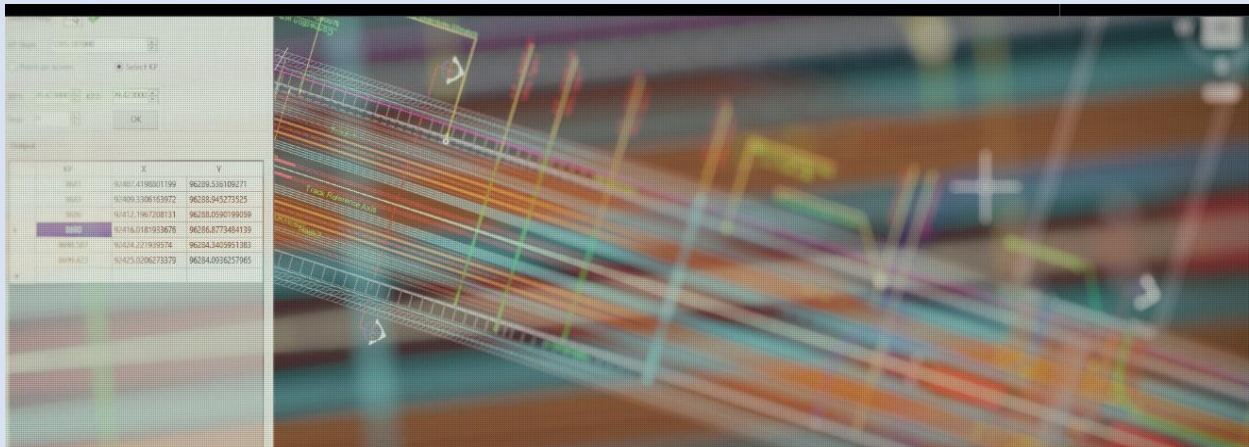# Locator ®™

USER MANUAL

TSS Locator® : design just got way easier

created from engineers for engineers

www.tss.link

January 2022

Table of Contents

1.   Why Locator®™

Locator®™ is an Autodesk® AutoCAD® tool that helps Locate, on a drawing, a given Kilometric Position (KP) over a defined Axis. At the same time Locator draws a short line, perpendicular to the axis, at the certain KP location, which is a must-have aid, in any Project, for any task.

Locator®™ can also be used to identify as-built points or other objects location and find its projection on the Axis. Such tasks, depending on the Project you are working on, usually have to be performed hundreds of times in the course of every working day.

Either you belong on the Design Team, the Construction Team, Surveyors or Project Management Team, **Locator®™** will take a repeating task off your shoulders, with tremendous speed and absolute accuracy.
Do you have to place different objects on a Plan View or a GA?
Do you have to Coordinate different studies?
Do you want to elaborate on Longitudinal Cross Sections?
Do you have to check As-Built situations?
Do you have to survey and compute quantities of executed longitudinal works, such as asphalt laying, trackbed concreting, etc.?

Our team, having worked for more than 25 years on Railway Projects, and particularly when performing Coordination Works, is dealing with such tasks on a permanent basis every day.

It should be obvious that the need for a tool such as **Locator®™**, was born from our needs. The concept was to help perform those tasks quickly and accurately, having a clear mind focused on the real engineering problems instead of such secondary issues.

Locator®™ works in Autodesk® AutoCAD® and Autodesk® Civil 3D® (currently not benefiting from the axis properties in Civil 3D, but soon to become available). Considering that there are many colleagues and friends that have previous versions of Autodesk® AutoCAD®, we are constantly supporting back until Autodesk® AutoCAD® 2012.
Of course, **Locator®™** at its current Version (200.100 issued October 2020), performs much more tasks that could be of serious help, when talking about real projects. Please read the present User Manual to get acquainted with those as well.

We are confident, you will find in **Locator®™** the support you need.
You are welcome to visit our site www.tss.link and check on the other tools that can help you, depending on your specialty and expertise.

TSS has a unique target. To link CAD programming expertise with Engineering and Drafting needs.

Thank you for contacting us.

2. Setting Up Locator®™ Axis

A. Run **Locator®™** by pressing the button Locator on TSS ribbon. Press the [*ESC*] button to exit the command.
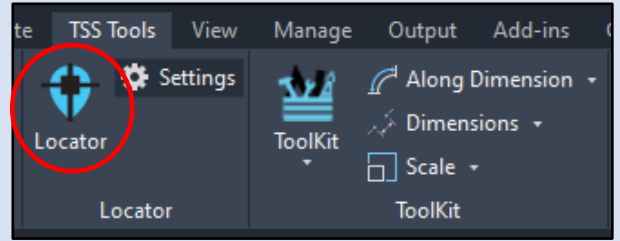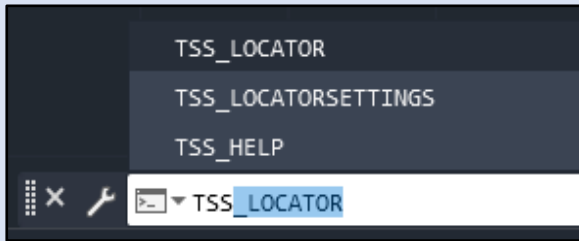
B. **Locator®™** Palette opens and reads the drawing.
On the right of the page there is a complete view of Locator's palette.
Navigate on the palette to get acquainted with the available options.
On the top you will find the Axis selection area and the zoom options.

