
7. DATA PREPARATION

7.1 Part 7 Chapter 2 of this Manual describes the structure of COBA data and Part 7 Chapter 4 the preparation of data for COBA in terms of descriptions of the various lines or records that must be collected into a file for input. COBA itself takes this data in the strict format described. There are several methods the user can adopt to prepare the COBA input data file. Whichever method is used the user is advised to manuscript his data onto the coding sheets. Copies of all of these are to be found in Part 7 Chapter 6 of this Manual; the user can photocopy these as needed. The layout of data has been designed, with the KEY (header) lines, to make the file readable to the user. The methods suggested to prepare the input data file are:

- i) the experienced COBA user may prefer to edit an existing COBA input file;
- ii) enter data into a file in the strict format defined on the sheets. The file containing a list of data KEY headers (C11HDR.DAT) can be used to assist the user (by copying and pasting the lines into a data file);
- iii) use CSCREEN to edit an existing COBA input file or to create a new file in COBA data format on screen. Some data checking is undertaken as the file is created (see paragraph 7.5);

7.2 The data file produced by all of these methods should, when completed, be copied into the COBA directory for use.

Data Editing

7.3 Most users of COBA will find that a first run through COBA with a given set of data will give a printout with errors or warnings due to faulty or incomplete data. Or, the output may suggest ways of preparing data for the scheme being assessed that better represent the features of the scheme or additional data might be needed to improve the definition of the scheme. This gives a requirement to edit the data file.

7.4 In order to edit files the user can use any simple text editor. The file should be plain ASCII; that is it should contain no special characters, and each line should terminate with a CR (carriage return). All characters in the file must be upper case (capitals). The Notepad program included with Windows is a suitable text editor, as is the EDIT program in DOS. If the user wishes to use a more sophisticated word processor they should ensure that the file is saved as a "Plain text" or "Text only" file.

CSCREEN Data Preparation and Editing Program

7.5 The CSCREEN program can be used as a pre-processor to create COBA formatted data files and carry out some data checking. It accepts an existing data file or data input from the keyboard. In either case the data is presented on screen in COBA format and can be edited. CSCREEN carries out data range checks and some logic checks but the more comprehensive consistency checks can only be carried out by COBA. To run CSCREEN, type **CSCR11**. The program will then prompt for data file names. A help facility describes how to move about the data file and how to edit the data. For further information on running CSCREEN see the **README.TXT** file on the release disk.

8. OBTAINING AND USING COBA

Versions of COBA

- 8.1 COBA will run on any PC under Windows 95 or above with Internet Explorer 4.0 or above. The main analysis program runs in DOS mode, but the associated file viewer utility are Windows applications. COBA will handle a maximum network size of 10,000 links and 6,000 nodes; the user cannot alter the maximum number of links and nodes. Due to storage requirements the total number of junctions that can be coded for delay calculations will generally be less than the number of network nodes; see paragraph 4.9. Special program versions may be supplied to meet specific user requirements of problem size.

Obtaining a Copy of the COBA Program

- 8.2 Copies of the COBA program can be obtained by contacting TRL at the address shown below. There is a charge, dependent upon the category of user, and users will be required to sign a licence agreement. There is no automatic re-issue of revised versions of the program although program holders will be notified when a revised version is available. Re-issues are made in exactly the same way as first issues.

Software Bureau	Tel: 01344 773131
Transport Research Laboratory	Fax: 01344 770356
Crowthorne House	
Nine Mile Ride	
WOKINGHAM	Email: softwarebureau@trl.co.uk
Berkshire	
RG40 3GA	Web: www.trl.co.uk

An electronic version of the user manual in pdf format is included on the release disk, or alternatively can be downloaded from the Department's website at:

http://www.dft.gov.uk/stellent/groups/dft_control/documents/contentservertemplate/dft_index.hcst?n=11303&l=2

Installing COBA

- 8.3 COBA should be installed onto the target PC by inserting the supplied CD-ROM and running SETUP.EXE. You will be prompted for a directory into which the required files will be copied.

