS LHS              SURFACE WATER CHANNELS RHS
Blocked:           12 m                  Blocked:           0 m
Inadequate:       12 m                  Inadequate:       0 m

Comments:

4 of 133 Unsealed Ratings found.

```

The road network is divided into road sections and the road sections are further subdivided into rating sections and inspection lengths. The length of the rating sections and inspection lengths and the generation of these is the same as that described in the section of the manual for rating of sealed roads.

Fields Contained In The Condition Rating Table For Unsealed Roads

| Fields | Required |
|--------------------------------|---|
| Road Number | yes |
| Carriageway Start Displacement | yes, if rating are based on the carriageway table |
| Rating Start Displacement | yes |
| Rating End Displacement | yes |
| Inspection Start Displacement | yes |
| Inspection End Displacement | yes |
| Survey Number | yes |
| Rating Date | yes |

| | |
|---------------------------------------|----------|
| Latest | yes |
| Traffic Lanes | yes |
| Carriageway Pot Holes (100mm x 25mm) | yes |
| Carriageway Pot Holes (100mm x 50mm) | yes |
| Carriageway Pot Holes (100mm x 100mm) | yes |
| Carriageway Pot Holes (300mm x 25mm) | yes |
| Carriageway Pot Holes (300mm x 50mm) | yes |
| Carriageway Pot Holes (300mm x 100mm) | yes |
| Carriageway Pot Holes (600mm x 25mm) | yes |
| Carriageway Pot Holes (600mm x 50mm) | yes |
| Carriageway Pot Holes (600mm x 100mm) | yes |
| Carriageway Pot Holes (900mm x 25mm) | yes |
| Carriageway Pot Holes (900mm x 50mm) | yes |
| Carriageway Pot Holes (900mm x 100mm) | yes |
| Carriageway Improper Cross Section | yes |
| Carriageway Scour | yes |
| Carriageway Shoving | yes |
| Carriageway Rutting | yes |
| Carriageway Corrugations (25mm) | yes |
| Carriageway Corrugations (75mm) | yes |
| Carriageway Loose Aggregate (50mm) | yes |
| Carriageway Loose Aggregate (100mm) | yes |
| Carriageway Top Size of Aggregate | yes |
| LHS Earth SWC Blocked | yes |
| LHS Earth SWC Inadequate | yes |
| RHS Earth SWC Blocked | yes |
| RHS Earth SWC Inadequate | yes |
| Comments | optional |

An entry is required in the above fields if they are required even if the value entered is zero. To assist with keying data a default value of zero is entered with the use of the ENTER key.

A full description of the data held in each field, including photographs, is contained in the Unsealed Road Rating manual. Training will be designed and delivered to train surveyors on how to identify and record the extent of the various distress types. This manual should not be used for training road rating surveyors.

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

Carriageway Start Displacement From this column the relevant road section can be selected. If the rating were created using the treatment length table then this column should be null and remain so.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

**End Displacement
For Rating Section**

The distance in metres from the road origin to the end of the rating section.

This field will have a value placed by the Autorate program which automatically generates the rating sections and will not be able to be altered.

**Start Displacement
For Inspection
Length**

The distance in metres from the road origin to the start of the inspection length.

This field will have a value placed by the Autorate function which automatically generates the rating sections. If the inspection length calculated by the program is located on a bridge or some other structure which is not suitable, the default value may be changed.

**End Displacement
For Inspection
Length**

The distance in metres from the road origin to the end of the inspection length.

This field will have a value placed by the Autorate function which automatically generates the rating sections. If the inspection length calculated by the program is located on a bridge or some other structure which is not suitable, the default value may be changed.

Survey number

The unique number given to the Survey that this rating was carried out under.

An entry is required. The **F4:List&Pick** option is available.

Rating Date

The date on which the unsealed road rating was carried out.

An entry is required. A future date and a date older than one year is not permitted.

Latest

The latest rating row, "L" indicates that it is the latest, "N" means that the information displayed is not the latest. This is program generated and cannot be changed by the user.

Traffic Lanes The number of traffic lanes in the inspection length.

An entry is required.

**Carriageway
Pot Holes
Dia. (100 - 300mm)
Depth (25 - 50mm)**

The number of pot holes in the inspection length where the average diameter of the hole is 100 - 300mm and the maximum depth of the hole is 25 - 50mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (100 - 300mm)
Depth (50 - 100mm)**

The number of pot holes in the inspection length where the average diameter of the hole is 100 - 300mm and the maximum depth of the hole is 50 - 100mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (100 - 300mm)
Depth (>100mm)**

The number of pot holes in the inspection length where the average diameter of the hole is 100 - 300mm and the maximum depth of the hole is >100mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (300 - 600mm)
Depth (25 - 50mm)**

The number of pot holes in the inspection length where the average diameter of the hole is 300 - 600mm and the maximum depth of the hole is 25 - 50mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (300 - 600mm)
Depth (50 - 100mm)**

The number of pot holes in the inspection length where the average diameter of the hole is 300 - 600mm and the maximum depth of the hole is 50 - 100mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (300 - 600mm)
Depth (>100mm)**

The number of pot holes in the inspection length where the average diameter of the hole is 300 - 600mm and the maximum depth of the hole is >100mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (600 - 900mm)
Depth (25 - 50mm)**

The number of pot holes in the inspection length where the average diameter of the hole is 600 - 900mm and the maximum depth of the hole is 25 - 50mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (600 - 900mm)
Depth (50 - 100mm)**

The number of pot holes in the inspection length where the average diameter of the hole is 600 - 900mm and the maximum depth of the hole is 50 - 100mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (600 - 900mm)
Depth (>100mm)**

The number of pot holes in the inspection length where the average diameter of the hole is 600 - 900mm and the maximum depth of the hole is >100mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (> 900mm)
Depth (25 - 50mm)**

The number of pot holes in the inspection length where the average diameter of the hole is > 900mm and the maximum depth of the hole is 25 - 50mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (> 900mm)
Depth (50 - 100mm)**

The number of pot holes in the inspection length where the average diameter of the hole is > 900mm and the maximum depth of the hole is 50 - 100mm.

An entry is required.

**Carriageway
Pot Holes
Dia. (> 900mm)
Depth (>100mm)**

The number of pot holes in the inspection length where the average diameter of the hole is > 900mm and the maximum depth of the hole is >100mm.

An entry is required.

**Carriageway
Improper
Cross Section**

The number of readings which fail the test for carriageway crossfall in the inspection length. A total of four tests are carried out in the inspection length, one on each side of the road at the 1/4 and 3/4 points. The cross section of the road is improper when there is not at least 5% crossfall for each side of the road measured about the road centre-line

An entry of 0, 1, 2, 3 or 4 is required.

Carriageway Scour

The total number of square metres of scour recorded in the inspection length which has been caused by concentrated water flows across or along the carriageway which have eroded the aggregate from the road surface.

An entry is required.

**Carriageway
Shoving**

The length of wheelpath in metres in the inspection length which is exhibiting shoving.

An entry is required.

**Carriageway
Rutting**

The length of wheelpath in metres in the inspection length which has rutted to a depth of 40mm or greater as measured by a 2m straight edge placed transversely across the wheelpath.

An entry is required.

**Carriageway
Corrugations
(25 - 75mm)**

The number of square metres in the inspection length exhibiting corrugations with a depth between 25mm and 75mm.

An entry is required.

**Carriageway
Corrugations
(> 75mm)**

The number of square metres in the inspection length exhibiting corrugations with a depth greater than 75mm.

An entry is required.

**Carriageway
Loose Aggregate
(50 - 100mm)**

The number of wind rows of aggregate (maximum of three), in the inspection length, multiplied by 50m, with an average depth of loose aggregate between 50 and 100mm. Average measurements are taken for the 50m inspection length for the two outer wind rows and the wind row in any other location with the greatest depth of loose aggregate.

A entry of 0, 50, 100 or 150 is required.

**Carriageway
Loose Aggregate
(> 100mm)**

The number of wind rows of aggregate (maximum of three), in the inspection length, multiplied by 50m, with an average depth of loose aggregate greater than 100mm. Average measurements are taken for the 50m inspection length for the two outer wind rows and the wind row in any other location with the greatest depth of loose aggregate.

A entry of 0, 50, 100 or 150 is required.

**Carriageway
Aggregate
Top Size**

The average top size of the aggregate used as running course for the carriageway. This is categorised into one of 3 following categories of 20mm, 40mm, 60mm.

An entry of 20, 40 or 60 is required.

**LHS Surface Water
Channel (SWC) -
Blocked**

The length of the earth surface water channel in metres on the LHS side of the carriageway which is blocked by vegetation and/or soil such that the water ponds and the earth surface water channel can't effectively channel water away from the pavement to a cut-out or culvert.

An entry is required.

**LHS Surface Water
Channel (SWC) -
Inadequate**

The length of the earth surface water channel in metres on the LHS side of the carriageway where the channel or shoulder is inadequate for drainage purposes. The depth required from the edge of the carriageway to the channel invert for an earth channel to be adequate is set by the road controlling authority but is usually 300mm. The shoulder will cause inadequate drainage if the shoulder will not allow the free flow of water from the road surface to an earth surface water channel or to runoff.

An entry is required.

**RHS Surface Water
Channel (SWC) -
Blocked**

The length of the earth surface water channel in metres on the RHS side of the carriageway which is blocked by vegetation and/or soil such that the water ponds and the earth surface water channel can't effectively channel water away from the pavement to a cut-out or culvert.

An entry is required.

**RHS Surface Water
Channel (SWC) -
Inadequate**

The length of the earth surface water channel in metres on the RHS side of the carriageway where the channel or shoulder is inadequate for drainage purposes. The depth required from the edge of the carriageway to the channel invert for an earth channel to be adequate is set by the road controlling authority but is usually 300mm. The shoulder will cause inadequate drainage if the shoulder will not allow the free flow of water from the road surface to an earth surface water channel or to runoff.

An entry is required.

Comments Any text up to 60 characters is optional.

Features

Update Road Features Table

This table contains data regarding the type and location of obvious physical features which are useful in locating your position along the route but have no category in any other table in the inventory. eg. Houses, large trees, radio transmitters, etc. The road sections used for this table are the same as the carriageway table.

```

FEATURE:  Query Add Update Delete Next Previous List Output ...
Update the current Feature
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAAAAAAA

      Road Number:      3              Name: WILSON RD

Start Displacement:    556 m  Start Name: THE CRESCENT
End Displacement:     1094 m  End Name: SEAFORTH RD

AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road Features Information AAAAAAAAAAAAAAAAAAAAAAAAAA

      Displacement:    1094 m
      Offset:          m
      Side: B          Both
      Feature: INT     Intersection

      Comments: Intersection with (35)

14 of 64 Features found.

```

Fields Contained In The Features Table

| Field | Required |
|--------------------------------|----------------------------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Displacement | yes |
| Offset | optional |
| Side | yes - if offset is defined |
| Feature | yes |
| Comments | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

Carriageway

Start Displacement From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Displacement The distance in metres from the road origin to the feature.

An entry no greater than the end or less than the start displacements for the road section is required.

Offset The offset distance in metres from the road centre line to the feature.

An entry is optional.

Side The side of the road on which the feature is located.

The following codes are optional:

| | |
|---|----------------|
| B | Both |
| C | Centre |
| L | Left |
| N | Not applicable |
| R | Right |

Feature This is the lookup code for the type of feature being entered. Use the **F4:List&Pick** function to display the valid list.

An entry is required. The following code are valid.

| | |
|--------|--------------------------------|
| BR | Bridge |
| BUILD | Historic Building |
| CBWALL | Crib Retaining Wall |
| CCWALL | Concrete Retaining Wall |
| DOSLI | DOSLI Benchmark |
| GANTRY | Gantry |
| GWALL | Gabion Retaining Wall |
| HMLT | High Mast Light Tower |
| INT | Intersection |
| LP | Lighting Pole |
| MAC | Major Access |
| MON | Monument |
| PEDOBR | Pedestrian Overbridge |
| PEDSUB | Pedestrian Subway |
| PILE | Stockpile Site |
| PLAQUE | Plaque/Historic Location |
| REST | Rest Area |
| RKWALL | Rock Retaining Wall |
| RLOBR | Rail Overbridge |
| SIGINT | Signal Controlled Intersection |
| SP | Slope Protection |
| STKSUB | Stock Underpass |
| TUNNEL | Tunnel |
| TWALL | Timber Retaining Wall |
| UNDEFI | Undefined |
| VEHOBR | Vehicle Overbridge |
| VEHSUB | Vehicle Subway |
| WEIGH | Weigh Station |
| XING | Rail Crossing |

Comments Any text up to 60 characters in length, eg. Use this field to indicate information about the construction of the pavement layer, problems encountered, etc.

Minor Struc

Update Minor Structures Table

This table contains information relating to minor structures. The road sections used for this table are the same as the carriageway table.

There are no audit details (date added, date changed etc.) on the main screen but you can press **F9** while on the main menu. This will open a window and show these audit details to you.

```

MINOR STRUCTURE:  Query  Add  Update  Delete  Next  Previous  List  ...
Update the current Minor Structure
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Road Number:      1              Name: WAIHI BEACH RD

Start Displacement:  6440 m  Start Name: BECKS BRIDGE
End Displacement:   7000 m   End Name: RAILWAY CROSSING

AAAAAAAAAAAAAAAAAAAAAAAAAAAA Minor Structure Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Type: BARR  Barrier
      Subtype: NJ  New Jersey barrier
      Material: STEEL  Steel

Displacement:  6456 m
Offset:  0.0 m
Side: R      Right
Length:  200 m
Width:  12.2 m
Height:  5.00 m
Clearance:  5.00 m
Built: 19Apr1956
Comments:

2 of 5 Minor Structures found.

```

Fields Contained In The Minor Structures Table

| Field | Required |
|--------------------------------|---|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| Type | yes |
| Subtype | optional |
| Material | yes |
| Displacement | yes |
| Offset | yes |
| Side | yes |
| Length | yes |
| Width | optional, depending on the setting in the ms_type table |
| Height | optional, depending on the setting in the ms_type table |
| Clearance | optional, depending on the setting in the ms_type table |
| Built | optional |
| Comments | optional |

A full description of the data held in each field is as follows

Road Number The number of the road in which the road section is located.

This screen is designed such that the first table accessed is the road names table. If the road number is not known the correct road can be easily selected by using either the **F1:Quick-query**, **F2:Full-query**, or **F3:Expand** options.

**Carriageway
Start Displacement**

From this column the relevant road section can be selected.

After selecting a road the user is then able to list all the road sections for that road using the **F4:List&Pick** option and chose the appropriate one. The **F3:Expand** option is also available.

The start displacement and matching Start and End names will now be the carriageway information displayed.

Type Minor structure type code. Use the **F4:List&Pick** option to list the valid codes on the screen.

An entry is required of one of the following.

| | |
|--------|-------------------------|
| GANTRY | Signal and Sign Support |
| OBR | Pedestrian Overbridge |
| SPASS | Stock Underpass |
| UPASS | Pedestrian Underpass |
| WALL | Retaining Wall |
| WSTAT | Weigh Station |

Subtype A further classification of the Type.

| Type | Subtype | Description |
|--------|---------|------------------|
| GANTRY | DBLE | Double |
| | SNGLE | Single |
| OBR | PED | Pedestrian |
| | RAIL | Railway |
| | STOCK | Stock |
| | VEH | Vehicle |
| UPASS | PED | Pedestrian |
| | RAIL | Railway |
| | STOCK | Stock |
| | VEH | Vehicle |
| WALL | ANCH | Anchored |
| | BIN | Bin |
| | CANT | Cantilever |
| | COUNT | Counterfort |
| | CRIB1 | Single Crib |
| | CRIB2 | Double Crib |
| | CRIB3 | Triple Crib |
| | EARTH | Reinforced Earth |
| | GABN | Gabion |
| | GRAV | Gravity |
| | GABN | Gabion |
| | MCRIB | Mincrib |
| | PILED | Sheet Pile |
| | ROCK | Rock |

An entry is optional.

Material The main construction material used in the minor structure.
Use **F4:List&Pick** to display the valid list on the screen.

An entry is required of one of the following.

| | |
|-------|-----------------|
| ARMCO | ARMCO |
| COMP | Steel Composite |
| CON | Concrete |
| DRUM | Steel Drum |
| STEEL | Steel |
| WOOD | Wood |

Displacement The distance in metres from the road origin to the start of the minor structure.

A value in the range 1 to 99999m is required. The program will not accept a displacement less than the start displacement or greater than the end displacement of the carriageway section selected.

Side The side of the centreline on which the minor structure is located.

An entry is required as follows:

| | |
|---|-----------------|
| L | Left hand side |
| R | Right hand side |

- Offset** The offset distance to the minor structure in metres to one decimal place from the road centreline.
An entry in the range 0 to 60.0m is required.
- Length** The length of the minor structure.
An entry no greater than the difference between the start and end displacements for the road section is required.
- Width** The width of the minor structure.
An entry is dependent on the setting of the width_req column in the ms_type table.
- Height** The height/depth of the minor structure. A negative number indicates the depth below the road.
An entry is dependent on the setting of the height_req column in the ms_type table.
- Clearance** The distance to the soffit or any supported or retained structure.
An entry is dependent on the setting of the clearance_req column in the ms_type table.
- Built** The date this structure was built. In the format ddmmyyyy.
An entry is optional.
- Comments** Any text up to 60 characters in length, eg. Use this field to indicate information about the construction of the pavement layer, problems encountered, etc.

NZ Map Grid

Update NZ Map Grid Co-ordinates Table

This table contains NZ Map Grid Co-ordinates for any displacement along a road. The road sections used for this table are the same as the carriageway table.

There are no audit details (date added, date changed etc.) on the main screen but you can press **F9** while on the main menu. This will open a window and show these audit details to you.

