

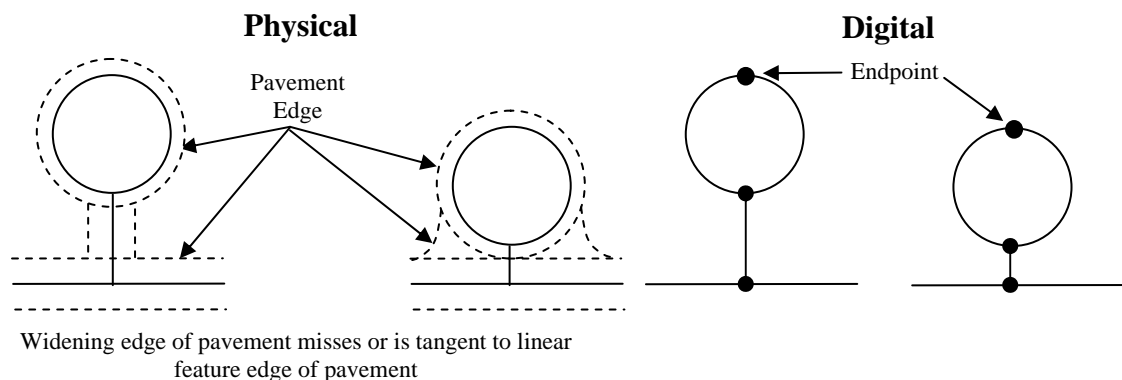
## TNET Editing Tips and the Joy of Cul-de-sacs



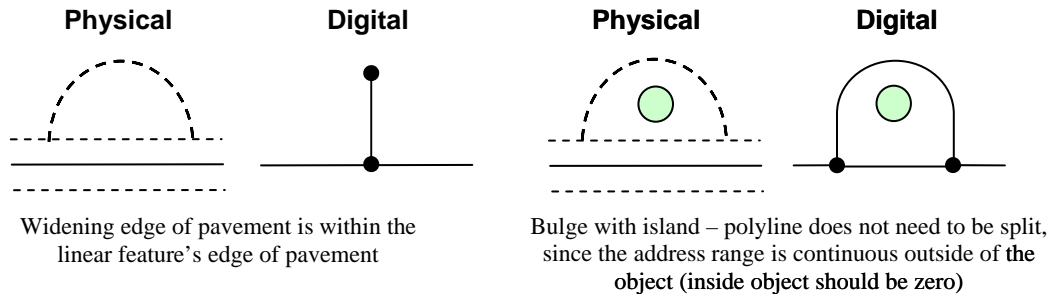
In this example, S 131<sup>st</sup> Pl is a cul-de-sac, while the unnamed street is a dead-end.

- G14:** *Cul-de-sacs, as opposed to dead-ends, should be drawn when the edge of pavement of the “circular” portion is tangent to or is beyond the edge of pavement of the feature from which they emanate (commonly at right angles). Where cul-de-sacs bear a street name different from the street name of the feature from which they emanate, they should be drawn as three distinct features: one feature representing the “straight” portion and two features representing the “curved” or “circular” portion. The circular portion, whether drawn by heads-up digitizing or using the ArcEditor arc tool, must be split in order to allow odd and even addressing contiguous with the straight portion. If produced by heads-up digitizing, the two halves of the curved or circular portion of the cul-de-sac should contain a minimum of one vertex per five feet of ground distance. Where cul-de-sacs bear a street name matching that of the feature from which they emanate, constituting thereby a deep knuckle or street widening, any addressing will be either odd or even but not both, therefore the circular portion should consist of a single feature.*

Functionally, a cul-de-sac is a widening of the pathway at its end permitting average size vehicles to perform a u-turn without having to back up. Drawing cul-de-sacs as three distinct features permits proper addressing on the odd and even numbered sides – except where the cul-de-sac constitutes essentially a deep widening of just one side of a feature, in which case the circle should be a single feature. The side of the feature facing to the center of the circle should have an address range of zero for both the from- and the to- values. Only in the case of cul-de-sacs is it recommended to match arc direction to flow direction, that is, counterclockwise, in order to reduce opportunity for error in addressing. Draw cul-de-sacs with minimally one vertex per five foot intervals using the Sketch Tool. Vertices need not be added if using the ArcMap Arc Tools. Note that endpoints (splits) are only necessary where addressing numbers are odd on one side and even on the other.

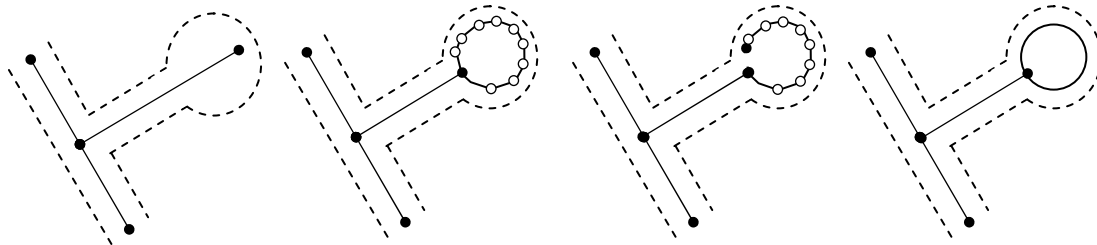


If the edge of pavement of the widening is within the pavement for the linear feature, then the widening is a **bulge** or **knuckle** and should be represented as illustrated below. In the unique case that an island exists at the center of the bulge, a distinct pathway around the island should be represented.



### First the cul-de-sac's geometry:

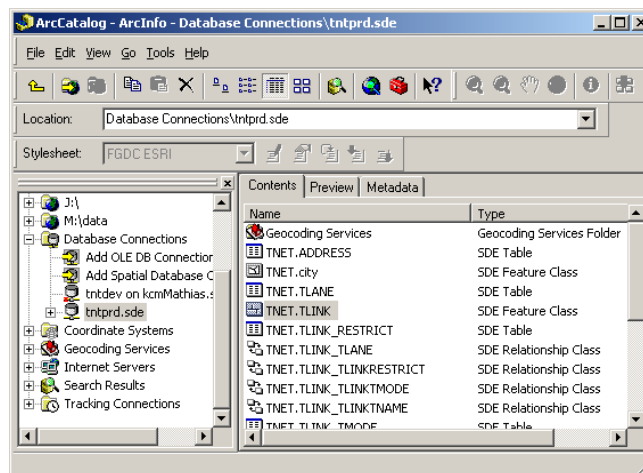
Currently, cul-de-sacs are represented in a variety of ways in TNET, such as but not limited to the following:



All new and existing representations of cul-de-sacs should conform to the Best Practices (BP) G14. Where no circle is present, one must be added. Free hand circles (Sketch Tool) are okay, but require vertices at five foot intervals. Open-ended circles (coat hangers) need to be closed.


