User Documentation for
Automated Access Coding Programs

WLKLINKS version 2.0
DRVLINKS version 2.0

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A suite of four programs has been developed to aid in the coding of access links in transportation networks. These programs were developed in response to a growing need to maintain consistency and to standardize the methodology for coding access link connections. This documentation describes the first two programs: WLKLINKS and DRVLINKS. These programs were developed to automate the construction of walk access and drive access links to transit services. The remaining programs, DRVTIME (used to place the highway travel time on auxiliary drive access transit links) and DRVTRIPS (used to create a trip table from the pnr and knr link volumes) are described elsewhere.

OVERVIEW

The WLKLINKS and DRVLINKS programs were designed to automate the coding of transit access links. Transit access links connect centroids with specific locations such as bus stops, train stations, or pnr/knr facilities. User defined options are available that allow coding to specific nodes rather than centroids. In addition, options are available to indicate minimum and maximum search distances, mode-specific transit stops, non-duplication of transit lines, etc. Each of these options is described in the sections below.

Both programs read a transportation network file separated into a centroid listing and a node listing. The highway network links are not required for these programs. The network is processed according to the options specified in the control file and a link batchin file is produced. The centroid and node batchout, and link batchin files are read directly in the format specified (i.e., EMME/2, TRANPLAN, or some other user defined format). For the WLKLINKS program, a transit line itinerary file is also read.

The programs are run with a single command line indicating the program name and control file. This command should be issued at the standard command prompt. For instance, the following line,

WLKLINKS wlklinks.ctl

will run the WLKLINKS program using the parameters found in the wlklinks.ctl control file. The control file contains various parameter settings that specify the settings to be used in building access link connections. A control file needs to be developed for each run of the program.

Both programs are organized in a similar manner. Version 1.X of each program provides compatibility with EMME/2 input and output routines; while version 2.X provides compatibility with both EMME/2 and TRANPLAN.

The programs are available for several different platforms, including: DOS 32-bit, UNIX, Windows95, Windows-NT, and Windows3.X. The program can be run from within Windows at a DOS prompt. In the DOS environment, these programs have been implemented in 32-bit protected mode. As such, two programs need to be in the path. These programs are: *32RTM.EXE* and *DPMI32VM.OVL*.

CONTROL FILE STRUCTURE

A control file is used to specify the options to be used in building access links. The control files for the WLKLINKS and DRVLINKS programs are very similar, except for the options that are described below.

An example control file for the WLKLINKS program is shown in Figure 1. For simplicity, the example control files have been named with the "ctl" extension. However, that is not necessary nor required.

The control file is organized into several sections with each section header indicated by brackets [...]. The specific options are described beneath. The various section headers include:

[Files]	describing the input and output filenames
[Parameters]	describing the specific options to be used in access link building
[Reports]	describing the specific reports being provided
[Centroid Format]	describing the format of the centroid input file
[Node Format]	describing the format of the node input file
[Transit Format]	describing the format of the transit line itinerary input file
[New Link Attributes]	describing the attributes to be used in the new access link file

Under the section header are a series of options that specify the particular parameters for that section. These options are listed using free format and spaces are allowed on both sides of the equal sign. Any yes/no parameters can be answered with other key words such as: y/n, true/false, t/f, or 0/1. Not all keywords are necessary; however, if they are missing, the default values will be used. The default parameters for each section are given in the detailed listing below, followed by other allowable options. All reports that can be produced under each program are written to the report file. This is the default setting and can be changed within the control file.

Comments can be used anywhere within the control file. However, they must start with the special characters: asterisk (*) or semi-colon (;).

WLKLINKS PROGRAM

The WLKLINKS program builds walk access links to transit stop nodes. The access links can be built from any centroid or node location. Although a geographic centroid is typically used for this purpose, the program allows the flexibility of building access links from any location – such as population centroids or employment centroids. The program can read an unlimited number of centroids, nodes, and transit line segments. The following options are also available:

- Access links can be built to a particular mode or subset of modes. This may be required when building access to certain premium modes, such as express bus or rail service.

- Access links can be built to a single stop on a transit line or to multiple stops per transit line. In most cases, the access links should be built to a single stop only. For instance, one would probably not want multiple access links to the same transit line only one block apart.