```

MAP GRID CO-ORDINATE:  Query Add Update Delete Next Previous List ...
Display the next Map Grid Co-ordinate in the current list
AAAAAAAAAAAAAAAAAAAAAAAAAAAA Road / Section Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      Road Number:    41           Name: WEST ST
Start Displacement:    0 m   Start Name: PACIFIC ST
End Displacement:    250 m   End Name: SEAVIEW TCE
AAAAAAAAAAAAAAAAAAAAAAAAAAAA NZ Map Grid Co-ordinate Information AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
      North:          2 m
      East:           2 m
      Displacement:   120 m
      Side:           C Centre
      Elevation AMSL: m
      Survey Date:   01Jan1992
      Co-ord Accuracy: m
      Comments:

2 of 2 Map Grid Co-ordinates found.
  
```

Fields Contained In The NZ Map Grid Co-ordinates Table

| Field | Required |
|--------------------------------|----------|
| Road Number | yes |
| Carriageway Start Displacement | yes |
| North | yes |
| East | yes |
| Displacement | yes |
| Side | yes |
| Elevation | optional |
| Survey Date | yes |
| Co-ord Accuracy | optional |
| Comments | optional |

A full description of the data held in each field is as follows:

Road Number The number of the road in which the road section is located. This can be entered directly or you can use **F1:Quick-query** or **F2:Full-query** to find the correct road name.

Start Displacement This links the NZ Map Grid row to the correct road name and carriageway section. You do not enter this field as the correct carriageway section is linked automatically when the user enters the Displacement of the Grid Co-ordinate.

North The NZ Map Grid northing coordinate.

East The NZ Map Grid easting coordinate.

Displacement The distance in metres from the road origin to the Map Grid coordinate.

Side The side of the road on which the coordinate was taken.

The following codes are allowed:

| | |
|---|--------|
| L | Left |
| R | Right |
| C | Centre |

Elevation This is the elevation in metres above mean sea level.

An entry between 0 and 3700m (Mt. Cook) is optional.

Survey Date The date that the Map Grid coordinate reading was taken. This field is required.

Coordinate

Accuracy This is the indicative reliability of the positional in metres.

This field is optional.

Comments General comments. Optional.

Treatment

Update the Treatment Selection tables

This menu entry allows maintenance of the Unit Costs and CCI tables for use by the Treatment Selection program.

Treatment◆Unit Costs

Unit Costs menu

Treatment◆Unit Costs◆TSF Unit Costs

Update the Unit Costs table for the Thin Surfaced Flexible module

This table contains sets of estimated costs to carry out maintenance work on thin surfaced flexible pavements. These costs should represent the cost of maintenance work carried out over the road network or in each area of the road network. Many sets of costs can be input and different local areas, roads or road sections can then be linked to the appropriate set of costs.

| | |
|--|----------------------------------|
| TSF UNIT COST: Query Add Update Delete Fl-Carriageway-link ... | |
| Query the TSF Unit Cost table | |
| The Unit Costs For TSF Maintenance (01Jul1991 Dollars) | |
| The Standard TSF Cost Set 1 | |
| Notes: | |
| Earthworks: \$15.00 /m3 | Granular Basecourse: \$63.00 /m3 |
| First Coat Seal: \$3.00 /m2 | Rural Reseal: \$3.20 /m2 |
| Urban Reseal: \$3.00 /m2 | Urban Smoothing: \$15.00 /m2 |
| Urban Strengthening: \$30.00 /m2 | Earth SWC Make: \$3.00 /m |
| Earth SWC Cleaning: \$2.00 /m | Earth Shoulder Repair: \$2.00 /m |
| Conc SWC Lip Fill.: \$12.50 /m | Conc SWC Lip Patch: \$7.50 /m |
| Conc SWC Replace.: \$85.00 /m | Surfaced SWC Clean: \$0.60 /m |
| Asphalt SWC Repair: \$30.00 /m | Digout: \$40.00 /m2 |
| Rut Filling: \$30.00 /m | Crack Seal: \$5.00 /m2 |
| Pothole Repair: \$20.00 each | Flushing Repair: \$10.00 /lane m |
| Edge Repair: \$7.50 /m | Scabbing Repair: \$6.00 /m2 |
| 2 TSF Unit Costs found. | |

The use of "Add" will cause the default set of unit costs to be displayed on the screen. These may be altered to the values required and the row added with the use of the escape key. This set may be changed by the use of the "Update" option on the menu or a new set of unit costs may be added by using the "Add" option. The default set of unit costs and the type of maintenance work to which they apply are shown in TABLE 1.

| | Type of Work | Cost/Unit |
|----|--|------------------|
| 1 | Earthworks (Average of cut to waste and cut to fill) | 15.00/m3 |
| 2 | Granular Basecourse (in place) | 63.00/m3 |
| 3 | First Coat Seal | 3.00/m2 |
| 4 | Reseal (rural) | 3.20/m2 |
| 5 | Reseal (urban) | 3.00/m2 |
| 6 | Urban Smoothing (Rip & reshape, thin AC, friction course, or open graded emulsion mix) | 15.00/m2 |
| 7 | Urban Strengthening (Stabilise insitu, thick AC, digout and replace basecourse) | 30.00/m2 |
| 8 | Earth Surface Water Channel - Construct | 3.00/m |
| 9 | Earth Surface Water Channel - Clean | 2.00/m |
| 10 | Shoulder - Chip (remove excess shoulder material with the grader) | 2.00/m |
| 11 | Surfaced SWC - Fill depression at channel lip | 12.50/m |
| 12 | Surfaced SWC - Patch pavement at channel lip | 7.50/m |
| 13 | Surfaced SWC (concrete) - Replace | 85.00/m |
| 14 | Surfaced SWC - Clean | 0.60/m |
| 15 | Surfaced SWC (asphaltic conc.) - Repair | 30.00/m |
| 16 | Digout Repairs (thin surfaced pavements) | 40.00/m2 |
| 17 | Rut Filling | 30.00/m |
| 18 | Crack Sealing (spray and chip) | 5.00/m2 |
| 19 | Repair Flushed Pavement (assume burner) | 10.00/ lane m |
| 20 | Edge Break Repair | 7.50/m2 |
| 21 | Scabbing Repair | 6.00/m2 |
| 22 | Pothole Repairs | 20.00 ea |

TABLE 1: Default Unit Costs For Maintenance (July 1991 Dollars)

NOTE: Unit costs shown (/m) are per metre of defect, not per metre of road.

If more than one set of costs is required for the road network, the different sets must be linked to the local area, roads or road sections to which they apply. This linking process is done while using the Unit-cost screen.

The use of the "F1" hotkey or the choice of "F1-Carriageway-link" on the menu will give the option of "All" or "Query". If the "All" option is used the set of unit costs previously chosen will be linked to all the road sections in the road network. The "Query" option will allow a query to be made on Local Area (if these have been recorded in the inventory), Road or Road Section. The list produced in the query can all be linked to the unit cost set previously chosen with the selection of "Query-all" on the menu or to only a select group of roads or road sections with the use of the "Pick-and-point" option on the menu.

The "Pick-and-point" option requires you to type a "Y" beside the road sections chosen and then "Escape" to execute the linking of these sections to the unit cost set previously chosen.

Selection of "List" on the menu for the Unit-cost screen will cause a window to open and to show the different sets of unit costs and also to show some comparisons of costs for the more common maintenance activities. Press "Return" (Enter) when the cursor is next to the set of unit costs required and this set will be displayed in full on the Unit-cost screen.

The use of the "F2" hotkey or the choice of "F2-Carriageway-List" will cause a window to be opened and the carriageway sections linked to the set of unit costs will be displayed.

The Fields Contained In The TSF Unit Costs Table

| Field | Required |
|--|-----------------|
| Date | yes |
| Cost Set | yes |
| Description | yes |
| Comments | no |
| Earthworks | yes |
| Granular Basecourse | yes |
| First Coat Seal | yes |
| Rural Reseal | yes |
| Urban Reseal | yes |
| Urban Smoothing | yes |
| Urban Strengthening | yes |
| Earth Surface Water Channels - Construct | yes |
| Earth Surface Water Channels - Clean | yes |
| Earth Shoulder - Chip | yes |
| Surfaced Surface Water Channels - Fill Depression at Channel Lip | yes |
| Surfaced Surface Water Channels - Patch Pavement at Channel Lip | yes |
| Surfaced Surface Water Channels (Concrete)- Replace Channel | yes |
| Surfaced Surface Water Channels - Clean | yes |
| Surfaced Surface Water Channels (Asphaltic Conc.) - Repair | yes |
| Digout Repairs | yes |
| Rut Filling | yes |
| Crack Sealing | yes |
| Pot Hole Repair | yes |
| Flushing Repair | yes |
| Edge Break Repair | yes |
| Scabbing Repair | yes |

A full description of the data held in each field is as follows:

Date For each set of costs the user must enter a date to which the costs pertain. This date is used by the program to find the nearest construction cost index (CCI) recorded prior to the unit costs date from the CCI table. Access to this table is discussed in the next section.

Description The description of the unit cost set.

Comments Any relevant comments in regard to the unit cost set.

Earthworks (\$/m³) The average cost per cubic metre (solid measure) of both cut to waste and cut to fill for minor earthworks alongside the pavement. Typical examples are the excavation of shoulders and widening of earth surface water channels prior to widening a pavement.

Granular

Basecourse (\$/m³) The average cost per cubic metre (solid measure) of purchasing, carting, placing, compacting and trimming granular basecourse material.

First Coat at Seal (\$/m²) The average cost per square metre of placing a first coat seal.

Reseal (rural) (\$/m²) The average cost per square metre of placing a reseal on rural roads. This includes all chip sizes used in the rural situation.

Reseal (urban) (\$/m²) The average cost per square metre of placing a reseal on urban roads. This includes all chip sizes used in the urban situation.

Urban Smoothing (\$/m²) The average cost per square metre of carrying out a Smoothing Shape Correction Treatment on urban roads. This includes but is not limited to treatments such as Rip and Reshape, Thin Asphaltic Concrete Overlay, Friction Course Overlay, Open Graded Emulsion Mix Overlay, Grader Laid Mix etc.).

Urban

Strengthening (\$/m²) The average cost per square metre of carrying out a Strengthening Shape Correction Treatment on urban roads. This includes but is not limited to treatments such as In situ Stabilization, Structural Asphaltic Concrete Overlay, Reconstruct Pavement Layers after Undercutting the Subgrade, etc.).

Earth Surface Water Channels - Construct (\$/m) The cost per linear metre to construct earth surface water channels where they are non-existent or inadequate.

Earth Surface Water Channels - Clean (\$/m) The cost per linear metre to mechanically clean earth surface water channels where they are blocked with vegetation, debris etc.

Earth Shoulder

Chip (\$/m) The average cost per linear metre to (a) cut (chip) off excess material from the shoulders of the road to allow the free flow of water from the pavement to the surface water channel or (b) build up rutted shoulders with aggregate, grade and compact shoulders to allow the free flow of water from the pavement to the surface water channel.

Surfaced Surface Water Channels - Fill Depression at Channel Lip (\$/m)

The cost per linear metre to fill depressions in the pavement alongside the lip of a concrete channel to allow the free flow of water from the pavement to the surface water channel.

Surfaced Surface Water Channels - Patch Pavement at Channel Lip (\$/m)

The cost per linear metre to patch any broken pavement surface alongside the lip of a concrete channel to allow the free flow of water from the pavement to the surface water channel.

Surfaced Surface Water Channels (Concrete) - Replace Channel (\$/m)

The cost per linear metre to replace broken concrete channel.

Surfaced Surface Water Channels - Clean (\$/m)

The cost per linear metre to clean a surfaced surface water channel.

Surfaced Surface Water Channels (Asphaltic Concrete) -Repair (\$/m)

The cost per linear metre to repair a surfaced surface water channel which is surfaced with asphaltic concrete or a chip seal.

NB Definition: A surfaced surface water channel is any channel which is not cut from the natural ground but is surfaced with concrete, asphalt, seal, half pipe etc.

Digout Repairs (\$/m²) The cost per square metre to digout a section of the granular basecourse in a TSF pavement and replace it with new material. This must be the total cost to excavate, supply, place, compact, trim and seal the area of pavement to be repaired and must be a cost based on the average depth of pavement for the roads to which the unit costs pertain.

Rut Filling (\$/m) The cost per linear metre to fill wheelpath rutting in the pavement. Assume rutting will be >30mm in depth.

Crack Sealing (\$/m²) The cost per square metre to chip seal (hand bar) areas of cracked pavement.

- Repair Flushed Pavement (\$/lane m)** The cost per lane metre to burn excess bitumen from the surface of a pavement.
- Edge Break Repair (\$/m)** The cost per linear metre to repair broken pavement edge.
- Scabbing Repair (\$/m²)** The cost per square metre to repair areas of chip loss on the pavement using a hand spray and chip method.
- Pot Hole Repairs (\$/ea)** The average cost to repair each individual pothole. This is to be an average for all pot hole patching methods and locations.

Treatment◆Unit Costs◆SAC Unit Costs

Update the Unit Costs table for the Structural Asphaltic Conc. module

This table contains sets of estimated costs to carry out maintenance work on structural asphaltic concrete pavements. These costs should represent the cost of maintenance work carried out over the road network or in each area of the road network. Many sets of costs can be input and different local areas, roads or road sections can then be linked to the appropriate set of costs.

| | |
|--|----------------------------------|
| SAC UNIT COST: Query Add Update Delete Fl-Carriageway-link ... | |
| Query the SAC Unit Cost table | |
| The Unit Costs For SAC Maintenance (01Jul1991 Dollars) | |
| The Standard SAC Cost Set 1 | |
| Notes: | |
| Reconstruction: \$50.00 /m2 | Mill & Replace: \$35.00 /m2 |
| SAMI & Smoothing: \$20.00 /m2 | SAM Seal: \$6.00 /m2 |
| Crack Filling: \$2.50 /m2 | Crack Seal: \$3.50 /m2 |
| Urban Reseal: \$3.00 /m2 | Urban Smoothing: \$15.00 /m2 |
| Earth SWC Make: \$3.00 /m | Earth SWC Cleaning: \$2.00 /m |
| Earth Shoulder Repair: \$2.00 /m | Conc SWC Lip Fill.: \$12.50 /m |
| Conc SWC Lip Patch: \$7.50 /m | Conc SWC Replace: \$85.00 /m |
| Surfaced SWC Clean: \$0.60 /m | Asphalt SWC Repair: \$30.00 /m |
| Digout: \$110.00 /m2 | Bandage & Crack Fill: \$7.50 /m2 |
| Rut Filling: \$30.00 /m | Scabbing Repair: \$6.00 /m2 |
| Pothole Repair: \$20.00 each | Flushing Repair: \$10.00 /lane m |
| 1 SAC Unit Cost found. | |

The use of "Add" will cause the default set of unit costs to be displayed on the screen. These may be altered to the values required and the row added with the use of the escape key. This set may be changed by the use of the "Update" option on the menu or a new set of unit costs may be added by using the "Add" option.

The default set of unit costs and the type of maintenance work to which they apply are shown in TABLE 1.

| | Type of Work | Cost/Unit |
|----|---|------------------|
| 1 | Reconstruction | 50.00/m2 |
| 2 | Mill & Replace | 35.00/m2 |
| 3 | SAMI & Smoothing | 20.00/m2 |
| 4 | SAM Seal | 6.00/m2 |
| 5 | Crack Filling | 2.50/m |
| 6 | Crack Seal (spray & chip) | 3.50/m2 |
| 7 | Urban Reseal | 3.00/m2 |
| 8 | Urban Smoothing | 15.00/m2 |
| 9 | Earth Surface Water Channel - Construct | 3.00/m |
| 10 | Earth Surface Water Channel - Clean | 2.00/m |
| 11 | Shoulder - Chip (remove excess shoulder material with the grader) | 2.00/m |
| 12 | Surfaced SWC - Fill depression at channel lip | 12.50/m |
| 13 | Surfaced SWC - Patch pavement at channel lip | 7.50/m |
| 14 | Surfaced SWC (concrete) - Replace | 85.00/m |
| 15 | Surfaced SWC - Clean | 0.60/m |
| 16 | Surfaced SWC (asphaltic conc.) - Repair | 30.00/m |
| 17 | Digout Repairs (thin surfaced pavements) | 110.00/m2 |
| 18 | Bandage and Crack Fill | 7.50/m2 |
| 19 | Rut Filling | 30.00/m |
| 20 | Scabbing Repair | 6.00/m2 |
| 21 | Pothole Repairs | 20.00 ea |
| 22 | Repair Flushed Pavement (assume burner) | 10.00/lan e |

TABLE 1: Default Unit Costs For Maint. (July 1991 Dollars)

NOTE: Unit costs shown (/m) are per metre of defect, not per metre of road.

If more than one set of costs is required for the road network, the different sets must be linked to the local area, roads or road sections to which they apply. This linking process is done while using the Unit-cost screen.

The use of the "F1" hotkey or the choice of "F1-Carriageway-link" on the menu will give the option of "All" or "Query". If the "All" option is used the set of unit costs previously chosen will be linked to all the road sections in the road network. The "Query" option will allow a query to be made on Local Area (if these have been recorded in the inventory), Road or Road Section. The list produced in the query can all be linked to the unit cost set previously chosen with the selection of "Query-all" on the menu or to only a select group of roads or road sections with the use of the "Pick-and-point" option on the menu.

The "Pick-and-point" option requires you to type a "Y" beside the road sections chosen and then "Escape" to execute the linking of these sections to the unit cost set previously chosen.

Selection of "List" on the menu for the Unit-cost screen will cause a window to open and to show the different sets of unit costs and also to show some comparisons of costs for the more common maintenance activities. Press "Return" (Enter) when the cursor is next to the set of unit costs required and this set will be displayed in full on the Unit-cost screen.

The use of the "F2" hotkey or the choice of "F2-Carriageway-List" will cause a window to be opened and the carriageway sections linked to the set of unit costs will be displayed.

The Fields Contained In The TSF Unit Costs Table

| Field | Required |
|--------------|-----------------|
| Date | yes |
| Cost Set | yes |

| | |
|--|-----|
| Description | yes |
| Comments | no |
| Reconstruct | yes |
| Mill and Replace | yes |
| SAMI and Smoothing Overlay | yes |
| SAM Seal | yes |
| Crack Fill | yes |
| Crack Seal (Spray & chip) | yes |
| Urban Reseal | yes |
| Urban Smoothing Overlay | yes |
| Earth Surface Water Channels - Construct | yes |
| Earth Surface Water Channels - Clean | yes |
| Earth Shoulder - Repair | yes |
| Surfaced Surface Water Channels - Fill Depression at Channel Lip | yes |
| Surfaced Surface Water Channels - Patch Pavement at Channel Lip | yes |
| Surfaced Surface Water Channels (Concrete) - Replace Channel | yes |
| Surfaced Surface Water Channels - Clean | yes |
| Surfaced Surface Water Channels (Asphaltic Conc.) - Repair | yes |
| Digout Repairs | yes |
| Bandage and Crack Fill | yes |
| Rut Filling | yes |
| Scabbing Repair | yes |
| Pot Hole Repair | yes |
| Flushing Repair | yes |

A full description of the data held in each field is as follows:

Date For each set of costs the user must enter a date to which the costs pertain. This date is used by the program to find the nearest construction cost index (CCI) recorded prior to the unit costs date from the CCI table. Access to this table is discussed in the next section.

Description The description of the unit cost set.

Comments Any relevant comments in regard to the unit cost set.

Reconstruction (\$/m²) The average cost per square metre to fully rehabilitate a Structural Asphaltic concrete pavement because the pavement is seriously damaged. Repair will require full reconstruction of the AC layer or a thick structural overlay. Level limits often preclude an overlay, so the standard unit cost must be computed assuming that, an average of 150mm of old pavement is removed and replaced by 125mm of asphaltic concrete and 25mm of friction course or alternatively the minimum pavement configuration generally required in the road network to give a design life of 25 years. An allowance must be made for ancillary work such as service covers etc.

Mill and Replace (\$/m²) The average cost per square metre to mill off the top 75mm of mix and replace with stable asphaltic concrete. This occurs where the existing surfacing is exhibiting signs of plastic instability and should include an allowance for ancillary work such as service covers etc.

SAMI plus Levelling Overlay (\$/m²)

The average cost per square metre to place a thick, elastic, polymer modified bitumen, stress absorbing membrane interlayer (SAMI), followed by a flexible, skid-resistant friction course (FC) or open graded emulsion mix (OGEM) in a thin, 30mm over high spots (40mm average depth), layer. This is considered the optimum treatment where there is extensive joint, longitudinal or transverse cracking but the pavement is basically sound although rough. An allowance must be made for ancillary work such as service covers etc.

Stress Absorbing Membrane

(SAM) Seal (\$/m²)

The average cost per square metre to place a stress absorbing membrane (SAM) seal. This is the assumed remedial treatment where the surface is heavily cracked but otherwise still sound and riding well. The treatment consists of a grade 3 reseal with a binder containing at least 6% polymer, followed by a grade 5 locking coat.

Crack Fill (\$/m)

The cost per metre of crack to clean and fill all joint, longitudinal and transverse cracks with a polymer/bitumen filler.

Crack Sealing (Usually Alligator Cracking) (\$/m²)

The cost per square metre to seal minor cracking where the pavement is basically sound where it may be permissible to seal the cracks under general maintenance rather than to dig them out.

**Conventional Reseal
(Urban) (\$/m²)**

The cost per square metre to place a conventional reseal where the surface has significant surface defects such as ravelling, scabbing, rutting or flushing but insufficient cracking to warrant a SAM reseal, and is otherwise sound and riding adequately. A reseal in the urban situation is assumed.

**Urban Smoothing
(Levelling Overlay) (\$/m²)**

The cost per square metre to place a 20mm over high spots (30mm average depth) AC, FC or OGEM overlay, where there is a sound but rough pavement. Allowances must be made for a heavy tack coat (to waterproof minor cracks), for filling and bandaging longitudinal, transverse and joint cracks and also for ancillary work such as service covers etc.

Surface Water Channels

The unit costs for surface water channels are determined in the same manner as for Thin Surfaced Flexible Pavements.

Digout Repairs (\$/m²)

The cost per square metre to digout a section of the SAC pavement and replace it with new materials. This must be the total cost to excavate, supply, place and compact the pavement layers and must be a cost based on the average depth of SAC pavements in the network.

**Crack Seal and
Bandage Joint and
L & T Cracks. (\$/m)**

The cost per metre of crack to clean and fill all joint, longitudinal and transverse cracks with a polymer/bitumen filler and then for the cracks to be bandaged over with polymer binder and grade 6 grit.

Rutting (\$/m)

The cost per linear metre for the hand leveling of ruts and depressions with asphaltic mix.

Scabbing Repairs (\$/m²)

The computation is as for thin surfaced pavements.

Pothole Repairs (ea)

The average cost to repair each individual pothole. This is to be an average for all pot hole patching methods used for SAC pavements.

Flushing (\$/lane metre)

The computation is as for thin surfaced pavements.

Treatment◆RCI

Update the RAMM Construction Index Table

This table contains information regarding road construction indices and their associated dates. These are used to update costs of maintenance work where recent information is not available in the system. The RAMM construction indices can be added each quarter when they become available.

