lucity™

TRAINING GUIDE

Lucity Tools in ArcGIS Pro

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Overview of ArcGIS Pro with Lucity

In this session, we'll cover the new Lucity ArcGIS Pro add-in.

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Overview

Highlights for version 2017

- Split any Sewer, Storm, or Water pipe asset.
- Merge any Sewer, Storm, or Water pipe asset.
- Renumber features of many different inventory types (supports batch processing!).
- View real-time processing and troubleshooting information in the Lucity Process Log.

Highlights for version 2017r2

- Attach documents to assets from the map.
- View, Edit, or Delete documents from an asset, or its related modules, from the map.
- Export the active map view and attach it as a document to a Request, Work Order, or PM.
- Split any Street Segment or Street Subsegment asset.
- Merge any Street Segment or Street Subsegment asset.
- Delete features of many different inventory types from both GIS and Lucity.
- Recreate Street Subsegment features for any given Street Segment feature(s) in GIS based on what is in Lucity.

Requirements

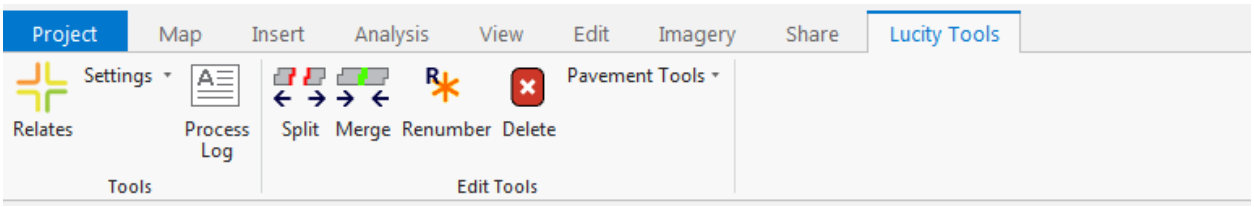
- For 2017: ArcGIS Pro 1.2-1.4
- For 2017r2: ArcGIS Pro 2.0+
- Lucity Internal REST API must be installed and running.
- Lucity Internal Identity Server API must be installed and running.
- Note: With every release so far, no additional Lucity licensing is needed to use the Lucity extension in ArcGIS Pro. This will likely not be the case in a future release and some sort of Lucity license would be required to use the Lucity extension in ArcGIS Pro.

Installation

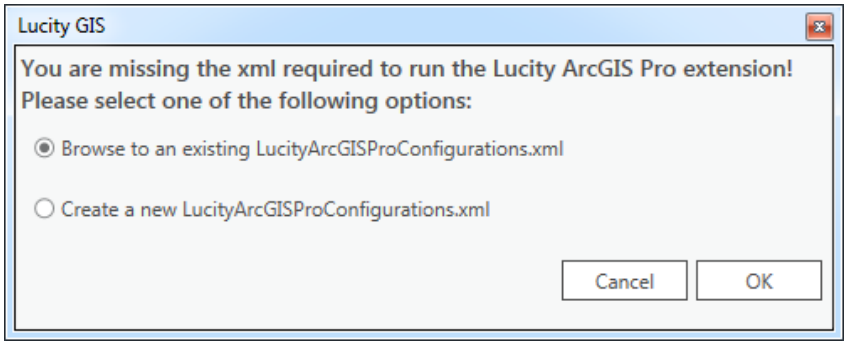
- The extension is provided in the format of an Esri add-in (LucityArcGISPro.esriAddInX)
- The Lucity workstation install will copy the .esriAddInX file to the Lucity desktop bin directory. The workstation install then determines if the workstation has ArcGIS Pro installed by checking the registry for HKLM>SOFTWARE>Esri>ArcGISPro. If that directory exists, then it will attempt to register the add-in with ArcGIS Pro.
- The add-in can also be manually installed. A download of the LucityArcGISPro.esriAddInX can be obtained at ArcGIS Pro 1.2-1.4 (2.0+ for 17r2). Simply double-clicking the add-in file will register the add-in with ArcGIS Pro.
- Lucity Internal REST API must be installed and running
- Lucity Internal Identity Server API must be installed and running

Setup/Configuration

When the Lucity ArcGIS Pro add-in is registered with ArcGIS Pro, a new Lucity Tools menu item will be added to the ArcGIS Pro ribbon. The Lucity Tools menu will contain two tool groups: Tools and Edit Tools.



- The Lucity ArcGIS Pro extension doesn't require any Lucity workstation component to be installed, the integration with Lucity is done via the Lucity Internal REST API. Therefore, before the tools provided with the Lucity ArcGIS Pro extension can be used, you must perform some initial configuration so the extension knows the location of the Lucity Internal REST API.
    - When you attempt to use one of the Lucity ArcGIS Pro tools, the Lucity extension checks to see if it has been previously configured for use. If not, the following prompt will be displayed:



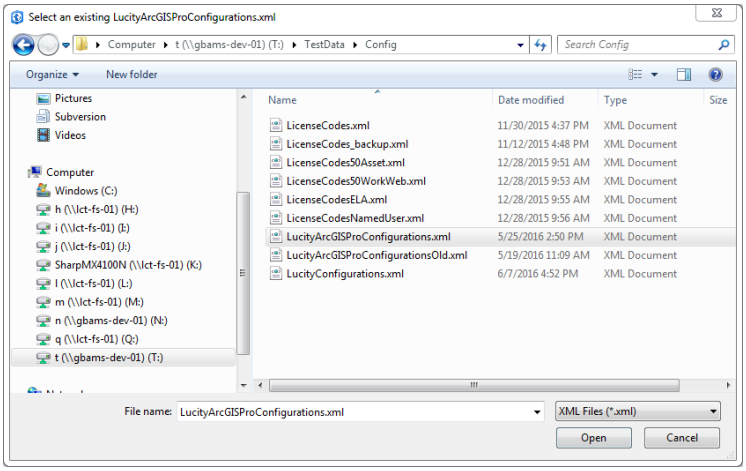
        - Note: Each time the Lucity ArcGIS Pro extension initializes it looks for a LUCITY_PROCONFIGDIR registry key in HKEY_CURRENT_USER>Software>Lucity>CurrentVersion. This key contains the path to where the LucityArcGISProConfigurations.xml resides. If the key isn't found or there isn't an .xml at that location then it will prompt the user to configure ArcGIS Pro for first time use.

    - The Lucity ArcGIS Pro extension requires a LucityArcGISProConfigurations.xml that contains information regarding the Lucity clients and their Internal REST API root urls. An example of the contents of the .xml is:

