

# Top GISDK Errors

*presented by*

**Cambridge Systematics, Inc.**

**Chao Wang**

**Ramesh Thammiraju**

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# Top GISDK Errors

- Wrong number of parameters (comma)
- Wrong types of data
- Syntax error of the “for” and “if” statement (do, end)

```
for i = 1 to 10  
    cumulative = cumulative + i  
end
```

```
for i = 1 to 10 then do  
    cumulative = cumulative + i  
end
```

```
a = 10  
if a > 10 then  
    b = 90  
    c = 7  
end
```

- Array not initialized

# Top GISDK Errors

## ➤ Change array elements unintentionally

```
a = {"r", "s"}  
b = a  
b[1] = "test"      // now both b and a refer to the array {"test", "s"}
```

## ➤ Typo (GISDK is case sensitive)



» Typo could be a very dangerous error, and takes a lot of time to debug

## ➤ Logical Error

# Joining Data

# Joining Data

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- Layers have an associated data table (  )
- Data can be joined (  ) to other tables
  - » Roadway Network + Traffic Assignment results
  - » TAZ layer + Land Use Data
  - » Roadway Network + Lookup Table
  - » More...
- This is how traffic assignment results are viewed in TransCAD



# Joining Data

Join

Settings Options

Create Joined View

Name geo\_byr+hwyload\_AM

Joining from (left side of join)

Table geo\_byr

Field LINKID

Examples 8650, 8651, 286, 285, 295, 337, 376, 411, 446, 44

To (right side of join)

Table hwyload\_AM

Field ID1

Examples 3, 4, 5, 6, 7, 8, 9, 11, 12, 13

OK Cancel

1. Select the Primary join table
  - » *Be careful: Check the Field*
2. Select the secondary join table
  - » *Be careful: Check the Field*
3. Create a name for the view, or use the default (do this last)

*Tip: You can open a file from the join dialog box*

To (right side of join)

Table File Open...

Field File Open...


Examples


# Practice 6a: Join the output flow file (.bin) to network links dataview and label the map

This slide is meant for handout – print and practice using the steps shown.

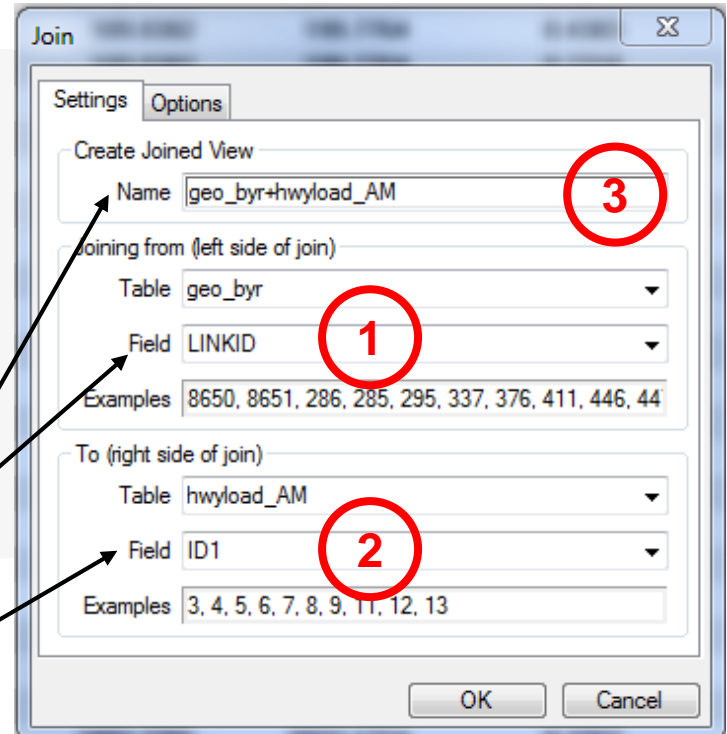
1. Open the abmload.dbd file:
  - ✓ goto File→Open, then in the file type dropdown next to 'File name:' select Geographic File (\*.cdf,\*.dbd) option
  - ✓ Browse to the location/folder where the geographic file is located and select the 'abmload.dbd' and click 'Open' button
2. Open output flow .bin file
  - ✓ goto File→Open, then in the file type dropdown next to 'File name:' select Fixed-format Binary (\*.bin) option
  - ✓ select the 'hwyload\_AM.bin' and click 'Open' button