### Here are some geometry editing hints and suggested procedures:

Assuming you have previously selected the software product ArcInfo to be used by ArcGIS in the ArcGIS Desktop Administrator, have connected to the SDE database and loaded TNET.TLINK into your project...



Naturally you will add whatever datalayers you need to facilitate the maintenance of TNET, such as orthophotography, zipcode boundaries, parcel data and so on.

## Toolbars.

- if “Editor”, “Topology”, and “TNET Editing” toolbars are not already present, right click View frame and turn on these toolbars
- “Advanced Editing” and “Edit Cache” are also useful toolbars
- dock all toolbars to your liking
- another way to turn these toolbars on and off is to click the down arrow on the “Editor” button  and select “More Editing Tools”, then select/deselect the appropriate options


## Versioning.

- click “Source” tab at the bottom of your Table of Contents
- if the TNET data layer is SDE.DEFAULT, right click it to open the options dialogue that allows the version to be changed
- select “Change Version...”
- select your version from the list box that opens
- switch back to the “Display” tab under the Table of Contents (the TNET layer will appear as “TNET.TLINK” – whenever you need to check the version, just go to the “Source” tab)



## Creating your personal version.


- open ArcCatalog, expand Database Connections
- locate TNTPRD.sde, right click, select “Versions”
- right click DEFAULT in the Version Manager list box, and select “New...” from the popup,
- type your first name in the “Name” field, click the radio button next to “Public”, and click OK


## Start Editing.



- in ArcMap click the down arrow in Editor button 
- select “Start Editing”. If you have several layers in your table of contents, a dialogue box will ask you to select the target layer
- select “(your network profile).(your name)” – (the “Target” window in the Editor toolbar will display “TNET.TLINK”)


## Edit Cache.

- edit caches can significantly improve editing performance
- zoom to 1:5,000 (or thereabouts), then click  “Set Auto Cache Scale”
- click  to toggle on “Auto Cache” to automatically cache edits at or below the scale of your preference (the larger the scale the longer it takes to cache)

**The Edit Tool**  is used to select features for editing purposes such as merging, splitting, realigning, disconnecting or connecting a single feature from or to existing geometry and accessing the TNET Attribute Editor. It becomes available upon starting an edit session (the cursor will be a black-filled arrowhead). Be sure to set TLINK as Target.

**The Topology Tool**  is used to spatially realign an “intersection” (shared geometry) while preserving all user-set topology rules such as preservation of shared endpoints. In this case the cursor becomes a white-filled arrowhead.

- to use this tool the first time, go to the Topology toolbar and click  “Map Topology”
- select/activate the target layer in the popup list box and click “OK”. This will make the “Topology Edit Tool”  available

- select  and point cursor to the target intersection/junction (shared endpoint) and left click to select it.


**Keyboard shortcut:** To easily select shared endpoint(s) hold down the “N” key while dragging a selection box around the target.

**Hint:** All shared endpoints within the dragged selection box will become active, and can be moved as a group. Their relative positions will be preserved, so the usefulness of this strategy is context driven.

**Caution:** Before moving any vertex or endpoint, always double-check the snapping environment, and select only snapping options that you actually want something to snap together.

- with target point selected, point the topology tool at it until the cursor changes to a cross hair
- left click and drag the endpoint

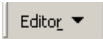
**Realigning features:** both Edit and Topology Tools may be used to realign features. Select one or the other according to your specific realignment intent.

- point to the target feature and double-click it to access the vertices and endpoints
- hover over the target vertex or endpoint until the cursor changes to “grab frame” 
- left-click-grab the vertex and move it as desired

**Important Note About Edit and Topology Tools:** The functionality of these tools can unfortunately contribute to unintentional disconnects in the street network, which may be unnoticed by the editor. For example, while using the Edit Tool to grab one of a segment’s vertices to improve its alignment the left click “grab” event may inadvertently occur just before the cursor cycles from cross hair to grab frame, and also in the process of left clicking you happen to move the mouse ever so slightly. Since the cross hair grabs the entire feature, the slight movement of the mouse while the left mouse button is depressed during the “second click” event repositions the feature without preserving shared geometry, thus disconnecting it at both ends. If the movement is small enough and the feature long enough, this disconnect might remain unnoticed. The Topology Tool is intended to work on shared geometry, and its coding will not allow disconnects if you are attempting to move a shared endpoint, but it can reposition a feature in its entirety, thereby disconnecting it at both endpoints without a popup warning.

**Hint:** A working safeguard is to enter the edit Options dialogue in an Edit Session, and under the General tab set the Sticky Move Tolerance to around 60 pixels or so. This will prevent inadvertent feature displacements when your cursor moves less than that number of pixels. Naturally this also means that whenever you attempt to move shared geometry in this manner you will have to begin by dragging the selected endpoints beyond 60 pixels before they show any movement, then you will be able to reposition them as close to their point of origin as the radius of your snapping tolerance limit allows – and of course if you need to position them closer just turn snapping off.

### Snapping Environment.

- especially if small geometry adjustments are likely it may be preferable to keep the Snapping dialogue window open (visible) and clear of any checkmarks
- to open the snapping dialogue window, click down arrow on “Editor” button  and select “Snapping”, and deselect Vertex, Edge or End boxes if desired



**Hint:** Also in the Editing Options dialogue under the General tab, it is a good idea to check the checkbox for “Show snap tips”. This will cause an info text box to popup to report the object to which your selected endpoint is snapping. An additional benefit of


this settings option is that it serves as a quick confirmation that the features have indeed snapped together.

**Minor caution:** With vertex snapping enabled, if a newly inserted vertex disappears, it may have snapped to a nearby vertex; hit the undo button or click CTL-Z -- otherwise unwanted, stacked vertices will begin to clutter the data.