In the middle you will find the Tabs for locating points or KPs.

Right below you will find the KP Data table that contain each selected point's data.
When a point get located at the drawing, a row gets inserted in the table with its calculated Kilometer Point, X-coordinate and Y-coordinate.

At the bottom you will find the button "Clear Data" that clears the table and the button "Export to Excel" that exports the table at the selected excel file.
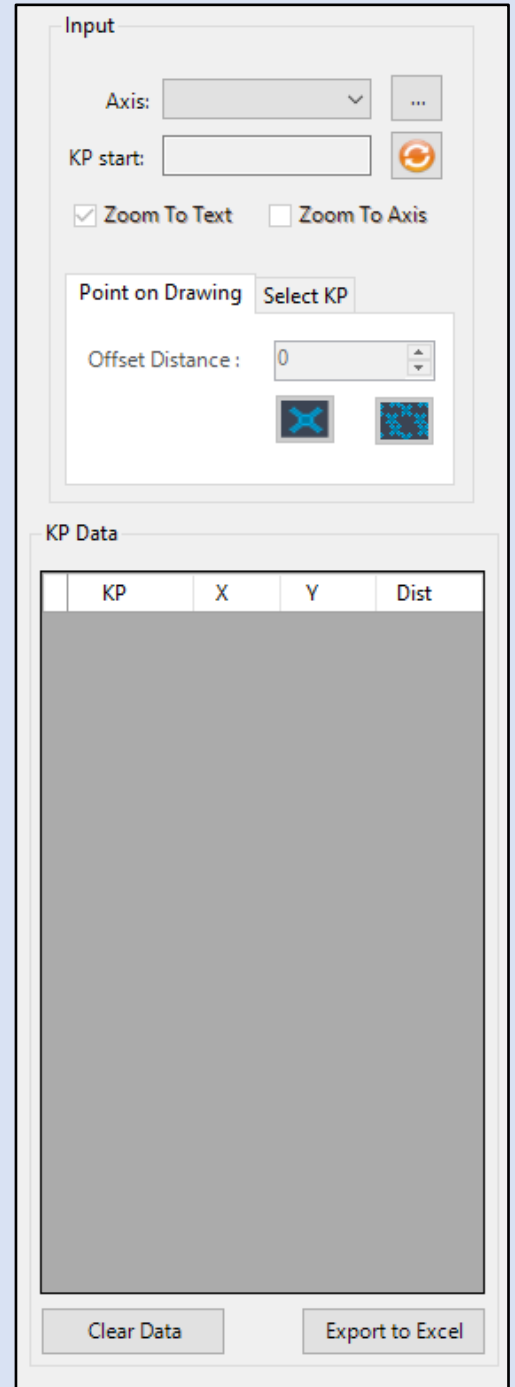
C. If you have never used **Locator®™** in the current drawing, there will be no saved axes and the first thing you have to do is to define a working axis.
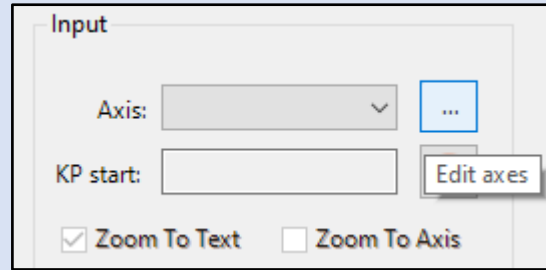
Tip1: *The selected axis can be any polyline, line or arc created in* Autodesk® AutoCAD®.