- Transit lines can be split into two parts by direction (i.e., line 32X would become 32XA and 32XB). This is particularly useful for areas with one-way street systems.

- Either individual or global settings can be used to set the minimum and maximum search distance. For instance, centroids in the CBD may have a smaller minimum (i.e., shorter walk distance) than suburban areas. Also, search distances can be larger at the edges of the transit network than in dense urban areas.

- The number of access links to be built can be specified either individually or globally.
- If multiple links are specified, the distance posted on each link can be an average of the multiple links; otherwise, the individual distances are used.
- The access link distance calculation can be specified as one of two ways: either Cartesian (calculated using the quadratic formula) or Manhattan (X+Y).
- A network scale is provided to convert coordinate units to actual distances.

The input and output file formats can be either standard EMME/2, or TRANPLAN formats, or some other user defined format. The user defined format allows users who are coming from a GIS system or other environments to use the program without having to reformat their files. In this case, the actual columns that contain the centroid, node, and link data are specified in the control file. When reading TRANPLAN formatted files, the large coordinate option should be used.

A transit line itinerary file is read to determine the transit stop locations. In EMME/2, transit stops are always indicated by "dwt" or "tdwt" records with non-zero entries. The program reads most of the special characters (#, *, +, <, >) that can accompany the dwell time option. In addition, the program reads over the "path," "ttf," "lay," "us," and other temporary specifications. In TRANPLAN, transit stops are indicated with a '-' (minus sign) preceding the node number.

Transit line itineraries should be supplied in EMME/2 batchout or TRANPLAN INET format. To ensure this is the case the transit lines should be read into EMME/2 and then batched out. This will ensure that the standard formats are abided by. An example of the transit line format is included in Appendix A for EMME/2 and in Appendix B for TRANPLAN (INET).

Parameter Controls for WLKLINKS Program

This section describes the various parameter controls for the WLKLINKS program. It is organized by [Section Header] with the individual options listed below. The default values are given next to the equal sign.

[Files]

* These are the default file names.

CentroidFile	= cents.in	Listing of centroids from which to build wlk access links.
NodeFile	= nodes.in	Listing of node coordinates to be used in distance calculations.
TransitFile	= lines.in	Transit line itineraries to be used to determine stop locations.
ReportFile	= wlklinks.rpt	Report file.
LinkFile	= wlklinks.out	Listing of walk access links.

[Parameters]

* These are the default parameters.

NumCentroids	= 2000	Number of centroids.
HiNodeNumber	= 10000	Highest node number.

IndividualMax	= no	If selected, the maximum number of access links can be specified on an individual centroid (or node) basis. The maximum number of access links should be placed in node user item 3.
MaxLinks	= 4	Maximum number of access links for global specification.
MultipleStops	= no	If selected, access links will be built to multiple transit stops on the same line itinerary. For example, two transit stops on the same transit line one block apart could both be coded with access links under this scenario.
SplitLines	= no	If selected, the transit line itineraries will be split at the layover point into two separate transit lines for purposes of creating access links. This option can only be used when MultipleStops=no; otherwise it is ignored.
SelectModes	= no	If selected, access links will be built to a subset of transit modes. These modes are listed below.
SearchModes	= b	Subset of alphanumeric transit modes to be used. Modes can be delimited with either spaces or commas (i.e., b x c or b,c,x).. In EMME/2, modes are defined as single alphabetic characters. In TRANPLAN the modes are defined numerically.
Distance	= Cartesian	Calculates the link distance using the quadratic formula. If "Manhattan" is specified, the link distance is calculated as (X+Y).
IndividualSearch	= no	If selected, the user can specify a minimum and maximum search distance for each centroid or node. In addition, the maximum number of access links can be specified under the IndividualMax option. For EMME/2, the minimum should be in node user data item 1, the maximum in node user data item2. For TRANPLAN a user defined centroid format must be used. The minimum and maximum values would then be placed into column format, with the appropriate column definitions given in the control file.
AverageDistance	= yes	If selected, the posted link distance will be the average of all access links (up to the maximum) for that centroid.
MinDistance	= 0.0	Minimum search distance for global specification.
MaxDistance	= 0.33	Maximum search distance for global specification.
NetworkScale	= 1.0	Scale factor to convert coordinate units to search distance units.
WalkSpeed	= 3.0	Walk speed for TRANPLAN links.