```
RCI VALUE:  Query Add Update Delete Next Previous List Output ...
Query the RCI Value table

----- RAMM Construction Index Values -----

      RCI Value:  1000           Date: 30Jun1993

1 of 15 RCI Values found.
```

The RCI values already recorded in the RCI table may be viewed using the "Query" option and may be amended using the "Update" option. To add a new RCI value select the "Add" option from the menu and record both the RCI value and the date pertaining to the RCI being recorded. Historical RCI values need only be recorded as far back as the earliest date recorded for unit costs.

The Fields Contained In The RCI Values Table

| Field | Required |
|-------------------------|-----------------|
| RAMM Construction Index | yes |
| Date | yes |

A full description of the data held in each field is as follows:

RAMM Construction Index The RAMM Construction Index from Transit NZ RCI values. This index reflects the effect of inflation on the cost to carry out construction work in New Zealand.

Date The date pertaining to the RAMM construction index.

Lookups

Maintain the various Lookup tables for RAMM

The lookup tables contain the codes (including their descriptions) used when adding data to the database. These codes are "looked up" by the software when data is added or updated to ensure that only valid codes are entered and to display the full description alongside on the screen or in reports.

The selection of "Lookups" on the maintenance menu allows access to the lookup tables which are displayed to the right on the menu. There are twelve lookup tables which the user may alter. In the interests of standardisation it is not recommended that the codes supplied be altered and the screens be used only to add different codes required for site specific purposes.

The lookup tables which the user may alter contain information as follows:

Lookups◆Local Auth.

Maintain the Local Authority table for State Highway entry

The codes and names of the District and City Councils in New Zealand, looked up by the State Highways Road Names Screen.

Lookups◆Region

Maintain the Region table for State Highway entry

The codes and names of the Territorial Regions, looked up by the State Highways Road Names Screen.

Lookups◆Organistion

Maintain the Organisation Code table

The codes and descriptions of the agencies responsible for various aspects of the road network and its maintenance. These codes are looked up by the Carriageway, Drainage, Surface and Traffic Facilities Screens.

Lookups◆Carriageway

Maintain the various Lookup tables associated with the Carriageway table.

Lookups◆Carriageway◆Area/Sub

Maintain the Area and Sub_area Description tables

The descriptions of the carriageway areas and sub_areas, looked up by the Carriageway Screen.

```

CARRIAGEWAY AREA:  Query Add Update Delete Merge Fl-Sub-Area Next ...
Update the current Carriageway Area
----- Local Area -----
                        Area: MILFORD

                        Operating Office: CHCH Christchurch TNZ
                        SH Cost Set Start: 100
                        End: 199

                        Sub-Area  Description
                        1          MILFORD
                        2          FORREST HILL
                        4          MARINA
                        5          SHERRIFS HILL
                        7          HAURAKI CORNER

4 of 14 Carriageway Areas found.

```

When the database type is State Highways entry is permitted into the SH Cost Set Start and End columns. The range entered in these columns must not overlap with any existing range. The range of cost sets is for use with the Forward Work Programming Tool in RAMM for Windows.

Lookups◆Carriageway◆Area Office

Maintain the Carriageway Area Office table

The descriptions of the carriageway area offices, looked up by the Carriageway Area/Sub-area Screen.

Lookups◆Carriageway◆Hierarchy

Maintain the Hierarchy Description table

The descriptions of the carriageway hierarchy groups, looked up by the Carriageway Screen.

Lookups◆Carriageway◆Opt. Groups

Maintain the Carriageway Optional Group tables

Lookups◆Carriageway◆Opt. Groups◆Headings

Maintain the Carriageway Optional Group tables

Users can now create up to five optional grouping columns. This allows councils to group carriageway data in ways specific to that council. The heading for each optional group should be entered first. This heading will appear in the second screen of the carriageway module.

```

PARAMETER:  Update  Help  Exit
Update the current Parameter

----- Carriageway - Optional Group Headings -----

      RAMM Version: 3.4
      : CJN Technologies Test Database
Database type: L  Local Authority

      Optional Group Headings
Group 1: School location
Group 2: Public Facilities
Group 3:
Group 4:
Group 5:

1 of 1 Parameters found.

```

Entry into the group columns will only be allowed if the preceding group has a heading entered.

Lookups◆Carriageway◆Opt. Groups◆Group 1
Maintain the Carriageway Optional Group 1 codes

Entry into this module is only permitted if a Group 1 heading has been entered. Enter into this table all the valid lookups that can be entered for this group.

```

OPTIONAL GROUP 1 CODE:  ... Previous List Output Help Exit
List and pick an Optional Group 1 Code from the current list

----- School location -----

      Type: NS

      Description: No sch+-----+
      |RETURN to select, arrows to move, DEL aborts |
      |F7/F8:Next/Previous page                       |
      |----- School location List -----          |
      |      Type  Description                       |
      |      SS   School located in street          |
      |      SI   School intersection                |
      |      SB   School bus stop                    |
      |      NS   No school within 5 kilometres     |
      |-----+
4 of 4 Optional Group 1 Codes fou|Optional Group 1 Codes 1 to 4 of 4
+-----+

```

The following screen shows how the optional groupings will appear in the carriageway screens.

```

CARRIAGEWAY SECTION: ... Output Screen eXpand Help Exit
Change the current screen
----- Carriageway Information -----
      Road Number:      1          Name: WAIHI BEACH RD

Start Displacement: 5660 m Start Name: LARGE CULVERT
End Displacement:  6550 m End Name:  FERGUS RD
  Local Area: WAIMATA          ----- LOADING ----- Screen 2/2
    Sub-Area:  1 WAIMATA          Status: E Estimate
                                      Heavy vehicles:  14 %

----- ROUGHNESS -----          ----- TRAFFIC -----
      Minimum NAASRA: 100          Count:          vehicles/day
      Maximum NAASRA: 100          Estimate:    2300 vehicles/day
      Average NAASRA: 100          ESA: 1.07

----- Optional Groupings -----
      School location: SB School bus stop
      Public Facilities: POST Post box

4 of 321 Carriageway Sections found.

```

Lookups◆Carriageway◆Opt. Groups◆Group 2

Maintain the Carriageway Optional Group 2 codes

Entry into this module is only permitted if a Group 2 heading has been entered. Enter into this table all the valid lookups that can be entered for this group.

Lookups◆Carriageway◆Opt. Groups◆Group 3

Maintain the Carriageway Optional Group 3 codes

Entry into this module is only permitted if a Group 3 heading has been entered. Enter into this table all the valid lookups that can be entered for this group.

Lookups◆Carriageway◆Opt. Groups◆Group 4

Maintain the Carriageway Optional Group 4 codes

Entry into this module is only permitted if a Group 4 heading has been entered. Enter into this table all the valid lookups that can be entered for this group.

Lookups◆Carriageway◆Opt. Groups◆Group 5

Maintain the Carriageway Optional Group 5 codes

Entry into this module is only permitted if a Group 5 heading has been entered. Enter into this table all the valid lookups that can be entered for this group.

Lookups◆Loading

Maintain the Loading Survey Method table

The codes and descriptions of the survey methods used in obtaining a loading count. These codes are looked up by the Loading Screen.

Lookups◆Verge

Maintain the various Lookup tables associated with Verge Inventory.

Lookups◆Verge◆Footpath

Maintain the various Lookup tables used for Footpath maintenance.

Lookups◆Verge◆Footpath◆Surface

Maintain the Footpath Surface Material table

The codes and descriptions of the footpath surfacing materials, looked up by the Footpath Surfacing Screen. To ensure sensible values are entered into the Depth and Size/Grade columns when entering information about footpath surfacings, Default Minimum and Maximum values can be set here for each Material type.

```
FOOTPATH SURFACE MATERIAL:  Query Add Update Delete Merge Next ...
Display the next Footpath Surface Material in the current list

----- Footpath Surface Material -----

                Code: C

                Description: Concrete

    Depth Default value: 65
          Minimum value: 50
          Maximum value: 200

    Size/Grade Default value: 12
              Minimum value: 3
              Maximum value: 20

3 of 9 Footpath Surface Materials found.
```

Lookups◆Verge◆Footpath◆Use

Maintain the Footpath Use table

The codes and descriptions of the footpath usage categories, looked up by the Footpath Screen.

Lookups◆Verge◆Crossing

Maintain the Crossing Type table

The codes and descriptions of the crossing types, looked up by the Crossing Screen.

Lookups◆Pavement

Maintain the various Lookup tables used for Pavement maintenance

Lookups◆Pavement◆Surfacing

Maintain the various Lookup tables associated with the surfacing tables

Lookups◆Pavement◆Surfacing◆Adhes. Type

Maintain the Adhesion Agent Type table

The codes and descriptions of the adhesion agents, looked up by the Carriageway Surfacing Screen.

Lookups◆Pavement◆Surfacing◆Binders

Maintain the Surface Binder Type table

The codes and descriptions of the binders, looked up by the Carriageway and Footpath Surfacing Screens.

Lookups◆Pavement◆Surfacing◆Addit. Type

Maintain the Polymer Additive Type table

The codes and descriptions of the polymer additives, looked up by the Carriageway Surfacing Screen.

Lookups◆Pavement◆Surfacing◆Surf. Mat.

Maintain the Surface Material and Surface Life tables

The codes and descriptions of the surface materials, looked up by the Carriageway Surfacing and Top surfacing Screens, and the estimated life of each surface by chip size, if required, **that will be used in the RAMM for Windows Treatment Selection Process**. The surface life table will be loaded with a default set of values. Access to these values was previously not available.

Note: If you are NOT running RAMM for Windows Treatment Selection then these values will not be used.

```
SURFACE MATERIAL:  Query Add Update Delete Merge F1-Life Next ...
Display the next Surface Material in the current list

----- Surface Material -----

                Type: COAT2

Description: Second coat seal

                Default  Minimum  Maximum
Depth:          0         0         0
Size/Grade:     6         1         6

First          Use  Use  Use  Use  Use  Use  Use
Chip Size      1   2   3   4   5   6   7
  2            16  14  12  11  10  9   8
  3            14  12  10  9   8   7   6
  4            12  10  8   7   6   5   4
  5             8   7   6   5   4   3   2

5 of 23 Surface Materials found.
```

To access the surface_life values us the option **F1-Life**. Entering a chip size is only required if the size of the chip affects the overall life of the surface.

Lookups◆Pavement◆Layer

Maintain the various Lookup tables used for Pavement Layer maintenance

Lookups◆Pavement◆Layer◆Material

Maintain the Pavement Layer Material table

The codes and descriptions of the pavement layer material types. These codes are looked up by the Pavement Layer and Pavement Structure Screens. To ensure sensible values are entered into the Depth column when entering information about the pavement layer, Default Minimum and Maximum values can be set here for each Material type.

```
PAVEMENT LAYER TYPE:  Query Add Update Delete Merge Next Previous ...
Query the Pavement Layer Material Type table

----- Pavement Layer Material Type -----
--

                Type: AP100

                Description: All passing 100mm sieve

    Depth Default value: 150
           Minimum value: 124
           Maximum value: 5000

30 Pavement Layer Types found.
```

Lookups◆Pavement◆Layer◆Source

Maintain the Pavement Layer Source table

The description of the source of the material, used in maintaining the road network. These codes are looked up by the Pavement Layer and Pavement Structure Screens.

Lookups◆Pavement◆Layer◆Subgrade

Maintain the Pavement Subgrade Type table

The codes and descriptions of subgrade types found in the road network. These codes are looked up by the Pavement Layer and Pavement Structure Screens.

Lookups◆Pavement◆Layer◆Stab. Agent

Maintain the Pavement Rehabilitation Stabilization Agent table

The codes and descriptions of the stabilization agents used in the rehabilitation of pavements. These codes are looked up by the Pavement Layer Rehabilitation and Pavement Structure Rehabilitation Screens.

Lookups◆Drainage

Maintain the various Lookup tables used for Pavement maintenance.

Lookups◆Drainage◆Culv. Type

Maintain the Drainage Culvert Type table

The codes and descriptions of the culvert types, looked up by the Drainage Screen.

Lookups◆Drainage◆Drain Type

Maintain the Drainage Type table

The codes and descriptions of the drainage facilities, looked up by the Drainage Screen.

Lookups◆Drainage◆Material

Maintain the Drainage Material Type table

The codes and descriptions of the construction materials, looked up by the Drainage Screen.

Lookups◆Traf Facils

Maintain those lookup tables associated with Traffic Facilities

Lookups◆Traf Facils◆Traf Facil

Maintain the Traffic Facility Code table

The codes and descriptions of the traffic facilities, looked up by the Traffic Facilities Screen. This module includes a further option "Transfer" which is used to transfer Traffic Facilities of the type currently displayed on the screen to a Minor Structure type/subtype. Only those Traffic Facilities that have a location will be transferred to the Minor Structures table.

Transfer Select all Traffic Facility rows where the facility type is the same as that currently on display and transfer them to the Sign table. A window is opened listing the valid Sign Types, the user selects the correct type. Once the user has made the selection a window is opened displaying what is going to occur. The following menu options are available:

```

TRAFFIC FACILITY CODE:  Query  Add  Update  Delete  Transfer  Merge  ...
Transfer the current Traffic Facility Type to a Sign Type

----- Traffic Facility -----

      Code: H09

Description: Edge Marker Post
+-----+
|TRANSFER:  Continue  Exit  |
|Transfer Traffic Facility rows to the Sign table  |
|----- Transfer Information -----|
|      Transfer  |
|Traffic Facility: H09      Edge Marker Post  |
|      To  |
|      Sign Type: H22      Edge Marker Post  |
|-----+
+-----+

1 Traffic Facility Code found.

```

Continue Transfer all Traffic Facilities of the type displayed to the Signs table, to the sign type displayed. A count will displayed as the rows are transferred across. Hitting the **DEL** key to stop the transfer will cause all the rows transferred so far in this operation to be deleted from the Signs table. When all the rows have being transferred they will be deleted from the Traffic Facilities table, control will return to the main ring menu.

Exit Do not continue with the Transfer, return to then main menu.

Lookups◆Traf Facils◆Signs Gen

Maintain the various general lookup tables associated with Signs

Lookups◆Traf Facils◆Signs Gen◆Owner

Maintain the Sign/Support Owner description table

Descriptions of the owners for either Signs, Support/Posts or both. Looked up from the first Sign screen and the Support screen.

A full description of the data held in each field is as follows:

Owner The two letter code for the Owner.

An entry is required, a maximum size of two characters.

Description A full description of the owner. A maximum size of 30 characters.

An entry is required.

Type The type of asset controlled by the owner.

An entry is required, valid values are

| | |
|---|--------------|
| B | Both |
| P | Support/Post |
| S | Sign |

Lookups◆Traf Facils◆Signs Gen◆Rep. Reason

Maintain the Sign/Support Replacement Reason table

Replacement reasons used when an asset is replaced. Looked up from the second Sign screen and the Support/Post screen.

A full description of the data held in each field is as follows:

Asset Type The type of asset for which this Replacement Reason is valid.

An entry is required, valid values are

| | |
|---|--------------|
| P | Support/Post |
| S | Sign |

Replacement

Reason The two letter code for the Replacement Reason.

An entry is required, a maximum size of two characters.

Description A full description of the Replacement Reason. A maximum size of 30 characters.

An entry is required.

Lookups◆Traf Facils◆Signs Gen◆Maint Reasn

Maintain the Maintenance Reason table

Descriptions of maintenance reasons used when entering maintenance information against a sign. Looked up from the Sign maintenance window.

Lookups◆Traf Facils◆Signs Gen◆Bracket

Maintain the Sign/Support Bracket table

Descriptions of bracket types used in securing a sign to a Support or Post, and brackets used in securing Posts to Supports. Looked up from the Support/Post screen.

Lookups◆Traf Facils◆Signs Gen◆Support

Maintain the Support Attachment table

Descriptions of Support and Attachment types that signs can be fixed to. Looked up from the Support/Post screen.

Lookups◆Traf Facils◆Sign Type

Maintain the various lookup tables associated with the Sign Type

Lookups◆Traf Facils◆Signs Type◆Material

Maintain the Sign Material table

Descriptions of valid sign material types. Used when defining both the Legend and Background materials. Looked up from the second Sign screen.

Lookups◆Traf Facils◆Signs Type◆Colour

Maintain the Sign Colour table

Descriptions of valid sign colours. Used when defining both the Legend and Background colours. Looked up from the second Sign screen.

Lookups◆Traf Facils◆Signs Type◆Substrate

Maintain the Sign Substrate table

Descriptions of substrate types. Looked up from the second Sign screen.

Lookups◆Traf Facils◆Signs Type◆Sign Class

Maintain the Sign Classification table

Descriptions of sign classification types. Looked up from the first Sign screen.

Lookups◆Traf Facils◆Sign Type◆Sign Type

Maintain the Sign Type table

Descriptions and defaults of available sign types. Looked up from the first Sign screen.