Tip2: *Remember that in case you have a real alignment represented in Autodesk® AutoCAD® created from another alignment software, make sure the transition curves have been depicted with at least 1point/1m, ideally 1point/0.5m, for absolute accuracy.*

D. After pressing the [Edit Axes] Button, a new window will pop-up. Axis Manager Window gives you the ability to [Add] or [Remove] Locator Axis.
In order to add a new Axis you have to press the [Add] Button and then select an entity inside the drawing.
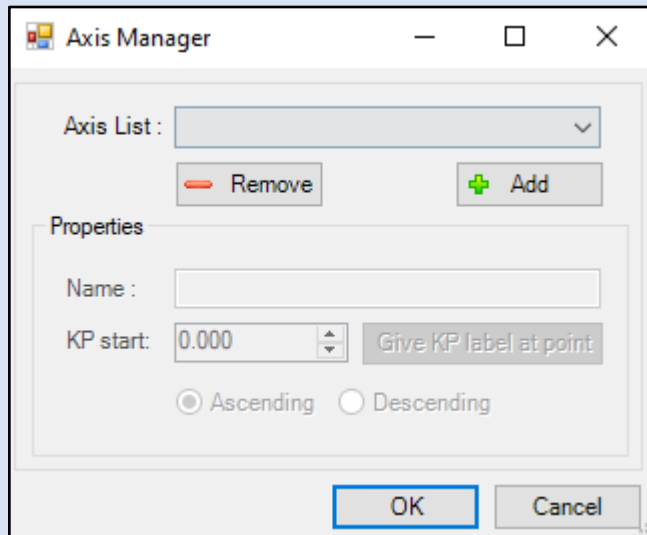
After adding the new Axis, the window will be filled with the axis data. Locator can give automatically names on the selected axis, if you skip the prompt on Autocad.
On the Properties panel you have the option to change the axis name and the KP Start.
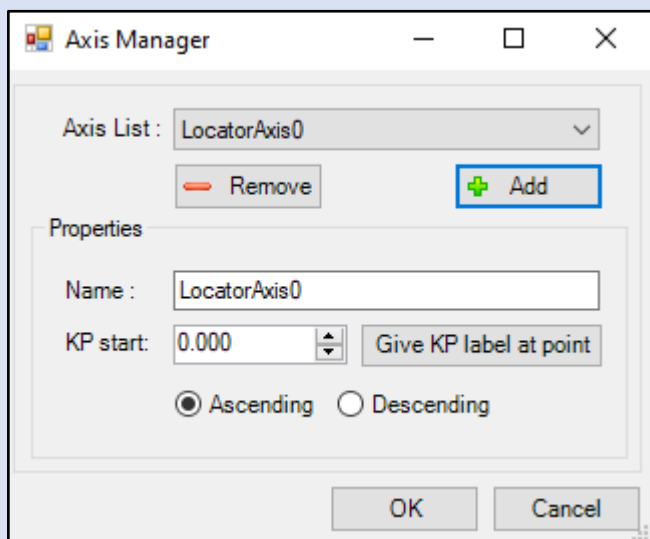
E. In order to give a Kilometric Position (KP) "name"/label at the starting point of the axis, other than zero (0+000,000) there are two options:

- In case you know the starting point KP, type it in the [KP Start] textbox:

- In case you do not know the starting point's KP, or if you are working temporarily on a part of the complete axis, there is no problem.
  Use any other point of the axis (with a known KP value) as reference. Just make sure to check the KP ascending order (read next paragraph).

Press the [Give KP label at point] button, type its KP label in the command line and then select on the drawing the point that this label refers to.
Locator will calculate the Starting KP of the complete axis. You are ready to work!

Give KP label at point
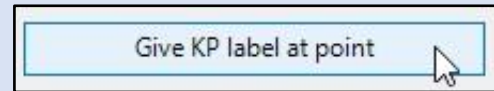
F. The KP Start of your axis might be positive or negative and the KP Labeling development can be either [Ascending] or [Descending].
In case you need to make such adjustments to the KP labeling system of your axis, choose one of the [Ascending] or [Descending] radio buttons.

⦿ Ascending   ○ Descending
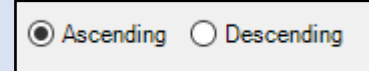
If the direction of the drawn polyline, does not coincide with the ascending chainage (KP system) of the selected axis, choose the [Descending] radio button. In the opposite case just choose the [Ascending] radio button.
If the KP labeling system of your axis decreases from the point you labeled as KP Start, choose [Descending].

Note: The term Kilometric Position (KP) is the same as the term Chainage of an axis.

Tip1:   The selected axis can be any polyline, line or arc created in Autodesk® AutoCAD®.
Tip2:   Remember that in case you have a real alignment represented in Autodesk® AutoCAD® created from another alignment software, make sure the transition curves have been depicted with at least 1point/1m, ideally 1point/0.5m, for absolute accuracy.
Tip3:   Duplicate names on Axis are not permitted
.

G. In case you had used **Locator®™** in the current drawing and had saved the drawing, then Locator will read all saved axes and select the first axis (in the row, as they were saved in the drawing).
In order to manually ask Locator read the data of a dwg file, press the Orange button ⟳ ([Refresh Data]).

Input

Axis: LocatorAxis0   ⌄   ...