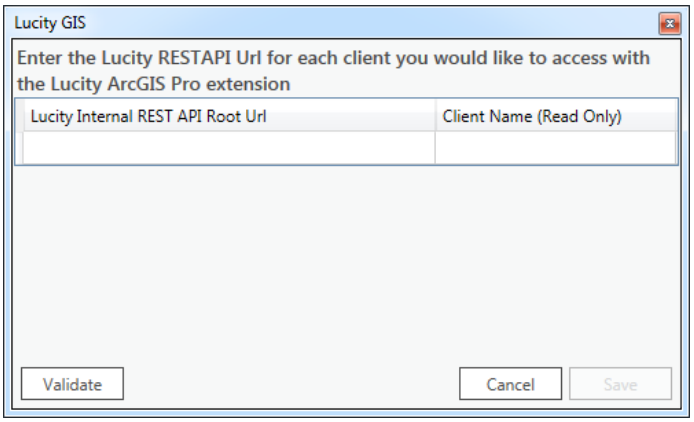
LucityArcGISProConfigurations.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LucityArcGISProConfigurations xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Configurations>
    <Configuration>
      <ClientName>Master SQL Server Development</ClientName>
      <InternalRESTAPIRootUrl>http://localhost:51596</InternalRESTAPIRootUrl>
    </Configuration>
    <Configuration>
      <ClientName>Replaced Nightly SQL Server</ClientName>
      <InternalRESTAPIRootUrl>http://lct-w2008r2-01/NightlyWebInternalRESTAPI/</InternalRESTAPIRootUrl>
    </Configuration>
  </Configurations>
</LucityArcGISProConfigurations>
```

- There are two options: 1) Browse to an existing .xml or 2) create a new one. Ideally, an organization could just create one LucityArcGISProConfigurations.xml, place it on a network share, and configure all end-users to use that single .xml. Alternatively, each user could create their own .xml and have it saved locally.
    - Browse to an existing LucityArcGISProConfiguration.xml- If you select this option an open dialog will appear prompt the user to select the existing .xml.

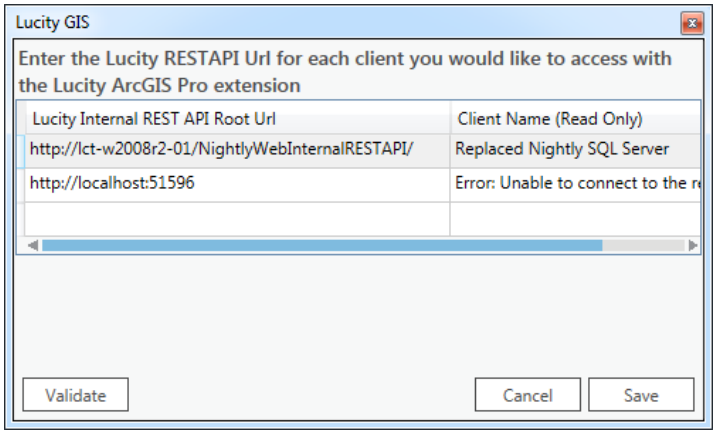


    - Create a new LucityArcGISProCofnigurations.xml- This option will prompt the user with the following dialog for input regarding their Lucity Internal REST API(s).

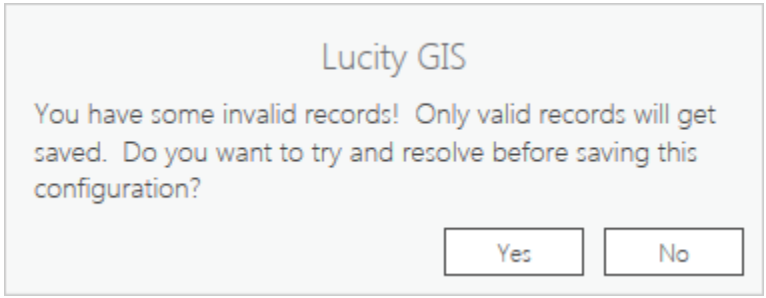


1. Enter the root url to the Lucity Internal REST API for each client you wish to have work with the Lucity ArcGIS Pro extension.

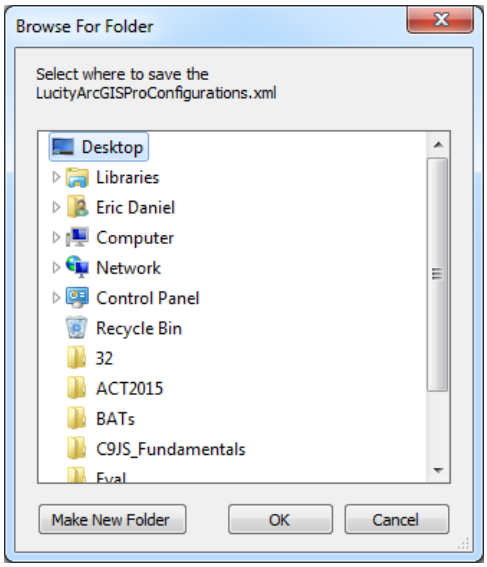
2. Validate. You must validate the configuration before saving. This will attempt to connect to the Internal REST API using the url provided. If successful, the Client Name field will be populated with the associated name; otherwise, it will be populated with an error message.



3. Save. Once you have configured each desired client and validated, you need to save which will create the .xml file. If you attempt to save when there are invalid records you will receive the following warning:

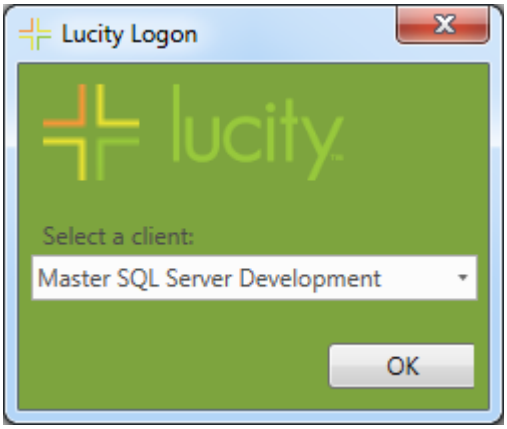


4. Choose location. The following dialog will appear prompting for the location to where you wish to save the newly created LucityArcGISProConfigurations.xml. Note: If you wish to share the .xml then you would likely want to save it to a shared network location where other users can access it.



Logon Process

For each ArcGIS Pro session, you will be prompted to logon the first time a Lucity ArcGIS Pro tool is used. If you have more than one Lucity client configured for use, you will receive the following prompt to select which Lucity client to log into.



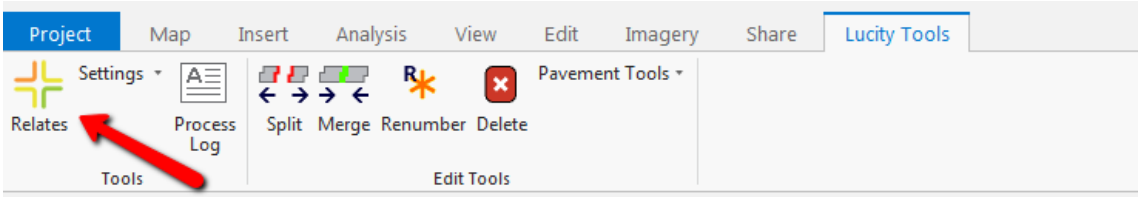
The Lucity Identity Server is required for logging into the Lucity Internal REST API. The following prompt will appear asking for the user's Lucity credentials:

Once logged in, the user can begin using the Lucity ArcGIS Pro tools.

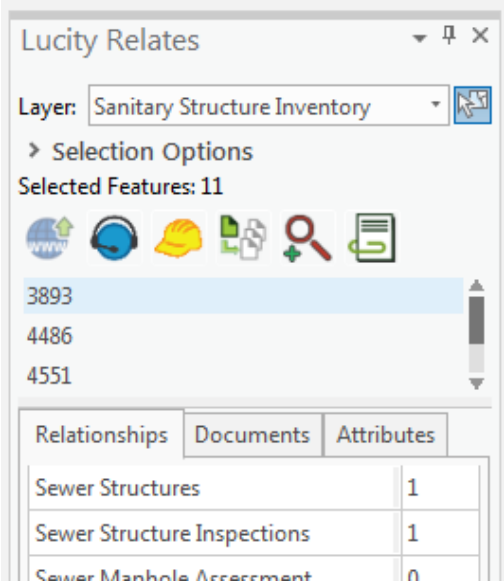
Tools

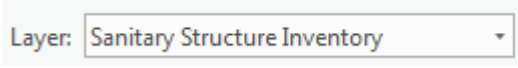
Relates

The Lucity Relates tool is used to view module relationships, manage documents, open related records in Lucity web, and create requests, work orders, pms, and inspections.



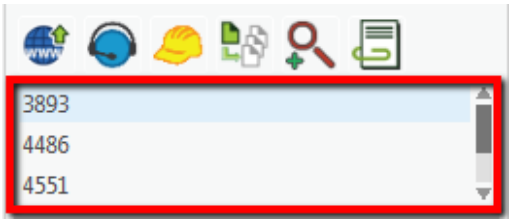
- When clicked, this tool will open a dockable window similar to the following:



  - 

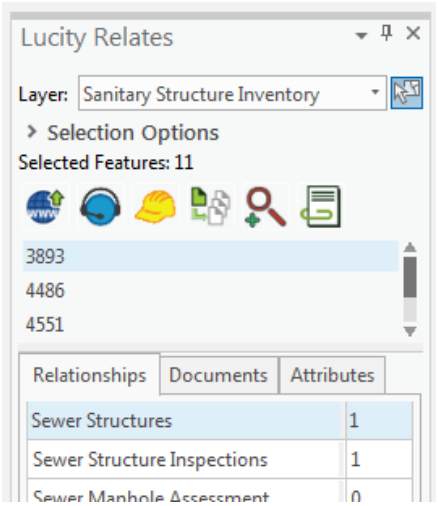
Layer: This is a drop down list of all layers in the map that are linked to Lucity.
  -  **Selection Tool**: This changes the active tool to a selection tool, allowing the user to select features from the active layer (the active layer is the one specified in the Layer dropdown).