\* There are multiple ways to open the flow file to join. Will be covered in the training

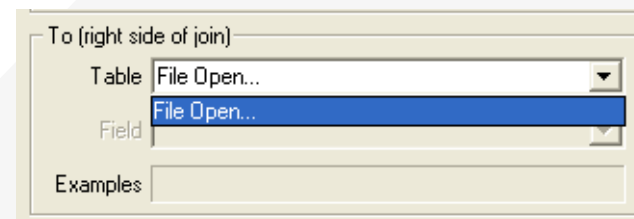
3. Click 'Join Dataviews' icon 
  - ✓ Select 'LINKID' field for Joining from (left side of join)
  - ✓ In the bottom section by default the ID1 will be selected for the right side of join – keep it (no need to change this)
  - ✓ Give a name if default name is not to your preference
  - ✓ Click 'OK'

4. Click map window and label map 
  - ✓ Use one of the flow file output fields to label. For example: AB\_Flow\_PCE & BA\_Flow\_PCE.

**Tip:** You can use practice 2 steps to label map.



**Tip:** You can open bin file from the join dialog box



## Practice 6b: Use ICTM TAZ layer and SED data and practice join and labeling map with Population and Employment

This slide is meant for handout – print and practice using the steps shown.

*HINT* →

Join

Settings Options

Create Joined View

Name TAZ\_t1+model\_sed 3

Joining from (left side of join)

Table TAZ\_t1

Field ID\_TAZ12a 1

Examples 43594000, 43588000, 53995000, 43595000, 5388

To (right side of join)

Table model\_sed

Field TAZ 2

Examples 60001000, 60002000, 60003000, 60004000, 6000

OK Cancel



# Roadway Network Basics



# User Variables

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- Creating your own variables
  - » Additional fields can be added to links & nodes layers
  - » Field names can contain spaces and numbers, and do not have a practical limit to the number of characters
  
- » HOWEVER...



# User Variables

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## ➤ Creating your own variables

### » It is preferable to:

- Limit field names to 10 characters
- Avoid using spaces
- Avoid starting a field name with a number

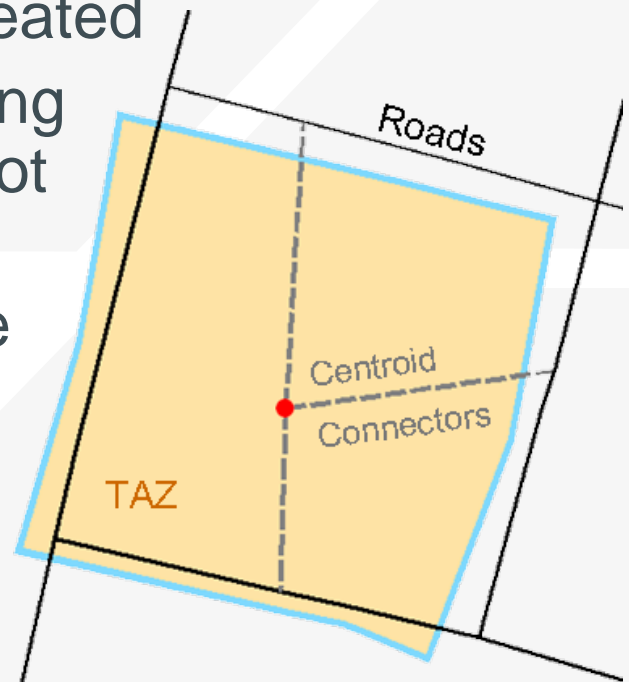
### » If these guidelines are followed, compatibility with other GIS programs will be improved

- Field names that do not follow these guidelines will have truncated or confusing names when exported to a shapefile



# Centroids

- Centroids are special nodes that are linked to socioeconomic data
  - » If data is added for new zones, new centroids and centroid connectors must be created
  - » New nodes are created by adding a link that has one end that is not located on an existing node
  - » TAZ numbers are entered in the ZONE field
  - » The network update macros update the “ID” field to match the TAZ number