[Reports]

EchoTransitLines	= yes	If selected, this option will echo the transit lines read in.
PrintUnconnected	= yes	If selected, a list of unconnected centroids will be produced.
PrintConnections	= yes	If selected, a summary of access links will be produced.
PrintStats	= yes	If selected, summary statistics on the number of access links, minimum, maximum, and average link distances will be produced.

[Centroid Format]

CentroidFormat	= user	Indicates format of centroid file. Allowable options are 'EMME/2' or 'user.' Under TRANPLAN, the format must be specified as 'user' and the next three items must be completed.
Number	= 3-8	These must be specified if CentroidFormat = user
XCoord	= 9-16	These must be specified if CentroidFormat = user
YCoord	= 17-24	These must be specified if CentroidFormat = user
User1	= 26-32	Contains minimum distance if IndividualSearch = yes
User2	= 34-40	Contains maximum distance if IndividualSearch = yes
User3	= 42-48	Contains maximum links if IndividualSearch = yes
FirstCentroid	= 1	Indicates line number where centroid listing starts.

[Node Format]

NodeFormat	= user	Indicates format of node file. Allowable options are 'EMME/2' or 'user.' Under TRANPLAN, the format must be specified as 'user' and the next three items must be completed.
Number	= 2-8	These must be specified if NodeFormat = user
XCoord	= 9-16	These must be specified if NodeFormat = user
YCoord	= 17-24	These must be specified if NodeFormat = user
FirstNode	= 1	Indicates line number where node listing starts.

[Transit Format]

TransitFormat	= EMME/2	Format of transit line itineraries. Only 'EMME/2' and 'TRANPLAN' are allowed in version 2.X.

[New Link Attributes]

* These items specify the attributes of the new access link.

DeleteLinks	= no	If selected, add link card will be preceded by delete link card.
Direction	= twoway	Determines the links that are written to the new link file. If "twoway" is specified, both inbound and outbound links will be written to the new link file. Alternatively, either "inbound" or "outbound" can be specified for the desired link.
ModesIn	= i	Single mode on inbound link to centroid.
ModesOut	= o	Single mode on outbound link from centroid.
LinkType	= 99	Link type code for EMME/2 only.
VolumeDelay	= 99	Volume delay code for EMME/2 only.
Lanes	= 1.0	Number of lanes on link for EMME/2 only.
LinkFormat	= user	Format of new link cards. Only 'EMME/2,' 'TRANPLAN' or 'INET' are allowed in version 2.X

Some of the parameters listed above are applicable to specific software packages only. Table 1 summarizes the settings that should be used in each case.

Table 1
Summary of Software Specific Parameter Controls

Parameter	EMME/2	TRANPLAN	User Format
[Parameters]			
NumCentroids	•	•	•
HiNodeNumber	•	•	•
IndividualMax	Place in ui3	CentroidFormat = user	Place in user3
MaxLinks	•	•	•
MultipleStops	•	•	•
SplitLines	Split at layover point	Not used	Not used
SelectModes	•	•	•
SearchModes	Character fields	Numeric values	
Distance	•	•	•
IndividualSearch	Min ui1, Max in ui2	CentroidFormat = user	Min in user1, Max in user2
AverageDistance	•	•	•
MinDistance	•	•	•
MaxDistance	•	•	•
NetworkScale	•	•	•
WalkSpeed	Not used	Default walk speed	Not used
[New Link Attributes]			
DeleteLinks	Add "d" card first	Not used	Not used
Direction	•	•	•
ModesIn	•	•	•
ModesOut	•	•	•
LinkType	Link type	Not used	Not used
VolumeDelay	Volume delay code	Not used	Not used
Lanes	Number of lanes	Not used	Not used
LinkFormat	•	•	•

Notes:
• These parameters are not software specific. Fill in with appropriate values.
Not used = These parameters are ignored under these specific software applications.

WLKLINKS Example

Figure 1 shows an example of the WLKLINKS control file for an EMME/2 network. In this case, all default file names are used, there are 395 centroids in the network, and the highest node number is 7500. All possible reports were requested. The remaining option settings are described in the control file listing. A partial output of the report file from the example WLKLINKS run is shown in Figure 2.