After the installation process is complete, the following files will have been copied onto your PC:

README.TXT	Latest release notes
COBA11.EXE	COBA11 executable
COBA11.ERR	COBA11 error/warning file
DOS4GW.EXE	WATCOM program for COBA11
C11HDR.TXT	Set of COBA11 KEY headers
C11WAR.DAT	COBA11 test data, input
C11WAR.PRN	COBA11 test data, output listing
CSCR11.EXE	COBA11 data preparation program (copied into CSCREEN directory)
PRNDOT.EXE	Program to print to generic dot matrix printer
PRNLAS.EXE	Program to print to generic laser printer
VIEWER.EXE	Viewing/printing utility
VIEWER.CHM	VIEWER Help file
VIEWER.TXT	VIEWER release notes
VIEW_OPT.DAT	VIEWER options file

- 8.4 Please refer to the README.TXT file (included on the CD-ROM and also copied into the COBA subdirectory) for any additional information relating to the particular release of the software.
- 8.5 COBA and its associated programs can be run either directly from a DOS command line or from Windows (via the Start menu, or a desktop shortcut, or by navigating to the COBA folder and running the executable.) The VIEWER program must be run from Windows. There are various files which are used by COBA during execution, and these are assumed by COBA to be present in the same directory. Data files also exist in, and output files are written to, this same directory. It is advised that data files and their output are stored in separate directories, and copied to/from the COBA directory before/after running them through COBA.
- 8.6 COBA is a batch program; that is, data is prepared, then submitted. There is no interaction between the user and the program while it is running. Output from COBA is to a file which can be sent to a printer after the COBA run has finished. Any text editor can be used to create data files, and to view and print output files. It is recommended that you use the supplied VIEWER program to view COBA output, since it creates an index to the various output sections and offers various other facilities.

Execution of the COBA program, COBA11.

- 8.7 To run COBA11, type: **COBA11 infile outfile**. Where:

infile is the name of the data file for COBA. If you do not supply an extension then the usual file extension for COBA input files, **.DAT**, is automatically added. The data file must exist in the COBA11 directory; if it does not then the user is prompted for a filename.

outfile is the name of the output file. If you do not supply an extension then the usual file extension for COBA output files, **.PRN**, is automatically added. (If any other extension is used then VIEWER will not recognise the file as COBA output.) If **outfile** is omitted, the program will produce a file of the same name as the data file with extension **.PRN**. If the output file already exists the user will be warned of this and given the opportunity to either sanction the overwriting of the existing file or of supplying an alternative filename.

- 8.8 If no filenames are supplied and the user types **COBA11** only (or if the user runs the program directly from Windows) then the program will prompt the user for a valid data and output file.

Example: run COBA11 using the supplied sample file by typing **COBA11 C11WAR**; this will generate an output file C11WAR.PRN.

Data Errors and System Errors

- 8.9 There are a number of error and warning messages built in to the program COBA. These are mainly concerned with incompatibility of data and are generally discovered by the user after a run has been attempted but the program has stopped after the data input and verification stage. In any case the data in error will be indicated and the user should consult the manual for the correction(s) necessary.
- 8.10 These error and warning messages are maintained on a file [COBA11.ERR] associated with COBA; COBA11 requires this file to be in the directory from which it is being run.
- 8.11 Run time errors can occur when running COBA or its associated programs. These errors are usually caused by data errors or file system errors. The more common errors are listed below. Nearly all errors reported in the past have been from this group.

Run time errors in the COBA program

- *ERR* IO - 07 Bad character in input field
 - meaning an error in data file, for example a non-numeric character in number field of data or data line incomplete.

- *ERR* IO - 10 Format specification does not match data type
 - meaning error in data file, for example, non-numeric character in number field of data or data file incomplete.

- Stub Exec Failed, DOS4GW, No such file or directory
 - meaning DOS4GW.EXE file not present (needs to be located with COBA11 program).

- DOS4GW Fatal Error, loader failed, LINEXE_LOADER
 - meaning insufficient memory (RAM, extended memory) to run program

COBA Output

- 8.12 Output from COBA is in the form of a text file, with page breaks, with a row width of up to 120 characters. You can use any text editor or word processor to examine and print the output, but the supplied VIEWER program is recommended - see below for details. Whatever method you use to print files, you will need to select a combination of paper orientation and/or font size that allows the full width of the file to fit onto a printed page. This will depend on your particular printer and the paper format being used.
- 8.13 In addition to VIEWER, two small utility programs are supplied for use with generic printer types. They take the output data file to be printed, add some switch sequences and send the output data to the printer, returning the printer to its default settings when finished. If your printer is:
- i) an Epson Compatible dot matrix printer, then use the program PRNDOT.EXE, by typing **PRNDOT filename**, or, if your printer is
 - ii) an HP Compatible laser printer, then use the program PRNLAS.EXE, by typing **PRNLAS filename**.
- 8.14 Part 7 Chapter 5 of this Manual describes some features of the COBA printed output; in particular, it describes the scope of the 'print phases' that the user obtains by default or requests on Key 002 records.