# Roadway Network Editing



# Network Editing

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- Warning: Make a backup copy first!
  - » There is an “Undo” function in TransCAD
  - » Edits are made directly to the network file: You can't close without saving to discard changes
  - » Network files sometimes become corrupt

The Undo function in TransCAD 5+ makes network editing less risky



# Network Editing

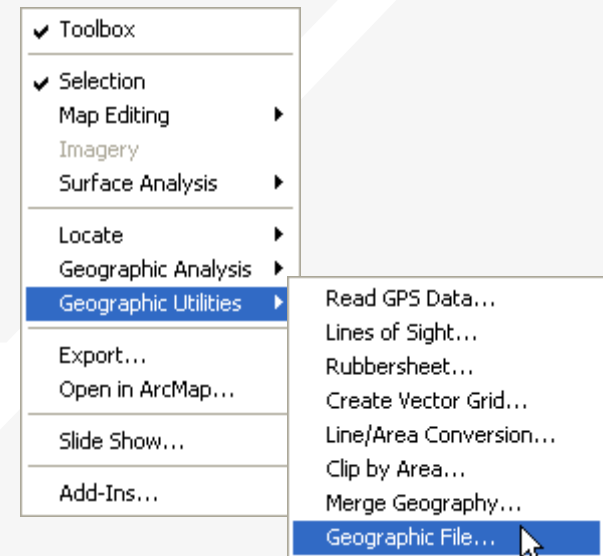
## ➤ Backing up the Roadway Network

### ➤ Method 1:

- » Close all files in TransCAD
- » Create a zip file with the line layer and route system files
- » Make sure to get all related files

### ➤ Method 2:

- » Open the network in TransCAD
- » Use Tools → Geographic Utilities → Geographic File to access the Geographic File dialog box

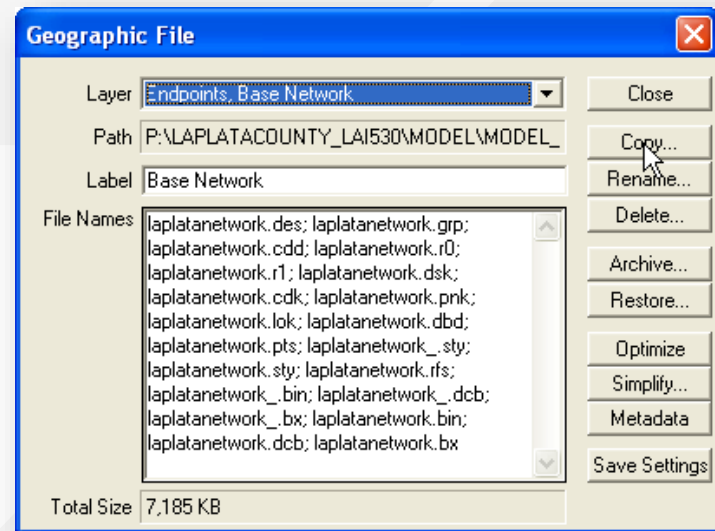


# Network Editing

## ➤ Method 2 (Continued):

### ➤ Backing up the Roadway Network

- » Click the “Copy...” button to save a copy of the network file
- » Choose a location to save the backup
- » You are still working in the original file.
- » *Or, use **Archive** to save in a zip file*





# Network Editing


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- Once you have made a backup, you can:
  - » Edit attributes of existing links
  - » Change data for a specific year or for multiple years and alternatives
  - » Add new links, delete existing links, or realign existing links
  - » Add data for a year not yet included in the network



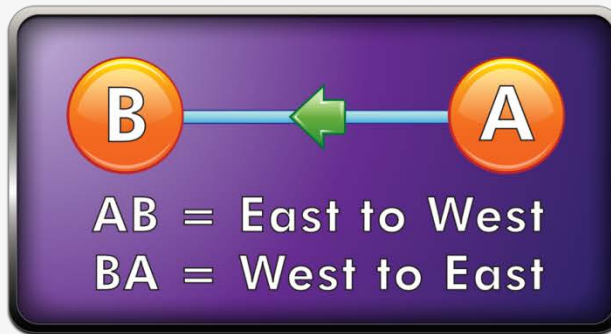
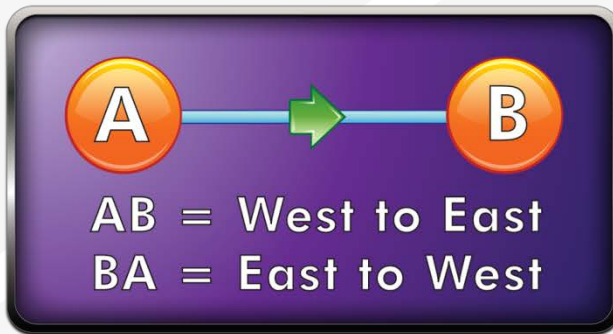
# Network Editing