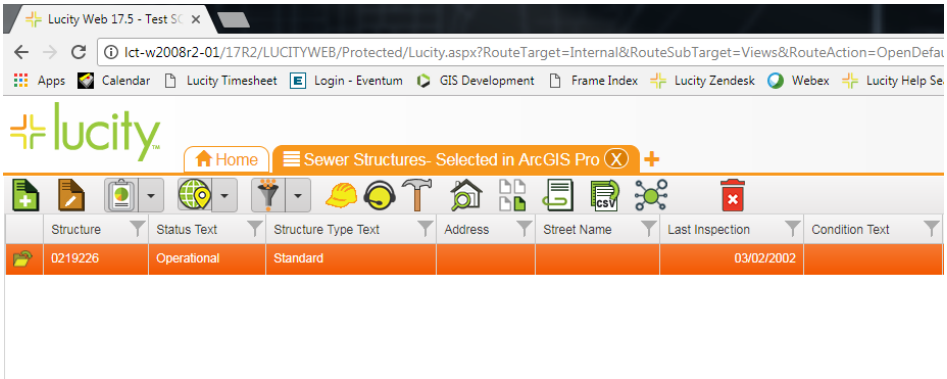
- **Selected features grid**: This is a list of the selected features for the currently selected layer. Selecting one or more of the records in this list will enable the Lucity tools.



View Record(s) in Lucity Web.

-  This tool will only be enabled if one or more features are highlighted in the selected features grid. This tool will open the module selected on the relationships tab.





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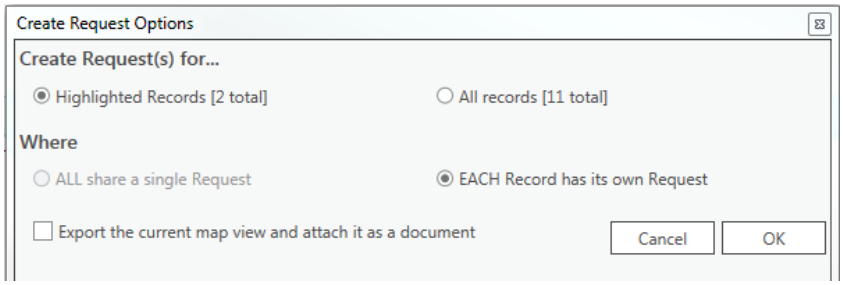
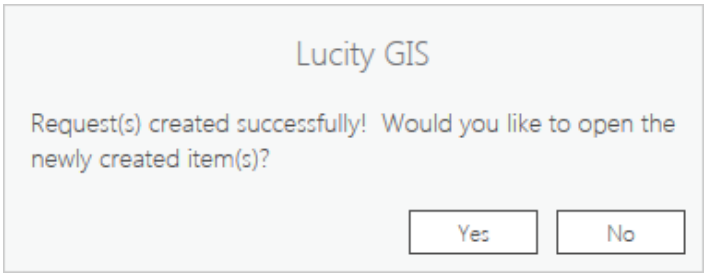
Create a Lucity Request

-  This tool will create a request (or multiple) using the highlighted feature(s) in the list. When clicked a prompt similar to the following will appear:



  - Select an option to create a request for just the highlighted record(s) or all records.
  - (Optional) Export the current map view and attach it as a document to the Request. The format of the document is determined by the System Setting under GIS Desktop>>Format for map exports. If none are specified, then the default is pdf. Supported: bmp, emf, jpeg, pdf, png, tga, and tiff.
  - Specify the desired options and press OK. If successful, a prompt similar to the following will appear:



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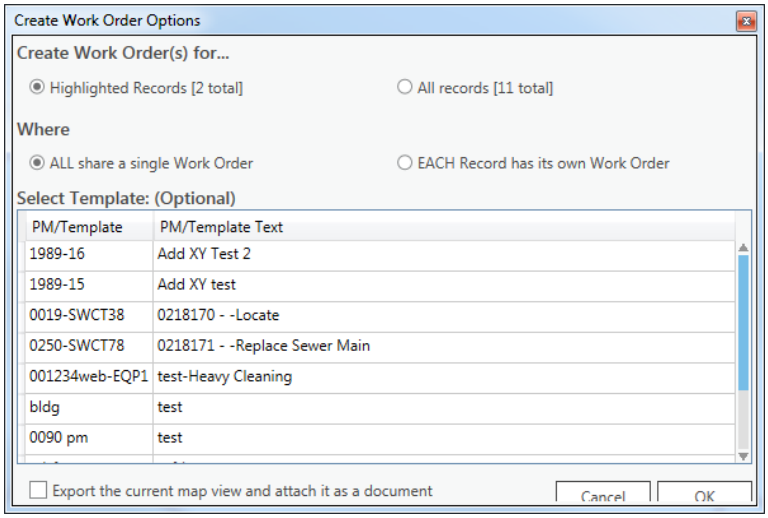
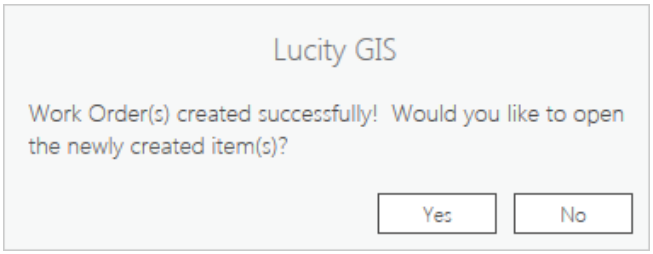
Create a Lucity Work Order

-  This tool will create a work order (or multiple) using the highlighted feature(s) in the list. When clicked you will receive a prompt similar to the following:



  - Select an option to create a work order for just the highlighted record(s) or all records.
  - Select an option to add all assets to a single work order or to create a separate work order for each asset.
  - (Optional) Select an existing PM Template (list based upon the asset type) that should be used when creating the work order.
  - (Optional) Export the current map view and attach it as a document to the Work Order. The format of the document is determined by the System Setting under GIS Desktop>>Format for map exports. If none are specified, then the default is pdf. Supported: bmp, emf, jpeg, pdf, png, tga, and tiff.
  - After setting the desired options, press OK. If successful, a prompt similar to the following will appear:



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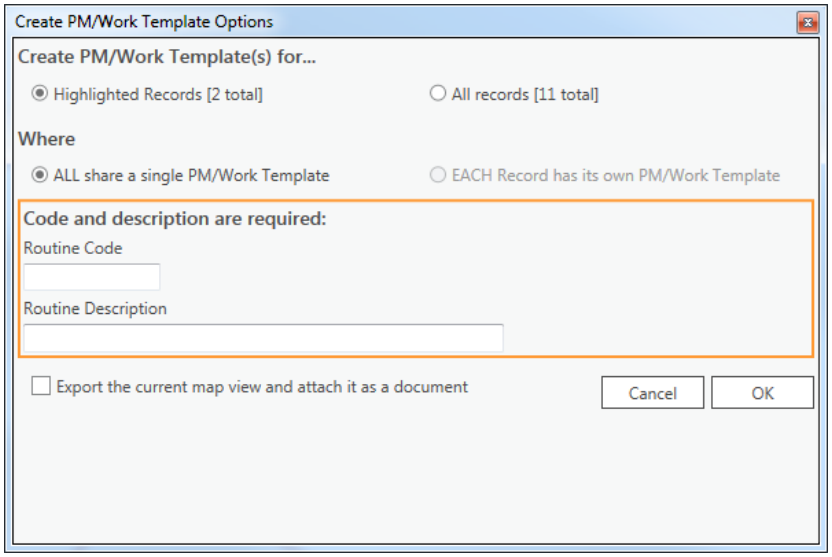
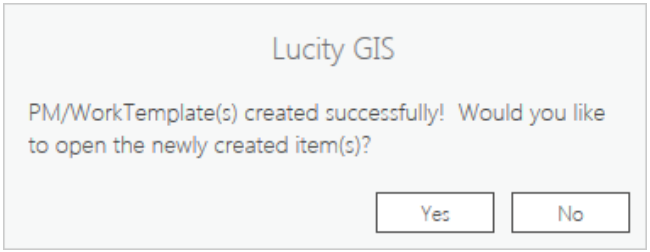
Create a Lucity PM/Work Template

-  This tool will create a PM/Work Template (or multiple) using the highlighted feature(s) in the list. When clicked you will receive a prompt similar to the following:



  - Select an option to create a pm/work template for just the highlighted record(s) or all records.
  - Enter a Routine Code and a Routine Description. These are required, and the Routine Code must be unique.
  - (Optional) Export the current map view and attach it as a document to the PM/Work template. The format of the document is determined by the System Setting under GIS Desktop>>Format for map exports. If none is specified, then the default is pdf. Supported: bmp, emf, jpeg, pdf, png, tga, and tiff.
  - After setting the desired options, press OK. If successful, a prompt similar to the following will appear:



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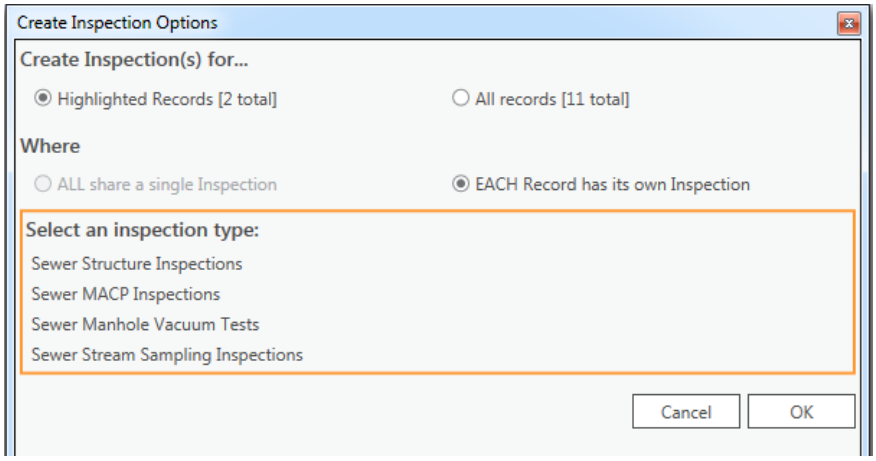
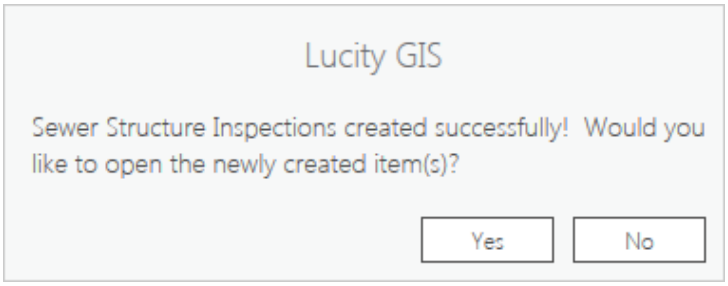
Create a Lucity Inspection

-  This tool will create an inspection (or multiple) using the highlighted feature(s) in the list. When clicked you will receive a prompt similar to the following:



  - Select an option to create the inspection for just the highlighted record(s) or all records.
  - Select an inspection type. The list of inspection types are based upon the asset type. Note: Some asset types may have only one inspection type and some may have none.
  - After specifying the desired options press OK. If successful, a prompt similar to the following will appear:



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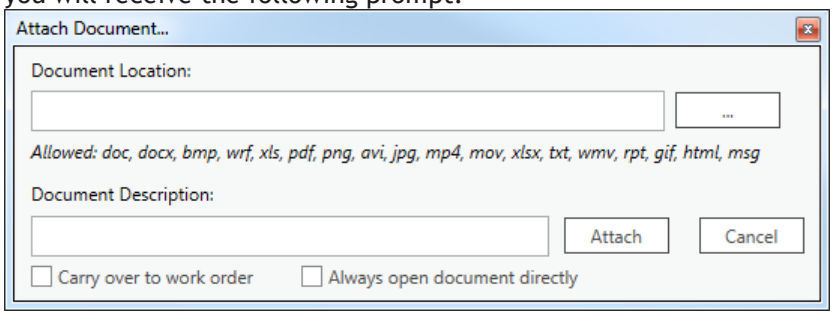
Attach a Document

-  This tool will attach a document to the highlighted feature(s) in the list. When clicked, you will receive the following prompt:



  - **Document Location:** This is the path to the document on your local filesystem that you would like to upload. Supported file types are shown below the text box.
  - **Document Description**: A text description for the document.
  - **Carry over to work order:** If checked, the document will be attached to any work orders created from the asset.
  - **Always open document directly:** If unchecked, the web app will display a link to the document location, rather than opening the document itself.
  - Once these options have been set to your desired configuration, click Attach. Results, success or failure, will be written to the Process Log.
  - Note: Attaching documents from ArcGIS Pro automatically uploads them to the document server. Associating documents (like you can do in Lucity Web) is not currently supported.

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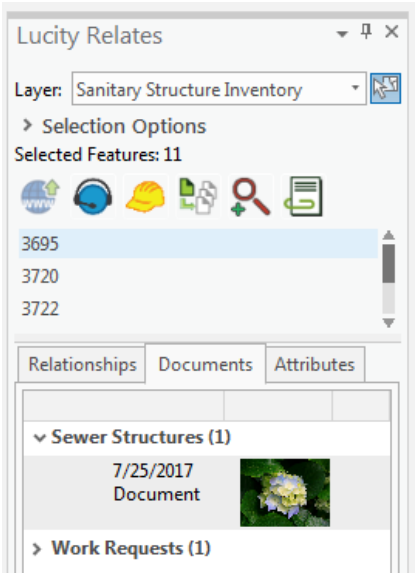
View a Document



- The Documents tab allows you to view all documents for all highlighted features in the list. This includes the feature's module itself, as well as all related modules (Work Orders, Requests, Inspections, etc.).
- In the first field, the date the document was uploaded, along with its description is displayed. In the second field, if the document is an image, a thumbnail is displayed.
- Double-clicking on the document in the list will open the document with your local machine's default program for whatever file type the document is.

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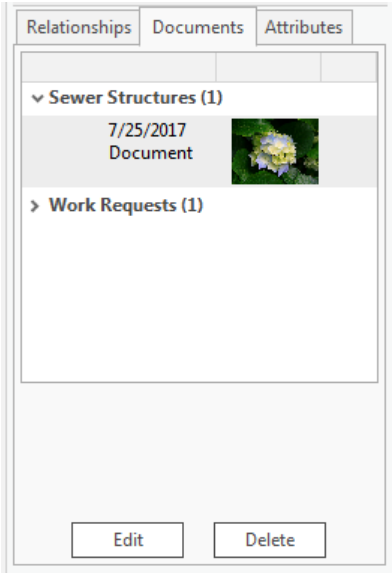
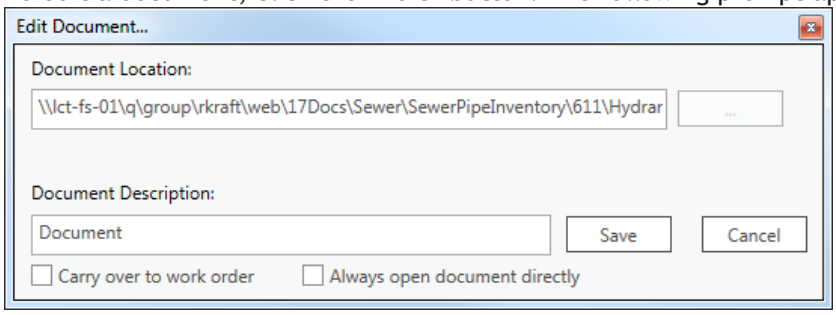
Edit or Delete a document

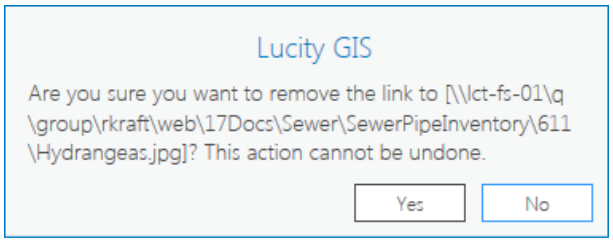


- These tools allow you to edit or delete a single selected document in the list.
- To edit a document, click the “Edit” button. The following prompt appears:

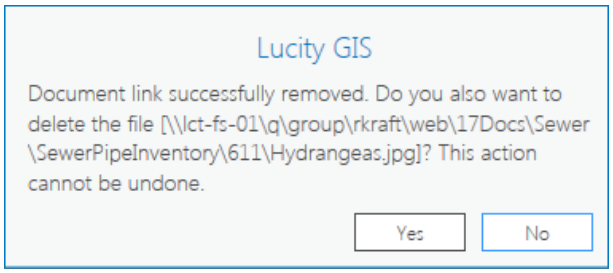


  - **Document Location:** This is the read-only path of the document as it exists on the file server. If the document was only associated (not uploaded), then this is not read-only, and can be changed.
  - **Document Description:** A text description for the document.
  - **Carry over to work order:** If checked, the document will be attached to any work orders created from the asset.
  - **Always open document directly:** If unchecked, the web app will display a link to the document location, rather than opening the document itself.
  - Once these options have been set to your desired configuration, click Save. Results, success or failure, will be written to the Process Log.

- To delete a document, click the Delete button. The following prompt appears:



  - Clicking Yes will disassociate the document from the record in whichever module it appears under in the list.
  - If the document can also have its underlying file deleted, then this prompt appears next:



  - Clicking Yes will delete the document's underlying file from the file system.
  - Results, success or failure, will be written to the Process Log.

