ArcGIS® StreetMap™ Premium Custom Roads—ArcGIS Pro 2.9

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THE SCIENCE OF WHERE®

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Introduction to ArcGIS StreetMap Premium Custom Roads

ArcGIS® StreetMap™ Premium Custom Roads allows organizations to combine roads that they manage with StreetMap Premium streets for a single continuous routable transportation network.

ArcGIS StreetMap Premium provides ready-to-use geocoding, routing, and map display content for use within ArcGIS Pro and ArcGIS Enterprise, behind your firewall on infrastructure that you manage. The Custom Roads dataset includes mapping layers and a network dataset in a file geodatabase as well as separate locator files for geocoding.

The product offers a vector tile package (.vtpk) that may be substituted for the mapping layers in the file geodatabase. The .vtpk file is the same as the Esri Navigation map that includes the HERE commercial data, plus other GIS user community contributions. The map 'Navigation Map with Custom Streets (vtpk)' is the default map in ArcGIS Pro for creating your own mobile map packages. In addition, the product offers the ArcGIS StreetMap Premium locators. To use the locators, as well as the network dataset, the ArcGIS StreetMap Premium extension for your region is required for ArcGIS Pro and/or ArcGIS Enterprise. For more detail on the contents shipped with the ArcGIS StreetMap Premium Custom Roads product, see Contents in the Reference section at the end of this document.

The Custom Roads edition of StreetMap Premium enables a specific capability for routing—seamlessly routing on both custom roads and commercial streets. Once integrated, this data can be used across the ArcGIS platform within ArcGIS Pro, ArcGIS Enterprise, and even packaged for use in ArcGIS Navigator, provided it is licensed accordingly.

The StreetMap Premium Custom Roads file geodatabase is in the projected coordinate system of WGS 1984 Web Mercator (Auxiliary Sphere). Within the StreetMap Premium Custom Roads file geodatabase, there are three empty feature classes that a geographic information system (GIS) analyst can either digitize or load roads into. Once the custom roads are added and the network dataset is rebuilt, the combined network is ready for routing.

StreetMap Premium Custom Roads is designed to be edited within ArcGIS Pro. When digitizing new features, street network connectivity and attribute requirements are automatically enforced through the use of editing templates that are part of the ArcGIS Pro document.

Note: The StreetMap Premium Custom Roads dataset is provided on the media in Read-Only format. After you copy the data to a local drive, make sure that the dataset (FGDB and .aprx) is set to a non-restricted or non-read-only setting before beginning any editing.

StreetMap Premium Custom Roads supports editing of three Custom Roads feature classes. It is not designed for editing of any other feature classes; for example, edits should not be made to the Routing_Streets layer (with the exception of adding vertices to connect custom streets, note that the provided editing templates automatically add vertices where needed to maintain street connectivity). This document describes the structure of the three Custom Roads feature classes and requirements for creating content within them.

The following licensing requirements are needed to use StreetMap Premium Custom Roads in ArcGIS software:

- **ArcGIS Pro:** To use within ArcGIS Pro, a StreetMap Premium license for ArcGIS Desktop is required. This license includes the StreetMap Premium extension for your region, for

example, Asia Pacific, Europe, Latin America, Middle East and Africa, or North America, that allows access to the network dataset and the Locators. In ArcGIS Pro, check for the StreetMap Premium extension under Settings > Licensing > Esri Extensions, or if you already have an ArcGIS Pro project open, navigate from Project > Licensing > Esri Extensions to view the list of extensions.

- **ArcGIS Enterprise:** To use within ArcGIS Enterprise, a StreetMap Premium license for ArcGIS Server is required. This license includes the StreetMap Premium extension for ArcGIS Pro and ArcGIS Enterprise for your region, for example, Asia Pacific, Europe, Latin America, Middle East and Africa, or North America, that allow publishing routing services with the custom network dataset and geocoding services with the Locators. In ArcGIS Server Manager, check for the StreetMap Premium extension under Site > Software Authorizations. In ArcGIS Pro, see above. The StreetMap Premium Custom Roads file geodatabase is not an enterprise geodatabase and may not be loaded into an enterprise geodatabase for editing purposes. Your street data may be edited in an enterprise geodatabase first and then transferred to the empty Custom_Streets feature class in the StreetMap Premium Custom Roads file geodatabase for connection to the network dataset.
- **ArcGIS Navigator:** To create a custom map for use in Navigator, the author must be within ArcGIS Pro and have a StreetMap Premium Custom Roads license for ArcGIS Desktop or ArcGIS Server. This license includes the StreetMap Premium extension for your region, for example, Asia Pacific, Europe, Latin America, Middle East and Africa, or North America. To consume and use custom Navigator maps that ArcGIS Pro has packaged, each Navigator field worker must have an ArcGIS Navigator license.