VIEWER

- 8.15 The VIEWER program can be run at any time, from the Windows Start menu, or by navigating to the COBA directory and running VIEWER.EXE. It will display and print any text file, but recognises COBA files and makes extra functionality available for such files. Full details regarding the operation of VIEWER can be found in the on-line Help file, which appears when the user clicks on *Help/Contents* from within the program. A summary is given below.
- 8.16 The heading of the various sections present within a COBA output file are highlighted in blue and added to the *Data* menu. Clicking on any of the entries in the *Data* menu will scroll the file to the appropriate position. The entries are arranged as follows:
- Sections printed only once for the whole file (e.g. Title Page, Basic Data) appear in the *Data* menu.

- Each scheme is shown in the *Data* menu as a link to a submenu. Each 'As Specified in...', 'As Modified in...' and 'Results' part of each scheme is shown separately, as appropriate.
 - Clicking on a scheme presents a submenu where the sections inside that scheme are shown. The top line of this menu is just a reminder of the chosen scheme and cannot be selected.
 - Clicking on a section then causes Viewer to jump to the relevant page of the file. It is not possible to walk 'backwards' through the menus but the process can be re-started by clicking on the *Data* menu.
- 8.17 If two or more files are loaded, the 'Synchronised Scroll Bar' down the right-hand side of VIEWER can be used to scroll through all files together. This is useful when comparing, say, two runs of the same file. A menu option allows the user to choose from several different ways of using the Synchronised Scroll Bar.
- 8.18 Parts of files can be compared and the differences highlighted. An option to jump to each difference is provided and is useful when the files being compared are large and the difference(s) small.
- 8.19 Files are said to be 'compatible' if they have the exact same number of lines and the same section headers at the same points. Such files can be compared in their entirety and can also be 'synchronised', so that choosing a data section in one will automatically choose the same section in the other file(s). Changing a COBA data file and re-running it may or may not result in a 'compatible' file being generated, depending on whether any additional rows are included in the output.
- 8.20 By default, the file is printed using the same font type and size as that used to display the file on screen. However, it is possible to set up separate screen and printer fonts. This is useful if the size of font needed to fit the full width of the output on a printed page is too small to comfortably view on screen. The printout is organised such that COBA pages are kept together on a printed page. More than one COBA page will fit on a printed page if a small enough font is used. It is possible to print either the entire file, a selection, or a specified number of pages.
- 8.21 All user options are saved to a file VIEW_OPT.DAT. If this file is deleted then VIEWER will revert to the default options and create a new version of the file.

9. EXAMPLES OF INPUT DATA

9.1 Included here are two data files which it is hoped will assist the user, especially those preparing input for the first time, by providing examples of data file formats. It is not possible to give examples of "best practise" as this will depend on the individual scheme being appraised. The examples should be viewed in conjunction with Chapter 2 which describes the structure of COBA data and Chapter 4 which instructs on the details of the data on each record.

9.2 The first example is of a very simple COBA input file required to examine the widening of a five kilometre length of single carriageway to dual carriageway. This data file has very little local data and the appraisal relies on default data, no cost data has been input. It is the type of run that could be undertaken at the early stages of scheme development in order to get an idea of whether a scheme is likely to prove economic.

```

GENERAL TITLE                DUALLING OF THE A999 FROM A TO B (L/G)
|
| YEARS FOR THIS SCHEME - FIRST      LAST  PRES-VAL  CURRENT      JOURNEY TIME
|                          2008                2006
|
| NTWRK CLASSIFICATION TF-PERIOD  TF-YEAR  TF-MONTH  ACCIDENTS  TIDALITY
|                          TNB      12HR    1999      05         SEP
|
| OPTIONS      TRAFFIC  ECONOMIC  FUELCOST
|              DEFL    DEFL      DEFL
|
| TRAFFIC PROPNS  YEAR PER  CAT-1    CAT-2    CAT-3    CAT-4    CAT-5    CAT-6
|                 2000 12   .767     .092     .072     .059     .01
|
| END OF BASIC DATA  ++++++
|
| SCHEME TITLE                DO MINIMUM
|
| NODE-LINK DATA      NODE LINK LINK LINK LINK LINK LINK
|                      1     1
|                      2     1
|
| 9999
|
| END OF NODE-LINK DATA  ++++++
|
| FLOW ON      LINK  VMG1  VMG2  VMG3 INTO NODE
|              1    16400
|
| 9999
|
| RURAL ROAD LINK  C AT DES LENGTH  CWID  HILLS DOWN BEND SWID VWID JUNC VISI MAXS
|                 1  1  4   0   5.0   7.0   20   0   90         2  0.8 350  97
|
| 9999
|
| END OF SCHEME DATA  =====
|
| SCHEME TITLE                IMPROVED TO DUAL 2 LANE
|
| NO NODE-LINK DATA CHANGES  ++++++
|
| RURAL ROAD LINK  C AT DES LENGTH  CWID  HILLS DOWN BEND SWID VWID JUNC VISI MAXS
|                 1  2 11         5.0  14.6   15   0   30         113
|
| 9999
|
| END OF SCHEME DATA
| FINISH