KP start: 0.000   ⟳

☑ Zoom To Text   ☐ Zoom To ⟮ Refresh Data
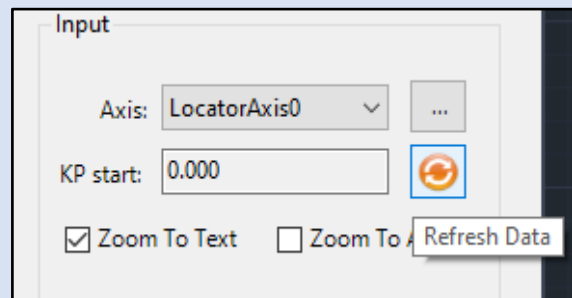
H. In order to see all the axes that have been added from **Locator®™**, the only thing it is required is to click on the listbox on the main panel and select the axis you need.

Axis: Track_2   ⌄   ...

KP start: LocatorAxis0
           LocatorAxis1
           LocatorAxis2
☑ Zoom Track1   ⟳ o Axis
        Track_2
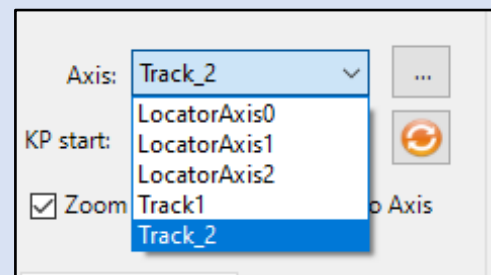
3.   Exploit Locator®™, feel the benefits

After an axis has been selected and KP start label has been set, you are ready to start exploiting Locator. See how Locator can save up your time.

3.1.   How to find which KP corresponds to a point/object on the drawing.

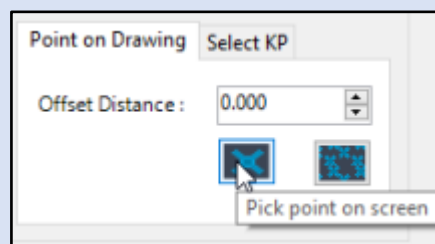Select the tab [*Point on drawing*] by pressing on it and click

the button with the cursor .

Each time you select a point on the active drawing, **Locator®™** will do the following:

A.   Calculate the projection of that point on the axis.

> Note1: *In case there are more than 1 such points, Locator®™ chooses the one which is closest to the original point.*
> Note2: *In case there is no projection on the axis, there will be no action from Locator®™.*

B.   Draw a line perpendicular to the axis at the projection point.

> Note3*: You can set the dimension of the vertical line, by changing the relevant value on* [*Locator's Settings Form*](#) *(see par. 5.2)*

C.   Add a text with the calculated KP according to Locator Settings (the value corresponds to the measured distance from the calculated point to the starting point of the Axis, plus the KP start label value).

> Note4*: Every time Locator finds a point or KP, all relevant information get inserted in* [*the KP Data table (see par. 4.3)*](#)

3.2.   How to mark a point which is at a certain Offset distance from a known point.

Select the tab [*Point on drawing*], and add the requested offset value in the [Offset Distance] text box. **Locator®™** will then do all the above-mentioned actions [(par.3.1 above)](#) not at the point that you selected/clicked on, but at the requested Offset distance (measured on the axis), from the projection of the point you selected.

KP	X	Y	Dist
28.682	23.419	3.701	-9.074
22.507	27.454	25.256	0
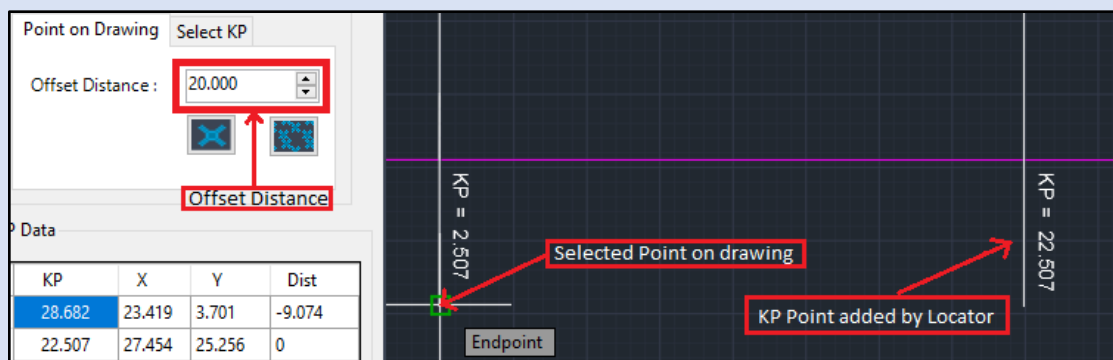
> Note: *Remember that any time you can Press the [ESC] button to exit the command.*