## Cul-de-sac geometry

**Adding a circle feature (“balloon-on-a-string” or “popsicle”):** where a cul-de-sac is represented by a polyline symbolizing a dead-end, but a widening of the pavement at the end of that street indicates a circle is called for, proceed as follows:

- begin by using the Edit or the Topology Tool to drag the endpoint of the existing polyline feature to the entrance of the cul-de-sac loop (the pavement widening) such that the new circle to be optimally sized and positioned within the pavement widening aligning approximately 10 ft from the curb will be coincident with the line’s endpoint
- once the feature’s endpoint is optimally positioned, deselect the feature
- if not already done, activate “Snapping to Endpoint” by clicking the box in the “End” column opposite the target layer in the Snapping Dialogue window
- create circle using End Point arc tool
- to access “End Point Arc Tool”  click the sketch tool’s  down arrow to open the edit toolbox
- hover the arc tool’s crosshair cursor over the endpoint of the target feature so that it snaps to the desired endpoint, left click once to place the start point of the circle
- left-click a second time (NOT a double-click) to place the circle’s endpoint to the same spot (the endpoint will display in black when coincident) and release button
- slowly move the mouse away from the coincident endpoints (dragging a radius) and watch the arc tool work its magic
- you’ll notice right away that it is very sensitive to mouse movement, but with a little practice you should soon be able to achieve the correct size circle in the correct position
- when that is accomplished, stop moving the mouse, hold it firmly in place, and left-click once to lock this circle in place. **Hint:** If you move the mouse after clicking you’ll begin creating additional features, in which case hover the cursor over the circle’s red endpoint until it turns black before the next step.
- double-click to finish the sketch -- OR right-click to open the options/properties dialogue window and select “Finish Sketch” -- OR press “F2” in the functions keys


**Create circle using heads up digitizing.** You can also use the Sketch Tool  instead of the Arc Tool. This tool is used to create any polyline feature.

- with the “End” box checked in the Snapping window, begin tracing a circle by letting the cursor snap to the endpoint of the street feature and left-clicking, then point and click your way around the loop (placing a vertex roughly every 5 feet of ground distance as per Best Practices)
- let the final endpoint snap to your beginning endpoint and left click to place it
- double-click to finish the sketch – OR, without moving the cursor, right click and select “Finish Sketch” from the drop-down options



**Hint.** If your circle (either manually or arc tool created) appears not quite centered on the pavement widening, use the Topology Tool  to select the circle, then, while holding down both the “N” key and the Shift keys, also select the endpoint shared by the circle and the straight feature, then hover on the selected set until the cursor becomes a cross-hair, left-

click-grab the feature and move it to better align with the ground – while the straight feature maintains topology and stretches to the desired alignment.



**Connectivity (shared geometry).** To confirm coinciding endpoints are really shared:

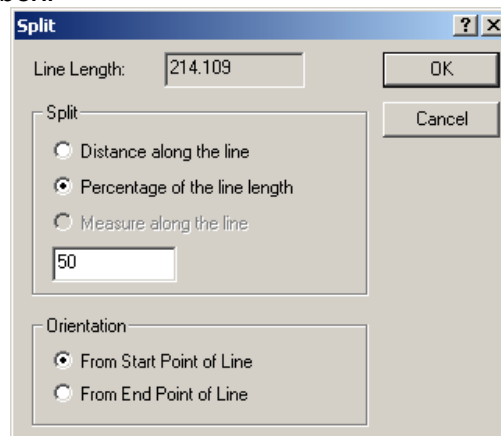
- use the Topology Tool  to select the apparently shared endpoints, grab them and drag them beyond the Sticky Move tolerance. If all converging features stretch accordingly true connectivity exists
- hit the Undo button or Ctrl –Z to undo the test move

**Incomplete circles or “Coat hangers”.** These must be closed into complete circles as follows:

- ensure the box under “End” points in the Snapping dialogue window is checked
- using either the edit tool  or the topology tool , double click the incomplete circle feature to access the vertices
- grab its endpoint and drag it near the endpoint (at the loop entrance) until the two points snap together
- insert vertices and position as needed to smoothen the circle

**Splitting.** If the cul-de-sac contains both odd and even addresses, the manual or arc tool circle must then be split where the address numbers shift from even domain to odd domain to enable proper address attribution.

- select the feature with the Edit Tool  (not the Topology Tool for this action)
- click the Split Tool , and either hover the circle-crosshair cursor over the polyline at the desired location or let it snap to an ideally positioned vertex, and left click
- alternatively, click down arrow on the Editor button and select “Split” to open the following dialogue box:



- select “Percentage of the line length”, and either enter the value 50 if the split is half way around, or another percentage number based on your estimate of the point at which the address number domains change from odd to even, and click OK


**Important note:** Currently, all newly created features are by default assigned “Unnamed” for both left and right sides in the TName table. Since splitting any feature creates two new features, in ArcGIS 9.3 the longer of the two new features retains all of the attributes of the original, while the shorter segment receives the “Unnamed” street name assignment and no recalculation of original address ranges occurs. After renaming that segment correctly, both segments must naturally receive corrected address ranges.

**Vertices.** As per BP on manually traced pathways we ask for vertices at five foot intervals around the cul-de-sac. If the Arc Tool is used no further vertices are needed. If additional vertices are required here or anywhere,

- double-click the feature with either the Edit or the Topology Tool
- point the cursor to your desired insertion point, hold down the “I” key and right-click
- or right-click and select “Insert Vertex” from the drop-down menu
- to remove any superfluous vertices, hold down the “D” key and right-click, or right-click and select “Delete Vertex” from the drop-down menu

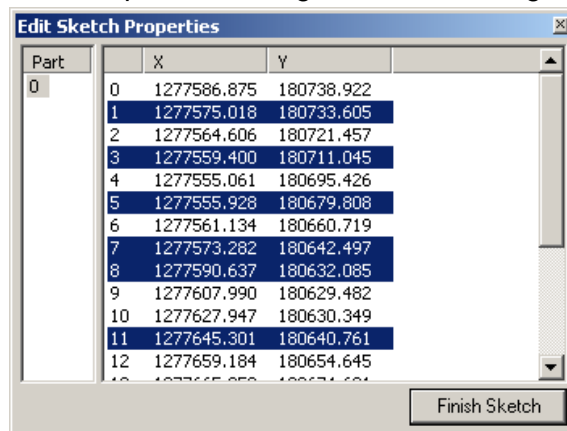
**Hint:** Excessive vertices can also be deleted in selected groups if a large number are present. To remove larger numbers of vertices