```

9.3 The second example is a hypothetical bypass scheme developed to give examples of all link and junction classifications.

```

GENERAL TITLE                SMALL TOWN BYPASS (EXAMPLE) HIGH GROWTH

YEARS FOR THIS SCHEME - FIRST      LAST  PRES-VAL  CURRENT      JOURNEY TIME
                        2008                2006                2000

NTWRK CLASSIFICATION TF-PERIOD   TF-YEAR  TF-MONTH ACCIDENTS  TIDALITY
TNB                12HR          2000    05          SEP

OPTIONS      TRAFFIC ECONOMIC  FUEL COST
             DEFH      DEFH      DEFH

TRAFFIC PROPNS YEAR PER CAT-1    CAT-2    CAT-3    CAT-4    CAT-5    CAT-6
                2000 12  .767      .092    .072    .059    .01

END OF BASIC DATA  ++++++

SCHEME TITLE                DO MINIMUM

NODE-LINK DATA      NODE LINK LINK LINK LINK LINK LINK
                    1  1  2
                    2  2  3  10
                    3  3  4
                    4  4  5
                    5  5  6
                    6  6  18  7  17
                    7  7  8
                    8  8  9
                    9  10 11
                    10 12 13
                    11 13 11 14
                    12 14 15
                    13 15 16
                    14 16 17
                    15 18 19
                    16 19 20
                    17 20 21
                    18 22 1

9999

END OF NODE-LINK DATA  ++++++

COSTS  YEAR      CAPITAL-COST  CONSTR-DELAY  MAINT-CAPITL  MAINT-DELAY
      2013          50                350            250
      2023          35                30
      2033          35                30

9999

FLOW ON      LINK  VMG1  VMG2  VMG3 INTO NODE
            1  16400
            2  16400
            3  15400
            4  15400
            5  18000
            6  18000
            7  15800
            8  13000
            9  13000
           10  3000
           11  4600
           12  5200
           13  5200
           14  4600
           15  3000
           16  3000
           17  4000
           18  10200
           19  7700
           20  7700
           21  7700
           22  16400

9999

```

RURAL ROAD LINK	C	AT	DES	LENGTH	CWID	HILLS	DOWN	BEND	SWID	VWID	JUNC	VISI	MAXS
1	2	10		1.0	14.6	28		0					113
2	1	4		0.6	6.8	28		60		1			97
3	1	6		0.5	10.0	28		60		1			97
4	1	4		1.0	6.8	28		60		1			97
9	1	4		1.0	7.3	15		40		1			97
10	1	9		3.3	6.0	15		150		1			97
12	1	9		1.0	7.0	15		30		1			97
15	1	9		0.4	7.0	15		30		1			97
20	1	9		0.3	7.0	15		30		1			97
21	1	9		1.0	7.0	15		30		1			97

9999

SUBURBAN LINK	AT	S/D	LENGTH	WIDTH	HILLS	MAX-S	INT	AXS
5	6	1	0.55	6.5	28	64	0.8	28
8	4	1	0.85	7.3	28	64	0.8	28
16	9	1	0.9	7.3	15	64	0.8	28

9999

URBAN ROAD LINK	C	AT	S/D	LENGTH	WIDTH	HILLS	VOBS	DEVEL	INT	QOBS
6	7	4	1	0.4	7	15		50		
7	7	4	1	0.55	7	15		50		
17	7	9	1	0.3	6.5	15		50		
18	7	9	1	0.55	6.0	15		50		
19	7	9	1	0.25	6.5	15		50		

9999

SMALL TOWN LINK	R	AT	S/D	LENGTH	WIDTH	HILLS	MAX-S	LD
11	9	1		0.4	6.0	15	48	0.24
13	9	1		0.5	6.8	15	48	0.24
14	9	1		0.6	7.0	15	64	0.4