3.3. How to locate a specific KP position on the axis,

Select the tab [*Select KP*] and request certain KP values to be retrieved/located on the drawing. **Locator®™** will calculate the point coordinates that refer to the given KP and draw the associated lines (perpendicular to the axis) and texts.

a. If you only want one/single KP value, type in KP1 textbox the requested KP and specify a step of 0,00m (see the image on the left, below).

b. For multiple KP values, type in KP1 and KP2 textboxes the corresponding Starting and Ending KPs of the space you want to be marked and specify the requested interval length in the [Step] textbox, in meters (see the image on the right, below).

c. Using the [Pick a point on screen] button ⊕ you can directly pick a point to change KP1 and KP2 values, without needing to specify by typing the value.
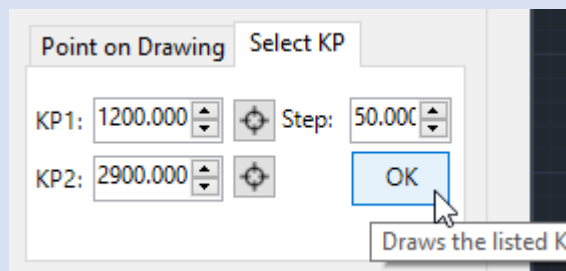
At the example on the second image, we requested Locator to start calculating points on the axis at KP1: 1+200,000 and place a perpendicular line every 50,00m until it reaches KP2: 2+900,000.

3.4. How to clear out the contents in the KP Data Table.

Press the button [Clear Data], positioned below the table to clear all rows.
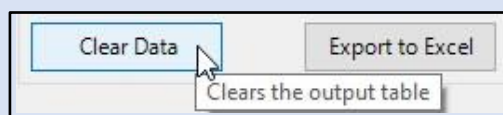
3.5. How to delete specific rows on the KP Data Table.
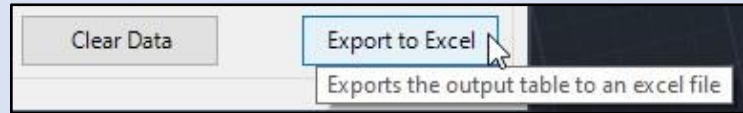
Do the following :

a. Click on row header of the first row you need to delete so as to select the entire row (the row header is the small white box on the left end of the row).

b. Press and hold the shift button at your keyboard.

c. Click on row header of the last row so as to select the entire area.

d. Release the Shift button on the keyboard.

e. The rows that you just selected are marked in a color (in our case blue)

f. Press the delete button at your keyboard

KP	X	Y
1,025.326	1,798.999	1,499.760
0.000	1,204.712	1,249.383
50.000	1,227.696	1,293.787
100.000	1,250.679	1,338.192
150.000	1,273.662	1,382.597
200.000	1,296.646	1,427.001
250.000	1,319.629	1,471.406
300.000	1,342.612	1,515.810
350.000	1,365.596	1,560.215
400.000	1,388.579	1,604.619
450.000	1,411.562	1,649.024
500.000	1,434.546	1,693.429
550.000	1,457.529	1,737.833
600.000	1,480.601	1,781.762
650.000	1,518.031	1,748.611
700.000	1,555.461	1,715.460
750.000	1,592.890	1,682.308
800.000	1,630.320	1,649.157

3.6.   How to export data from the KP Data Table to MS Excel®™.

Press the button [Export to Excel], which is located below the KP Data Table, so as to open the File Browser and select or create a new Excel file to write all the KP Data contained in the table.

In the Excel file, except from the KP, X and Y coordinates columns, the following columns are also included:

a.   EntityID: the unique id of each axis you have selected. It helps you distinguish the records in case you have exported data from more than one axis.

b.   Filename: the file path of each drawing. It helps you distinguish the records in case you have exported data from more than one drawings.

In the picture below, an Excel file example is presented, that shows all the exported data.

KP	X	Y	Dist	AxisName	EntityID	FileName
0.092	-37.462	20.007	-0.026	LocatorAxis0	590	Drawing1.dwg
0.696	-37.038	20.437	-0.39	LocatorAxis0	590	Drawing1.dwg
1.975	-36.139	21.346	-0.264	LocatorAxis0	590	Drawing1.dwg
3.34	-35.179	22.317	-0.247	LocatorAxis0	590	Drawing1.dwg
4.706	-34.219	23.288	-0.247	LocatorAxis0	590	Drawing1.dwg
6.313	-33.089	24.431	-0.107	LocatorAxis0	590	Drawing1.dwg
7.92	-31.959	25.574	-0.107	LocatorAxis0	590	Drawing1.dwg
9.527	-30.83	26.716	-0.107	LocatorAxis0	590	Drawing1.dwg
11.341	-29.554	28.006	-0.071	LocatorAxis0	590	Drawing1.dwg
13.66	-27.924	29.656	0.48	LocatorAxis0	590	Drawing1.dwg
16.217	-26.126	31.474	0.39	LocatorAxis0	590	Drawing1.dwg
18.791	-24.317	33.305	0.373	LocatorAxis0	590	Drawing1.dwg
19.854	-23.569	34.06	0.017	LocatorAxis0	590	Drawing1.dwg

The export to Excel feature will be expanded in the future editions of **Locator®™** to include more data. Stay tuned.