*programmatically:*


- select or double-click the feature
- open the Advanced Editing toolbar and select the Generalize tool 
- enter a maximum allowable offset, eg 1 foot and click OK

*manually:*

- double-click the feature with either edit tool to display its vertices
- right-click the selected feature, and choose “Properties”. The “Edit Sketch Properties” window displays a list of the vertices by number and coordinates
- left-click the number of the vertex or vertices that you wish to delete (**Note:** the selected vertices in your map view change in appearance)
- hold down the Shiftkey and click first and last vertices to select blocks, or “Ctrl” and click to select non-sequential vertices, such as every other one
- when you’re done the Properties list might look something like this:





- when the desired vertices are selected, press the Delete key
- “X” out of the Properties window

**Use of the Trace Tool.** If you choose to use the Trace Tool  (found on the Editor toolbar in the Edit tool dropdown): make the source layer selectable, select the target feature, get the Trace Tool, snap its cursor to the desired point of beginning and left-click and drag the tracing along the selected feature then release the mouse button at your desired endpoint. The new feature digitized in this manner will require attribution as usual. **Word of caution:** please note that the geometry AND the spatial position of the source feature are copied, therefore the new TNET feature’s endpoints will require snapping onto existing TNET endpoints so that it becomes a part of the TNET topology.

**Caution:** Please do not Copy features, however handy that might seem, from other feature sets or data sources – schema variances will cause data integrity issues.

## Adding feature attributes:

**Starting up the TNET Attribute Editor Extension.** Assuming you're in an edit session, use the Edit Tool  to select the newly created or existing feature(s) to be attributed – and if several arcs are to be attributed/edited select them all before you start. **Important note:** once the TNET Attribute Editor starts up no interaction with ArcMap is possible beyond the very limited controls available within the interface, such as Zoom All, etc.

- click on the , and wait for it to start up. A lot is happening behind the scenes, so it takes a little time. By default the TNET Attribute Editor opens on its “Name/Address” tab:



- a new feature will by default be named “Unnamed”, but an existing feature may also be unnamed, so the Naming fields may look like this:

Naming					
Name	Category	Juris	Zip	Side	
Unnamed	Primary	Federal Way	98003	Right	

- left-clicking in the “Name” field will open that field for editing

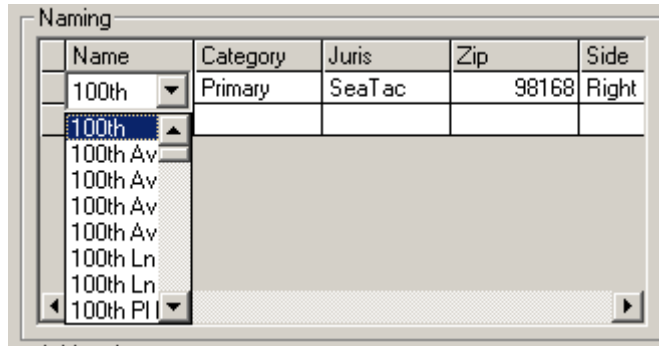
**Re-naming existing feature(s).** If an existing feature has a record of attributes, it will look something like this:

Naming					
Name	Category	Juris	Zip	Side	
S 131st Pl	Primary	SeaTac	98168	Right	
S 131st Pl	Primary	SeaTac	98168	Left	

**Hint:** if long street names are partially obscured by column width, before clicking in the field to open its coded value domain, place the cursor on the vertical line between the columns in the grayed heading row (in this case between “Name” and “Category”), left-click and drag to the right to widen the column.

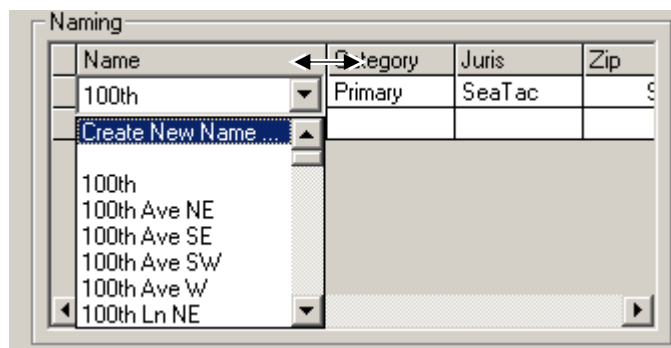
**Note:** in the 9.3 version of the TNET extension, these column widths have been optimized for display within the fixed GUI to facilitate editing.

- if the assigned name is wrong, click in the “Name” field and type the full name including prefixes etc, ignoring case, but including spaces. The domain will sort quickly to find the name for you if it exists. This functionality has a time-out element in the search function, so type without hesitation, or you will have to start over
- alternatively, click the down-arrow to access the pull-down menu, type the first couple of numbers or digits, then scroll and select the correct street name from the coded value domain

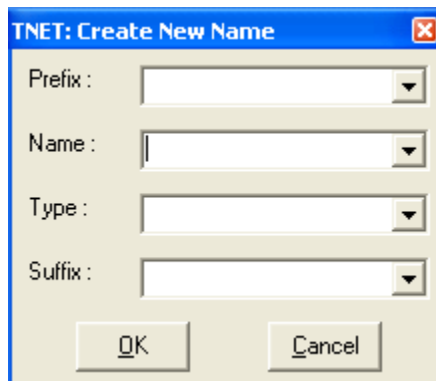


**Creating a new name:** If the feature name does not exist in the “Name” CVD, it must be created. Do this carefully, for you are modifying the database directly.

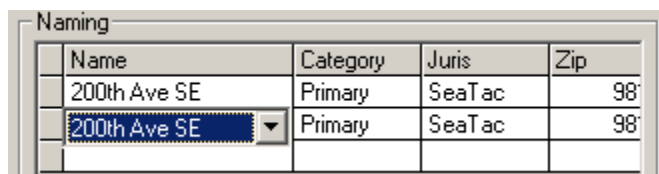
- press the Space Bar, or scroll to the very top of the pull down list and select “Create New Name...”