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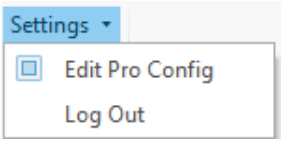
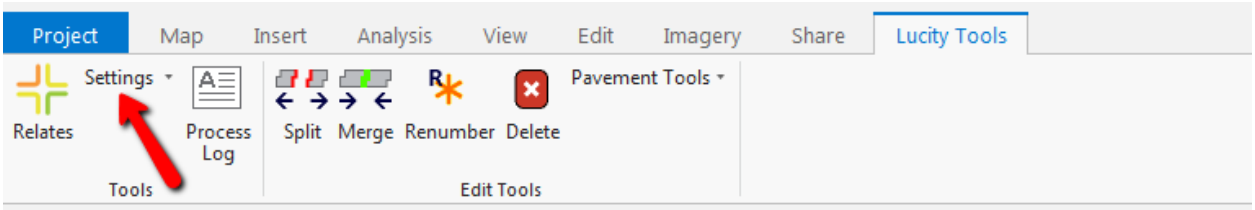
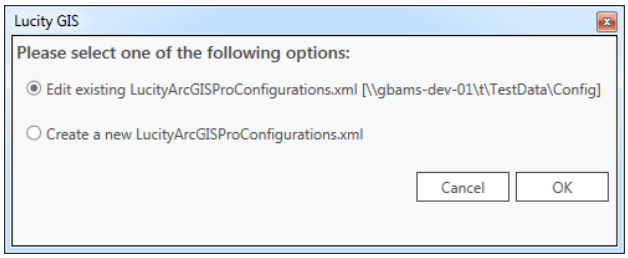
Settings



There are two main tools currently under Lucity Settings: Edit Pro Config and Log Out.



- **Edit Pro Config**. This tool lets you modify the currently configured LucityArcGISProConfigurations.xml, or you use this tool to create a new .xml. When clicked, a prompt similar to the following will appear:



  - Select if you wish to edit the existing .xml or create a new one and click OK.

- **Log Out**. This tool will log the user out of the Lucity Internal REST API. This is useful if you were looking to switch Lucity clients without closing completely out of ArcGIS Pro.

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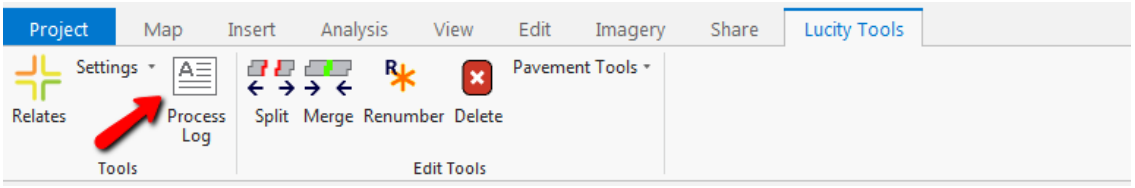
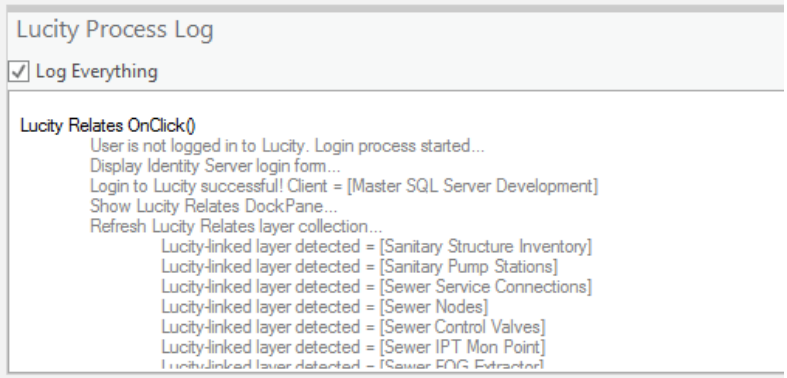
Process Log

The Lucity Process Log is a tool to help troubleshoot problems that may arise while using the Lucity ArcGIS Pro add-in. Information is written to the log in real-time, and is color-coded based on the type of logging.



Here is the color-coding convention:

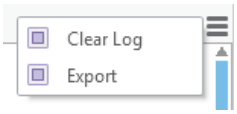
- Black lettering – Standard logging.
- Gray lettering – Extra logging (added by checking the Log Everything option).
- Orange lettering – Process warnings.
- Red lettering – Process errors.



By default, the Process Log is not visible, but the user can view it by clicking the Process Log button on the Lucity Toolbar. Errors are always written to the log in red, and if an error occurs, the user will be prompted to check the Process Log for more error details.

There is a menu on the far-right of the Process Log with additional options:

- **Clear Log:** Clears all text currently inside of the Process Log.
- **Export:** Saves the contents of the log to a rich-text (.rtf) file on the user's local machine. This is particularly helpful for Lucity Support, as a user can easily export it and email it to support staff for review.



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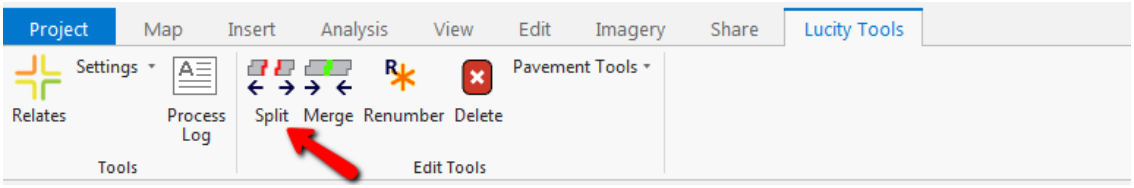
Edit Tools

Split

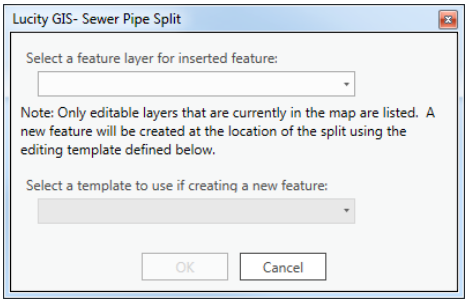
The Lucity Split tool allows a user to split any Lucity-linked line feature in both GIS and Lucity, for several different asset types.



The following asset types are supported by the Lucity Split tool: Sewer Pipes, Storm Conduits, Water Pipes (Distribution, Raw, Recycled), Street Segments, Street Subsegments.

To use the Split tool:

1. Select any single line feature in the map that is linked to one of the aforementioned modules, and click the Split tool button on the Lucity Toolbar.
2. Click the point along the line where you would like to split the line.
3. For Sewer, Storm, or Water splits, if there was no existing Lucity-linked split point feature at the location where you clicked, you will be prompted to choose an asset type for the new split point feature:



4. The Split Options form will display:

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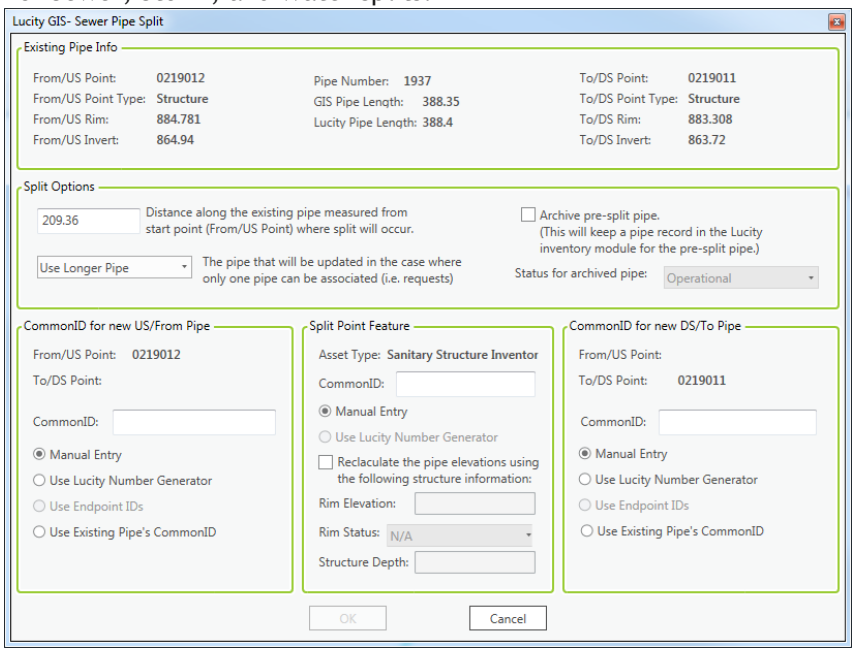
- For Sewer, Storm, and Water splits:



  - **Existing Pipe Info:** This is read-only information for the existing pipe, upstream structure, and downstream structure.
  - **Split Options:** You have the following options here: override the split distance calculated based on your click point along the line here, set which pipe will be used where only one relationship can be defined, archive the pre-split pipe, and set the status for the archived pipe. If you choose to archive the pre-split pipe, then it will not be deleted from the inventory module.