```
SIGN TYPE:  Query  Add  Update  Delete  Merge  Next  Previous  List  ...
Update the current Sign Type
----- Sign Type Information -----
      Standard: T      Transit standard
      Class: H        Hazard Markings
      Code: H01-75
      Description: Chevron Board - Advisory speed 75km/h
      Group: S        Stand alone
Route Data Sheet: N      No, do not Include
      Obsolete: N
----- Sign Defaults ----- Screen 1/2
      Material                      Colour
Legend: UN Unknown              WH White
Background: UN Unknown          BK Black
Substrate: UN Unknown
      Width:          mm              Frame: N
      Height:         mm              Number of Posts: 1

41 of 364 Sign Types found.
```

```

SIGN TYPE:  ... Output Screen Help Exit
Change the current screen
----- Traffic Facility Information -----
      Owner: T   Transit standard
      Code: H01-75
      Description: Chevron Board - Advisory speed 75km/h
----- Legends ----- Screen 2/2
      Type: P   Permanent
      Legend: [>>> 75]

Reverse Side:

41 of 364 Sign Types found.

```

The sign type table contains the following fields:

| Field | Required |
|---------------------|-----------------|
| Owner | yes |
| Class | yes |
| Code | yes |
| Description | yes |
| Group | yes |
| Route Data Sheet | yes |
| Obsolete | yes |
| Legend Material | optional |
| Legend Colour | optional |
| Background Material | optional |
| Background Colour | optional |
| Substrate | optional |
| Width | optional |
| Height | optional |
| Frame | optional |

A full description of the data held in each field is as follows:

Owner The owner of the description shown on the sign. All Transit signs will have an owner of Transit, all signs added by either the council or the contractor will be flagged Non-standard. All Transit New Zealand signs will have restricted editing.

An entry is required, but will be handled by the computer.

Class The classification of the sign type.

The **F4:List&Pick** option is available

Code The code the sign type will be known as.
An entry is required, up to a maximum of 7 characters.

Description The description of the sign.
An entry is required, up to a maximum of 55 characters.

Group Can this sign standalone or must it be part of a group.
An entry is required, the **F4:List&Pick** option is available.

| | |
|---|-------------|
| B | Both |
| G | Group |
| S | Stand alone |

Route Data Sheet When running the Route Data Sheet, is this sign type required to be included.

An entry is required, the **F4:List&Pick** option is available.

| | |
|---|--------------------|
| I | Include |
| N | No, do not include |

Obsolete Allow the user to identify obsolete signs. This means that a replacement regime can be put in place based.

An entry is required, the **F4:List&Pick** option is available.

| | |
|---|----------------|
| F | Fazing out |
| N | Not applicable |
| O | Obsolete sign |

Legend Material The material that the legend is written in.

An entry is optional, all valid materials are available using the **F1:Quick-query** and **F4:List&Pick** options.

Legend Colour The colour that the legend is written in.

An entry is optional, all valid colours are available using the **F1:Quick-query** and **F4:List&Pick** options.

Background Material The material that makes up the background of the current sign.

An entry is optional, all valid materials are available using the **F1:Quick-query** and **F4:List&Pick** options.

Background Colour The colour of the background is written in. The background colour must be different to the Legend colour.

An entry is optional, all valid colours are available using the **F1:Quick-query** and **F4:List&Pick** options.

Substrate The substrate that makes up the current sign.

An entry is required, all valid substrates are available using the **F1:Quick-query** and **F4:List&Pick** options.

Width The width of the sign in millimetres (mm).

An entry is optional.

Height The height of the sign in millimetres (mm).

An entry is optional.

Frame Is the sign framed or not.

An entry is required, the **F4:List&Pick** option is available.

| | |
|---|--------------------|
| F | The sign is framed |
| N | Not framed |
| U | Unknown |

Lookups◆Traf Facils◆Sign Type◆Sign Group

Maintain the Sign Grouping table

Descriptions of sign groups and the sign types that make up each group. Looked up from the first Sign screen.

Lookups◆Traf Facils◆Sign Post

Maintain the various lookup tables associated with Posts

Lookups◆Traf Facils◆Sign Post◆Material

Maintain the Post Material table

Descriptions of valid post material types. Looked up from the Support/Post screen.

Lookups◆Traf Facils◆Sign Post◆Shape

Maintain the Post Shape table

Descriptions of post shapes. Looked up from the Support/Post screen.

Lookups◆Traf Facils◆Sign Post◆Make/Model

Maintain the Post Make and Model tables

The descriptions of the various post manufacturers and within each manufacturer the different models available and their descriptions. Looked up from the Support/Post window.

```
POST MAKE:  Query  Add  Update  Delete  Merge  F1-Model  Next  Previous  ...
Maintain the Model information

----- Post Make -----

          Make: TT

      Description: Thompson and Thomas

      Model      Description
      TF         Fibreglass bendable C2
      T7         Fibreglass bendable C7

8 Post Make found.
```

The screen displays the make of the Post and a description, listed below this information are the various models found available for this make. To alter or add information about models select the **F1-Models** option from the ring menu. The output option produces a list of Post Makes with the models listed below each.

Lookups◆Traf Facils◆Sign Post◆Mount

Maintain the Post Mount table

Descriptions of post mounts. Looked up from the Support/Post screen.

Lookups◆Traf Facils◆Sign Post◆Plant Type

Maintain the Post Plant Type table

Descriptions of the ways Posts can be planted in the ground. Looked up from the Support/Post screen.

Lookups◆Traf Facils◆Sign Post◆Ground Type

Maintain the Post Ground Type table

Descriptions of the various ground types a Post can be situated in. Looked up from the Support/Post screen.

Lookups◆Traf Facils◆Sign Post◆Joint Type

Maintain the Post Joint Type table

Descriptions of the joint types that a Post can use. Looked up from the Support/Post screen.

Lookups◆Traf Facils◆Sign Post◆Post Type

Maintain the Post Type table

Descriptions and profiles of post types. This table should be set up last if profiles are to be used. Each Post Type can have a number of different profiles but all defaults must have been previously defined. Looked up from the Support/Post screen.

Lookups◆Traf Facils◆Railings

Maintain the various lookup tables associated with Railings

Lookups◆Traf Facils◆Railings◆Attachments

Maintain the Railings Attachments table

Descriptions of the attachments that can be used on a railing. Looked up from the Railings screen.

Lookups◆Traf Facils◆Railings◆Colour

Maintain the Railings Colours table

Descriptions of the colours for railing. Looked up from the Railings screen.

Lookups◆Traf Facils◆Railings◆Ground fix

Maintain the Railings Ground Fixture table

Descriptions of the types of ground fixtures used in erecting railings. Looked up from the Railings screen.

Lookups◆Traf Facils◆Railings◆Make

Maintain the Railings Manufacturers table

Descriptions of the types of railing manufacturers. Looked up from the Railings screen.

Lookups◆Traf Facils◆Railings◆Material

Maintain the Railings Material table

Descriptions of the railing materials. Looked up from the Railings screen.

Lookups◆Traf Facils◆Railings◆Type

Maintain the Railings Type table

Descriptions of the railing types. Looked up from the Railings screen.

Lookups◆Traf Facils◆Markings

Maintain the various lookup tables associated with Markings

Lookups◆Traf Facils◆Markings◆Material

Maintain the Markings Material table

Descriptions of the different materials that can be used for a marking. Looked up from the Markings screen.

Lookups◆Traf Facils◆Markings◆Attachments

Maintain the Markings Attachments table

Descriptions of the attachments that can be applied to a marking. Looked up from the Markings screen.

Lookups◆Traf Facils◆Markings◆Colour

Maintain the Markings Colours table

Descriptions of the colours used for markings. Looked up from the Markings screen.

Lookups◆Traf Facils◆Markings◆Paint Apply

Maintain the Paint Application Type table

Descriptions of the paint applications types used in markings. Looked up from the Markings screen.

Lookups◆Traf Facils◆Markings◆Paint Make

Maintain the Paint Manufacturers table

Descriptions of the paint manufacturers. Looked up from the Markings screen. From here select **F1-Brands** to access the Brand information held against each manufacturer.

Lookups◆Traf Facils◆Markings◆Type

Maintain the Markings Type table

Descriptions of the marking types. Looked up from the Markings screen.

Lookups◆Roughness

Maintain the Roughometer Event Code table

The codes and descriptions of the events recorded during a roughometer survey, looked up by the Roughness Screen.

```
ROUGHOMETER EVENT CODE:  Query  Add  Update  Delete  Next  Previous  ...
Query the Roughometer Event Code table

----- Roughometer Event -----

                Code: A

                Description: Post-Survey Added value

                Treatment Include: I Include

1 of 16 Roughometer Event Codes found.
```

Specific event codes can now be excluded when calculating the average roughness in the RAMM for Windows Treatment Selection process. The user may change the predetermined flags to include or exclude event codes as required. The default list of event codes to be excluded is

| Event code | Description |
|------------|-----------------------------------|
| B | BRIDGE Abutment end (Both) |
| D | Detour route |
| G | GRID (e.g. Cattle Stop) |
| H | Speed humps |
| W | WORKS (Road works, marking, etc.) |
| X | Railway Crossing |
| Z | Raised zebra crossing |

Lookups◆Features

Maintain the Feature Type table

The codes and descriptions of any features to be found in the road network. These codes are looked up by the Feature Screen.

Lookups◆Minor Struc

Maintain the various Lookup tables used for Minor Structure maintenance.

Lookups◆Minor Struc◆Type/Sub

Maintain the Type and Subtype table

The codes and descriptions of the minor structure type and subtypes, looked up by the Minor Structure Screen. The columns Width, Height and Clearance refer to the information held in these fields in the minor_structures table as to whether a value is Mandatory or Optional.

```
MINOR STRUCTURE TYPE: ... Next Previous List Output Help Exit
Display the next Minor Structure Type in the current list

----- Minor Structure Type -----

          Type: OBR
Description: Overbridge

          Width: O Optional
          Height: O Optional
          Clearance: M Mandatory

Sub Type  Description
PED       Pedestrian
RAIL      Railway
STOCK     Stock
VEH       Vehicle

3 of 7 Minor Structure Types found.
```

Lookups◆Minor Struc◆Material

Maintain the Material Type table

The codes and descriptions of the minor structures material types, looked up by the Minor Structures Screen.

Treatment

Pavement Treatment Selection Programs

T.S.F.

Treatment Selection for Thin Surfaced Pavements

This document describes what the user must do to run the treatment selection program and explains the results. It does not attempt to describe the various analyses made by the program. The theory behind the program design and the technical notes explaining the analyses and calculations carried out are contained in the treatment selection workshop material.

DATA REQUIREMENTS

In order to run the treatment selection program the tables shown below must be entered. Some of the fields listed are not used in the treatment selection program but these fields have screen entry requirements where it is considered that they are essential for other statistical or management reports. A detailed description of the data required for these fields is contained earlier in this Manual.

(a) **Road Names Table**

State Highways:
Road Number
Road Name
Roads District
Local Authority Roads:
Road Name
Road Number

(b) **Road Sections (Carriageway) Table**

Road Number
Start Displacement For Road Section
End Displacement For Road Section
Class
Urban/Rural Indicator
Maintenance Category
Carriageway Length
Carriageway Width
Irregular Width Indicator
Owner

(c) **Traffic Table**

Road Number
Start Displacement For Road Section
Date
Status (Must be defined as E)
Estimate of AADT

(d) **Shoulders Table**

Road Number
Start Displacement For Road Section
LHS and RHS Shoulder Start Displacements
LHS and RHS Shoulder End Displacements
LHS and RHS Shoulder Lengths
LHS and RHS Shoulder Widths
LHS and RHS Shoulder Materials

(e) **Surface Water Channels Table**

Road Number
Start Displacement For Road Section

LHS and RHS Surface Water Channels Start Displacements
LHS and RHS Surface Water Channels End Displacements
LHS and RHS Surface Water Channels Lengths
LHS and RHS Surface Water Channels Distance To Surfacing
LHS and RHS Surface
Water Channels Type

(f) **Carriageway Surfacing Table**

Road Number
Start Displacement For Surfacing
End Displacement For Surfacing
Surfacing Date
Life Cycle
Width
Material
Depth of Material
Binder Type

(f) **Top Surfacing Table**

After the data required for the carriageway surfacings table has been entered the utility program "**Update Table**" needs to be run. This utility is located in The Misc. section of the RAMM menu and the instructions on how to run the program are contained in the Miscellaneous chapter of this manual. This utility program determines which surfacings are currently on the top of the pavement and stores this information in the top surfacings table.

(h) **Carriageway Roughness Table**

Road Number
Start Displacement For Road Section
Date of Roughness Measurement
Displacement of Roughness Measurement
Side of Carriageway
Roughness Value (NAASRA)

(i) **Rating Table**

Road Number
Start Displacement For Road Section
Start Displacement For Rating Section
End Displacement For Rating Section
Start Displacement For Inspection Length
End Displacement For Inspection Length
Rating Date
LHS & RHS Surfaced Surface Water Channels - Broken
LHS & RHS Surfaced Surface Water Channels - High Lip
LHS & RHS Surfaced Surface Water Channels - Broken Surf.
LHS & RHS Surfaced Surface Water Channels - Blocked
LHS & RHS Surfaced Surface Water Channels - Uphill Grade
LHS & RHS Earth Surface Water Channels - Blocked
LHS & RHS Earth Surface Water Channels - Inadequate
LHS & RHS Earth Surface Water Channels - Ineffective Sh.
Carriageway - Number of Traffic Lanes
Carriageway - Rutting
Carriageway - Shoving
Carriageway - Scabbing
Carriageway - Flushing
Carriageway - Alligator Cracks
Carriageway - Longitudinal & Transverse Cracks
Carriageway - Joint Cracks
Carriageway - Pothole
Carriageway - Pothole patches
Carriageway - Edge Break
Carriageway - Edge Break Patches

(j) **Thin Surfaced Flexible (TSF) Unit Costs Table:**

Date

Cost Set
 Description
 Comments
 Earthworks
 Granular Basecourse
 First Coat Seal
 Rural Reseal
 Urban Reseal
 Urban Smoothing
 Urban Strengthening
 Earth Surface Water Channels - Construct
 Earth Surface Water Channels - Clean
 Earth Shoulder - Chip
 Surfaced Surface Water Channels - Fill Depression at Channel Lip
 Surfaced Surface Water Channels - Patch Pavement at Channel Lip
 Surfaced Surface Water Channels (Concrete) - Replace Channel
 Surfaced Surface Water Channels - Clean
 Surfaced Surface Water Channels (Asphaltic Conc.) - Repair
 Digout Repairs
 Rut Filling
 Crack Sealing
 Pot Hole Repair
 Flushing Repair
 Edge Break Repair
 Scabbing Repair

DECISION FACTORS

When "Treatment", then "TSF", is first selected on the RAMM menu a screen is produced (see figure 1), which requires the user to enter certain decision factors before anything else can proceed. The decision factors required, and the use made of them in the program is as follows:

B/C (Benefit/Cost) Ratio This is the benefit cost ratio above which you require the program to report viable Shape Correction Treatments. The program calculates a B/C ratio for carrying out shape correction treatments (SCT), both smoothing and strengthening, for all rating sections. The B/C ratio set determines the minimum ratio high enough for the rating section to be reported for SCT.

It would be appropriate to set this reasonably low initially (say 1.0) to ascertain how much SCT may be required over the road network. It can be changed later to give a listing more consistent with expectations or budget restraints as appropriate.