3.7.   How to reveal hidden columns in KP Data Table.

Follow the steps below:

a.   Move the mouse pointer on the KP Data Table and [right-click] on the column headers.
b.   A menu with 2 items will appears.
c.   Click on [Unhide] to reveal all columns.
d.   Click on [Hide] to hide the column that the mouse points on.

KP Data

KP	X	Y	Dist	AxisName	EntityID	FileName
12.586	15.505	12.978	-9.839	LocatorAxis0	558	Hide / Unhide
3.533	9.592	12.125	0.474	LocatorAxis0	558	wg
4.615	10.482	12.737	3.254	LocatorAxis0	558	Drawing1.dwg
6.85	11.955	14.404	0.984	LocatorAxis0	558	Drawing1.dwg
9.056	13.718	15.516	-3.841	LocatorAxis0	558	Drawing1.dwg
4.615	10.482	12.737	0	LocatorAxis0	558	Drawing1.dwg
5.03	10.796	13.008	2.075	LocatorAxis0	558	Drawing1.dwg
5.308	10.997	13.2	2.409	LocatorAxis0	558	Drawing1.dwg
5.308	10.997	13.2	1.001	LocatorAxis0	558	Drawing1.dwg
5.308	10.997	13.2	1.001	LocatorAxis0	558	Drawing1.dwg
12.586	15.505	12.978	1.782	LocatorAxis0	558	Drawing1.dwg
0.618	6.834	11.251	-0.961	LocatorAxis0	558	Drawing1.dwg
1.728	7.926	11.442	4.016	LocatorAxis0	558	Drawing1.dwg
2.615	8.768	11.722	4.861	LocatorAxis0	558	Drawing1.dwg
4.054	10.033	12.402	4.367	LocatorAxis0	558	Drawing1.dwg

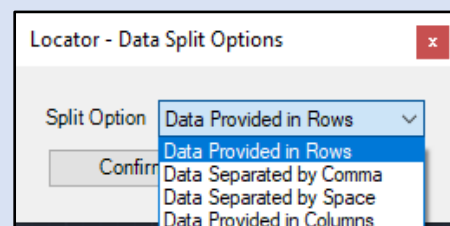### 3.8.   How to locate multiple KP values from an Excel file on your drawing.

In many cases designers receive lists of locations or catalogues of project specific objects that must be placed in the drawings (particularly in transportation projects or other linear projects).
In order to perform such a massive work, [Copy] all the KP values from an Excel column and then inside Locator®™ KP Data Table, go into **Locator®™** palette KP Data Table and right-click at a blank row.

Click the [Paste multiple values from excel] button and choose a way to split the data. You can choose between 4 different ways. After you choose and press the [Confirm] button **Locator®™** will do the following:

KP Data

KP	X	Y

Paste Multiple Values From Excel
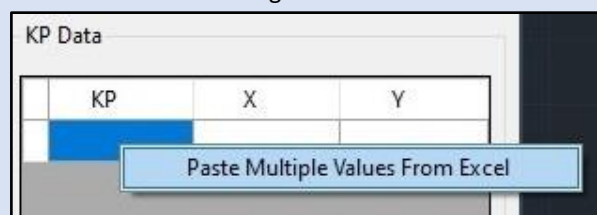
a.   Calculate the points on the selected axis that correspond to the inserted KP data.
b.   Add their coordinates in the table, next to each KP value.
c.   Draw the perpendicular to the axis lines, at the calculated points.
d.   Add the relevant text with the KP values on the axis

Locator - Data Split Options

Split Option: Data Provided in Rows

Confirm
- Data Provided in Rows
- Data Separated by Comma
- Data Separated by Space
- Data Provided in Columns

3.9. How to work with more than one axes in a drawing.

Every time you want to work with another axis, just repeat the steps described in Chapter 2 in this manual, in order to define each time a new axis for **Locator®™** to work with.
The complete process takes only a few seconds but the benefits are remarkable and the time saved is undeniable.
All axes that you ever define in a drawing, remain available for **Locator®™** to work with them.
In order to switch between the different axes, all you have to do is to select any axis from the Axis List.
Automatically, **Locator®™** will identify the Axis you selected and it will load all of its settings.