  - **CommonID for new US/From Pipe:** You have the option to manually enter a Common ID for the new upstream pipe, use a Lucity number generator if one is set up, use the endpoint IDs, or use the existing upstream pipe's Common ID.
  - **Split Point Feature:** If there is a new split point feature, you have the option to manually enter a Common ID for the split point feature, or use a Lucity number generator if one is set up. You also have the option to set the new rim information for the split point feature if it's a Sewer or Storm split.
  - **CommonID for new DS/To Pipe:** You have the option to manually enter a Common ID for the new downstream pipe, use a Lucity number generator if one is set up, use the endpoint IDs, or use the existing downstream pipe's Common ID.

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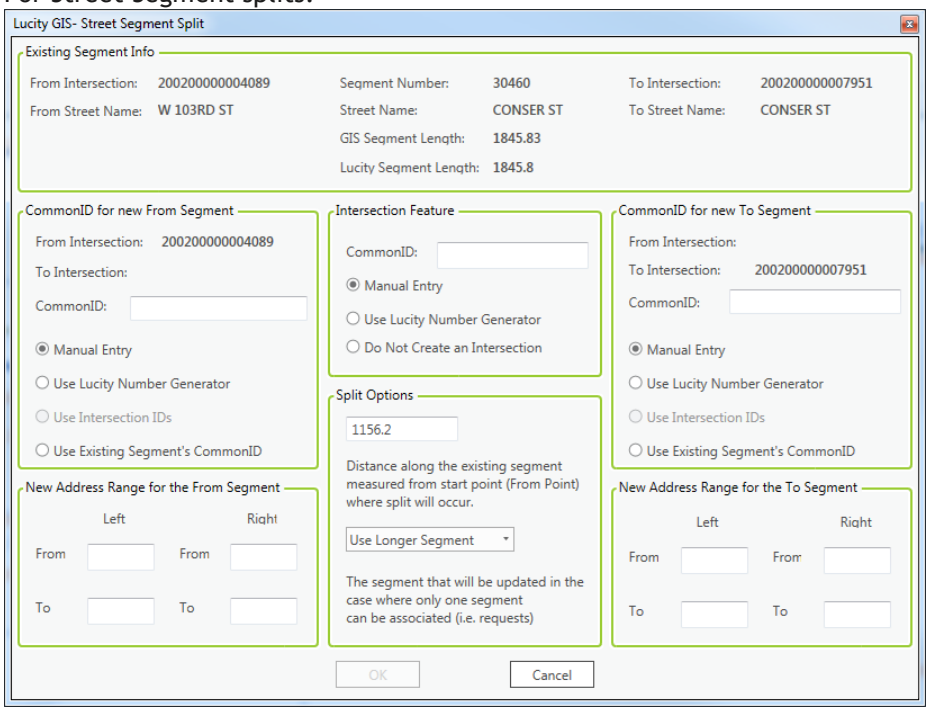
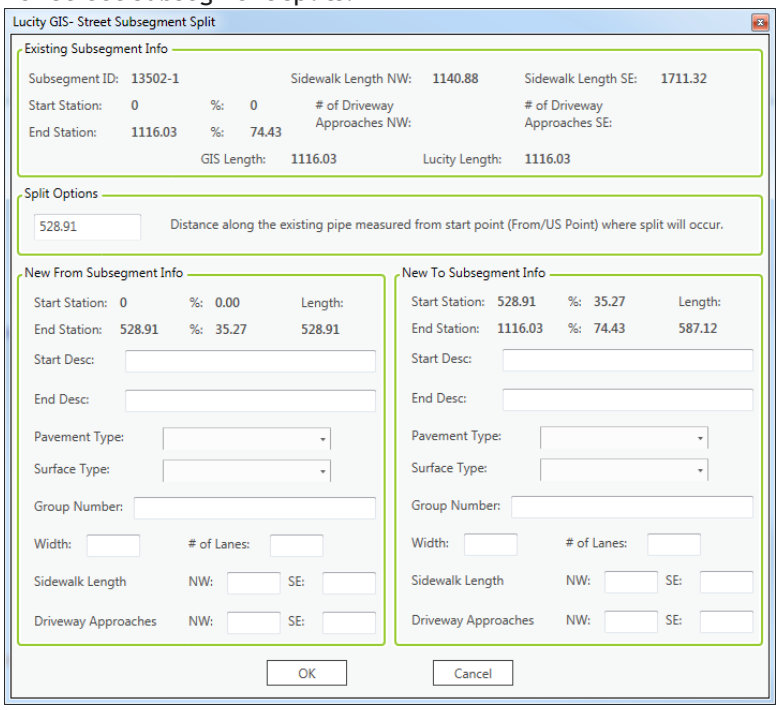
- For Street Segment splits:



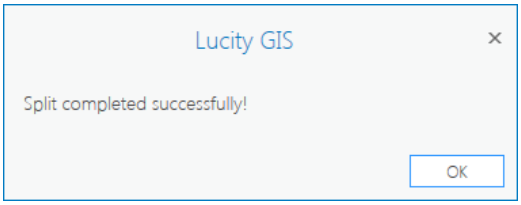
  - **Existing Segment Info:** This is read-only information for the existing segment, from intersection and street, and to intersection and street.
  - **CommonID for new From Segment:** You have the option to manually enter a Common ID for the new from segment, use a Lucity number generator if one is set up, use the intersection IDs, or use the existing from segment's Common ID.
  - **Intersection Feature:** If there is a new intersection feature, you have the option to manually enter a Common ID for the intersection feature, use a Lucity number generator if one is set up, or not create an intersection at all.
  - **CommonID for new To Segment:** You have the option to manually enter a Common ID for the new to segment, use a Lucity number generator if one is set up, use the intersection IDs, or use the existing to segment's Common ID.
  - **New Address Range for the From Segment (optional):** This is the address info for the new from segment.
  - **Split Options:** You have the following options here: override the split distance calculated based on your click point along the line here, set which pipe will be used where only one relationship can be defined, archive the pre-split segment, and set the status for the archived segment. If you choose to archive the pre-split segment, then it will not be deleted from the inventory module.
  - **New Address Range for the To Segment (optional):** This is the address info for the new to segment.

- For Street Subsegment splits:



  - **Existing Subsegment Info:** This is read-only information for the existing subsegment.
  - **Split Options:** You have the option to override the split distance calculated based on your click point along the line here.
  - **New From Subsegment Info (optional):** These are various fields specific to the subsegment module for the new from subsegment.
  - **New To Subsegment Info (optional):** These are various fields specific to the subsegment module for the new to subsegment.

5. Once you have set the Split options to your desired configuration, click OK. The split will be processed first in GIS, and then in Lucity.
6. The following prompt will appear once the split has completed:



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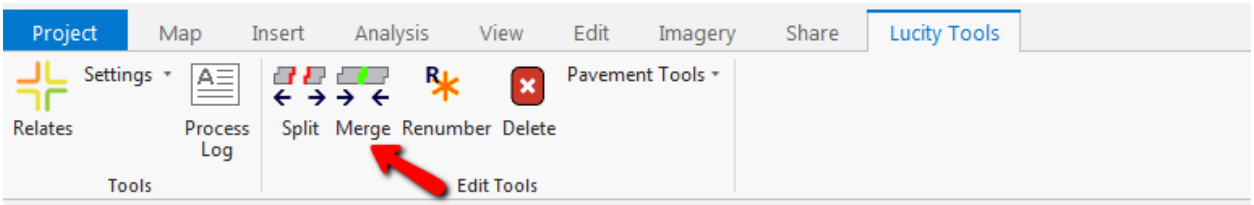
Merge

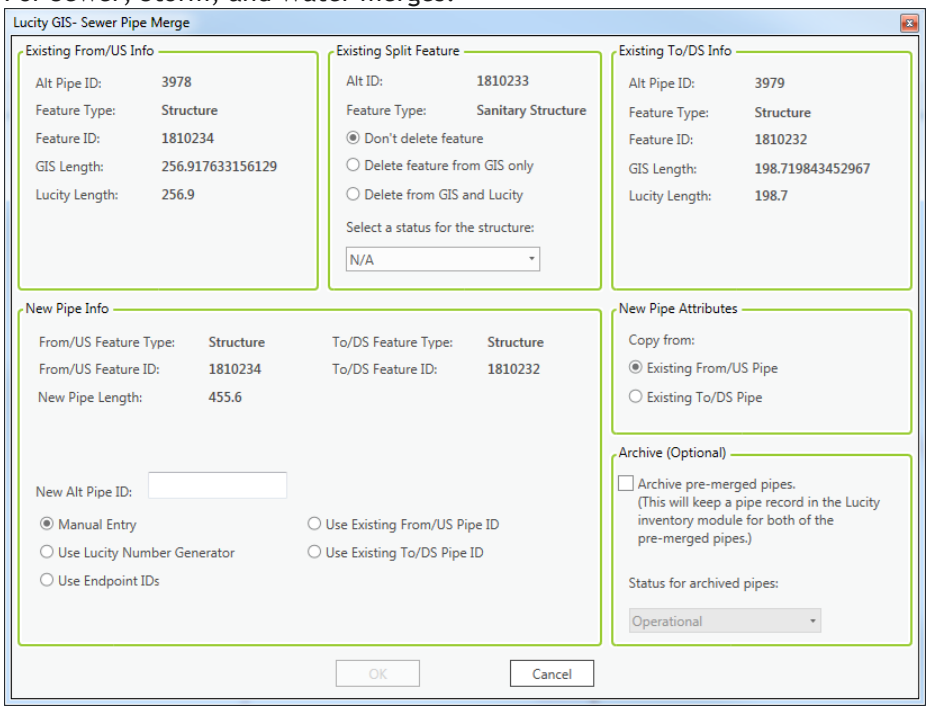
The Lucity Merge tool allows a user to merge any two Lucity-linked line features in both GIS and Lucity, for several different asset types.



The following asset types are supported by the Lucity Merge tool: Sewer Pipes, Storm Conduits, Water Pipes (Distribution, Raw, Recycled), Street Segments, Street Subsegments.

To use the Merge tool:

1. Select any two adjacent line features in the map that are linked to one of the aforementioned modules, and click the Merge tool button on the Lucity Toolbar.
2. The Merge Options form will display:
    - For Sewer, Storm, and Water merges:

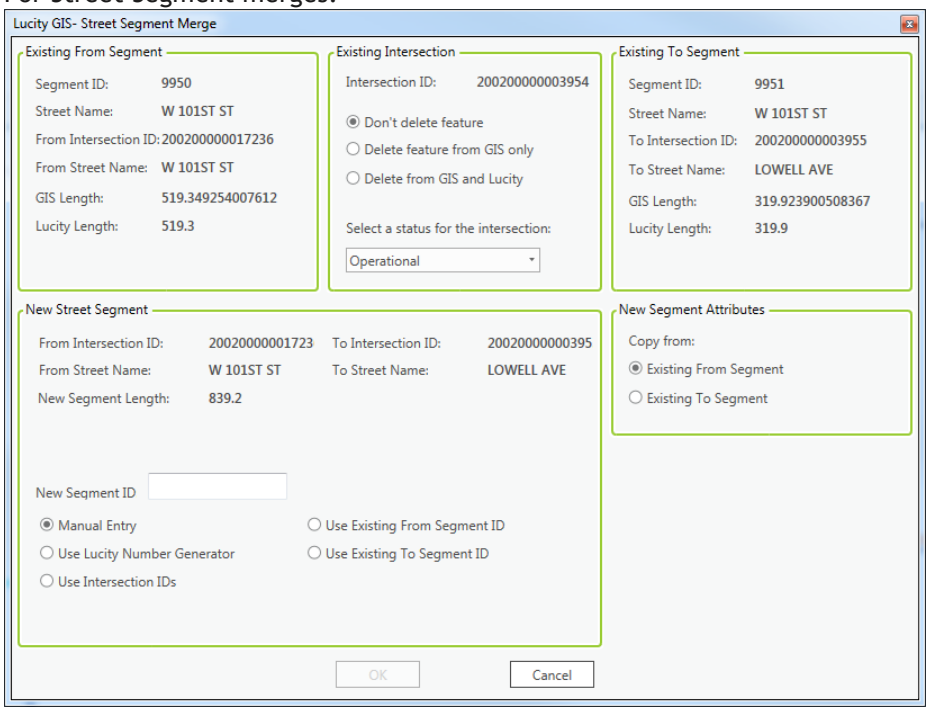


        - **Existing From/US Info:** This is read-only information for the existing from pipe.
        - **Existing Split Feature:** This is read-only information for the existing split feature and you have the option to not delete the feature, delete it from GIS only, or delete it from GIS and Lucity.
        - **Existing To/DS Info:** This is read-only information for the existing to pipe.
        - **New Pipe Info:** This is read-only information for the new pipe, and you have the option to manually enter a Common ID for the new pipe, use a Lucity

number generator if one is set up, use the endpoint IDs, use the existing upstream pipe's Common ID, or use the existing downstream pipe's Common ID.

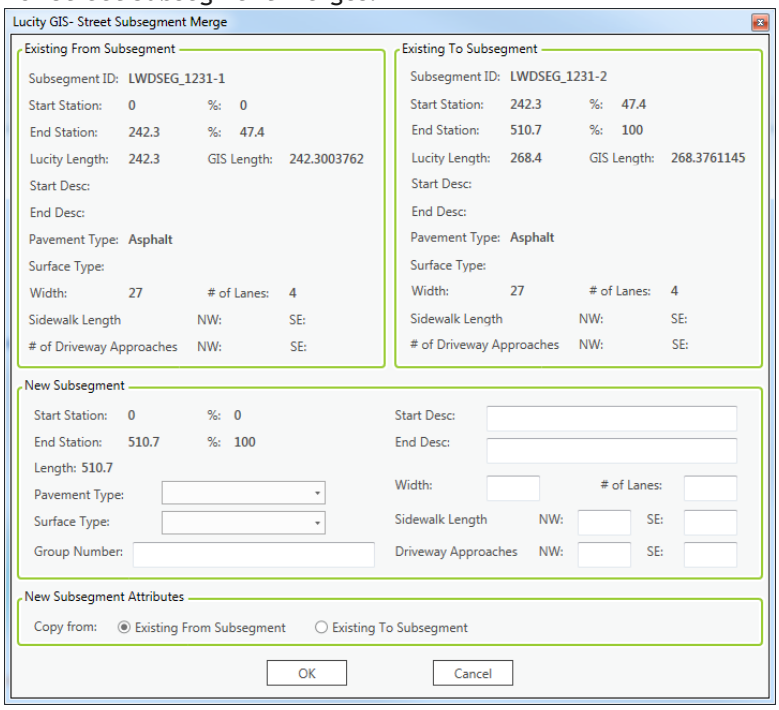
- **New Pipe Attributes:** You can choose to copy over the attributes from the pre-merge from pipe, pre-merge to pipe, or the longer pipe.
- **Archive (Optional):** Select this option if you wish to maintain a record in the pipe inventory module for both the pre-merged pipes. If you select this option, the pre-merge pipes will not be deleted from the inventory module.

- For Street Segment merges:



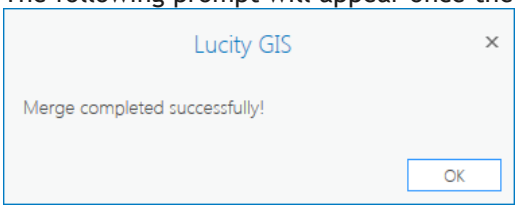
- **Existing From Segment:** This is read-only information for the existing from segment.
- **Exsting Intersection:** This is read-only information for the existing intersection feature, and you have the option to not delete the feature, delete it from GIS only, or delete it from GIS and Lucity.
- **Existing To Segment:** This is read-only information for the existing to segment.
- **New Street Segment:** This is read-only information for the new segment, and you have the option to manually enter a Common ID for the new segment, use a Lucity number generator if one is set up, use the intersection IDs, use the existing from segment's Common ID, or use the existing to segment's Common ID.
- **New Segment Attributes:** You can choose to copy over the attributes from the pre-merge from segment, pre-merge to segment, or the longer segment.

- For Street Subsegment merges:



  - **Existing From Subsegment:** This is read-only information for the existing from subsegment.
  - **Existing To Subsegment:** This is read-only information for the existing to subsegment.
  - **New Subsegment:** These are various fields specific to the subsegment module for the new merged subsegment.
  - **New Subsegment Attributes:** You can choose to copy over the attributes from the pre-merge from subsegment, or the pre-merge to subsegment.

3. Once you have set the Merge options to your desired configuration, click OK. The merge will be processed first in GIS, and then in Lucity.
4. The following prompt will appear once the merge has completed:



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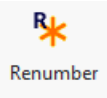
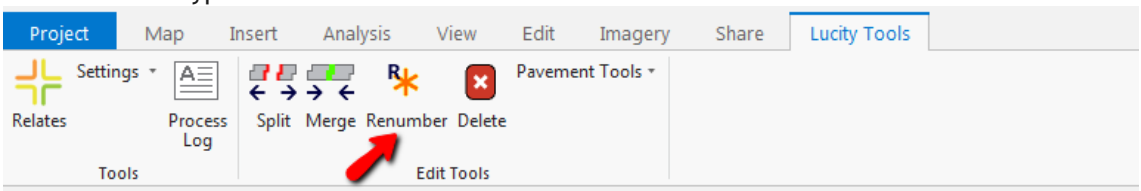
Renumber



The Lucity Renumber tool allows a user to change the Common IDs of many assets at once, for most asset types.

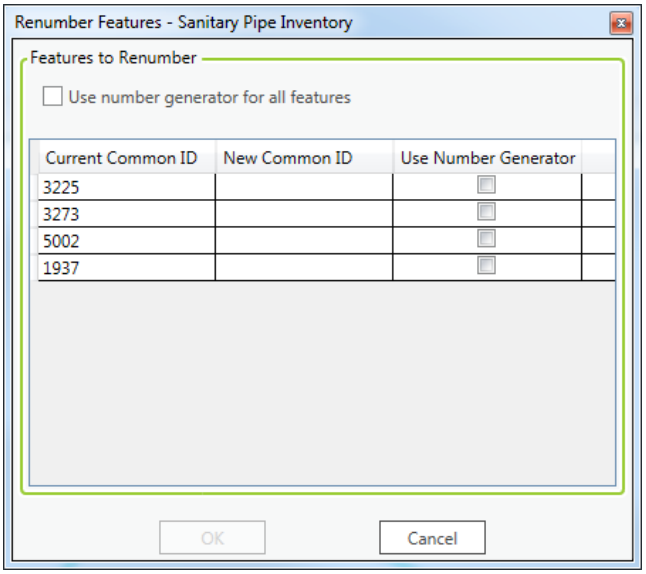


There are some asset types that are **not** yet supported by the Lucity Renumber tool. They are:

- Anything that is not an inventory item.
- Anything in Electric.
- Anything in Water (Distribution, Raw, Recycled).
- Common: Customer Address.
- Facility: Building, Floor, Furnishing, Irrigation Node, Irrigation Valve, Room, Roof, Site, Site Asset.