Figure 1
Example Control File for the WLKLINKS Program

```
[Files]
CentroidFile = cents.in
NodeFile     = nodes.in
TransitFile  = lines.in
ReportFile   = wlklinks.rpt
LinkFile     = wlklinks.out

[Parameters]
NumCentroids = 395
HiNodeNumber = 7500

IndividualMax = no
MaxLinks      = 4

MultipleStops = no
SplitLines    = yes
SelectModes   = no
SearchModes   = b x

Distance         = cartesian
IndividualSearch = no
AverageDistance  = yes
MinDistance      = 0.0
MaxDistance      = 0.33
NetworkScale     = 1.0

[Reports]
EchoTransitLines = yes
PrintUnconnected = yes
PrintConnections = yes
PrintStats       = yes

[Centroid Format]
CentroidFormat  = emme/2

[Node Format]
NodeFormat = emme/2

[Transit Format]
TransitFormat  = emme/2

[New Link Attributes]
LinkFormat  = emme/2
DeleteLinks = no
Direction   = twoway
ModesIn     = i
ModesOut    = o
LinkType    = 99
VolumeDelay = 99
Lanes       = 1.0
```

Figure 2
Example Report from WLKLINKS Program (partial listing)

```
WLKLINKS (TM) TRANSIT WALK LINK GENERATION PROGRAM
Ver 1.00  Rel  3/28/96  (32-Bit Version)
--------------------------------------------------
CONTROL FILE
-------------

[Files]
CentroidFile = cents.in
NodeFile     = nodes.in
TransitFile  = lines.in
ReportFile   = wlklinks.rpt
LinkFile     = wlklinks.out

[Parameters]
NumCentroids = 395
HiNodeNumber = 7500

IndividualMax = no
MaxLinks      = 4

MultipleStops = no
SplitLines    = yes
SelectModes   = no
SearchModes   = b x

Distance         = cartesian
IndividualSearch = no
AverageDistance  = yes
MinDistance      = 0.0
MaxDistance      = 0.33
NetworkScale     = 1.0

[Reports]
EchoTransitLines = yes
PrintUnconnected = yes
PrintConnections = yes
PrintStats       = yes

[Centroid Format]
CentroidFormat = emme/2

[Node Format]
NodeFormat = emme/2

[Transit Format]
TransitFormat = emme/2

[New Link Attributes]
LinkFormat  = emme/2
DeleteLinks = no
Direction   = twoway
ModesIn     = i
ModesOut    = o
LinkType    = 99
VolumeDelay = 99
Lanes       = 1.0
```

Figure 2 (continued)
Example Report from WLKLINKS Program (partial listing)

```
TRANSIT LINES READ =   50
--------------------------

    1       11       12       13       14       17       18       20
   23       24       25       26C      27       28       29       30
   31       33       34       35       3x       40       41       44
etc...

RUN RESULTS
-----------

CENTROIDS READ = 295
NODES READ     = 1116
LINKS WRITTEN  = 932

UNCONNECTED CENTROIDS
---------------------

     2      3      5      7      8      9     10     11     12     13
    14     15     16     18     19     20     21     23     24     25
    26     27     28     29     31     34     36     37     39     41
    42     43     61     65     66     78     79     81     82    116
etc...

NUMBER OF TWO-WAY LINKS/CENTROID
--------------------------------

     1 =      1 |     4 =      1 |     6 =      1 |    17 =      1 |
    22 =      1 |    30 =      1 |    32 =      1 |    33 =      1 |
    35 =      1 |    38 =      2 |    40 =      1 |    44 =      2 |
    45 =      3 |    46 =      3 |    47 =      3 |    48 =      4 |
etc...


CENTROID CONNECTION STATISTICS
------------------------------

             Canidate     Final       min       max       avg
Centroid       links     links      dist      dist      dist
-------------------------------------------------------------
       1  =        1         1     0.271     0.271     0.271
       2  =        0         0     0.000     0.000     0.000
       3  =        0         0     0.000     0.000     0.000
       4  =        1         1     0.254     0.254     0.254
       5  =        0         0     0.000     0.000     0.000
       6  =        1         1     0.299     0.299     0.299
       7  =        0         0     0.000     0.000     0.000
       8  =        0         0     0.000     0.000     0.000
       9  =        0         0     0.000     0.000     0.000
      10  =        0         0     0.000     0.000     0.000
etc...
```