If you plan to create mobile map packages with the Create Mobile Map Package tool in ArcGIS Pro, use ArcGIS Pro 2.9.4 or earlier to ensure geocoding compatibility with the currently released versions of ArcGIS Navigator (iOS or Android) or ArcGIS Runtime.

If using ArcGIS Pro 3.0 or later is a requirement, creating mobile map packages with the Create Mobile Map Package tool will result in .mmpk files where geocoding is only supported in the following versions:
1. End of 2022 releases of ArcGIS Navigator iOS (22.1.0) or ArcGIS Navigator Android (to be determined).
2. ArcGIS Runtime 100.14.1, 100.15 or later.

Layer descriptions

Custom data is put into three feature classes; each feature class is described in more detail below. The feature classes reside within the Routing feature dataset and participate in the Routing_ND network dataset.

Custom Data Layers used for editing
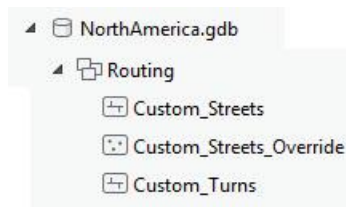
Custom_Streets

Custom_Streets is a line feature class storing street segment geometry and attribution. For routing behavior to work correctly, at least one of the following rules must be followed:

- The endpoint of a Custom_Streets segment must snap to the endpoint of a Routing_Streets segment or snap to the endpoint of another Custom_Streets segment.
- The endpoint of a Custom_Streets segment must snap to a vertex of a Routing_Streets segment or snap to the vertex of another Custom_Streets segment.
  Additionally, a Custom_Streets_Override point must be placed on top of this intersection.
- A vertex of a Custom_Streets segment must snap to a vertex of a Custom_Streets or Routing_Streets vertex. Additionally, a Custom_Streets_Override point must be placed on top of this intersection.
- The editing templates described in the next section help you adhere to the above rules. The editing templates automatically add an endpoint/split a Custom_Streets segment if connecting to a midpoint without a vertex or add a vertex to the Routing_Streets segment (if one doesn't already exist) and a Custom_Streets_Override point for street connectivity. If not using the editing templates, you will have to add these manually after appending or digitizing your custom streets.

Custom_Streets_Override

Custom_Streets_Override is a point feature class storing street junction geometry and attribution. For routing behavior to work correctly, the following rules must be followed:

- A Custom_Streets_Override point is required at the intersection of a Custom_Streets endpoint and a Routing_Streets vertex, as well as at the intersection of a Custom_Streets endpoint and a Custom_Streets vertex.
- A Custom_Streets_Override point is required at the intersection of a Custom_Streets vertex and a Routing_Streets vertex, as well as at the intersection of a Custom_Streets vertex and another Custom_Streets vertex.
- A Custom_Streets_Override point should be placed at the intersection of a Custom_Streets endpoint and a Routing_Streets endpoint, as well as at the intersection of a Custom_Streets endpoint and another Custom_Streets endpoint. In this case the Override point is used for tracking purposes, and not for network connectivity.

Custom_Turns

Custom_Turns is a line feature class storing street turn geometry and attribution. A Custom_Turns segment is only needed to model turn restrictions, and it is not required. For routing turn behavior to work correctly, the following rules must be followed:

- A Custom_Turns segment must snap to each street edge that is part of the turn.
- The directionality of the line segment must be considered, going from the first street edge to the second street edge modeling the turn. Multiedge turns are also supported, so there can be more than two street edges considered.
- The ObjectID attributes of the first street edge must be populated within the Edge1FID field, and the ObjectID of the second street edge must be populated within the Edge2FID field.

  Note: If the ObjectID of a street edge changes, the associated value in the turn feature also needs to be updated.

- To restrict a turn, you must populate the RST_... fields in the Custom_Turns feature class with a "Yes" value for each type of vehicle that is restricted from making that turn or a "No" value for each type of vehicle for which the turn does not apply.