- this will open the “TNET: Create New Name” window:

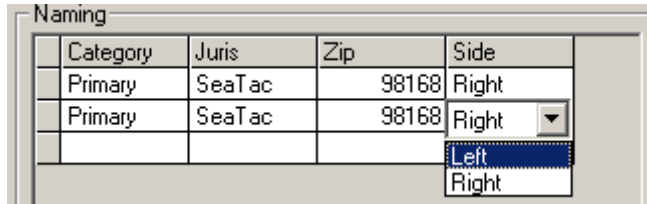


- each of the elements in turn have coded value domains exclusively from which the elements of the feature name must be selected, EXCEPT “Name:”, which – in addition to the coded value domain – allows you to type a new name directly into the field
- left-click in the “Name” field of the second record and see if the application has assigned the same name previously selected or newly created – and populated the rest of the attributes the same as the first record from default settings and overlays

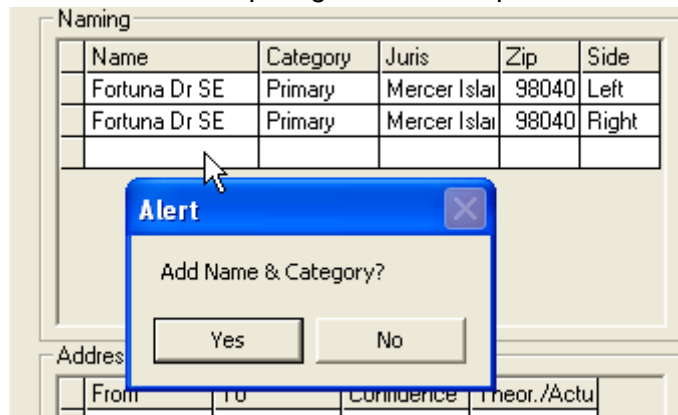


**Note:** for each new record, the TNET Attribute Editor defaults to the “Right” side as well as the “Primary” naming Category. To avoid incorrect attribution and resultant data integrity failures, fix as follows:

- click in the second row’s field under the “Side” column, and select “Left” from the drop-down domain to relate the attributes to the other side of the feature



**Important caution:** Clicking in any field of a blank row will assume a new record is being added to the feature’s attributes, such as an Alt-Primary name category, populating the fields from overlays, etc. To avoid unintentional entries and the subsequent cleanup difficulties, we have coded an Alert requiring a YesNo response from the editor:



This popup occurs in the 3<sup>rd</sup> and in the 5<sup>th</sup> rows only. Clicking Yes will populate the record with defaults.

**Warning:** this includes the defaults “Primary” and “Right”, so if you add an Alt-Primary name (3<sup>rd</sup> and 4<sup>th</sup> rows) and even an Alias (5<sup>th</sup> and 6<sup>th</sup> rows) it is very important that you modify the Category and Side defaults, so that when you are done there is only ONE left side record and one right side record for EACH of the three different naming Categories.

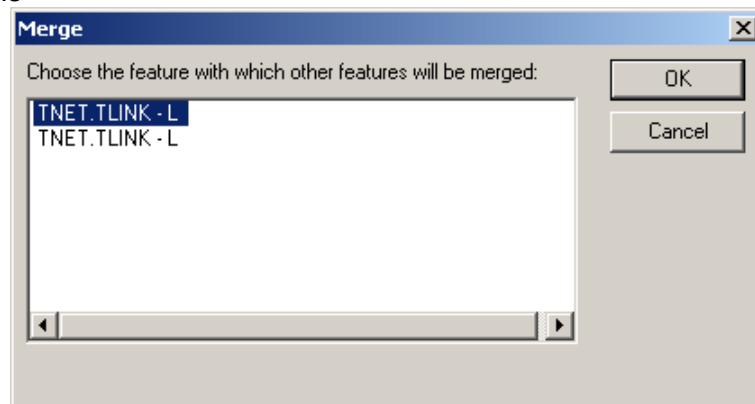
**Jurisdiction and Zipcode:** While newly attributed features will have these columns correctly populated from overlays, existing features may have wrong entries in these two columns. To edit, click in the “Jurisdiction” field and press the first letter of the desired entry repeatedly to progress through the CVD until the desired entry is found. Click in the “Zip” field and selectively replace part or all of the existing entry by typing the desired numbers (no CVD in this column), then click in the gray area within the Zip “column” to set the changes (clicking anywhere else in the interface will replace your changes with “0”).

**Flipping:** Although we generally ignore arc direction (identification of “from” and “to” endpoints), in the case of cul-de-sac circles it is advisable to match edge direction to flow direction, that is, counter-clockwise. Otherwise an already confusing addressing parameter becomes more prone to error.

- to flip a cul-de-sac circle’s (or any feature’s) direction (if desired), double-click the feature with either edit tool
- right-click to open the options dialogue window and select “Flip”.

**Merging.** If the circle is made up of more than two features, (or if any unbroken real world roadway is represented by more than one feature) in order to simplify populating the address ranges it is advisable to merge all features until only two in the case of a circle or only one in the case of an unbroken roadway are left, unless the unusual circumstance of variances in attributes, such as city or zipcode boundaries, require separately attributable feature segments.

- using the Edit Tool, select the two or more features to be merged
- open the TNET Editor and jot down the address ranges of the features, then “Cancel” the TNET Editor
- click the Editor button’s down arrow and select “Merge” from the pull-down menu
- the selected features to be merged will appear in a list within the “Merge” dialogue that opens



- clicking on one of the features in the list will “flash” the feature in the map view
- select the feature into which the other feature(s) will be merged

**Hint:** Since the attributes of the feature(s) merged into your selected feature will be replaced by the attributes of your selected feature, make it easy on yourself by merging the simpler address ranges into the more complex ones. For example, if one cross street type is “Avenue”, while the next cross street type is “Place” or “Lane”, you know that the number adjacent to “Avenue” is simple, such as 800 or 801, while the numbers ending at “Place” or “Lane” can be wildcard numbers such as 843 or 872. Therefore select the feature bearing the wildcard numbers to merge into so the address range fix is easy.