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- Edit attributes of existing links
  - » Display settings can assist with editing
- Additional labels and/or themes can be useful
  - » Label # of lanes or other values
  - » Show Topology (  )  
to see AB vs. BA


# Network Topology

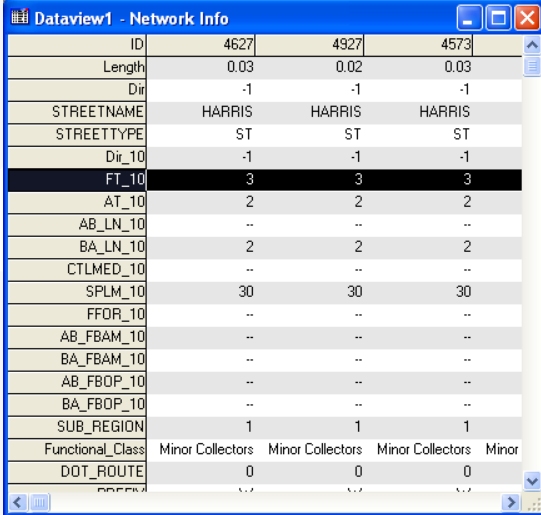
- Show topology to identify AB and BA directions



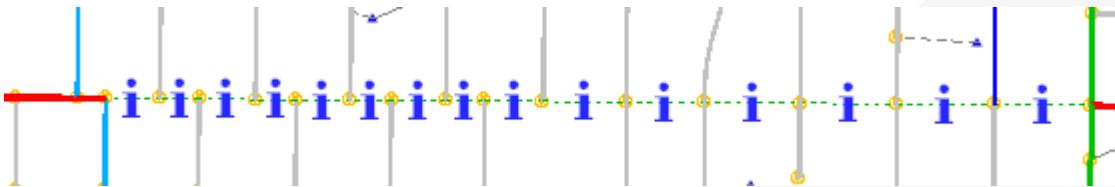
- To identify one-way roads, use the DIR field:
  - » 0: Two-way travel
  - » 1: A → B travel
  - » -1: B → A travel

# Network Editing

- Edit attributes of existing links – Method 1
  - » To make most edits, use the information tool (  ) and edit text in the form that appears
  - » Changes can be undone
    - Each edit action creates an undo point
  - » You can select and fill multiple links with the information tool
    - Multiple values can be filled by right-clicking on row names



ID	4627	4927	4573
Length	0.03	0.02	0.03
Dir	-1	-1	-1
STREETNAME	HARRIS	HARRIS	HARRIS
STREETTYPE	ST	ST	ST
Dir_10	-1	-1	-1
FT_10	3	3	3
AT_10	2	2	2
AB_LN_10	--	--	--
BA_LN_10	2	2	2
CTLMED_10	--	--	--
SPLM_10	30	30	30
FFOR_10	--	--	--
AB_FBAM_10	--	--	--
BA_FBAM_10	--	--	--
AB_FBOP_10	--	--	--
BA_FBOP_10	--	--	--
SUB_REGION	1	1	1
Functional_Class	Minor Collectors	Minor Collectors	Minor Collectors
DOT_ROUTE	0	0	0







# Network Editing

## *Alternate Method (Method 2)*

### ➤ Edit attributes of existing links *Alternate Method*



- » Use the map editing toolbox (  )
- » Use the Edit Line Attributes (  ) button
  - Operation of this tool is similar to using the information button
- » Edits are saved when the green light (  ) is clicked
- » Use the red (  ) light to cancel all unsaved edits
- » The Undo function will undo all edits that are saved at once with the green light



# Network Editing

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## ➤ What Fields do I Edit???