9999

MAJOR MINOR RST JT	LINK	L-WID	R-WID	L-VIS	R-VIS	C-WID	T-WID	S	V	MXD
2 110 1								0	1	300
	3	0	0	0	0	0	8.50			
	10	3.0	2.5	250	140	0	0			
	2	0	2.5	0	160	0	8.50			

9999

ACDY ONLY JUNCT	LNK1	DEL	LNK2	DEL	LNK3	DEL	LNK4	DEL	LNK5	DEL	LNK6	DEL
3	4	5	3	5								

9999

SIGNALS RST	LNK1 GR	LNK2 GR	LNK3 GR	LNK4 GR	LNK5 GR	LNK6 GR	M	M1	LTM	MXD					
6 210	6 0	18 0	7 0	17 0			0	99	10	300					
LINK INDEX LN	1L	R	GD	2L	R	GD	3L	R	GD	WIDTH	1S2	STO	OP	MVTS	XGR
1	1	2		0	3		0	0		0	3.50	1	0	0	0
1	2	4		0	0		0	0		0	3.50	1	0	0	0
2	1	3		0	4		0	1		0	3.25	2	0	0	0
3	1	4		0	1		0	0		0	3.50	1	0	0	0
3	2	2		0	0		0	0		0	3.50	1	0	0	0
4	1	1		0	2		0	3		0	3.25	2	0	0	0

9999

TURNF NODE F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
2 P		3	10	2						
	3	0	65	935						
	10	330	0	670						
	2	878	122	0						

9999

TURNF NODE F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
6 P		6	18	7	17					
	6	0	288	684	28					
	18	510	0	245	245					
	7	778	158	0	64					
	17	125	625	250	0					

9999

END OF SCHEME DATA =====

SCHEME TITLE NORTHERN BYPASS (D2/WS2 OPTION)

DELETE THE FOLLOWING LINKS AND/OR NODES

1

9999

LINKS TO BE ADDED

LINK	JOINS	NODE	TO	NODE
30		18		31
31		31		1
32		1		32
33		32		35
34		35		33
35		33		1
36		1		34
37		34		18
38		31		32
39		33		34
40		17		8
41		17		35

9999

END OF NODE-LINK DATA ++++++

CONSTRUCTN COST	ESYR	Q	RPI	NEXT	OPEN	CON	ST	PR	SU	YR1	YR2	YR3	YR4	YR5
13000	2001	1	171.8	2006	2008	2	3	6	5	47	50	3		
LAND COST	ESYR	Q	RPI	YR	PRO	YR	PRO	YR	PRO	YR	PRO	YEAR	PBRPI	
1300	2000	2	170.6	07	100									

9999

COSTS	YEAR	CAPITAL-COST	CONSTR-DELAY	MAINT-CAPITL	MAINT-DELAY
	2006		100		
	2007		60		
	2018			50	5
	2023			50	5
	2028			400	20
	2033			50	5

9999

FLOW ON	LINK	VMG1	VMG2	VMG3	INTO	NODE
	2	8000				
	3	5000				
	4	5000				
	5	7600				
	6	7600				
	7	7600				
	8	4800				
	10	5000				
	11	5600				
	13	5200				
	14	2600				
	15	1000				
	16	1000				
	17	2000				
	18	4000				
	19	4500				
	20	4500				
	30	8200				31
	31	3000				1
	32	1000				32
	33	6200				35
	34	6200				33
	35	1000				1
	36	3000				34
	37	8200				18
	38	5200				32
	39	5200				34
	40	8200				
	41	12400				

9999

RURAL ROAD	LINK	C	AT	DES	LENGTH	CWID	HILLS	DOWN	BEND	SWID	VWID	JUNC	VISI	MAXS
	30	2	11		1.0	7.3		12	20					113
	31	2	11		0.5	6.0		15	15					113
	32	2	11		0.5	6.0	15		15					113
	33	2	11		3.0	7.3	12		15					113
	34	2	11		3.0	7.3		12	20					113
	35	2	11		0.5	6.0		15	20					113

```

36 2 11      0.5  6.0   15      15      113
37 2 11      1.0  7.3   12      20      113
38 2 11      1.0  7.3    5      10      113
39 2 11      1.0  7.3    5      10      113
40 1 7       2.0 10.0   12      20  1.0  2.0  97
41 2 11      0.1 14.6   15      20      113
9999