```

TREATMENT:  Query Next Previous Calculate-treatment Update ...
Display previous rating
ROAD SECTION:      [ 25]      Road Name:[WAITAWHETA RD      ]
  Start Displacement:[ 4990]m Start Name:[MCLEANS RD      ]
  End Displacement:[ 6080]m End Name:[BRIDGE      ]
  Area:[WAITAWHETA  ] Maint Cat.: [T2] Urban/Rural:[R] Unit Cost Set:[ 2]
RATING SECTION:[ 91]
  Start Disp:[ 5490] Inspection Start Disp:[ 5490] Date:[10May89 ]
  End Disp:[ 6080] Inspection End Disp:[ 5540]
                        Decision Factors
B/C Ratio:[ 0.1] Global SCT Roughness (Urb): [ 45] (Rur): [ 55] CCI date:[31Mar86]
                        Intermediate Values
                        No Area Reseal Smoothing Strength. Other
Construction [ $7871] [ $41029] [ $59997] Edge Widen [ $1729]
Gen. Maint [ $496] [ $496] [ $0] [ $0] If Delay [ $0]
  
```

| | | | | | | | | | | | | | |
|--|-----------------------|---------|------|-----------------|--------|----------|--------------------|----------|-----------------------|------|---------------|---|------|
| P.V. Maint | [| \$8601] | [| \$0] | [| \$10950] | [| \$10950] | Edge Rep. | [| \$496] | | |
| Drainage | [| \$700] | [| \$1080] | [| \$0] | | | | | | | |
| | Target SCT Roughness: | [| 55] | Seal Need Ind.: | [| N] | Target Edge Width: | [| 6.5] | | | | |
| | Recommended Treatment | | | | | | - | [| General Maintenance] | | | | |
| Priority Treatment | General | | | DRAINAGE | | | | | EDGE WIDENING | | | | |
| Indicator Cost | Cost | | | Option | Cost | | | | Option | Cost | | | |
| [| 0.0] | [| \$0] | [| \$496] | [| Fix Part] | [| \$700] | [| Keep at 5.8] | [| \$0] |
| Max rough indicates partial smoothing, B/C = 0.1 | | | | | | | | | | | | | |

Figure 1 - Treatment Selection Screen

**Target Roughness
Values For Shape
Correction Treatments**

These are the average values that can be expected after SCT work has been carried out in the rural and urban situations. They should accurately reflect the actual values obtained from roughness testing of the last seasons SCT work.

After these values have been keyed press the "Escape" key to have the values entered into the program.

If the decision factors need to be altered select "**Decision-factor**" on the treatment selection screen which will firstly bring up a window which warns that the decision factors apply to the whole road network and if altered will cause the re-calculation of all maintenance treatments. This will take some considerable time for a larger network and therefore it is possible to select either "Yes" to proceed, "No" if you wish to delay the re-calculation process until a more appropriate time, or "CCI" if you wish to adjust the cost to a particular date's dollar values. For a further explanation see the section on the "CCI" option under 'Calculation of Recommended Treatments' further on in this chapter. If "Yes" is selected the cursor moves to the decision factor fields and all alterations can be keyed in. By pressing the "Escape" key the new values will be entered and the program will immediately start the re-calculation of the maintenance treatment selection process.

CALCULATION OF RECOMMENDED TREATMENTS

Select "**Calculate-treatments**" on the menu of the treatment selection screen. This selection will then give the options of "**CCI**", "**All**", "**Query**" and "**Exit**".

The selection of the CCI option will bring up a window which requests the user to enter a date to which all costs are adjusted and reported with the use of the construction cost indices in the CCI table. The program uses this date to select the CCI with a date nearest and prior to the date selected by the user. The date associated with the CCI used by the program in its calculations is displayed on the treatment selection screen near the decision factors (see figure 1). The date set for the CCI becomes the default value until it is reset. If the user does set the CCI date for the very first run of the program, the value used will be the most recent one recorded in the CCI table.

If the "**All**" option is selected this will begin the calculation of maintenance treatments for every rating section in the road network. The time required to do the calculation for each rating section

depends on the size of the random access memory the computer has and on the type and speed of the processor. The range of times observed varies from 3 seconds to 2 minutes. If the "**All**" option is selected the calculation of maintenance treatments for every rating section in the road network could take a considerable time and may slow down the performance of the computer for other users. It may therefore be advisable to run this total calculation during a period of low computer usage.

To calculate the maintenance treatments for only a road or set of rating sections then select "**Query**". This selection will allow a query to be made on Local Area, Sub-Area, Road Number, Road or Rating Section. The rating sections on the list produced in the query can all have the maintenance treatment calculation carried out with the selection of "**Query-all**" on the menu. Alternatively, only a select group of roads or rating sections need have the calculation carried out with the use of the "**Pick-and-point**" option on the menu.

The "**Pick-and-point**" option requires you to type a "Y" beside the rating sections chosen and then "Escape" to execute the maintenance treatment calculation.

The costs that are calculated during the execution of the program are displayed on the screen along with messages in regard to the logic options being used by the program during the processing of each rating section. Warnings in regard to missing or invalid data found in the tables accessed by the program are also displayed.

A description of how to obtain reports of the results of the treatment selection calculation, and of the messages displayed during the calculation, is given in the "Reports" section of this manual.

The treatment selection screen displays "intermediate values" for the cost calculations. These values are termed intermediate because they can be altered to better reflect site conditions after a technical evaluation of the results has been completed.

An explanation of fields displayed on the treatment selection screen:

The following is an explanation of the fields displayed and the terms used on the "**Intermediate Values**" and "**Treatment Selection**" areas of the treatment selection screen. The fields on the top section of the screen will not be discussed as they display only header data to identify the road section, rating section and inspection length.

Area Treatment and Maintenance Costs:

The values shown on this part of the screen in figure 1 are for a rating section which the program has recommended for a resurfacing in the next budget year. An explanation of each field and the terms used is as follows:

No Area

This refers to continued general maintenance with no area treatment such as a resurfacing or shape correction treatment.

Reseal

This refers to a resurfacing treatment with a chip seal but may a thin layer of asphaltic material where this type of treatment is justified. (eg. Thin AC, friction course, open graded emulsion mix etc.).

Smoothing

This refers to a smoothing treatment where some strengthening of the pavement may occur but is not considered significant. Treatments may include the following:

- Urban** A rip and reshape or a thin overlay of asphaltic concrete, friction course or open graded emulsion mix. Granular overlays are not usually considered feasible due to limitations imposed on levels by kerb and channel.
- Rural** Rip and reshape, thin granular overlay (70mm over the high spots), thin overlay of asphaltic concrete, friction course or open graded emulsion mix.

Strength

This refers to a treatment which significantly strengthens the pavement as well as smoothing it. Treatments may be the following:

- Urban** Stabilising existing basecourse material, thick AC overlay or replacement of pavement material.
- Rural** Stabilising existing pavement material with or without the addition of more granular material, thick granular overlay or thick AC overlay. Thick AC overlay is not usually an economical option in the rural situation.

For each of the area treatments described above (No Area, Reseal, Smoothing, Strength) the costs are calculated under the following headings.

- Construction** This refers to the cost of carrying out an area treatment such as resurfacing, smoothing, etc. For No Area the Construction cost is therefore not applicable.
- General Maint** This refers to the estimated cost of carrying out all the preliminary maintenance repairs for each treatment option based on the condition survey results.
- P V Maint** This is the estimated present value (discounted at 10%), of future resurfacings and general maintenance activities for each of the four treatment options.

If general maintenance is the recommended treatment the present value of future maintenance is not calculated for the resurfacing options, as this option is not considered applicable. Conversely if a resurfacing option is the recommended treatment the present value of future maintenance is not calculated for the general maintenance option.

The present value of future maintenance is always calculated for the smoothing and strengthening treatments because it is considered that these options may always be economically viable, irrespective of the structural condition of the pavement. This is due to possibility of substantial user benefits accruing if there is to be a significant reduction in road roughness from a shape correction treatment.

The treatment option with the lowest total value of construction cost, preliminary general maintenance cost, discounted maintenance costs and drainage cost is selected as the recommended treatment unless the benefit/cost ratio for one of the SCT options is above that which has been set by the user for the reporting of shape correction treatments. If the B/C is above this value the treatment selected will be the most economic of smoothing or strengthening.

Drainage The following is an explanation of possible components of the drainage and cost.

Surfaced Surface

Water Channels: If an area treatment is selected the estimated cost is to completely restore all the drainage to the correct standards. For the general maintenance option the estimated drainage cost is only to do any required minor maintenance and cleaning of the surface water channels.

Earth Surface

Water Channels: If an area treatment is selected the estimated cost is to properly form any inadequate channels, to clean any blocked channels and to fix any defective shoulders so that water can drain to the channel. For the general maintenance option the estimated drainage cost is to clean the total length of blocked and inadequate channel and fix any defective shoulders. The program assumes that inadequate channels will also be blocked.

Miscellaneous Costs

The values shown on this part of the screen in figure 1 are for a rating section which the program has recommended for a resurfacing in the next budget year, with no seal widening. An explanation of each field displayed and of the terms used is as follows:

Edge Widen This refers to the cost of widening the existing pavement out to a theoretically determined width based on traffic volume. If the present pavement is at this width or greater no value is calculated.

The target values for road widths are shown in the following table.

| | (vehicles/day) | (m) | (m) |
|----|----------------|-----|------|
| T1 | <100 | 5.0 | 0.75 |
| T2 | 100-500 | 6.5 | 0.00 |
| T3 | 500-2000 | 7.5 | 0.00 |

| | | | |
|----|------------|-----|------|
| T4 | 2000-10000 | 8.5 | 0.00 |
| T5 | >10000 | 9.0 | 0.00 |

If Delay This refers to the estimated cost of EXTRA repairs which will need to be carried out if resurfacing is delayed for one year when the recommended treatment is to seal in the next budget year. The assumption is made that if all routine maintenance repairs are carried out and then the road left for another year before resurfacing, almost the same amount routine maintenance work will need to be done again the following year. The cost of doing this second lot of work is considered to be the cost of the delay in resurfacing.

Edge Repair This is the estimated cost to repair the current amount of edge break.

Repair Costs The calculated costs for carrying out repairs for each individual pavement distress type and drainage deficiency can be displayed by selecting the "**Repair_costs**" option on the menu of the treatment selection screen. The calculation of these costs and the way in which they are aggregated to estimate the cost of the preliminary repairs required for each area treatment option is fully detailed in the Treatment Selection workshop notes.

Treatment Selection

This section of the screen gives information in regard to the criteria used for the selection of the maintenance treatments and their cost. The values shown on this part of the screen in figure 1 are for a rating section which the program has recommended for a resurfacing in the next budget year, with no seal widening. An explanation of each field displayed and of the terms used is as follows:

Target Overlay

Roughness This refers to the roughness value normally achieved in the local area after a shape correction treatment has been carried out. The selection from the decision criteria input by the user further up the screen depends on whether the rating section is in an urban or rural location.

(b) Seal Need

Indicator The indicators can be 1, 2, F or N and indicate the following resurfacing needs.

- 1 Resurface in the budget year for which the maintenance programme is being determined. The condition survey should be carried out in the

July - August period so the budget year will be the next financial year.

2 Resurfacing is likely to be required in the year following the programme (next financial) year.

F The surfacing is sound but exhibits flushing characteristics and should be checked for a treatment to correct the macrotexture.

N The likely time for resurfacing is more than 2 seasons away but is otherwise unknown.

Target Edge Width This is the theoretical edge width determined from table 2 or the present width of the pavement, whichever is greater. The calculation for the cost to widen the seal is based on this width.

(d) Recommended

Treatment This is the treatment selected from all the criteria given above. The list of possible options are:

- Gen. Maintenance** No area treatment required.
- Reseal in Budget** Resurface in next financial year.
- Reseal Next Time** Resurface year after next financial year.
- Reseal (Flushed)** Macrotexture correction required.
- Resurf. After Rating** Section has been resurfaced after rating survey
- Smoothing Overlay** Shape correction without strengthening.
- Strengthening** Shape correction with strengthening.

Priority Indicator For the selection of General Maint, Reseal Next Time or Reseal (Flushed), this indicator is not used and is set to 0.

For Reseal in Budget this indicator is the first year rate of return (FYRR) obtained by the saving of the extra repairs which would have to be carried out if the reseal was delayed one year. The FYRR is expressed as a percentage of the cost of the reseal. If the total amount of high priority resurfacing work (seal need = 1) is too great to eliminate in one year this indicator will allow the user to drop from the programme those sections of road (requiring resurfacing), which will cost the least in "extra" maintenance due to the delay caused by budget restraint.

For Smoothing or Strengthening this indicator is the calculated Benefit/Cost Ratio for the proposed work and again allows the user to prioritise the shape correction programme to optimise the returns from this type of maintenance work. The aim should be to

give the maximum return to the road user for the least cost to the road controlling authority.

Treatment Cost The estimated cost of the selected area treatment.

General Maintenance

Cost The estimated cost of preliminary general maintenance repairs required prior to the selected treatment, for the rating section.

Drainage Option The option selected for the drainage. These options are as follows:

Fix Part

Earth SWCs Clean any blocked or inadequate channel and fix any defective shoulder so that water can drain to the channel.

Surfaced SWCs Clean blocked channel, fill depressed carriageway where channel lip is high, patch broken carriageway surface alongside channel lip and patch any broken areas of asphalt or sealed channels.

Fix All

Earth SWCs Clean blocked channel, fix any defective shoulder and form a channel to the appropriate standard where the channel is inadequate.

Surfaced SWCs Replace broken channel or channel with an uphill grade, fill depressed carriageway where channel lip is high, patch any broken surface alongside channel lip and clean any blocked channel.

NOTE In the case of a SCT being selected the cost of forming earth channels is part of the overlay cost and the cost for surfaced surface water channels will only be costs associated with the channel because all pavement deficiencies alongside the channel will be fixed as part of the SCT work.

Drainage Cost The estimated cost of the drainage option chosen.

Edge Widening Option The carriageway width indicated as being the most appropriate. If this is less than or equal to the existing carriageway width, the message will be to keep the carriageway at the existing width.

Estimated Cost The estimated cost of the edge widening if appropriate.

FIELD VERIFICATION

It is essential that users of this system understand that the treatments calculated are the result of the analysis of statistical data only and are NOT a detailed, project level, engineering assessment. The surface condition of the carriageway is sampled for a minimum of 10% of the total length and this limitation combined with the many assumptions made in the calculation procedure requires that field verification of the results produced is carried out by suitably trained technical staff. Where a major treatment is required a thorough engineering investigation and design should be carried out.

The rating survey carried out for this system is not designed to be so specific that it can be used to identify and schedule routine maintenance work and more regular inspections should be carried out for this purpose by staff responsible for supervising routine maintenance activities. Rating sections reported as requiring only General Maintenance, therefore, need not be investigated unless results from routine maintenance inspections or from a cost and resource use recording system indicate that the selected treatment is in error and a major maintenance treatment may be required.

All rating sections reported for an area maintenance treatment should be inspected, the reported treatment verified or a more appropriate treatment scheduled and then an accurate measure up carried out of the affected area. The need for the measure up is that the system reports are based on rating section lengths, whereas in reality the maintenance required may be needed for several rating sections or only part thereof. A typical example would be where one rating section is reported as requiring an area treatment but on inspection it is found that the treatment is required to extend back into the previous rating section and does not need to go the full length of the section reported. The previous rating section, however, may only have been reported for general maintenance because the first part of the pavement in that section was sound.

ALTERATION OF COSTS, DECISION FACTORS AND TREATMENTS

Where the field inspection shows the RAMM treatment selection to be inappropriate it may be because the site is unusual in some way. The costs and target SCT roughness specific to the site should be substituted for the RAMM calculated costs for that particular rating section. If necessary the seal need indicator may also be changed.

To make these changes, first use **"Query"** to find the rating section to be changed and then use **"Update"**. This will allow changes to be made for any of the cost or treatment selection fields on the screen. Pressing the "Escape" key will make the changes in the program and carry out a re-calculation for the rating section.

AMALGAMATION OF RATING SECTIONS INTO TREATMENT SECTIONS

Select **"Alter-Option"** on the treatment selection screen and then **"Query"** on the Alter-Option window. The query can be for a specific road or rating section or can be a general query on all roads by entering a * in the road name field and then executing the query. The general query lists the rating sections found in each road and movement from one road to the next is achieved with the use of the **"Next"** and **"Previous"** options. The **"First"** option returns to the first road found in the query.

The selection of the **"Update"** option on the Alter-Option window allows any of the start and end displacements or any of the treatments to be altered for the rating sections in the query list. When a section is required to have the treatment selection changed to become the same as the section before or after it the F1 and F2 keys may be used. The F1 key changes the treatment selection to the same as the rating section above where the cursor is and the F2 key changes the treatment to the same as the rating section below the cursor.

The escape key executes the changes and re-calculates the costs for the new treatment section lengths.

REPORT OF FINAL TREATMENT SECTIONS AND COST ESTIMATES

Reports are able to be accessed by the selection of "**Reports**" from the RAMM main menu and these reports give the outputs from the treatment selection program.

S.A.C.

Treatment Selection for Structural Asphaltic Surfacing

From a user viewpoint this program is very similar to the Thin Surfaced Flexible Treatment Selection program and again this section of the manual describes what the user must do to run the treatment selection program and explains the results. It does not attempt to describe the various analyses made by the program. The theory behind the program design and the technical notes explaining the analyses and calculations carried out are contained in the treatment selection workshop material.

DATA REQUIREMENTS

The data required to run this program is the same as for the Thin Surfaced Flexible Treatment Selection program with the exception of the unit costs table. The fields in this table are listed below and a detailed description of the data required for these fields is contained earlier in this Manual.

(a) Structural Asphaltic Concrete (SAC) Unit Costs Table:

Date
Cost Set
Description
Comments
Reconstruct
Mill and Replace
SAMI and Smoothing Overlay
SAM Seal Crack Fill
Crack Seal (Spray & chip)
Urban Reseal
Urban Smoothing Overlay
Earth Surface Water Channels - Construct
Earth Surface Water Channels - Clean
Earth Shoulder - Repair
Surfaced Surface Water Channels - Fill Depression at Channel Lip
Surfaced Surface Water Channels - Patch Pavement at Channel Lip
Surfaced Surface Water Channels (Concrete) - Replace Channel
Surfaced Surface Water Channels - Clean
Surfaced Surface Water Channels (Asphaltic Conc.) - Repair
Digout Repairs
Bandage and Crack Fill
Rut Filling
Scabbing Repair
Pot Hole Repair
Flushing Repair
Date Added

DECISION FACTORS

When "**Treatment**", then "SAC", is first selected on the RAMM menu a screen is produced (see figure 1), which requires the user to enter certain decision factors before anything else can proceed. The decision factors required, and the use made of them in the program is as follows:

B/C (Benefit/Cost) Ratio This is the benefit cost ratio above which you require the program to report viable Shape Correction Treatments. The program calculates a B/C ratio for carrying out shape correction treatments (SCT), both smoothing and strengthening, for all rating sections. The B/C ratio set

determines the minimum ratio high enough for the rating section to be reported for SCT.

It would be appropriate to set this reasonably low initially (say 2.0) to ascertain how much SCT may be required over the road network. It can be changed later to give a listing more consistent with expectations or budget restraints as appropriate.

```

TREATMENT:  Query Next Previous Calculate-treatment Update ...
Display the next rating
ROAD SECTION:  [ 3] Road Name:[WILSON RD ]
Start Displacement:[ 0]m Start Name:[BEACH RD ]
End Displacement:[ 164]m End Name:[BRIDGE ]
Area:[WAIHI ] Maint Cat.: [S1] Urban/Rural:[U] Unit Cost Set:[ 5]
RATING SECTION:[ 30]
Start Disp:[ 0]m Inspection Start Disp:[ 20]m Date:[10May89 ]
End Disp:[ 164]m Inspection End Disp:[ 70]m
Decision Factors
B/C Ratio:[ 0.1] Global SCT Roughness (Urb): [ 45] (Rur): [ 55] CCI date:[31Mar86]
Intermediate Values
Construction Gen. Maint P.V. Maint
Overlay [ $13382] [ $0] [Levelling Overlay ]
Alternative [ $0] [ $0] [ $1170] [General Maintenance ]