Tip1: An *axis* should not necessarily refer to an alignment entity (either polyline or Civil 3D alignment). *An "axis" could even be the sides of a diagram, the sides of a Longitudinal cross section, the polyline showing a linear representation of a Railway Line (for coordination purposes) or any crooked polyline that serves as a guide for a project.*

Tip2: *Use Locator and see how faster the results are, compared even to a simple Offset command, when serving the needs of such design requirements (transportation, hydraulics or other lengthy projects).*

3.10. How to work with the same axes on many drawings.

It is certain that for every project you design, you will need to work in more than one drawing.
This is a common situation that is valid for all Design Firms irrespective of the size of the office/company.
Concequently in many occasions you will need after you have defined an axis (or many axes) in a drawing, to copy them in other drawings and get acess to Locator support in all the drawings, without having to redefine all axes data.
Follow the steps below:
a. Select and Copy the initially defined axes, from the 1st drawing you have set it/them up completely, using the known and common Autodesk® AutoCAD® commands, such as [Copy] or key combinations such as [Ctrl]+[C].
b. Paste the copied axes to the new drawing using Autodesk® AutoCAD® commands, such as [Paste] or key combinations such as [Ctrl]+[V].
c. Start Locator in the new drawing and Locator Palette opens.
d. On Locator Palette, press the orange button *[Refresh Data]*
e. **Locator®™** will read the properties of the newly copied axes and will be able to take advantage of them without asking you to redefine them from the beginning.
f. You can now work with **Locator®™**

4.   Locator®™ Handy Tools.

4.1.   Locator & the Handy accessories.

When **Locator®™** is asked to find/locate a point or a KP value, it automatically draws a line (perpendicular to the working axis) and a Text with the KP value, at the requested KP.

Note: *This feature is essentially handy and really helpful for many tasks including placing of equipment in coordination drawings of multidisciplinary projects. Our team has gained numerous hours of work in such tasks when working on Large Scale Metro projects.*
Use this line for accurate placement of any kind of object/blocks/remarks/annotations.

Tip1 :   Use TSS **ObjectLocator®™** to take full advantage of such features and unbelievably accelerate similar workloads.

Tip2 :   Visit www.tss.link to get acquainted with TSS **ToolKit®™.** Brink in your work some of the most advanced and inteligent analysis tools that will help you perfrom tasks you wouldn't even think you could, previously.

4.2.   Zoom to Text Option

Check the [*Zoom To Text*] checkbox, at the bottom right-hand corner of Locator Palette, and every time you request to find/locate a KP value, **Locator®™** will automatically zoom there.
Locator will zoom the drawing to that specific area/location where the perpendicular line and the KP text are drawn.
This feature is really helpful, especially in long transportation, hydraulic or other linear lengthy projects, where it is difficult to navigate in the drawings and search for KP markers on the alignment axis.
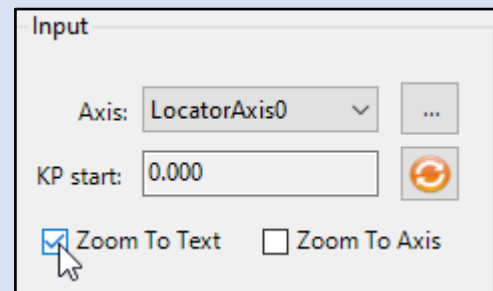
Tip1:   *Turn off this feature, when you want to perform multiple Location tasks and you want to have an overall view of the wider area.*

4.3.   Zoom to Axis Option

Check the [Zoom to Axis] checkbox on the right bottom corner, and every time you select a new axis from the [Axis] list, **Locator®™** will automatically zoom to the axis you just selected.
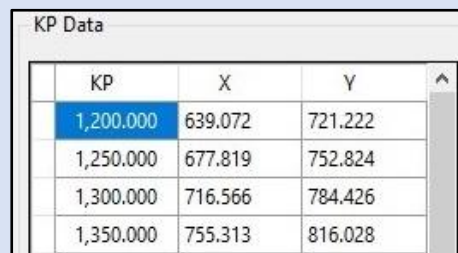
This feature is really important when you are working with multiple different axis and you need to instantly zoom to the specific area.
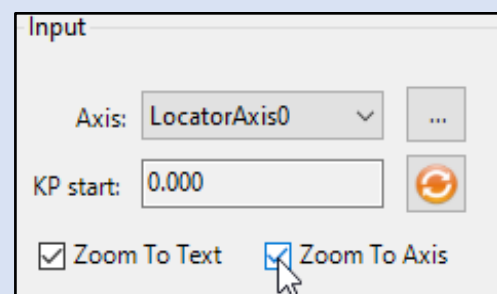
4.4.   KP Data Table

Every time you click on a point or you request a certain KP value, **Locator®™** collects the data that correspond to the points on the working axis, such as KP label, X coordinate and Y coordinate (and more).

Those data automatically get inserted in the KP Data Table on Locator's palette.