```

```

MERGE NODE  T  LNK1 LNK2 LNK3  N  CAP AMPI PMPI  PARA PARB PARC  PARD PARE  MXD
      32      33  38  32    2    227
      34      37  39  36    2    227
9999

```

```

ROUNDAABOUT RST RT  LINK  A-WID E-WID E-RAD F-LEN DIAM FI  GSI  DCPK DCOPK GD  MXD
      8 120 2  9  3.65 8.0  20  20  40 30  0  0  0  300
      0  8  3.65 8.0  20  20  40 30
      0  40 5.00 9.5  30  30  40 30
9999

```

```

SIGROUND  RST  DIAM  GD  MXD
      17 120 1  80  300
      LINK E EWID  ESAT F FWID  FSAT FLEN FLAR C CWID  CSAT JTIM JDIST  GRAD MIN
      41 3 3.65  1 3.65  20  3 3.00  60
      21 2 4.00  2 3.65  20  3 3.00  60
      40 3 3.20  2 3.65  30  3 3.00  60
      20 3 3.33  2 3.65  30  3 3.00  60
9999

```

```

TURNF NODE F/P  FROM  TO 1  TO 2  TO 3  TO 4  TO 5  TO 6  INFL AMPI PMPI
      2  P      3  10  2  800
      10 200  0  800
      2  500  500  0
9999

```

```

TURNF NODE F/P  FROM  TO 1  TO 2  TO 3  TO 4  TO 5  TO 6  INFL AMPI PMPI
      6  P      6  18  7  17
      6  0  132  803  65
      18 250  0  125  625
      7  803  66  0  131
      17 125  625  250  0
9999

```

```

TURNF NODE F/P  FROM  TO 1  TO 2  TO 3  TO 4  TO 5  TO 6  INFL AMPI PMPI
      8  P      9  8  40
      9  0  364  636
      8 1000  0  0
      40 1000  0  0
9999

```

```

TURNF NODE F/P  FROM  TO 1  TO 2  TO 3  TO 4  TO 5  TO 6  INFL AMPI PMPI
      17 P      41  21  40  20
      21  0  307  597  96
      40 416  0  195  389
      20 756  183  0  61
      20 222  667  111  0
9999

```

```

DETAILED JUNCTION DELAYS  NODE  1STYEAR  2NDYEAR  3RDYEAR
                          17  2008
9999

```

END OF SCHEME DATA

FINISH

Accident Only Analysis

9.4 COBA can be used to provide an Accident Only Analysis. This provides only accident numbers and accident costs with all other outputs (for example, construction costs, link transit and junction delay costs etc.) being suppressed or blanked out. An Accident Only COBA is run as follows:

- (i) If users have already coded the roads network using COBA (that is, a full set of link and junction data with flows and geometric data etc), an Accident Only Analysis can be selected on KEY004 (using ACS or ACC) depending on whether the original data set was coded as SEPARATE or COMBINED
- (ii) If the roads network has not already been coded in COBA, then an Accident Only Analysis can be carried out by providing a much reduced amount of link, node and scheme data. Data for the following KEYS is needed:-

Basic Data

001	General Title
003	Years for this Scheme
004	Network Classification/Flow Period/Year/Month/ Accidents/Tidality (this Key must contain ACS or ACC)
005	Options for Traffic/Economics/Fuel Cost Growth
008 (optional)	Seasonality Index/E-Factor/M-Factor
009 (optional)	Growth of Traffic
040	End of Basic Data

Scheme Data

041	Scheme Title
042	Node-Link Data
043 (as required)	Delete the Following Links/Nodes
044 (as required)	Links to be Added
045 (as required)	Nodes to be Added
050 or 051	End of Node Link Data or No Node Link Data Changes
056	Flow on Link

Link descriptions

060 (as required)	Rural Road Link	}	Link number, Road Class, Length and Accident Type only needed. (The default speed limit for this Road Class will be used by COBA unless specified otherwise).
061 (as required)	Suburban Link	}	
062 (as required)	Urban Road Link	}	
063 (as required)	Small Town Link	}	
085 (optional)	Local Accident Data for Links		

Node descriptions

- | | |
|----------------|--|
| 087 (optional) | Local Accident Data for Nodes |
| 088 (optional) | Accident Only Node. If ACS is specified on 004 then junction accident type must be entered here. |

Final Control Records

- | | |
|----------------|-----------------------------------|
| 089 (optional) | Next Year for Scheme Data Changes |
| 090 | End of Scheme Data |
| 998 | Finish. |