### » **Facility Type**

- 2 or 3-digit facility type identifier

### » **Lanes**

- Directional number of lanes
- Aux. lanes

### » **Direction**

### » **Other fields as necessary**



# Practice 7: Network Editing – editing attributes

- i. There are multiple ways to edit network link attributes
- ✓ **Example of Method 1:**
  - ✓ Open geographic file (.dbf)
  - ✓ Zoom to focus area where a roadway is planned for improvements
  - ✓ Select multiple links using identifier icon in the toolbox
  - ✓ Right click on the IFC field and use fill option and change the IFC code from 4 to 3
  - ✓ **Example and details of Method 2 will be covered during the hands-on session and notes will be provided.**

The screenshot shows a GIS interface with a map of road networks. Several road links are highlighted with blue 'i' icons. A data table titled 'Dataview1 - geo\_byr Info' is overlaid on the map, showing attributes for selected links. A 'Fill' dialog box is open, showing the 'Single Value' method with the value '3' entered in the input field. The 'IFC' field in the data table is highlighted, indicating it is the field being edited.

ID	37558	37559	9391	9392	9393
Length	0.07	0.22	0.08	0.13	0.13
Dir	0	0	0	0	0
[Length:1]	376.302190	1136.596600	426.063840	662.548280	1106.051680
NM	FURY	FURY	FURY	FURY	FURY
IFC	4	4	4	4	4
IHOV					
IWAY					
ABLN					
ABAU					
BALN					
BAAU					
LINKID					

**Fill**

Fill Method

Single Value

Sequence Start  Step

Formula

Tag Using layer  Tag with

Aggregate

Clear all values in the range

OK Cancel



# Network Editing

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## ➤ Adding new links

» Use the map editing toolbox (  )

» Add links using Add Line (  )

- To work properly, links must be connected at nodes
- Existing links may need to be split
- Avoid splitting links if possible

» Make sure that links are connected by:

- Saving edits
- Moving a node around – do all of the attached links move with it?
- Canceling the edit






# Network Editing


## ➤ Adding New Links

- » New links need new data!
- » Copy data from an existing link with similar characteristics

- Use the Edit Link Attributes () button
- Click/shift-click on the new link(s)
- Shift-click on the similar old link
- Right-click on the data for the “old” link and choose “Copy Values”