- Plant/Equipment: Equipment, Fleet.
- Park: Irrigation Node, Irrigation Valve.
- Street: Auxiliary Equipment, Cabinet, Junction Box, Meter Box, Light, Light Central Controller, Pole, Signal Head, Signal Controller, Snow Shoe.

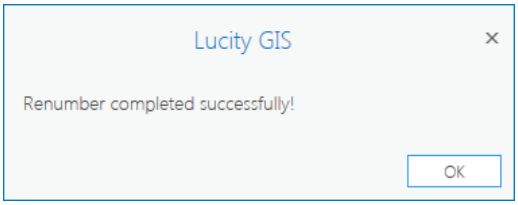
To use the Renumber tool:

1. Select the feature(s) in the map that you would like to renumber (these must all be from the same Lucity-linked feature class), and click the Renumber tool button on the Lucity Toolbar.
2. The following dialog appears:



- **Use number generator for all features:** This option sets the “Use Number Generator” checkbox for all features in the selection.
- **Current Common ID:** This is a read-only field that displays the current Common ID for each selected feature. Clicking in this field will zoom and highlight the corresponding asset in the map.
- **New Common ID:** Enter the new Common ID value here. This is disabled if you are using a number generator for the feature.
- **Use Number Generator:** This option tells the program to use a configured number generator to assign the new Common ID to the feature, instead of the user manually entering it.

3. Once you have either set a new Common ID (or opted to use a number generator) for each selected feature, click OK. The renumber process will begin.
4. The following prompt will appear once the renumber has completed:



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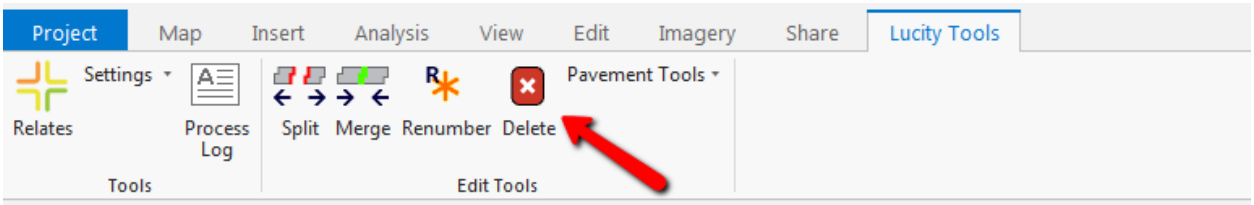
Delete

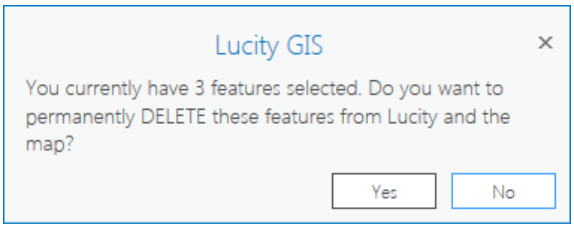
The Lucity Delete tool allows a user to delete many assets at once, from both GIS and Lucity, for almost any asset type.



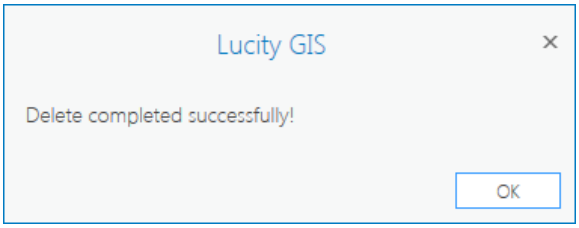
The Lucity Delete tool can currently be used on any asset type supported by GIS except Street Subsegments.

To use the Delete tool:

1. Select all features in the map that you wish to delete from both GIS and Lucity. These can be from multiple Lucity-linked feature classes.
2. Click the Delete tool button on the Lucity Toolbar to begin the delete process. The following prompt appears:



3. Clicking Yes will delete all selected features from both GIS and Lucity.
4. The following prompt will appear once the delete has completed:



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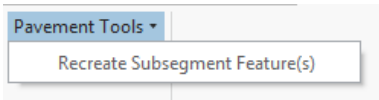
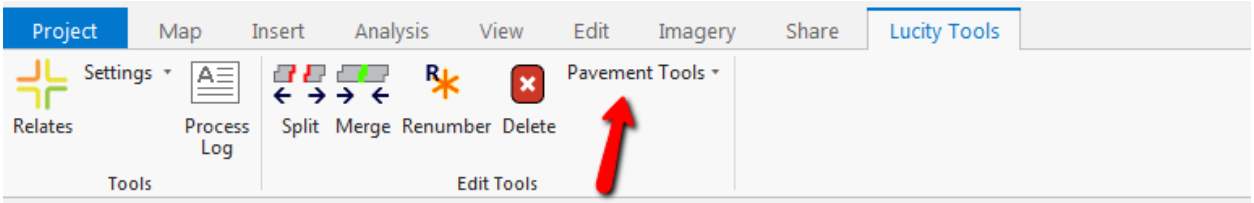
Pavement Tools



The Lucity Pavement Tools are a group of tools specifically for use against Lucity-linked Street Supersegment and Street Subsegment features in GIS.

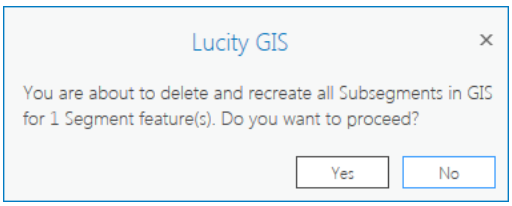


Recreate Subsegment Feature(s)

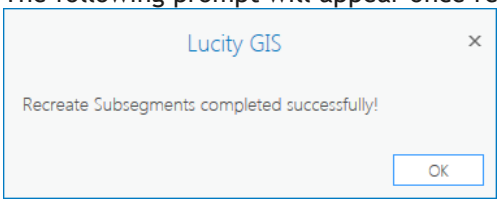
Currently, the only tool in the Pavement Tools dropdown list is Recreate Subsegment Feature(s). This tool redraws all Subsegments in the map for each selected Street Segment feature, based on the information within Lucity.

To use the Recreate Subsegment Feature(s) tool:

1. Select all Street Segment features in the map that you would like to recreate in GIS.
2. Click the Recreate Subsegment Feature(s) button under the Pavement Tools dropdown on the Lucity Toolbar. The following prompt appears:



3. Clicking Yes will begin the process. For each selected Segment, all existing child Subsegments will be deleted in GIS. Next, the child Subsegments will be redrawn in GIS by copying the parent Segment's geometry, and then splitting that line feature at each Subsegment's current end station distance in Lucity until all Subsegments have been drawn again.
4. The following prompt will appear once recreating Subsegments has completed:



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