DRVLINKS PROGRAM

The DRVLINKS program builds drive access links from centroids to park-n-ride or kiss-n-ride (pnr/knr) locations. These pnr/knr locations are represented by a set of nodes in the nodes.in file. This is a different use of the nodes.in file as compared to the WLKLINKS program. The access links can be built from any centroid or node location. Although a geographic centroid is typically used for this purpose, the program allows the flexibility of building access links from any location – such as population centroids or employment centroids. The program can read an unlimited number of centroids and pnr/knr locations. The following options are also available:

- Either individual or global settings can be used to set the minimum and maximum search distance from a pnr/knr location. For instance, fringe area pnr/knr facilities may have a larger catchment area than central area facilities.

- Either the closest centroid or all centroids within the maximum search distance can be connected to a pnr/knr location.

- The access link distance calculation can be specified as one of two ways: either Cartesian (calculated using the quadratic formula) or Manhattan (X+Y).

- A network scale is provided to convert coordinate units to actual distances.

The input and output file formats can be either standard EMME/2 or TRANPLAN formats, or some other user defined format. The user defined format allows users who are coming from a GIS system or other environments to use the program without having to reformat their files. In this case, the actual columns that contain the centroid, node, and link data are specified in the control file.

Parameter Controls for DRVLINKS Program

This section describes the various parameter controls for the DRVLINKS program. It is organized by [Section Header] with the individual options listed below. The default values are given next to the equal sign. The software specific parameters are described in Table 1.

[Files]

* These are the default file names.

CentroidFile	= cents.in	Listing of centroids from which to build drive links.
NodeFile	= nodes.in	Listing of pnr/knr locations to build drive links to.
ReportFile	= drvlinks.rpt	Report file.
LinkFile	= drvlinks.out	Listing of drive access links.

[Parameters]

* These are the default parameters.

NumCentroids	= 2000	Number of centroids.
NumNodes	= 500	Number of pnr/knr locations.

Distance	= Cartesian	Calculates the link distance using the quadratic formula. If "Manhattan" is specified, the link distance is calculated as (X+Y).
IndividualSearch	= no	If selected, the user can specify a minimum (in node user data item 1) and maximum (in node user data item 2) search distance for each centroid or node.
MinDistance	= 0.0	Minimum search distance (in miles).
MaxDistance	= 3.0	Maximum search distance (in miles).
NetworkScale	= 1.0	Scale factor to convert coordinate units.
MultipleLinks	= yes	If selected, then all access links will be used.

[Reports]

PrintUnconnected	= yes	If selected, a list of unconnected centroids will be produced.
PrintConnections	= yes	If selected, a summary of access links will be produced.

[Centroid Format]

CentroidFormat	= user	Indicates format of centroid file. Allowable options are 'EMME/2' or 'user.' Under TRANPLAN, the format must be specified as 'user' and the next three items must be completed.
Number	= 3-8	These must be specified if CentroidFormat = user
XCoord	= 9-16	These must be specified if CentroidFormat = user
YCoord	= 17-24	These must be specified if CentroidFormat = user
FirstCentroid	= 1	Indicates line number where centroid listing starts.

[Node Format]

NodeFormat	= user	Indicates format of node file. Allowable options are 'EMME/2' or 'user.' Under TRANPLAN, the format must be specified as 'user' and the next three items must be completed.
Number	= 2-8	These must be specified if NodeFormat = user
XCoord	= 9-16	These must be specified if NodeFormat = user
YCoord	= 17-24	These must be specified if NodeFormat = user
User1	= 26-32	Contains minimum distance if IndividualSearch = yes
User2	= 34-40	Contains maximum distance if IndividualSearch = yes
FirstNode	= 1	Indicates line number where node listing starts.

[New Link Attributes]

* These items specify the attributes of the new access link.

DeleteLinks	= no	If selected, add link card will be preceded by delete link card.
Modes	= p	Drive access connector link mode.
LinkType	= 99	Link type code.
VolumeDelay	= 99	Volume delay code.
Lanes	= 1.0	Number of lanes on link.
LinkFormat	= user	Format of new link cards. Only 'EMME/2' and 'TRANPLAN' are allowed in version 2.X

DRVLINKS Example

Figure 3 shows an example of the DRVLINKS control file for an EMME/2 network. In this case, all the default file names are used, and both reports are requested. A partial output of the report file from the example DRVLINKS run is shown in Figure 4.