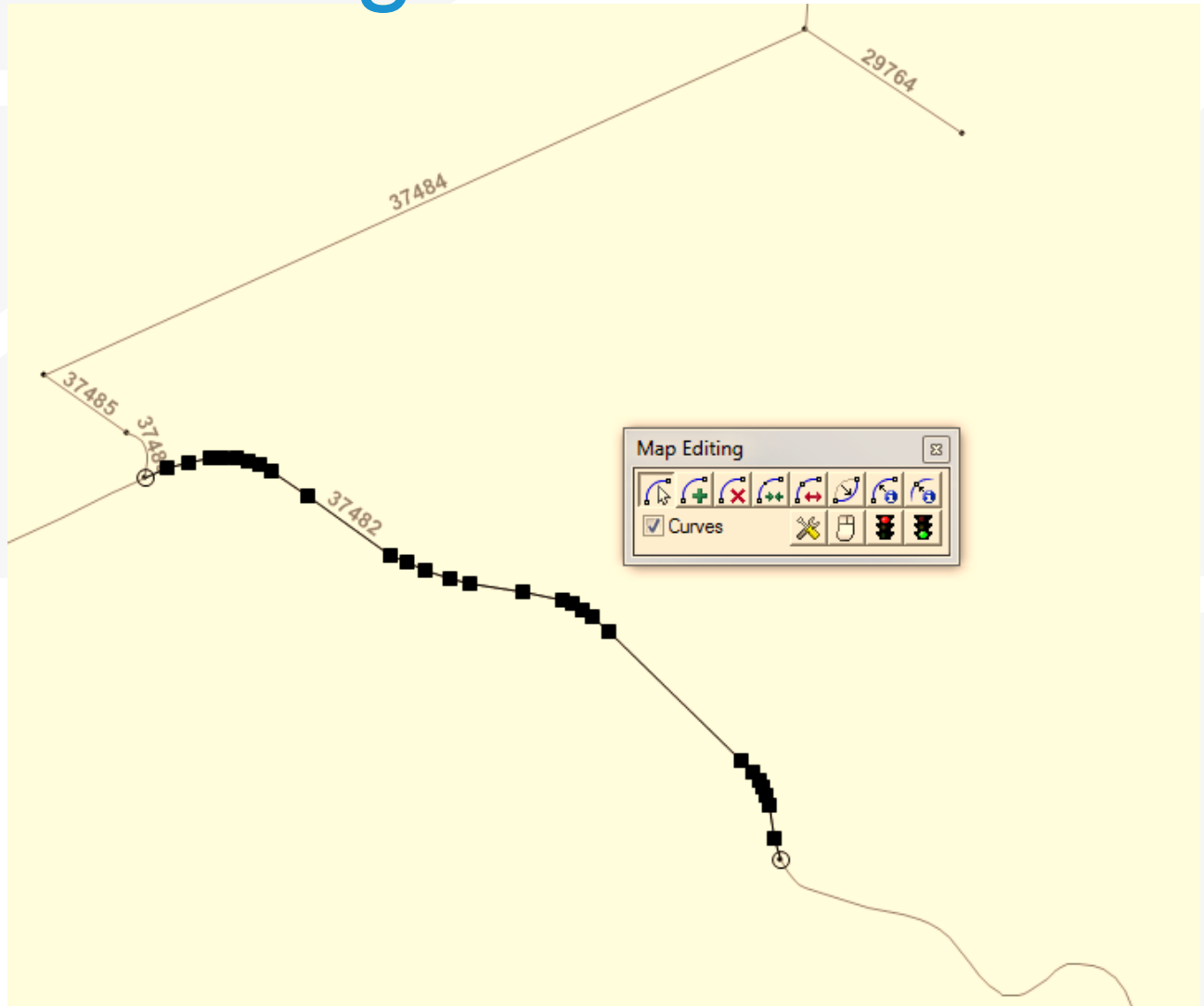


## » Splitting/Joining Links

- Check the split/join settings
- Use the split/join tools ()
- New/moved links may be connected at new nodes
- Check data on split/joined links



# Network Editing



# Practice 8:

## Network Editing



Key network editing options will be covered during the hands-on session.

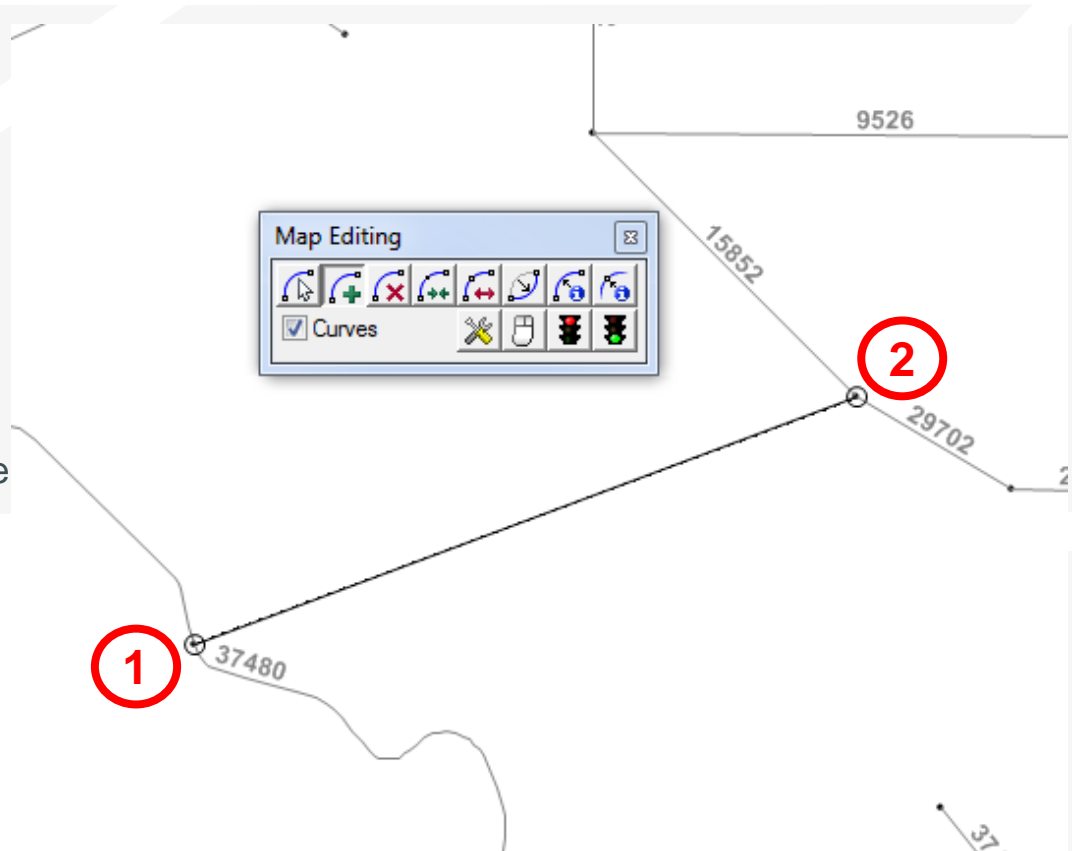
- ✓ Editing attributes
  - ✓ Copying attributes from one link to other link(s)
- ✓ Editing geometrics
- ✓ Adding links
  - ✓ add a centroid connector or a new roadway connection
- ✓ Splitting links
- ✓ Joining links
- ✓ Deleting links
- ✓ Replacing links
- ✓ Configuration settings