Drainage [ $10] [ $0] [ $10] Tgt SCT Rough.: [ 45]
Recommended Treatment
Treatment Option:[Levelling Overlay ] DRAINAGE
Priority Treatment Cost General Cost Option Cost
[ 1.2] [ $13382] [ $0] [Maintain ] [ $0]
There is no surface water channel data for this rating section

```

Figure 1 - SAC Treatment Selection Screen

**Target Roughness
Values For Shape
Correction Treatments**

These are the average values that can be expected after SCT work has been carried out in the rural and urban situations. They should accurately reflect the actual values obtained from roughness testing of the last seasons SCT work.

After these values have been keyed press the "Escape" key to have the values entered into the program.

If the decision factors need to be altered select "Decision-factor" on the treatment selection screen which will firstly bring up a window which warns that the decision factors apply to the whole road network and if altered will cause the re-calculation of all maintenance treatments. This will take some considerable time for a larger network and therefore it is possible to select either "Yes" to proceed or "No" if you wish to delay the re-calculation process until a more appropriate time, or "CCI" if you wish to adjust the cost to a particular dates dollar values. If "Yes" is selected the cursor moves to the decision factor fields and all alterations can be keyed in. By pressing the "Escape" key the new values will be entered and the program will immediately start the re-calculation of the maintenance treatment selection process.

CALCULATION OF RECOMMENDED TREATMENT

Select **Calculate-treatments** on the menu of the treatment selection screen. This selection will then give the options of **All**, **Query**, **CCI** and **Exit**.

The selection of the CCI option will bring up a window which requests the user to enter a date to which all costs are adjusted and reported with the use of the construction cost indices in the CCI table. The program uses this date to select the CCI with a date nearest and prior to the date selected by the user. The date associated with the CCI used by the program in its calculations is displayed on the treatment selection screen near the decision factors (see figure 1). The date set for the CCI becomes the default value until it is reset. If the user does set the CCI date for the very first run of the program, the value used will be the most recent one recorded in the CCI table.

If the **All** option is selected this will begin the calculation of maintenance treatments for every rating section in the road network. The time required to do the calculation for each rating section depends on the size of the random access memory the computer has and on the type and speed of the processor. The range of times observed varies from 3 seconds to 2 minutes. If the **All** option is selected the calculation of maintenance treatments for every rating section in the road network could take a considerable time and may slow down the performance of the computer for other users. It may therefore be advisable to run this total calculation during a period of low computer usage.

To calculate the maintenance treatments for only a road or set of rating sections then select **Query**. This selection will allow a query to be made on Road or Rating Section. The rating sections on the list produced in the query can all have the maintenance treatment calculation carried out with the selection of **Query-all** on the menu. Alternatively, only a select group of roads or rating sections need have the calculation carried out with the use of the **Pick-and-point** option on the menu.

The **Pick-and-point** option requires you to type a "Y" beside the rating sections chosen and then **Escape** to execute the maintenance treatment calculation.

The costs that are calculated during the execution of the program are displayed on the screen along with messages in regard to the logic options being used by the program during the processing of each rating section. Warnings in regard to missing or invalid data found in the tables accessed by the program are also displayed.

A description of how to obtain reports of the results of the treatment selection calculation, and of the messages displayed during the calculation, is given in the "Reports" section of this manual.

The treatment selection screen displays "intermediate values" for the cost calculations. These values are termed intermediate because they can be altered to better reflect site conditions after a technical evaluation of the results has been completed.

An explanation of fields displayed on the treatment selection screen:

The following is an explanation of the fields displayed and the terms used on the "Intermediate Values" and "Treatment Selection" areas of the treatment selection screen. The fields on the top section of the screen will not be discussed as they display only header data to identify the road section, rating section and inspection length.

Area Treatment and Maintenance Costs:

An explanation of each field and the terms used is as follows:

Overlay

This refers to the smoothing treatment chosen by the program as being the most appropriate based on the surface condition from the rating. The treatment chosen is displayed on the right hand side.

The options considered for a smoothing treatment are as follows:

- Reconstruction
- Mill and Replace
- Thin Overlay
- Thin Overlay + Stress Absorbing Membrane Overlay (SAMI)

Alternative

This refers the treatment chosen by the program as being the technically most appropriate. It is not restricted to a smoothing treatment as for overlay above. The treatment chosen is displayed on the right hand side.

The total options considered are as follows:

- Reconstruction
- Mill and Replace
- Thin Overlay
- Thin Overlay + Stress Absorbing Membrane Overlay (SAMI)
- Stress Absorbing Membrane reseal (SAM) - 1st Priority
- Stress Absorbing Membrane reseal (SAM) - 2nd Priority
- Conventional Reseal - 1st Priority
- Conventional Reseal - 2nd Priority
- Continued General Maintenance

Construction This refers to the cost of carrying out an area treatment. For General Maintenance the Construction cost is therefore zero.

General Maint This refers to the estimated cost of carrying out all the preliminary maintenance repairs for each treatment option based on the condition survey results.

P V Maint This is the estimated present value (discounted at 10%), of the difference in future major maintenance between the Overlay Option and the Alternative Option.

It is assumed that there will be no significant cost differences arising from future general maintenance. Differences in future maintenance costs arising from differing requirements for major rehabilitation are not possible to predict from the available information and are ignored on the assumption that the pavement will be in a sound condition after carrying out the chosen treatment. In all cases where a major treatment is recommended it will be necessary to carry out site investigations and a full engineering evaluation of the pavement.

Drainage The following is an explanation of possible components of the drainage and cost.

Surfaced Surface Water

Channels If an area treatment is selected the estimated cost is to completely restore all the drainage to the

correct standards (Fix All or Fix Overlay) . For the general maintenance option the estimated drainage cost is only to do any required minor maintenance and cleaning of the surface water channels (Fix).

Earth Surface Water Channels

If an area treatment is selected the estimated cost is to properly form any inadequate channels, to clean any blocked channels and to fix any defective shoulders so that water can drain to the channel (Fix All or Fix Overlay). For the general maintenance option the estimated drainage cost is to clean the total length of blocked and inadequate channel and fix any defective shoulders (Fix). The program assumes that inadequate channels will also be blocked.

Repair Costs:

The calculated costs for carrying out repairs for each individual pavement distress type and drainage deficiency can be displayed by selecting the "Repair_costs" option on the menu of the treatment selection screen. The calculation of these costs and the way in which they are aggregated to estimate the cost of the preliminary repairs required for each area treatment option is fully detailed in the Treatment Selection workshop notes.

Treatment Selection:

This section of the screen gives information in regard to the criteria used for the selection of the maintenance treatments and their cost. An explanation of each field displayed and of the terms used is as follows:

Target SCT Roughness This refers to the roughness value normally achieved in the local area after a shape correction treatment has been carried out. The selection from the decision criteria input by the user further up the screen depends on whether the rating section is in an urban or rural location.

Recommended Treatment This is the treatment selected from all the criteria given above. The list of possible options are:

Reconstruction Reconstruct pavement or place a structural AC Overlay

Mill and Replace Mill out layer of unstable mix and replace AC.

Thin Overlay Place non-structural layer of FC, OGEM or AC.

Thin Overlay + Stress Absorbing Membrane Overlay (SAMI)

Non-structural overlay plus a stress absorbing membrane interlayer.

Stress Absorbing Membrane reseal (SAM)

- 1st Priority High priority two coat seal with heavily polymerised binder.

Stress Absorbing Membrane reseal (SAM)

- 2nd Priority Lower priority two coat seal with heavily polymerised binder.

Conventional Reseal - 1st

Priority High priority conventional chip seal

Conventional Reseal - 2nd

Priority Lower priority conventional chip seal

Continued General Maintenance

No area treatment required.

Priority Indicator For the selection of General Maint or a resurfacing treatment, this indicator is not used and is set to 0.

For a SCT (eg reconstruction or thin overlay) the calculated Benefit/Cost Ratio for the proposed work is used as the priority indicator. Again, this allows the user to prioritise the shape correction programme to optimise the returns from this type of maintenance work. The aim should be to give the maximum return to the road user for the least cost to the road controlling authority.

Treatment Cost The estimated cost of the selected area treatment.

General Maintenance Cost The estimated cost of preliminary general maintenance repairs required prior to the selected treatment, for the rating section.

Drainage Option The option selected for the drainage. These options are as follows:

Fix Part

Earth SWCs Displayed as Drainage - Fix. Clean any blocked or inadequate channel and fix any defective shoulder so that water can drain to the channel.

Surfaced SWCs Clean blocked channel, fill depressed carriageway where channel lip is high, patch broken carriageway surface alongside channel lip and patch any broken areas of asphalt or sealed channels.

Fix All

Earth SWCs Displayed as Drainage - Fix Overlay or Fix All. Clean blocked channel, fix any defective shoulder and form a channel to the appropriate standard where the channel is inadequate.

Surfaced SWC's Replace broken channel or channel with an uphill grade, fill depressed carriageway where channel lip is high, patch any broken surface alongside channel lip and clean any blocked channel.

NOTE In the case of a SCT being selected the cost of forming earth channels is part of the overlay cost and the cost for surfaced surface water channels will only be costs associated with the channel because all pavement deficiencies alongside the channel will be fixed as part of the SCT work.

Drainage Cost The estimated cost of the drainage option chosen.

FIELD VERIFICATION

It is essential that users of this system understand that the treatments calculated are the result of the analysis of statistical data only and are NOT a detailed, project level, engineering assessment. The surface condition of the carriageway is sampled for a minimum of 10% of the total length and this limitation combined with the many assumptions made in the calculation procedure requires that field verification of the results produced is carried out by suitably trained technical staff. Where a major treatment is required a thorough engineering investigation and design should be carried out.

The rating survey carried out for this system is not designed to be so specific that it can be used to identify and schedule routine maintenance work and more regular inspections should be carried out for this purpose by staff responsible for supervising routine maintenance activities. Rating sections reported as requiring only General Maintenance, therefore, need not be investigated unless results from routine maintenance inspections or from a cost and resource use recording system indicate that the selected treatment is in error and a major maintenance treatment may be required.

All rating sections reported for an area maintenance treatment should be inspected, the reported treatment verified or a more appropriate treatment scheduled and then an accurate measure up carried out of the affected area. The need for the measure up is that the system reports are based on rating section lengths, whereas in reality the maintenance required may be needed for several rating sections or only part thereof. A typical example would be where one rating section is reported as requiring an area treatment but on inspection it is found that the treatment is required to extend back into the previous rating section and does not need to go the full length of the section reported. The previous rating section, however, may only have been reported for general maintenance because the first part of the pavement in that section was sound.

ALTERATION OF COSTS, DECISION FACTORS AND TREATMENTS

Where the field inspection shows the RAMM treatment selection to be inappropriate it may be because the site is unusual in some way. The costs and target SCT roughness specific to the site should be substituted for the RAMM calculated costs for that particular rating section. If necessary the seal need indicator may also be changed.

To make these changes, first use "Query" to find the rating section to be changed and then use "Update". This will allow changes to be made for any of the cost or treatment selection fields on the screen. Pressing the "Escape" key will make the changes in the program and carry out a re-calculation for the rating section.

AMALGAMATION OF RATING SECTIONS INTO TREATMENT SECTIONS

Select "Alter-Option" on the treatment selection screen and then "Query" on the Alter-Option window. The query can be for a specific road or rating section or can be a general query on all roads by entering a * in the road name field and then executing the query. The general query lists the rating sections found in each road and movement from one road to the next is achieved with the use of the "next" and "previous" options. The "First" option returns to the first road found in the query.

The selection of the "Update" option on the Alter-Option window allows any of the start and end displacements or any of the treatments to be altered for the rating sections in the query list. When a section is required to have the treatment selection changed to become the same as the section before or after it the F1 and F2 keys may be used. The F1 key changes the treatment selection to the same as the rating section above where the cursor is and the F2 key

changes the treatment to the same as the rating section below the cursor.

The escape key executes the changes and re-calculates the costs for the new treatment section lengths.

REPORT OF FINAL TREATMENT SECTIONS AND COST ESTIMATES

Reports are able to be accessed by the selection of "Reports" from the RAMM main menu and at present three reports allow the reporting of the calculated treatments and program messages.

The first report lists rating sections along each road and the calculated maintenance treatment for each, with associated preliminary repairs and costs. this report has been designed to be used after the first run of the treatment selection program so that each site reported for an area treatment can be inspected in on-road order.

The second report lists the final "treatment sections", sorted by treatment type and is designed to be the basis for next years maintenance programme.

The third report lists all the messages generated during the running of the treatment selection program and is designed to inform the user of any missing data and any unusual circumstances detected by the program.

Maintenance Costs

Update the Maintenance Cost tables

This menu selection is used when the information in the Maintenance Cost tables is to be amended.

Instructions on how to navigate through the menu and how to select any of the various options are contained in the section relating to the "Fanfare Menu".

The menu will initially look as follows:

| | |
|---|-------------|
| 1 | Maintenance |
| 2 | Enquiry |
| 3 | Reports |
| 4 | Graphs |
| 5 | Treatment |
| 6 | Maint. Cost |
| 7 | Misc. |

Select "Maint. Cost" on the first column of the menu. This will cause the second column on the menu to fan out and give the selection of screens available to access the database tables for adding or amending data, (table maintenance).

The menu will look as follows:

| | | | |
|---|-------------|---|------------|
| 1 | Maintenance | 1 | Batches |
| 2 | Enquiry | 2 | Rule Sets |
| 3 | Reports | 3 | Cost Group |
| 4 | Graphs | 4 | Activity |
| 5 | Treatment | 5 | Fault type |
| 6 | Maint. Cost | | |
| 7 | Misc. | | |

Batches

Maintenance, importing, conversion of Maintenance Cost Batches

This option allows the user to create batches of transactions, import transactions, and convert those transactions into RAMM maintenance cost transactions.

The user must firstly "Add" the batch details to the batch header, the most important detail being which Rule Set to use for the conversion process.

The user can either "Import" a prepared file from another system, or use the "F1-Source-trans" option to manually key transactions.

The "Import" process assumes that the load file is already on the users machine. During the import process a report may be produced outlining any changes the system has made to the data.

Alternatively, source transactions can be keyed directly by choosing the "F1-Source-trans" option. It is assumed however, that lookups for the source transactions are already in the database.

The "F1-Source-trans" option can be used to view and amend imported or keyed source transactions.

The next step is to "Convert" the imported source transactions to RAMM useable cost transactions using the specified Rule Set (a set of rules for converting transactions from a given source). The conversion process will fail if the conversion rules are incomplete.

The RAMM cost transactions created can be viewed using the "F2-RAMM-trans" at this stage.

The user is presented with the following screen :

```
BATCH HEADER: ... F1-Source-trans Next Previous List Output ...
Display the previous Batch header in the current list
----- Batch Header Information -----
      Batch ID: 16
      Rule Set: CM2000      Rules for converting CM2000
      SH Columns: N

      Method: N N/A          Imported:
      Status: N New         Converted:

      Notes:

      Filename:/tmp/cm2000_0196
      Delimiter:P Pipe (|)
              AUDIT                      ACTUAL
      Transactions:          Transactions:
      Total:                 Total:

4 of 6 Batch headers found.
```

Fields Contained In The Batch Header Table

| Field | Required |
|------------|----------|
| Batch ID | yes * |
| Rule Set | yes |
| SH Columns | yes |

| | | |
|---------------------|----------|---|
| Method | yes | * |
| Status | yes | * |
| Imported | yes | * |
| Converted | yes | * |
| Notes | optional | |
| Filename | optional | |
| Delimiter | optional | |
| Audit Transactions | yes | |
| Audit Total | yes | |
| Actual Transactions | yes | * |
| Actual Total | yes | * |

* = Set by the system.

A full description of the data held in each field is as follows:

Batch ID The number automatically generated by the program and allocated to the batch.

Rule Set The rule set identifier. e.g. CM2000. This can be entered directly or you can use **F4-List&Pick** to find the correct rule set.

SH Columns This field is only available for State Highway databases and indicates whether the import file has four extra columns (State Highway, Reference Station, Direction and On/Off Ramp) to locate the road rather than Road ID.
The following codes are allowed:

| | |
|---|---|
| N | Normal. This is the only type of batch for Local Authority databases and means that the import file contains no extra columns for State Highways. |
| S | State Highway format. If this is set then the import file should contain four extra fields than a Normal import file for determining the RAMM Road ID using SH,RS data. See the table in IMPORT PROCESS below. |

Method This field indicates the method by which this batch of transactions was created.
The following codes are allowed:

| | |
|---|---|
| N | N/A. ie. This batch has NOT been imported or keyed yet. |
| I | Imported |
| K | Keyed |
| B | Both. i.e. This batch was originally imported then changed by hand. |

Status This field indicates the current status of this batch.
The following codes are allowed:

| | |
|---|--|
| N | New. ie. This batch has NOT been Imported, Keyed or Converted. |
| U | Unconverted |
| C | Converted |

Notes General notes. Optional.

Filename The file name to be used when importing the source transactions. This is defaulted from the rule set table if one has been defined. Note that this field can only be changed if there are no source transactions for the current batch. This field is required only when importing transactions.

Delimiter The field separator to be used when importing the source transactions. This is defaulted from the rule set table if one has been defined. Note that this field can only be changed if there are no source transactions for the current batch. This field is required only when importing transactions. The following codes are allowed:

| | |
|---|-----------|
| C | Comma (,) |
| P | Pipe () |
| T | TAB |

Audit Transactions The number of transactions in the batch determined by the user. This is compared with the Actual Transactions number to verify that the batch imported successfully. Although a value is required for the conversion process, this field can be left blank for the import process if the user doesn't know how many transactions there are in the batch.

Audit Total The total cost value of all transactions in the batch determined by the user. This is compared with the Actual Total to verify that the batch has been imported successfully. Although a value is required for the conversion process, this field can be

left blank for the import process if the user doesn't know the total cost of the batch.

Actual Transactions This is the number of transactions actually contained in the batch, and is automatically calculated by the system.

Actual Total This is the actual total cost value of all transactions contained in the batch, and is automatically calculated by the system.

In addition to the normal **Query, Add, Next, Previous, List, Exit**, the following menu options are available:

Update The user can change the Filename and Delimiter fields only if there are no source transactions for the current batch. The rule set can be changed for another one, but be aware that any RAMM cost transactions for the batch are removed and the batch has to be reconverted. Be aware also that the source transaction and rule set checks that were done after the import phase are done automatically on the new rule set. This means that the user must review the new rule set to check for gaps.

Delete This option allows the batch header record and associated source transactions and RAMM transactions to be deleted.

Import This option begins the import process. See **Import Process**.

Import-Undo This option effectively reverses the "**Import**" option by removing the source cost transactions, and subsequently allows the user to change the Filename and Delimiter fields, or to manually key in source transactions.

Convert This option begins the conversion process. See **Conversion Process**.

Convert-Undo This option effectively reverses the "**Convert**" option by removing the RAMM cost transactions, and subsequently allows the user to amend the source transactions (by hand) or to correct the rule set and retry the "**Convert**" phase, or to continue to "**Import-Undo**".

F1-Source-trans This option allows the user to view the source transactions in the current batch. See **Source Transactions Window**.

F2-RAMM-trans This option allows the user to view the RAMM transactions created from the current batch. See **RAMM Transactions Window**.

Output This option enables the user to "**Report**" on the batch header information.

Fanprint This takes the user to the Fanfare Print program. This option should be used to view and print any exception reports generated by the "**Import**" and "**Convert**" processes.

IMPORT PROCESS

The import option begins by attempting to read the file into the RAMM database using the filename and delimiter specified in the batch header.

See the table below for the fields and types expected in the source file.

If the file does not load a window appears with the error message and enough information to determine what went wrong. Make sure the full path name of the file is specified and that the delimiter is correct for the format of the file.

After the file has been successfully loaded, the transactions are checked for irregularities. In particular, null fields are changed to default values where sensible and fields that should be in uppercase are corrected, as per the table below:

| Field name | Type | Convert to | Default if null | Optional or Required |
|--------------------|---------------|------------|--------------------|--|
| Source ID | char(10) | | | Optional |
| Date | date | | | Required |
| Fault | char(10) | Uppercase | "UNKNOWN" | Optional |
| Activity | char(12) | Uppercase | | Required |
| Cost Group | char(2) | Uppercase | "UN" | Optional |
| Quantity | decimal(10,4) | | "1" | Optional |
| Units | char(8) | | | Required |
| Amount | money(10,2) | | | Required |
| Contract Area | char(15) | Uppercase | | Optional |
| State Highway | char(3) | Uppercase | | Optional ^o |
| Reference Station | smallint | | | Optional ^o |
| Direction | char(1) | Uppercase | | Optional ^o |
| Ramp Type | char(8) | Uppercase | | Optional ^o |
| Road Number | integer | | | Optional |
| Start Displacement | integer | | | Optional |
| End Displacement | integer | | Start Displacement | Require, if Start Displacement is not null |
| Position | char(1) | Uppercase | "N" | Optional |

^o These fields are only necessary in the import file if the **SH Columns** field in the batch header is set to **S**.

If any fields are defaulted to the values above, then a report is produced showing which transactions have been amended. Fields that were shifted to uppercase are not reported. This report should be reviewed by the user (choose the "**Fanfare**" menu option), to check for any data problems.

The transactions are also checked against the rule set specified in the batch header. Default rules are put in place where necessary for the conversion phase, as follows:

If the system encounters an Activity code for which there is not entry in the rule set, a new source Activity record is created in the rule set, with the note "< ADDED BY IMPORT PROCESS >". If the source Activity code has the same code as a RAMM Activity, then the system assumes that they are the same Activity. The same action is taken for source Fault types, and for source Cost Groups.

Source link and RAMM links records are also created where necessary. Whenever there is no split record for a source Activity, Fault type, and Cost Group combination, a default Source link record and RAMM split record are created. The percentage weighting is set to 100%. The RAMM Activity, Fault, and Cost Group codes are left null, unless there exists a RAMM code with the same code as the source.

If there is no Contract Area defined in the rule set, then a record is created. The system cannot assume which carriageway sections to attach, so it is up to the user to define the limits of the Contract Area.

Source Activities and source units with no conversion factor to m² will have conversion records created with a null factor. Again it is up to the user to fill in the gaps. Note that only Activities used in the major Cost Groups (Pavement, Surfacing, or Drainage) need have a unit conversion factor defined.

It is important the rule set is reviewed by the user at this stage and any gaps filled in, before moving to the conversion process.

CONVERSION PROCESS

The Convert option applies the conversion rules to the source transactions to create RAMM cost transactions. Many cost transactions may be produced from each source transaction.

Firstly the batch Audit and Actual figures are compared and the user is not able to proceed if they differ. The user should check that the Actual figures do correspond with those anticipated for the batch. The user can "**Update**" the Audit figures if necessary.

The presence of a **RCI** date for Maintenance Costs is checked next. This date is used to calculate the **RCI** adjusted cost amounts. If there is no **RCI** date defined in the parameter table, a window is opened which requests the user to choose a **RCI** date and value. The date chosen is stored in the parameter table for use next time. See **Maintenance Cost RCI Date** under the **Misc.◆Update** menu option.

To create the RAMM cost transactions, the conversion processes the source transactions one at a time.

The unit conversion factors are used to convert the source quantity into the common unit m². If the factor in the rule set is null or not found, then the source quantity is converted to zero.

The Source to RAMM link record(s) are used to split the source transaction into many RAMM transactions. The percentage weighting of each split determines the proportion of the cost amount and quantity for each RAMM transaction. For an example, see the **Show Rules Window** below.

The next step is to apportion the split cost and quantity over the appropriate carriageway sections, according to the following table. A tick (✓) indicates where a value is given. Please note that State Highway batches including the four SH, RS, Direction and Ramp fields are taken as effectively supplying a Road ID so for the purposes of this table read Road ID as either Road ID or the four State Highway columns.

| Contract Area | Road ID | Start (m) | End (m) | Action |
|---------------|---------|-----------|---------|---|
| | | | | The cost and quantity are spread over the entire network (i.e. ALL carriageway sections in the RAMM database). |
| ✓ | | | | The cost and quantity are spread over those carriageway sections specified in the rule set for the Contract Area. |
| | ✓ | | | The cost and quantity are spread over all carriageway sections for the road. |
| | ✓ | ✓ | ✓ | The cost and quantity are spread over the carriageway sections covered by the Start and End Displacements. |

For examples of the above cases, see the **Show Rules Window** below.

The RCI adjusted cost amount is calculated using the RCI value for the (above mentioned) RCI Date. This value is divided by the RCI value nearest and prior to the Transaction date. The maintenance cost amount is multiplied by this ratio to give the RCI adjusted cost amount. E.g. If the transaction date was 01Aug90 then the RCI value for 01Jul90 was 1234, whilst the RCI Date is currently 01Oct94 with a value of 1300. If the amount to convert is \$ 200 the RCI adjusted amount is \$ 200 x (1300/1234) = \$ 210.70.

In the course of creating RAMM cost transactions, the conversion process produces an exception report if any errors are found in the source transactions or the application of the rules thereon. If

the report is produced, i.e. one or more errors were found, no RAMM cost transactions are created for this batch. This is to ensure that no batches have less than 100% of their transactions in the RAMM database.

The following is a list of all the errors that can appear on the exception report. The corrective action to take is outlined below each error.

- Null Source Activity code
Update this source transaction to have an Activity code, or alternatively correct this transaction at its source. See **Source Transactions Window** below.
- Source Activity code not found: *activity*
Add this Activity code to the rule set. See **Maint. Cost◆Rule Sets** below.
- Source Fault code not found: *fault*
Add this Fault type code to the rule set.
- Source Cost Group code not found: *cost group*
Add this Cost Group code to the rule set.
- Contract Area code not found: *area*
Add this Contract Area code to the rule set.
- Links not found for Contract Area: *area*
Define this Contract Area by attaching carriageway sections to the rule set.
- Null Transaction date
Update this source transaction to have a transaction date, or alternatively correct this transaction at its source.
- Null or zero Source Cost Amount
Update this source transaction to have a cost amount, or alternatively correct this transaction at its source.
- Road ID not found: *road ID*
Update this source transaction to have the correct Road ID, or alternatively correct this transaction at its source.
- Displacements given without Road ID
This means that the Start and End Displacements for the work have been specified, but the Road ID is null. Correct the source transaction to either have a Road ID specified, or no Displacements specified.
- Both Road ID and Contract Area provided: *road ID*
Correct the source transaction to have only one field specified, as it does not make sense to specify a road **and** a Contract Area.
- Displacements outside of Road parameters: *road ID*
Correct the source transaction Start and End Displacements to be within the start and end of the road.
- Start Displacement greater than End Displacement: *road ID*
Correct the source transaction Start and End Displacements to have sensible values.
- Source to RAMM Links not at 100% for : *activity / fault / cost group*
Ensure that the RAMM links add up to 100% for the Source link in the rule set.

- Null RAMM Activity code for: *activity / fault / cost group*
- Activity code not found: *activity*
Correct the RAMM link record in the rule set to specify a known RAMM Activity.
- Null RAMM Fault code for: *activity / fault / cost group*
- Fault code not found: *fault*
Correct the RAMM link record in the rule set to specify a known RAMM Fault.
- Null RAMM Cost Group code for: *activity / fault / cost group*
- Cost Group code not found: *cost group*
Correct the RAMM link record in the rule set to specify a known RAMM Cost Group.
- Null RAMM Weighting for: *activity / fault / cost group*
Check that all RAMM link records in the rule set have percentage weightings assigned.
- Null Conversion Factor for: *activity / units*
Change the rule set unit conversion factor to be non-null.
- Null Road Location for RAMM Activity: *activity*
This RAMM Activity requires location information because the Cost Group specified is one of Pavement, Surfacing or Drainage.
Correct the source transaction to have a specific location.
- Both State Highway and Ref. Station number expected
If the State Highway number is given then the Reference Station number is also expected. The reverse is also true.
- State Highway does not exist: *State Highway number*
The State Highway number given is not correct. Please note that SH numbers use zeroes to fill left. ie SH 2 is 002.
- State Highway/Reference Station does not exist: *SH/RS*
The SH/RS combination shown does not exist in the database.
- No roads found that match: *SH/RS/Direction/Ramp/Disp.*
There are no roads that match the data given. In this case it is likely that the data has incorrect Direction or Ramp details. If the displacement is wrong then you will have also got the *Displacements outside of Road parameters* error. The Direction field can only be one of I(ncreasing), D(ecreasing) or Null. The Ramp type can be null or ON, ON1, ON2 ..., OFF, OFF1, OFF2 ...etc.
- Too many roads that match: *SH/RS/Direction/Ramp*
This is the reverse of the error message above. The data is not specific enough to accurately determine one and only one RAMM Road ID.

The problem here could be that the start and end displacements of the cost record span more than one Road ID. If this is the case then you must split the costs into one record per Road ID.

Another problem could be that in the case of ON or OFF ramps you cannot not be more specific without supplying the actual Road ID as well. This is due to the problem that where there is more than one ON (or OFF) ramp on the same RS there is no way for the program to tell which Ramp the data is referring. In this case you **must** supply the Road ID as well.

- There is SH,RS data where the batch header details say there shouldn't be.

The **SH Columns** field in the batch header screen is set to **N** yet this data has some or all of the four extra fields set to non null values.

- The SH,RS information do not match the Road ID supplied
The SH, RS, Direction, Ramp, Disp information is supplied along with a Road ID. The problem is that the SH,RS data does not find the same road as the Road ID finds.
- Displacements expected in the data
There are no values in the Start Displacement and End Displacement fields.

It is important for the user to utilize the error report in repairing the offending transaction(s) or gaps in the conversion rules.

The converted maintenance cost transactions can be viewed using the "**F2-RAMM-trans**" option. See below for more details.

SOURCE TRANSACTIONS WINDOW

This window is accessed from the batch maintenance main screen by choosing the menu option "**F1-Source-trans**".

The user can key source transactions directly into the system using this option, or they can change source transactions after they have been imported.

The normal **Next, Previous, List** and **Exit** options are provided. The **Add, Update, Delete** options are only available prior to the batch being converted

The RAMM transactions created from this source transaction can be viewed by choosing the menu option "**F1-RAMM-trans**".