- re-open the TNET Editor and fix the address range

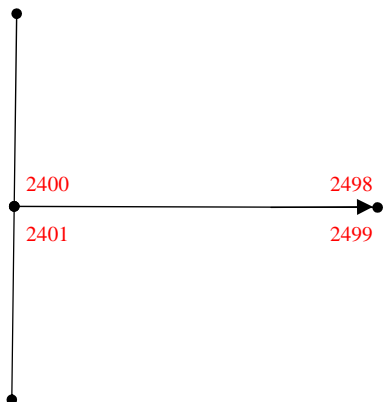
### **Populating the address ranges of a cul-de-sac:**

Naturally the initial address ranges (where data is available) will consist of four values: From Left, From Right, To Left and To Right. The same sequence will apply regardless of whether the original address range was theoretical or actual. For example let’s use the cul-de-sac illustrated at the front of this doc: it has address ranges as follows:

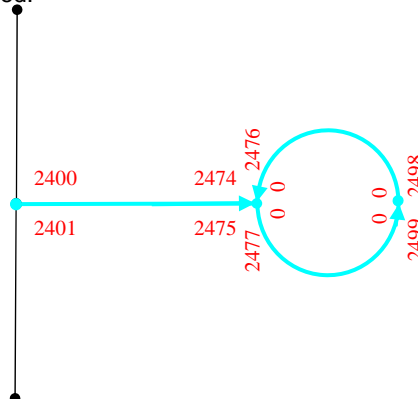
From Left (FRADDL): 2400  
To Left (TOADDL): 2498  
From Right (FRADDR): 2401  
To Right (TOADDR): 2499

**Important:** Either toggle on arc direction  Show Arc Direction in the TNET Editor or symbolize all linework using endpoint arrowhead symbology in order to know which is the left side and which is the right side of the feature. A quick hand drawn visualization of your target geometry on scratch paper is always a good idea to reduce the chance of error.

The original looked like this (with an arrowhead showing arc direction) and the address range appearing in red:



The new cul-de-sac will look something like this (features selected and with arrowheads showing arc direction) and the address ranges appearing in red:



To edit the address ranges for the original feature (since it has been shortened), and to add address ranges to the circle feature -- assuming the three features are still selected and the TNET Editor interface is running with  Show Arc Direction turned on so that you know which side is right and which is left

- click  to be sure of which feature you're editing (in this case the shortened original segment)
- click the grey box at the front of the table row (record) for either the right or the left side to select the record, so that it looks like this:

Naming					
	Name	Category	Juris	Zip	Side
	S 131st Pl	Primary	SeaTac	98168	Right
	S 131st Pl	Primary	SeaTac	98168	Left

- once the record is selected, the extension will retrieve the addressing data, if any. The original range on the right side was From 2401 To 2499. This may take a few moments while the app searches through the relationships within the data
- having dragged the endpoint back by approximately 25% of the segment's original length, click in the field under the "To" heading and edit the numbers directly, so that it looks something like this:

Addressing			
From	To	Confidence	Theor./Actu
2401	2475	Medium	Theoretical

**Note:** In general, the policy is to code the street network with address ranges instead of point address data for a lot of reasons, including future flexibility. This is of course "Theoretical" data, and its confidence level is "Medium". Theoretical address ranges work quite well for geocoding purposes, accommodating changes to the parcel layer and other needs such as emergency response.

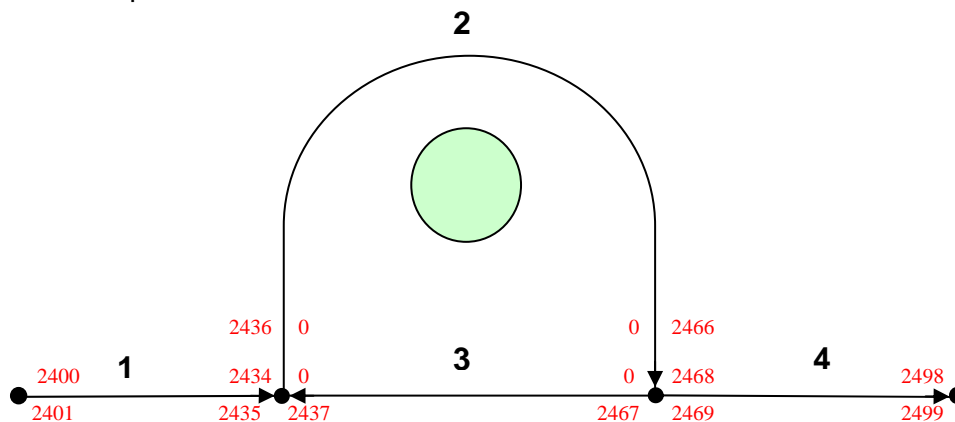
**Hint:** More commonly you will refer to a source such as parcel data for addressing, which will simplify your entries. In general, strive to "bracket" the parcel addresses within a reasonable range to allow for potential future subdivision while ensuring reasonably accurate geocoding on current addresses.

- so, with the original line feature shortened to approximately three-quarters of its original length, the address ranges become:  
FRADDL 2400 TOADDL 2474  
FRADDR 2401 TOADDR 2475
- the circle feature now consists of two curved features with the arc direction running counterclockwise
- the first arc entering the cul-de-sac loop and turning towards the right into the odd numbered domain of the original feature will have an odd address range on its right side as follows:  
FRADDL 0 TOADDL 0  
FRADDR 2477 TOADDR 2499

**Note:** all address ranges on the interior of the circle are necessarily “0” from and to.

- the second arc continues around the loop and connects with the endpoint of the street at the entrance of the loop. Its address range must be added more carefully
- the “From” endpoint for this arc is located at the end of the cul-de-sac and proceeds around on what constitutes the even numbered side of the *original feature* back towards the beginning of the loop, therefore it will not only have an even address range, but also in this case the “From” number will be *larger* than the “To” number, so its address range will go as follows:  
FRADDL 0 TOADDL 0  
FRADDR 2498 TOADDR 2476

**Knuckles and Bulges:** If the widening of pavement is within the linear feature’s edge of pavement and it is digitally represented as a single perpendicular line segment, then this segment should be named accordingly but its addressing should show only “0’s”. To do otherwise might confuse geocoding along the feature and/or location in the case of an emergency response. However, if the bulge has an island necessitating a “half-loop”, then the digital feature should be properly attributed with address ranges as suggested in the example below:



So, the address ranges for **Feature 1** would be:

FRADDL 2400 TOADDL 2434  
FRADDR 2401 TOADDR 2435

For **Feature 2**, they would be:

FRADDL 2436 TOADDL 2466  
FRADDR 0 TOADDR 0

As it happens, the arc direction of **Feature 3** runs opposite to the others, therefore its ranges would be:

FRADDL 2467 TOADDL 2437  
FRADDR 0 TOADDR 0

For **Feature 4**, they would be:

FRADDL 2468 TOADDL 2498  
FRADDR 2469 TOADDR 2499

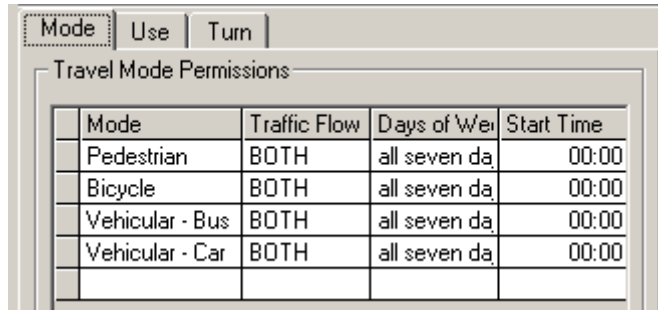
**Note:** this example represents a rough guideline – specific addressing should emulate parcel addressing as closely as possible to facilitate accurate geocoding – within the theoretical parameter. For example, this might see Actual addressing from 1801 to 1811, but the theoretical range could be 1801 to 1849 for a partial block or 1801 to 1899 for a complete block.

**Caution:** To prevent geocoding from resulting in multiple locations for one address you must ensure no overlapping ranges and to prevent geocoding failures you must ensure there are no gaps in ranges of contiguous features.

### That takes care of the “Name/Addr.” Tab. Next tabs:

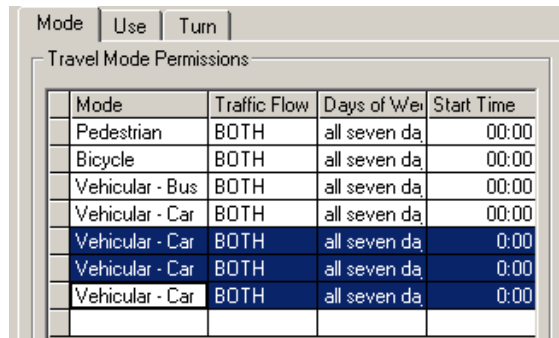
**“Specifications” Tab:** Features you’ve created will auto-populate with some default values. But if you know the Road Class, US Class, number of Lanes, Lane Width, and Speed Limit and the default is not correct, make all necessary changes.

**“Restrictions” Tab:** This interface has three additional sub-tabs:



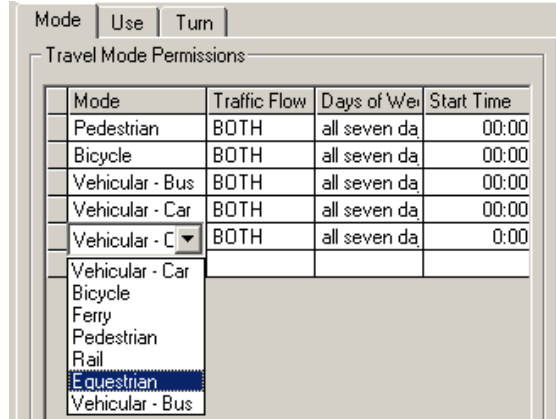
Mode	Traffic Flow	Days of Week	Start Time
Pedestrian	BOTH	all seven da	00:00
Bicycle	BOTH	all seven da	00:00
Vehicular - Bus	BOTH	all seven da	00:00
Vehicular - Car	BOTH	all seven da	00:00

- the default values for **“Mode”** restrictions for new features are the four modes shown above
- if you know differently (probably not for cul-de-sacs, but for other types of features), such as freeways west of Issaquah (where bicycles are not allowed) delete prohibited mode(s) by left-clicking in the gray box at the front of the row and pressing “Delete”
- if you’ve unintentionally clicked in blank “Mode” fields and added undesired/duplicate records – here or anywhere in the TNET Editor interface, you need to delete these also:



Mode	Traffic Flow	Days of Week	Start Time
Pedestrian	BOTH	all seven da	00:00
Bicycle	BOTH	all seven da	00:00
Vehicular - Bus	BOTH	all seven da	00:00
Vehicular - Car	BOTH	all seven da	00:00
Vehicular - Car	BOTH	all seven da	0:00
Vehicular - Car	BOTH	all seven da	0:00
Vehicular - Car	BOTH	all seven da	0:00

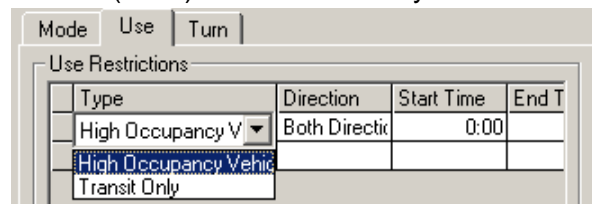
**Adding/changing Mode permissions.** On the other hand, you may need to add or edit mode(s) that are allowed on a feature, such as “Equestrian”, or even “Rail”.



- click in a “Mode” field and select the desired mode from the drop-down domain
- “Traffic Flow” refers to modal movement along the feature in relation to the arc direction. One-wayness and turn restrictions derive from this entry
- all fields are editable and contain coded value domains listing the available restriction options for each

**The “Use” sub-tab:** This accesses the option of specifying use restrictions on a selected transportation feature.

- the only options available in the Use/**Type**/Coded Value Domain are “High Occupancy Vehicles” (HOV) and “Transit Only”



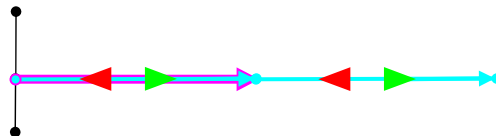
- clicking in a blank “Type” field will auto populate the record, so click in it only if you know that a use restriction is present on your selected feature and you intend to enter it
- virtually no cul-de-sacs will have such a restriction, so if you happen to click in the “Type” field and it populates unintentionally, be sure to select the record (row) and press “Delete” before continuing
- in the event that you are working on a feature which does have such restrictions, selecting “HOV” or “Transit Only” means that at least one of the available lanes on that feature will carry this restriction. “Mode” restrictions specify access to the entire feature, such as a multi-lane freeway, whereas “Use” restrictions may mean all lanes of travel or just one, such as a HOV lane. If, for example, you know that a single-lane feature with traffic flowing in a single direction is a bus only lane, then “Mode” restrictions should be limited to “Vehicular –Bus”, and the “Use” restriction type should be “Transit Only”
- additionally, some HOV lanes are in effect only during specific hours of the day, so please enter that also if known

Type	Direction	Start Time	End Time	D.
High Occupa	Both Directi	6:00	9:00	all
High Occupa	Both Directi	15:00	18:00	all

- to visualize current settings turn on “Show Arc Direction” AND “Show Mode Direction”

Auto Zoom      Flash Feature  
 Show Arc Direction  
 Show Mode Direction      Zoom Feature

- the arc direction will display as arrowhead(s) pointing to the “To” endpoint
- mode direction will display as a pair of arrowheads straddling the feature’s midpoint, color coded as green for “go” and red for “no-go”.