KP Data			
KP	X	Y	
1,200.000	639.072	721.222	
1,250.000	677.819	752.824	
1,300.000	716.566	784.426	
1,350.000	755.313	816.028	

<u>Note</u>: *This table is a very helpful tool and its utilities will certainly be extended in the near future.*

5. Locator®™ Settings Form

5.1. How to call the Locator® Settings Form

In Autodesk® AutoCAD® environment, at the command line, type [tss_locatorsettings] (see the left picture below) or press the button [Locator Settings] on the ribbon (see right picture below), in order to gain access to **Locator®** Settings Form and be able to modify the design properties for every selected polyline.
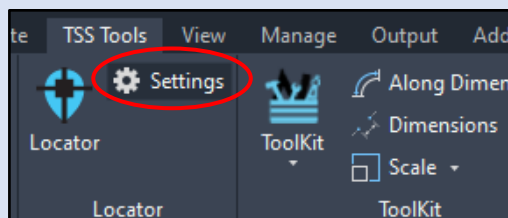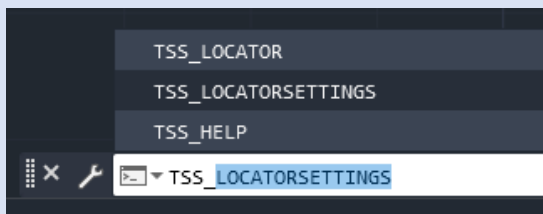
Note: *You can define different properties/settings on every axis and on every drawing. There is no limit on that and Locator will remember the settings you defined.*
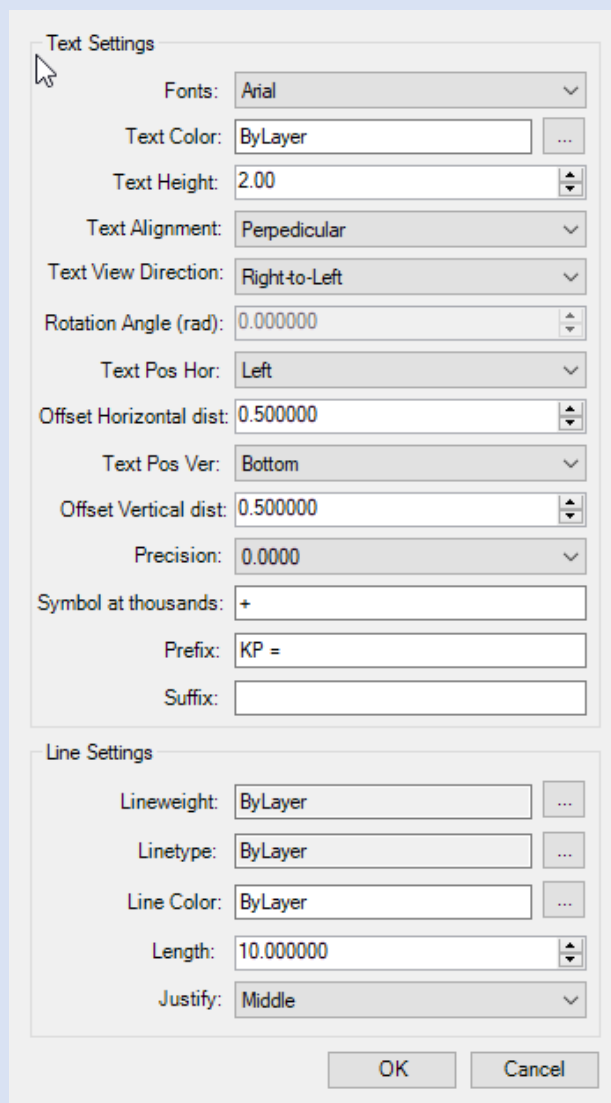
5.2. The Locator® Settings Form's fields

Locator®™ Settings Form opens and you can modify the design properties that concern the working axis.

Press [OK] and all modifications will be applied at the currently active drawing.

Save your drawing and the data that concern each axis (KP start and the Settings) gets saved in the drawing.
They will be automatically retrieved the next time you open this drawing.

6. Our Target is to transform our experience into your tools.

Our goal is to support Engineering and let Engineering community spend more time on real Engineering problems and less on drawings tricks and tweaks.

6.1. Checkout more of _tss tools

In case you would like to see more of our tools, please visit our site at www.tss.link and feel free to download and try any other tool you may find of interest, according to your design needs/tasks.

6.2. Trial Period

Please note that all TSS tools have a **30day free trial period**.

6.3. Newsletter

Please subscribe to our Newsletter so that you are informed every time an update is been released and gain access to all new tools we will be continuously issuing.

Remember tss_tools are …

created from engineers for engineers

Sincerely,

TSS TEAM