```

BATCH HEADER: ... F1-Source-trans F2-RAMM-trans Next Previous ...
View and maintain Source transactions for this batch
+-----+
|COST TRANSACTION ENQUIRY: F1-RAMM-trans Next Previous List ...
|View RAMM transactions for this record
|-----+-----+-----+-----+-----+-----+-----+-----+-----+
|          Source Transaction Information -----+-----+-----+-----+
| Transaction ID:      303
| Source ID: i2
| Date: 02Nov94
|
| Activity: 1001          NOX PLANTS
| Quantity:      1.0000
| Units: m3
| Fault: SH SHEAR      Factor:      5.0000
| Cost Group: PV          SH SHEAR
| Amount:          $30.00          PV
|
| Contract Area:
| Road Number:      1          WAIHI BEACH RD
| Start Displacement: 1000 m
| End Displacement: 2000 m
| Position: N          Not Applicable
|6 Cost Transactions found.
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
    
```

Fields Contained In The Source Transaction Table

| Field | Required |
|--------------------|-----------------------------------|
| Transaction ID | yes * |
| Source ID | optional |
| Date | yes |
| Activity | yes |
| Quantity | yes |
| Units | yes |
| Fault | yes |
| Cost Group | yes |
| Amount | yes |
| Contract Area | optional |
| Road Number | optional |
| Start Displacement | optional |
| End Displacement | optional |
| Position | yes |
| State Highway | optional <input type="checkbox"/> |
| Reference Station | optional <input type="checkbox"/> |
| Direction | optional <input type="checkbox"/> |
| Ramp Type | optional <input type="checkbox"/> |

* = Set by the system.

□ These fields are only shown if the **SH Columns** field in the batch header is set to **S**

A full description of the data held in each field is as follows:

Transaction ID The number given to this source transaction by the system.

Source ID Any ID to this transaction in the original or source system.

This field is optional.

Date The date for this transaction.

Activity The source Activity type. This can be entered directly or the user can use **F1-Quick-query** or **F4-List&Pick** to find the correct Activity.

Quantity The quantity of this source Activity.

Units The original data source quantity unit of measure (e.g. m², m³, km).

| | |
|---------------------------|---|
| Fault | The source Fault type. This can be entered directly or the user can use F1-Quick-query or F4-List&Pick to find the correct Fault type. |
| Cost Group | The source Cost Group. This can be entered directly or the user can use F1-Quick-query or F4-List&Pick to find the correct Cost Group. |
| Amount | The total value of this source transaction (GST exclusive). |
| Contract Area | Contract Area from the original data source. If a Contract Area is specified, then it does not make sense to specify a Road ID or Displacements. This field is optional. |
| Road Number | The number of the road on which this Activity was performed. This can be entered directly or the user can use F1-Quick-query or F2-Full-query to find the correct road name. This field is optional. |
| Start Displacement | The start displacement of the work in metres from the road origin. This field is optional. |
| End Displacement | The end displacement of the work in metres from the road origin. This field is required if the start displacement is not null. |

Position The position of the work on the carriageway.

The following codes are allowed:

| | |
|---|----------------|
| N | Not Applicable |
| C | Centre |
| L | Left |
| R | Right |
| U | Unknown |
| B | Both sides |
| F | Full width |

RAMM TRANSACTIONS WINDOW

This window is accessed from the batch maintenance main screen by choosing the menu option "**F2-RAMM-trans**". It can also be accessed from the **Source Transactions Window** (see above) by choosing the menu option "**F1-RAMM-trans**". In the latter case, only those RAMM cost transactions created from the current source transaction are available for viewing.

The normal **Next**, **Previous**, **List** and **Exit** options are available.

By choosing the menu option "**F1-Show-rules**" the user can view an explanation of how the current RAMM transaction was created from the source transaction. See below for more details.

```

BATCH HEADER: ... F1-Source-trans F2-RAMM-trans Next Previous ...
View RAMM transactions for this batch
----- Batch Header Information -----
+-----+
|MAINTENANCE COST TRANSACTION: F1-Show-rules Next Previous List ...|
|Display the next Maintenance Cost Transaction in the current list  |
|----- RAMM Transaction Information -----|
| Transaction ID: 5686                                         |
| Source ID: 304                                             |
| Date: 06Dec94                                           Financial Year: 94/95 |
| Cost Group: SH Shoulder                                   |
| Activity: SURE_PATCH                                       |
| Quantity: 2.1505 m2 Source qty: 0.4301 CUBIC M           |
| Fault: FOOTPATH C                                         |
| Amount: $43.01 RCI Amount: $42.54                         |
| RCI Date: 30Jun93                                         |
| Road Number: 1 WAIHI BEACH RD                             |
| Section: TRIG RD NORTH - LARGE CULVERT (2780-5550)       |
| Start Displacement: 2780 m                               |
| End Displacement: 5350 m                               |
| Position: N Not Applicable                               |
|5 of 163 Maintenance Cost Transactions found.             |
+-----+

```

Fields Contained In The Cost Transaction Table

| Field | Required |
|--------------------|----------|
| Transaction ID | yes |
| Source ID | yes |
| Date | yes |
| Financial Year | yes |
| Cost Group | yes |
| Activity | yes |
| Quantity | yes |
| Source qty | yes |
| Fault | yes |
| Amount | yes |
| RCI Amount | yes |
| RCI Date | yes |
| Road Number | optional |
| Section | optional |
| Start Displacement | optional |
| End Displacement | optional |
| Position | yes |

A full description of the data held in each field is as follows:

| | |
|---------------------------|---|
| Transaction ID | The number given to this RAMM transaction by the system. |
| Source ID | This is the source transaction identifier. |
| Date | The date for this transaction. |
| Financial Year | The financial year in which this transaction falls. |
| Cost Group | The maintenance Cost Group. |
| Activity | The maintenance cost Activity. |
| Quantity | The resulting quantity in m ² for the maintenance cost Activity. |
| Source qty | The original source quantity of the source Activity. |
| Fault | The maintenance cost Fault type. |
| Amount | The resulting value for the maintenance cost Activity (GST exclusive). |
| RCI Amount | The RCI adjusted maintenance cost amount. |
| RCI Date | The RCI date used (in conjunction with the transaction date) to determine the above RCI Amount. |
| Road Number | The number of the road on which this Activity was performed. |
| Section | The carriageway section (and Displacements) that this cost transaction is relevant to. |
| Start Displacement | The start displacement of the work in metres from the road origin. |
| End Displacement | The end displacement of the work in metres from the road origin. |
| Position | The position of the work on the carriageway. |

SHOW RULES WINDOW

```
BATCH HEADER:   ... F1-Source-trans F2-RAMM-trans Next Previous ...
View RAMM transactions for this batch
----- Batch Header Information -----
+-----+-----+
|RULES:  Exit                                     |         |
|Exit this window                               |         |
|----- Source to RAMM Conversion Rules -----|-----|
| SOURCE to RAMM                                |         |
|   Activity 1001                               | converts to GRASS CUT |
|   Fault SH SHEAR                             | converts to SHSH      | Weighting = 100%
|   Cost Group PV                              | converts to PA        |
| DISPLACEMENT                                  |         |
|   Activity is over sections of WAIHI BEACH RD |         |
|           from 1000m to 2000m = 1000m        |         |
|   Portion on this section is from 1000m to 1230m = 230m |         |
|   Proportion of cost is 230m / 1000m = 0.23   |         |
| COST                                           |         |
|   Amount $30.00 x 0.23 x 100% = $6.90        |         |
| QUANTITY                                       |         |
|   1 m3 x 0.23 x 100% = 0.23 m3              |         |
|   Activity 1001 conversion for m3 to m2 = 5   |         |
|   0.23 m3 x 5 = 1.15 m2                     |         |
+-----+-----+
```

This window sets out to display the rules used by the conversion process in creating the current RAMM cost transaction. The user can access this screen from the **RAMM Transactions Window** (see above) by choosing the "**F1-Show-rules**" option.

The first section entitled "SOURCE to RAMM" illustrates the Source to RAMM link record used to split the source transaction. Note that only the one split record is shown with its respective percentage weighting, as only one split record is used to create this one RAMM transaction. (There are other split records involved in creating other RAMM transactions if this percentage is less than 100%.)

The next section "DISPLACEMENT" shows how the proportion of cost and quantity was determined for this carriageway section. The four cases encountered in the conversion process are thus:

1. The proportion is the length of the current carriageway section divided by the total length of all roads in the RAMM database.
2. The proportion is the length of the current carriageway section divided by the total length of carriageway sections in the Contract Area.
3. The proportion is the length of the current carriageway section divided by the total length of the road.
4. The proportion is the length of the current carriageway section divided by the total length of the Activity (i.e. from start to end) e.g. If the Activity is from 100m to 1000m, but the current carriageway section is from 200m to 500m, then the proportion is $(500-200)/(1000-100) = 300/900 = 1/3$.

The next section entitled "COST" shows how the RAMM cost amount was calculated from the source transaction amount. The source amount is multiplied by the road proportion and by the split percentage weighting to give the RAMM cost amount.

The final section "QUANTITY" illustrates the conversion of the source quantity. First the source quantity is multiplied by the road proportion and by the split percentage weighting to give the new quantity in original units. The unit conversion factor is then shown. If there is no conversion factor then the next step is not shown, as the RAMM quantity in m^2 is zero. The quantity is multiplied by the unit conversion factor to give the RAMM quantity in m^2 .

Use the "**Exit**" option to leave this window.

Rule Sets

Maintain rules used in the conversion of maintenance cost transactions

These tables define the "rules" used by the Batch conversion process to convert original or source cost transactions to RAMM cost transactions. It is likely that for each source the originating data can come from, the conversion method is different. This program allows the user to uniquely identify a set of rules for converting transactions from a given source.

The Source Activity, Fault type, and Cost Group codes identified in these rule sets are those used by the originating system and found in the Source transactions. As some users do not collect the Fault type or the Cost Group, there are defaults for these values where necessary. See the "**F2-Activity**", "**F3-Fault**", "**F4-Cost-group**" options below for more details.

Each combination of Source Activity, Fault type, and Cost Group found in the Source transactions must link to a sensible combination in the RAMM system. These links are used by the conversion process to apportion the source transaction to one or many RAMM Cost Groups according to the Activity (and fault) involved. See "**F1-Source-link**" below for more details.

Contract Areas can be maintained using the "**F5-Contract-area**" option. The carriageway sections defined for each code define the limits of the Contract Area.

The three Maintenance Cost Groups used by the Treatment Selection program (Pavement, Surfacing & Drainage) must all have costs translated to the same unit of measure (m²). This means that for every combination of Activity and unit of measure from every data source there should be a conversion factor to bring the quantities into m². Be aware that those Activities which do not get used by the three main maintenance Cost Groups do not need a conversion factor. See "**F6-Unit-conversion**" below for more details.

If any changes to the rules are necessary but affect existing RAMM transactions, then there is a "**Copy**" option (see below) to help with this. See also the **Change Rules Window** below for more details.

During the "**Import**" process (described above) these rules can be added to by the system to suit the incoming batch. It is important that the user fills in the gaps left by the system, as the conversion process depends on the rule set being complete.

```

RULE SET:  ... F6-Unit-conversion  Next  Previous  List  Output  Exit
Display the previous Rule set in the current list
----- Maintenance Cost Rule Set Information -----

      Rule Set: CM2000
      Description: Rules for converting CM2000

      Notes:

Default delimiter: P Pipe (|)
Default filename: /tmp/cm2000_0196

3 of 6 Rule sets found.

```

Fields Contained In The Rule Set Table

| Field | Required |
|-------------------|-----------------|
| Rule Set | yes |
| Description | yes |
| Notes | optional |
| Default delimiter | optional |
| Default filename | optional |

A full description of the data held in each field is as follows:

Rule Set The rule set identifier. e.g. CM2000

Description The name given to the rule set.

Notes General notes. Optional.

Default delimiter The field separator to be used when importing the source transactions. This is defaulted in the Batches Screen when this Rule Set is selected. This field is optional. The following codes are allowed:

| | |
|---|-----------|
| C | Comma (,) |
| P | Pipe () |
| T | TAB |

Default filename The file name to be used when importing the source transactions. This is defaulted in the Batches Screen when this Rule Set is selected. This field is optional.

The following menu options are available to the user, in addition to the usual **Query, Add, Update, Delete, Next, Previous, List, Exit** options:

Copy This option allows the current Rule Set and all of its detail tables to be copied and given a new rule set code. This enables the user to create a Rule Set identical to an existing set, and then change the new set without affecting existing RAMM cost transactions.

F1-Source-link This option allows the user to maintain the Activity, Fault, and Cost Group link between the Source transactions and the RAMM cost transactions. Combinations of Source Activity, Fault, and Cost Group codes are held in the Source link table. This link can be split out to one or more combinations of RAMM Activity, Fault, and Cost Group codes. These RAMM combinations are held in the Source to RAMM link table. A percentage weighting is attributed to each RAMM link and all such links must add to 100% for each Source link, so that the source transaction cost and quantity are completely carried across into RAMM.

The Source link window is as follows:

```

RULE SET:  Query  Add  Update  Delete  Copy  F1-Source-link  ...
View the Source Activity/Fault/Cost Group Link information
----- Maintenance Cost Rule Set Information -----

      Rule Set: CM2000
      Description: Rules for converting CM2000

      Notes:
+-----+
|SOURCE LINK:  Add  Update  Delete  F1-RAMM-link  ...|
|Add a new Source Link|
|----- Source Link Information -----|
| SOURCE Activity: 1001          NOX PLANTS|
|           Fault: SH SHEAR      SH SHEAR  |
| Cost Group: PV                PV         |
| Total: 100 %|
| Notes: < ADDED BY IMPORT PROCESS >|
|                                     |
|                                     |
|                                     |
|20 Source Links found.
+-----+

```

F4-List&Pick is available on the Source Activity, Fault, and Cost Group fields to help the user choose the appropriate code.

The "Total" field is the sum of all the RAMM link percentage weightings for the current Source link record. This must equal 100% for the batch conversion process to successfully split the Source transaction into RAMM cost transactions.

The choice of "**F1-RAMM-link**" causes the following window to be opened on the RAMM link table, allowing the

user to maintain the combinations of RAMM Activity, Fault, and Cost Group codes, and the percentage weighting.

"F2-RAMM-list" allows the user to list the RAMM combinations for the current Source link.