Figure 3
Example Control File for the DRVLINKS Program

```
[Files]
CentroidFile = cents.in
NodeFile     = nodes.in
ReportFile   = drvlinks.rpt
LinkFile     = drvlinks.out

[Parameters]
NumCentroids = 300
NumNodes     = 2000

Distance = Cartesian
IndividualSearch = no
MinDistance      = 0.0
MaxDistance      = 0.5
NetworkScale     = 1.0

MultipleLinks = yes

[Reports]
PrintUnconnected = yes
PrintConnections = yes

[Centroid Format]
CentroidFormat = User

[Node Format]
NodeFormat  = User

[New Link Attributes]
LinkFormat  = emme/2
DeleteLinks = yes
Modes       = pk
LinkType    = 99
VolumeDelay = 99
Lanes       = 1.0
```

Figure 4
Example Output from DRVLINKS Program

```
DRVLINKS (TM) TRANSIT DRIVE LINK GENERATION PROGRAM
Ver 1.00  Rel  3/28/96  (32-Bit Version)
------------------------------------------------


CONTROL FILE
--------------

[Files]
CentroidFile = cents.in
NodeFile     = nodes.in
ReportFile   = drvlinks.rpt
LinkFile     = drvlinks.out

[Parameters]
NumCentroids = 300
NumNodes     = 2000

Distance = Cartesian
IndividualSearch = no
MinDistance      = 0.0
MaxDistance      = 0.5
NetworkScale     = 1.0

MultipleLinks = yes

[Reports]
PrintUnconnected = yes
PrintConnections = yes

[Centroid Format]
CentroidFormat = User

[Node Format]
NodeFormat  = User

[New Link Attributes]
LinkFormat  = emme/2
DeleteLinks = yes
Modes       = pk
LinkType    = 99
VolumeDelay = 99
Lanes       = 1.0


RUN RESULTS
------------

CENTROIDS READ = 196
NODES READ     = 14
LINKS WRITTEN  = 68
```

Figure 4 (continued)
Example Output from DRVLINKS Program

```
UNCONNECTED CENTROIDS
---------------------

    10     11     12     17     20     25     26     27     28     29
    30     31     32     36     40     41     42     44     45     46
    51     52     53     54     55     60     61     62     63     64
    65     66     67     68     69     71     72     73     74     75
    76     77     78     83     84     85     86     90     91     92
    96     97     98     99    101    102    103    104    105    106
   107    108    109    110    111    112    113    114    115    116
   117    118    119    120    121    122    123    124    125    126
   127    128    129    130    131    132    133    134    135    136
   137    138    139    140    141    142    143    144    145    146
   147    148    149    150    151    152    153    154    155    156
   157    158    159    160    161    162    163    164    165    166
   167    168    169    170    171    172    173    174    175    176
   177    178    179    180    181    182    183    184    185    186
   187    188    189    190    191    192    193    194    195    196


UNCONNECTED NODES
-----------------


NUMBER OF LINKS/CENTROID
------------------------

    1 =    2 |    2 =    1 |    3 =    2 |    4 =    1 |
    5 =    1 |    6 =    1 |    7 =    2 |    8 =    3 |
    9 =    2 |   13 =    1 |   14 =    2 |   15 =    3 |
   16 =    2 |   18 =    1 |   19 =    3 |   21 =    2 |
   22 =    3 |   23 =    2 |   24 =    1 |   33 =    2 |
   34 =    1 |   35 =    2 |   37 =    2 |   38 =    1 |
   39 =    1 |   43 =    1 |   47 =    2 |   48 =    1 |
   49 =    1 |   50 =    1 |   56 =    1 |   57 =    1 |
   58 =    1 |   59 =    1 |   70 =    1 |   79 =    1 |
   80 =    1 |   81 =    1 |   82 =    1 |   87 =    2 |
   88 =    2 |   89 =    1 |   93 =    1 |   94 =    1 |
   95 =    1 |  100 =    1 |

NUMBER OF LINKS/NODE
--------------------

 7001 =    3 |  7003 =    1 |  7008 =    2 |  7012 =    3 |
 7015 =    5 |  7017 =    5 |  7018 =    6 |  7020 =    6 |
 7022 =    6 |  7024 =   10 |  7025 =    7 |  7026 =    5 |
 7028 =    6 |  7029 =    3 |
```