**Please note:** Notes for a few of the options are provided in the following slides; the details will be better to discuss during the hands-on session. Practice slides notes will be improved after hands-on session.



# Adding a new link

- Click 'Add line'
- One left click at node 1
- Double click at node 2
- Click green light to save changes
- Now the link will be added to the network but it will not have any attributes (attribute data).



# Copy link attributes

➔ Copy link attributes from existing link to new link

➔ Existing link

➔ New link

The screenshot illustrates the process of copying link attributes in a GIS application. It features three main components:

- Map Editing Tools:** A toolbar with various editing functions, including a checked 'Curves' option.
- Data View Table:** A window titled 'Dataview1 - geo\_byr - Editing a...' displaying a table of link attributes. The table has three columns: 'Field', 'Value', and 'Value'. The data is as follows:

Field	Value	Value
ID	37482	39869
[Length:1]	2042.238600	..
NM	MERRITT	..
IFC	7	..
IHOV	1	..
IWAY	2	..
- Confirm Dialog:** A dialog box with a question mark icon asking, 'Are you sure you want to fill 1 records with values from the selected record?'. It includes 'Yes' and 'No' buttons.

The map shows two links: an existing link (ID 37482) and a new link (ID 39869). Orange arrows indicate the flow of information from the existing link to the new link. The existing link is labeled with ID 37482 and has a length of 2042.238600. The new link is labeled with ID 39869 and has a length of 29702. The data view table shows the attributes for both links, and the confirm dialog is open, indicating the user is about to copy the attributes from the existing link to the new link.

# Practice: Network Editing

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- Try adding a new centroid connector
  - » Copy centroid connector values from an existing connector



# Network Editing

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- Things to keep in mind:
  - » When splitting links, make sure the data on both pieces still makes sense
  - » When adding new roadways, adjust centroid connectors if necessary
    - Centroid connectors can be specific to a year
  - » Keep the data for all years up to date



# Matrices





# TransCAD Matrices

The screenshot shows the TransCAD interface with a matrix window titled "Matrix1 - AMSelect Trips (Ev\_Auto [DA])". The matrix contains 14 rows and 12 columns, with all values set to 0.00. A red circle highlights a button in the toolbar, and a black arrow points from it to a "Matrix File Contents" dialog box. The dialog box lists various matrix names, with "Ev\_Auto [DA]" selected. The dialog box also includes buttons for "Close", "File Info...", "Add Matrix", "Drop Matrix", and "Rename...".

	1	2	3	4	5	6	7	8	9	10	11	12
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Practice 9: Matrix Operations

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Introductory matrix operations will be covered during hands-on session.

# Flowchart of the Caltrans D11 Highway Post Processor