```

RULE SET:+-----+
View the |SOURCE TO RAMM LINK:  Add Update Delete Next Previous ...
-----+-----+
          |Add a new Source to RAMM Link
          |----- Source to RAMM Link Information -----+
          |  RAMM   Activity: DIGOUT
          |          Fault: UNKNOWN          Unknown fault
          |          Cost Group: PA           Pavement
          |          Weighting: 100 %
          |          Notes: < ADDED BY IMPORT PROCESS >
+-----+
|SOURCE L|
|View the|
|-----+
| SOURCE |
|-----+
|        |
|Co|1 Source to RAMM Link found.
|-----+
|          Notes: < ADDED BY IMPORT PROCESS >
|-----+
|
|6 of 20 Source Links found.
+-----+

```

F4-List&Pick is available on the RAMM Activity, Fault, and Cost Group fields to help the user choose the appropriate code.

During "**Add**" or "**Update**", if the Cost Group field is null, the RAMM Cost Group defaults table is used to default a Cost Group code for the Activity and Fault type combination.

F2-Activity This option opens up a window on the Source Activity table. This allows the user to identify those Activity codes used by the originating system or contractor.

F3-Fault This option opens up a window on the Source Fault type table. This allows the user to identify those Fault type codes used by the originating system or contractor, where applicable.

F4-Cost-group This option opens up a window on the Source Cost Group table. This allows the user to identify those Cost Group codes used by the originating system or contractor, where applicable.

F5-Contract-area This option opens up a window on the Contract Area and Area link tables. These tables contain the name of a Contract Area (e.g.: DEVONPORT) and a list of carriageway sections which define the extents of the area.

The choice of "**F1-Carriageway**" causes a window to be opened on the Area link table, allowing the user to maintain

the carriageway sections linked to this Contract Area one at a time.

"**F2-Carriageway-list**" lists the carriageway sections linked to this Contract Area.

"**F3-Carriageway-fast**" enables the user to choose many carriageway sections at a time by opening a window and allowing the user to perform a Full Query on the carriageway section table. Upon accepting the selection criteria, the window below opens and the first 10 sections found are displayed along with the following menu:

All-sections All sections selected are attached to the current Contract Area, excepting those sections already linked.

Pick-sections This enables the user to scroll through the selected sections and indicate which to attach to this area by placing an "I" against them. Sections already attached to the current Contract Area have the "I" defaulted. If the "I" is removed from such sections, they are unlinked from the Contract Area.

List The user can view the list of selected sections.

```

+-----+
|CARRIAGEWAY SECTION QUERY: ESC accepts, DEL aborts.
|Enter the Query conditions or F1:Quick-query F2:Full-query
|----- Carriageway Information -----
|      Road Number:          Name:
|
| Start Displacement:      m Start Name:
| End Displacement:       m End Name:
|   Local Area:           Rating Seq:
|   Sub-Area:              ID:
|----- MISCELLANEOUS ----- CARRIAGEWAY -----
|   Class:                  Length:      m Irregular:
| Urban/Rural:              Width:       m No. of Lanes:
| Hierarchy:                Res. width:  m Lane width:      m
|Maint Grouping:
|Maint Category:
|----- EXTRA AREAS ----- RESPONSIBILITY -----
|   Bus Bays:               m2 Owner Type:
|   Islands:                m2 Controlled by:
| Intersections:           m2 Maintained by:
|   Other Areas:           m2 Unit Cost Set:
|   Comments:
|Road identification code
+-----+

```

F6-Unit-conversion This option opens up a window on the Unit Conversion table. This allows the user to maintain the conversion factors necessary to translate source quantities to square metres (m²). Conversion factors are held by combination of Source unit and Source Activity. If the conversion factor is left null, then the source quantity is converted to zero during the batch conversion process. This is useful for those units which would not sensibly convert to m².

Output This option enables the user to "**Report**" on rule sets partially or totally. The following window is presented:

```

OUTPUT:  Report  Fanprint  Exit
Produce a report of the current list
----- Maintenance Cost Rule Set Information -----

      Rule Set: CM2000
      Description: Rules for converting CM2000
+-----+
|OUTPUT OPTIONS: ESC accepts, DEL aborts|
|F4:List&Pick|
|----- Rule Set Report Options -----|
| INCLUDE  Activities: I  Include|
|           Faults: I  Include|
|           Cost Groups: I  Include|
|           Contract Areas: I  Include|
|           Unit Conversions: I  Include|
|Source to RAMM Links: I  Include|
|           Notes: I  Include|
|-----+
|Include source activities or Not ?|
+-----+

```

All aspects of a rule set can be Included or Not by placing an "I" or an "N" in the appropriate field. The Contract Areas field has an additional option, "A", which means include the Contract Area only in the report and not all the carriageway section links.

CHANGES TO RULES WINDOW

It is anticipated that at some stage the user may change the rules which affects those Source transactions that have already been converted.

If the rules do change, it is important that all batches using the rules are reconverted to ensure consistency in the RAMM cost transactions.

Any changes to rules which affect existing transactions results in the following window appearing:

```
CHANGE RULES:  Exit   Proceed   List
Exit this window and abandon the rule change.

WARNING: You are about to change the data conversion rules.

Use the List option to view the 3 batch(es) affected by this
change.
These batches will have to be reconverted if you Proceed.

A Copy facility is available on the Rule set screen to enable you
to make a copy of these rules for the purpose of customisation and
enhancement.

Choose Exit if you DO NOT wish to change these rules.
```

The following menu options are available to the user :

Exit The current action is abandoned.

Proceed The batches affected by the rule change will have their status reset to **Unconverted**, and all the RAMM cost transactions for the batch are removed.

List This option allows the user to view those batches affected by the current rule change.

If it is necessary to change the rules because the rules are wrong, then choose the "**Proceed**" option so that the batches concerned can be reconverted (using the Batch program later).

If the rules are still correct for the existing batches, but need to be changed for a new batch, then it is better to choose the "**Exit**" option, and then "**Copy**" the rules and change the new set to accommodate the new batch.

Cost Group

Maintain the Cost Group table for RAMM cost transactions

The codes and names of the Cost Groups, looked up by the RAMM Cost Transactions Enquiry Screen.

Cost Group records supplied by Transfund are marked "TNZ Controlled". The user may not alter any such records.

Combinations of Activity and Fault types for the current Cost Group can also be maintained using this option. These combinations are used to default an appropriate Cost Group in the Rule Sets Source to RAMM link screen.

| Cost Group | Code | Activity | Fault | | |
|-----------------------|-----------|-----------|-----------|----------|---------|
| Bridge Maintenance | BR | BRIDGE | DEBRIS | | |
| | | BRIDGE | DECKRENEW | | |
| | | BRIDGE | DECKREP | | |
| | | BRIDGE | FOUNDAT | | |
| | | BRIDGE | PAINT | | |
| | | BRIDGE | RAILS | | |
| | | BRIDGE | STRUCTMEM | | |
| | | BRIDGE | UNKNOWN | | |
| | | Drainage | DR | POSDRAIN | SATPAVE |
| | | | | POSDRAIN | UNKNOWN |
| SWCIMP | CULNEW | | | | |
| SWCIMP | SATPAVE | | | | |
| SWCIMP | SWCNEW | | | | |
| SWCIMP | UNKNOWN | | | | |
| SWCMAINT | BLOCKED | | | | |
| SWCMAINT | CLEAR | | | | |
| SWCMAINT | CLEARVEGE | | | | |
| SWCMAINT | CULCLEAN | | | | |
| SWCMAINT | INAD | | | | |
| SWCMAINT | SATPAVE | | | | |
| SWCMAINT | UNKNOWN | | | | |
| SWSTRUCT | BLOCKED | | | | |
| SWSTRUCT | BROKEN | | | | |
| SWSTRUCT | CLEAR | | | | |
| SWSTRUCT | CORRODE | | | | |
| SWSTRUCT | CULINAD | | | | |
| SWSTRUCT | CULNEW | | | | |
| SWSTRUCT | CULREPAIR | | | | |
| SWSTRUCT | UNKNOWN | | | | |
| Environment | EN | EMERGENCY | FLOOD | | |
| | | EMERGENCY | ICE/FROST | | |
| | | EMERGENCY | SLIP | | |
| | | EMERGENCY | SNOW | | |

| Cost Group | Code | Activity | Fault |
|------------------|-----------|------------|----------|
| Lighting | LI | EMERGENCY | UNKNOWN |
| | | ENVCLEAN | DEBRIS |
| | | ENVCLEAN | DETRITUS |
| | | ENVCLEAN | LITTER |
| | | ENVCLEAN | SPILLAGE |
| | | ENVCLEAN | UNKNOWN |
| | | LIGHTMAINT | ACCIDENT |
| | | LIGHTMAINT | CLEAN |
| | | LIGHTMAINT | REPLACE |
| | | LIGHTMAINT | UNKNOWN |
| Minor Structures | MS | LIGHTMAINT | UPGRADE |
| | | BARRIER | ACCIDENT |
| | | BARRIER | CORRODE |
| | | BARRIER | PAINT |
| | | BARRIER | REPLACE |
| | | BARRIER | UNKNOWN |
| | | WALLS | COLLAPSE |
| | | WALLS | CORRODE |
| | | WALLS | UNKNOWN |
| | | Pavement | PA |
| CONCPAVE | JOINT | | |
| CONCPAVE | POLISHED | | |
| CONCPAVE | SPALL | | |
| CONCPAVE | SUBSIDE | | |
| CONCPAVE | UNKNOWN | | |
| DIGOUTS | DEFORM | | |
| DIGOUTS | DEPRESS | | |
| DIGOUTS | DRAININAD | | |
| DIGOUTS | SATPAVE | | |
| DIGOUTS | SHEAR | | |
| DIGOUTS | SLIPCRK | | |
| DIGOUTS | UNKNOWN | | |
| LEVEL | ABIT | | |
| LEVEL | DEPRESS | | |
| LEVEL | RUTTING | | |
| LEVEL | SHAPE | | |
| LEVEL | SUBSIDE | | |
| LEVEL | UNEVEN | | |
| LEVEL | UNKNOWN | | |
| POTFILL | HOLES | | |
| POTFILL | UNKNOWN | | |
| SERVCOVER | BROKEN | | |
| SERVCOVER | UNEVEN | | |
| SERVCOVER | UNKNOWN | | |
| STAB | DEFORM | | |
| STAB | DEPRESS | | |

| Cost Group | Code | Activity | Fault |
|------------|----------|----------|-----------|
| Shoulder | SH | STAB | DRAININAD |
| | | STAB | SHEAR |
| | | STAB | SUBSIDE |
| | | STAB | UNKNOWN |
| | | SURFOPEN | SERVICE |
| | | SURFOPEN | TRENCH |
| | | SURFOPEN | UNKNOWN |
| | | UNSEALED | AGGLOSS |
| | | UNSEALED | CORRUG |
| | | UNSEALED | RUTTING |
| | | UNSEALED | SATPAVE |
| | | UNSEALED | SCOUR |
| | | UNSEALED | SHAPE |
| | | UNSEALED | SUBSIDE |
| | | UNSEALED | UNKNOWN |
| | | SHLDMINT | EDGEBRK |
| | | SHLDMINT | EDGERUT |
| SHLDMINT | HIGHSHLD | | |
| SHLDMINT | LOWSHLD | | |
| SHLDMINT | SCOUR | | |
| SHLDMINT | SHAPE | | |
| SHLDMINT | SOFTSHLD | | |
| SHLDMINT | UNKNOWN | | |
| Surfacing | SU | BURN | BLEED |
| | | BURN | FLUSH |
| | | BURN | UNKNOWN |
| | | FILLCRK | ALLIGCRK |
| | | FILLCRK | ISOCRK |
| | | FILLCRK | SLIPCRK |
| | | FILLCRK | UNKNOWN |
| | | RECHIP | BLEED |
| | | RECHIP | POLISHED |
| | | RECHIP | SCAB |
| | | RECHIP | STRIP |
| | | RECHIP | TEXTURE |
| | | RECHIP | UNKNOWN |
| | | SEALCRK | ALLIGCRK |
| | | SEALCRK | ISOCRK |
| | | SEALCRK | SLIPCRK |
| | | SEALCRK | UNKNOWN |
| | | SURFREP | ALLIGCRK |
| | | SURFREP | BLEED |
| | | SURFREP | FLUSH |
| | | SURFREP | ISOCRK |
| | | SURFREP | POLISHED |
| | | SURFREP | SCAB |
| SURFREP | SLIPCRK | | |

| Cost Group | Code | Activity | Fault |
|-------------|---------|------------|-----------|
| Traff Facil | TF | SURFREP | STRIP |
| | | SURFREP | TEXTURE |
| | | EDGEPOST | CLEAN |
| | | EDGEPOST | MISSING |
| | | EDGEPOST | REALIGN |
| | | EDGEPOST | RENEW |
| | | EDGEPOST | UNKNOWN |
| | | MARKING | PAINT |
| | | MARKING | REMOVE |
| | | MARKING | RPMMISS |
| | | MARKING | RPMRENEW |
| | | MARKING | UNKNOWN |
| | | SIGNALS | ACCIDENT |
| | | SIGNALS | CLEAN |
| | | SIGNALS | PAINT |
| | | SIGNALS | UNKNOWN |
| | | SIGNALS | UPGRADE |
| | | SIGNMAINT | ACCIDENT |
| | | SIGNMAINT | CLEAN |
| | | SIGNMAINT | GRAFITTI |
| SIGNMAINT | MISSING | | |
| SIGNMAINT | NONSTD | | |
| SIGNMAINT | PAINT | | |
| SIGNMAINT | REPLACE | | |
| SIGNMAINT | UNKNOWN | | |
| SINGMAINT | UPGRADE | | |
| Verge | VG | VEGETATION | CHEMCNTRL |
| | | VEGETATION | GRASSMOW |
| | | VEGETATION | HYDROSEED |
| | | VEGETATION | UNKNOWN |
| | | VEGETATION | VEGECNTRL |
| | | VEGETATION | VEGEPLANT |

Activity

Maintain the Activity table for RAMM cost transactions

The codes and names of the Activity types, looked up by the RAMM Cost Transactions Enquiry Screen.

Activity records supplied by Transfund are marked "TNZ Controlled". The user may not alter any such records.

| Activity | Description |
|------------|----------------------------------|
| BARRIER | Guardrail and barrier maint. |
| BRIDGE | Bridge maintenance |
| BURN | Burn excess binder |
| CONCPAVE | Concrete pavement repairs |
| DIGOUTS | Digouts (all pavements) |
| EDGEPOST | Edge marker post maintenance |
| EMERGENCY | Emergency work |
| ENVCLEAN | Environmental cleanup |
| FILLCRK | Fill cracks |
| LEVEL | Minor levelling |
| LIGHTMAINT | Maintain highway lighting |
| LIGHTMARK | Maintain highway lighting |
| LIGHTMAST | Maintain highway lighting |
| MARKING | Road marking maintenance |
| POSDRAIN | Positive drainage |
| POTFILL | Pot-hole repairs |
| RECHIP | Re-chip surfacing |
| SEALCRK | Seal cracks |
| SERVCOVER | Service cover adjustment |
| SHLDMAINT | Shoulder maintenance |
| SIGNALS | Traffic signal maintenance |
| SIGNMAINT | Sign and sight rail maint. |
| STAB | In situ stabilisation |
| SURFOPEN | Surface openings |
| SURFREP | Surfacing defect repairs |
| SWCIMP | Surface water channel improve |
| SWCMaint | Surface water channel maint. |
| SWSTRUCT | Stormwater structure maint. |
| UNSEALED | Maintain unsealed pavements |
| VEGETATION | Vegetation control and maint. |
| WALLS | Retaining wall maint. |

Fault type

Maintain the Fault type table for RAMM cost transactions

The codes and names of the Fault types, looked up by the RAMM Cost Transactions Enquiry Screen.

Fault type records supplied by Transfund are marked "TNZ Controlled". The user may not alter any such records.

| Fault | Description |
|--------------|-------------------------|
| ABUT | Uneven abutment join |
| ACCIDENT | Vehicle accident |
| AGGLOSS | Aggregate loss |
| ALLIGCRK | Alligator cracking |
| BLEED | Bleeding |
| BLOCKED | Blocked |
| BROKEN | Broken |
| CHEMCNTRL | Chemical control |
| CLEAN | Clean (wash) |
| CLEAR | Clear rubbish |
| CLEARVEGE | Clear vegetation |
| COLLAPSE | Collapse |
| CORRODE | Corroded |
| CORRUG | Corrugation |
| CRACK | Concrete cracking |
| CULCLEAN | Clean culvert |
| CULINAD | Inadequate culvert |
| CULNEW | Construct a new culvert |
| CULREPAIR | Repair culvert |
| DEBRIS | Remove debris |
| DECKRENEW | Renew decking |
| DECKREP | Deck repair |
| DEFORM | Deformation |
| DEPRESS | Depression |
| DETRITUS | Clear detritus |
| DRAININAD | Inadequate drainage |
| EDGEBRK | Edge break |
| EDGERUT | Edge rutting |
| FLOOD | Flood |
| FLUSH | Flushing |
| FOUNDAT | Foundation maintenance |
| GRAFITTI | Graffiti |
| GRASSMOW | Mow the grass |
| HIGHSHLD | High shoulder |
| HOLES | Pot-holes |
| HYDROSEED | Hydroseed |
| ICE/FROST | Ice/Frost |

| Fault | Description |
|--------------|---------------------------------|
| INAD | Inadequate |
| ISOCRK | Isolated Crack |
| JOINT | Joint cracking |
| LITTER | Clear litter |
| LOWSHLD | Low shoulder |
| MISSING | Missing |
| NONSTD | Remove nonstandard sign |
| PAINT | Paint |
| POLISHED | Polished surface |
| RAILS | Side rail maintenance |
| REALIGN | Realign |
| REMOVE | Remove |
| RENEW | Renew |
| REPLACE | Replace (Remove existing) |
| RPMMISS | Missing raised pavement markers |
| RPMRENEW | Renew raised pavement markers |
| RUTTING | Wheelpath rutting |
| SATPAVE | Saturated pavement |
| SCAB | Scabbing |
| SCOUR | Scouring |
| SERVICE | Utility services maintenance |
| SHAPE | Reshape cross-section |
| SHEAR | Shear failure |
| SLIP | Landslip |
| SLIPCRK | Slippage crack |
| SNOW | Snowfall |
| SOFTSHLD | Soft shoulder |
| SPALL | Spalling |
| SPILLAGE | Spillage |
| STRIP | Stripping |
| STRUCTMEM | Maintain structural members |
| SWCNEW | Construct new SWC |
| TEXTURE | Loss of texture |
| TRENCH | Trench settlement |
| UNEVEN | Uneven surface |
| UNKNOWN | Unknown fault |
| UPGRADE | Upgrade |
| VEGECNTRL | Vegetation control |
| VEGEPLANT | Plant vegetation |