Appendix A
Sample EMME/2 Transit Line Batchout Format

```
c EMME/2 Module: 2.24(v7.04)   Date: 96-04-04 15:34   User: E505/PBTFSC01..clc
c Project:       Metra Model Development
c Scenario  101: 1990 Base Hwy-Transit AM Peak Walk Access
t lines init
a'cta006' B  1   4.00  12.00 '3   KING DRIVE      '     25       0       0
  path=no   20123 dwt=.01   ttf=1   us1=5   10119 us1=2.8   20117
  us1=2.4   10118 us1=1.8   10040  us1=.6   20111 us1=2.4   10037
     9977 us1=2.9    9976 us1=2.2    9934  us1=.6   20099
  us1=2.8    9931 us1=1.8   20094 us1=1.9    9882 us1=1.8   20089
     9853   20085 us1=4.2    9816 us1=2.2   20081 us1=1.8    9714
  us1=1.2    3790  us1=.3    3791 us1=1.3    9713  us1=.5    9712
   us1=.7    3788  us1=.6   11885 us1=1.2    5709  us1=.5    5908
   us1=.3    3743  us1=.2    3724   12108   20073    5889    5887
     5881    5819    4040    4021    5782    5718  us1=.3    4020
    20065  us1=.9   13534    5585 us1=4.3    5388  us1=.6    5641
   us1=.4    5370 us1=1.4    5367 us1=2.6    3685   us1=3    3686
    lay=3    3685 us1=2.6    5367 us1=1.4    5370  us1=.4    5641
   us1=.6    5388 us1=4.3    5585  us1=.9   13534   20065
   us1=.3    4020    5718  us1=.2    5782    4021    4040    5819
     5881    5887    5889   20073   12108    3724    3743
   us1=.3    5908  us1=.5    5709 us1=1.2   11885  us1=.6    3788
   us1=.7    9712  us1=.8    3790 us1=1.2    9714 us1=1.8   20081
  us1=2.2    9816 us1=4.2   20085 us1=1.8    9853   20089    9882
  us1=1.9   20094 us1=1.8    9931 us1=2.8   20099  us1=.6    9934
  us1=2.2    9976 us1=2.9    9977 us1=2.4   10037   20111
   us1=.6   10040 us1=1.8   10118 us1=2.4   20117 us1=2.8   10119
    us1=5   20123   lay=3
a'cta009' B  1   4.00  12.00 '4   COTTAGE GROVE   '     25       0       0
  path=no   20123 dwt=.01   ttf=1 us1=1.8    2733 us1=1.2    3818
  us1=2.8   20118 us1=1.9   10121   us1=2   10120   10043
   us1=.6    8505   us1=2   10485  us1=.8   10041 us1=2.8    9980
   us1=.6    9979 us1=2.1    9978 us1=3.3    9938   us1=2    8510
   us1=.3    9937   us1=2    4160  us1=.2    9885 us1=2.3    9884
  us1=2.8    9858 us1=2.7    4159   us1=3    9823 us1=2.2   20085
  us1=4.2    9816 us1=2.2   20081  us1=.5    5700  us1=.1    5701
  us1=1.1    9735 us1=1.6   14515  us1=.1    9713 us1=1.7    3789
   us1=.6    3788   11885 us1=1.2    5709  us1=.5    5908
   us1=.3    3743  us1=.2    3724   12108   20073    5889    5887
     5881    5819    4040    4021    5782    5718  us1=.3    4020
    20065  us1=.9   13534    5585   13533   13535   lay=3   13534
    20065  us1=.3    4020    5718  us1=.2    5782    4021    4040
     5819    5881    5887    5889   20073   12108    3724    3743
   us1=.3    5908  us1=.5    5907 us1=1.1   11887 us1=1.2   11884
   us1=.6    3787  us1=.5    3788  us1=.6    3789 us1=1.7    9713
   us1=.1   14515 us1=1.6    9735 us1=1.1    5701  us1=.1    5700
   us1=.5   20081 us1=2.2    9816 us1=4.2   20085 us1=2.2    9823
    us1=3    4159 us1=2.7    9858 us1=2.8    9884 us1=2.3    9885
   us1=.2    4160   us1=2    9937  us1=.3    8510   us1=2    9938
  us1=3.3    9978 us1=2.1    9979  us1=.6    9980 us1=2.8   10041
   us1=.8   10485   us1=2    8505  us1=.6   10043   us1=2   10120
    10121 us1=1.9   20118 us1=2.8    3818 us1=1.2    2733
  us1=1.8   20123   lay=3
```