**The “Turn” Sub-tab:** Turn restrictions auto-populate based on “Mode/Direction” and a complex set of rules, therefore particular care must be exercised in modifying these fields.

For each feature sharing an endpoint with x number of connected features, there would be a record for every possible turn from the selected feature to *each* of the connected features *as well as* to itself.

- for example, in the case where two consecutive straight features are connected only to each other so that they share an endpoint (a “pseudonode”) indicating perhaps a zip code boundary crossing a roadway, there will be two records for turn restrictions in the database table across the shared endpoint, i.e. a “turn” from the first feature to the next feature and a “turn” from the feature to itself (U-turn). And if the feature’s “Mode/Direction” is “Both” then the “Turn” is “Not restricted”. If, on the other hand, the feature’s Mode Direction is either “With” or “Against” arc-direction for one-way only (displayed by one green arrowhead and one red arrowhead), then the turn back to itself will be “Restricted”

EdgeEnd	EdgeTo	Turn	Start Time	En
from	S 131st Pl	not	00:00	
from	24th Ave S	not	00:00	
from	24th Ave S	not	00:00	
to	S 131st Pl	Restrict	00:00	
to	S 131st Pl	Restricted	00:00	

Also under the “Turn” tab you will see “**Available Modes**”. The drop-down list will display all modes allowed on the selected feature.

- highlight each of the available modes to see what if any turn restrictions are present respectively, and/or edit as needed. For example, in the case of an entrance to a Transit Center, a left turn from one direction and a right turn from the opposite direction would be restricted for all available modes other than “Vehicular – Bus” and possibly “Pedestrian”

The “**Metadata**” tab: Last tab on the TNET Editor interface:



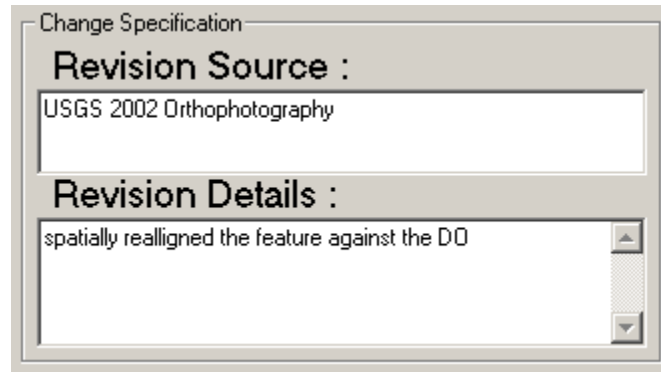
- this tab will display the “History”, which is a log of all modifications that you (or any other TNET editor) have performed on the selected feature:

History				
Modification	Edit Agency	Action	Table	Attribu
2:32:29 PM	smith	Attribute	TLINK	ROLL

- if this log has surprisingly many entries after an edit session that seems to have consisted of relatively few actions on your part, that’s because the SDE dbase has complex relationships across the database and each action that you take may trigger many modifications

Below “History” is the “**Change Specification**” window:

**Important Note:** Currently, an undiagnosed coding issue disallows entries made in the Change Specification window to persist, so as of this re-writing this function awaits repair.

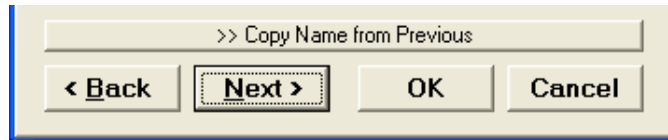


- When fixed, please type in what references or sources you used to make the edit, and briefly describe your action(s)

**Note:** Existing features may have missing/unknown data in the various attribute tables. When you find these and know the correct information, please enter it. Newly created features will auto-populate with all of the default values. Double-checking these data values is always a good practice.

**Attributing multiple selected features.**

If you have selected multiple features, click “Next” to begin editing the next feature as you did the first:



**Note** Using the ">>Copy Name from Previous" button will populate the Naming fields with the previous entries, replacing any existing records. However, address ranges entered for the previous segment will not copy with this action, and any address ranges already in this segment will be "blanked" out, so the address ranges will require correction.

The ">>Copy Specifications from Previous" button (under the Specifications tab)



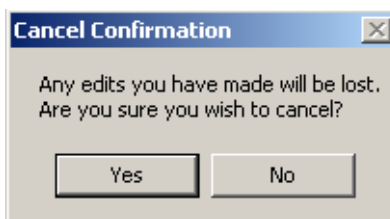
is particularly useful, allowing multiple entries to be quickly applied to the next feature (provided, of course, that the next feature's specs are indeed identical).

### Closing the TNET Editor.

- if you're done with data entry and you're reasonably confident the edits are correct, click "OK". The application will save your edits and close.



- if, on the other hand, you've opened the TNET Editor only to review the data and/or to check data options, OR you're not sure of your edits, OR you know that you've made a mistake (which can happen to the best of us), click "Cancel"
- This will pop up a "Cancel Confirmation" box (a life-saver if you've accidentally clicked "Cancel")



- clicking "No" will return you to the TNET Editor interface
- clicking "Yes" will dump your edits and close the extension

**Note:** Clicking "OK" will also save the TNET Editor's last position on your desktop. If you have re-positioned it and click "Cancel" that new position will be lost.

### Epilogue

This TNET Editor guide is a work in progress. We are continually learning better ways to do things, and so will you. As the list of function issues is resolved some of the contents will become dated, and also with each ESRI product upgrade the TNET Editor extension may be modified to suit. If you encounter "bugs", questions with functionalities or discover ways to improve any of these guidelines please contact the TNET Project Team.

**Thanks for being part of TNET!**