Appendix B
Sample TRANPLAN INET Transit Line Format

```
&ROUTE M= 15,L=  1,C= 24,RG=907,H= 25,ID='1SB,LONG BEACH-CAPISTRANO',
       ONEWAY=T,
     N= -4077,-11472,-10260,-10261, 10262,-10263,-11162,-11161,-11160,
       -11159,-13473,-10245,-10246,-10247,-10248,-10249,-12799,-11175,
       -10232,-10178,-10205,-10206,-10179,-10180,-10181,-11192, 10182,
       -11193,-10183,-10273,-10272,-10284,-16457, 18533,-15505, 18529,
       -15504, 18534, 15438, 15437,-15990, 18538,-15326, 18537, 16852,
        15992, 15988, 15223, 17135, 15224,-16324, 15225,-16289,-15226,
       -16336, 18918,-15227,-15228, 18919,-15229,-15245, 16820,-15246,
        18696,-15242,-15230, 18700,-16361, 18707,-15175, 18708,-15176,
        17237, 15177, 18710,-15178, 17243,-15179, 19198,-15180, 17244,
       -16419, 17245,-16393, 18735,-17246, 18732,-17460,-15181,-17247,
        18296,-15182, 18297, 18299, 15183,-15184, 17253, 18300, 15019,
        17160, 15018, 15017,-15016, 17612, 15001, 17613, 17614, 14985,
        17607,-14955,-14949, 17600,-14946, 17598,-16037,-16035, 17593,
       -16034, 17595,-16033,-14944, 14937,-14936, 14935,-14925,-14926,
        17569,-14927,-14929, 17570,-14930,-17312,-17311,
                                                    &END
&ROUTE M= 15,L=  2,C= 24,RG=907,H= 60,ID='22,BREA-TUSTIN            ',
     N=-15496,-15525,-15528, 18970,-16281, 18954,-15584, 16952,-16196,
       -16198, 18945,-16197, 18944,-16158, 16684,-16159,-16096, 16676,
       -16098, 18244,-16097, 18246,-16100, 18242,-16674, 18247,-15710,
        18240,-15752, 18235,-15772,-15771, 18232,-14463,-16653,-15813,
        15818,-14635,-14636,-15838, 17913,-16102,-16089, 17911,-15850,
        17910,-15867, 17909,-16105,-15899, 17898,-16234,-16238, 17900,
       -15909,-16241, 17887,-16242, 17886,-16243, 17881,-16244, 17872,
       -16245, 17870,-16246, 17874,-16247, 17863,-16027,-16257, 17868,
       -16260, 16259,-16258,
                                                    &END
&ROUTE M= 15,L= 3,C= 24,RG=907,H= 22,ID='57,SANTA ANA-LAGUNA HILLS',
     N=-15106, 15079,-15118, 17208,-15117, 17207,-15116,-15115, 17198,
        14727, 14728,-17159,-15050, 17504,-17432, 17503,-15016, 15017,
       -15018, 17160,-15019, 18300,-17253, 15184, 15183,-18299, 18297,
       -15182,-18296, 17247,-15181,-17460, 18732,-17246, 18735,
       -16393, 17245,
       -16419, 17244,-15180, 19198,
       -15179, 17243,-15178,-16421,-15241,-15240, 18726,-15239, 18725,
       -15238,-15237,-15243,-15244,-15251,-15250, 16837,-15261, 16838,
       -15276,-15290, 16840,-15291, 18762,-16380,-16381,-16845,-15304,
        18763,-15314, 16851,-16850,-15315, 18785,-15316,-16383, 18786,
       -14197,-14196,-16385, 18791,-15359,-16878,-15374,-19332,-15402,
        16883,-15429, 16885,-15453, 16886,-15478, 18831,-18843, 16900,
       -15518, 19108,-15539, 16904,-15540, 19111,-16279,-16276,-16275,
       -16277,
                                                    &END
```