Editing templates

The StreetMap Premium Custom Roads project (used within ArcGIS Pro) includes editing templates to help manage the properties of Custom Streets when they are digitized or edited. Editing templates are a standard feature of ArcGIS Pro and can greatly help manage the ease of creating new features. Your organization may also choose to create new templates specific to your editing needs. The following templates are part of the ArcGIS Pro project.

Editing Templates within the Custom Roads ArcGIS Pro Project
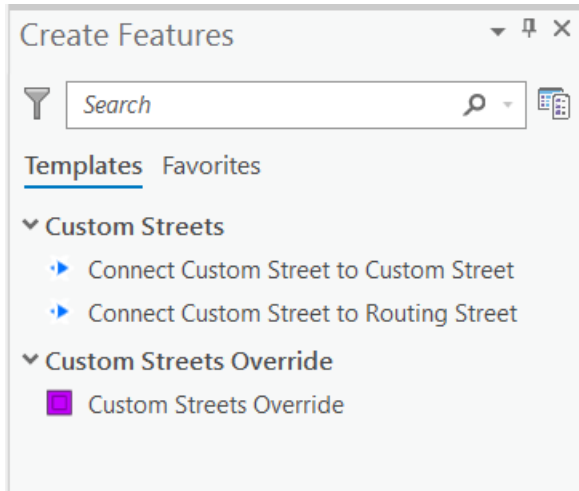
Custom Streets

- **Connect Custom Street to Custom Street:** Used to connect a Custom Street to a Custom Street. When connecting a new Custom Street endpoint to a pre-existing Custom Street, the pre-existing segment will be split.
- **Connect Custom Street to Routing Street:** Used to connect a Custom Street to a Routing Street. When connecting a Custom Street endpoint to a Routing Street, the Routing Street will have a vertex created. A Custom Streets Override point will automatically be created at this intersection.

The following applies to both editing templates above:
- The FT_KPH and TF_KPH fields define the speed limit and have default values of 40 km/hour (25 mph).
- The STREET_NAME field should be populated.
- The PAVED field (Yes or No values) is used within travel modes. When set to No, the streets are avoided when using the following travel modes: Driving Time, Driving Distance, Trucking Time, and Trucking Distance. These streets are traversable when using the following travel modes: Rural Driving Time, Rural Driving Distance, Walking Time, and Walking Distance.

If you leave attributes of your custom streets as NULL, for example, the FT_/TF_MINUTES attributes, then the Minutes cost attribute automatically looks for the distance from the METERS field and the speed from the FT/TF_KPH field and performs the calculation for you. Leaving the METERS field as 0 results in the distance calculation reverting to the (less accurate) planar distance in the Shape_Length field.

Note: Advanced Network Analyst behavior such as one-way streets and travel restrictions may be enforced within your newly created Custom_Streets features. This utilizes standard Network Analyst functionality, using the data model of StreetMap Premium Custom Roads. For example:

- A one-way street may be modeled by populating the FT_RST_... and TF_RST_... fields in the Custom_Streets feature class for each type of vehicle with a "Yes" value if the vehicle is not allowed to travel in the given direction, and a "No" value if the vehicle is allowed to travel in that given direction. There are two fields, one for each direction of travel, and the fields are relative to the digitized direction of the street.
- A travel restriction may be modeled by populating the restriction attributes accordingly within the field values.

Custom Streets Override

- **Custom Streets Override:** Used to identify where Custom_Streets connect with Routing_Streets. These must be captured for the purposes of updating the content when a new StreetMap Premium database is available.

Managing Editing Templates

If you want to modify the default attributes in the existing StreetMap Premium (SMP) Custom Roads editing templates in ArcGIS Pro, perform the following steps:

1. On the **Edit** tab in the **Features** group, click the **Manage Templates** dialog box launcher ⌐ . The **Manage Templates** pane appears.
2. In the **Manage Templates** pane, click the **Custom_Streets** feature class. You will see the two SMP Custom Roads templates for 'Connect Custom Street to Custom Street' and 'Connect Custom Street to Routing Street'.
3. On the toolbar, click **Properties** 📝 just above the 'Connect Custom Street to Custom Street' template. The **Template Properties** dialog box should display.
4. In the **Template Properties** dialog box, click '**Attributes**' on the left.
5. Add your default value in the second column where it says **<Null>** next to the desired attribute and click the box to the right to make it show up in the editing template as visible.
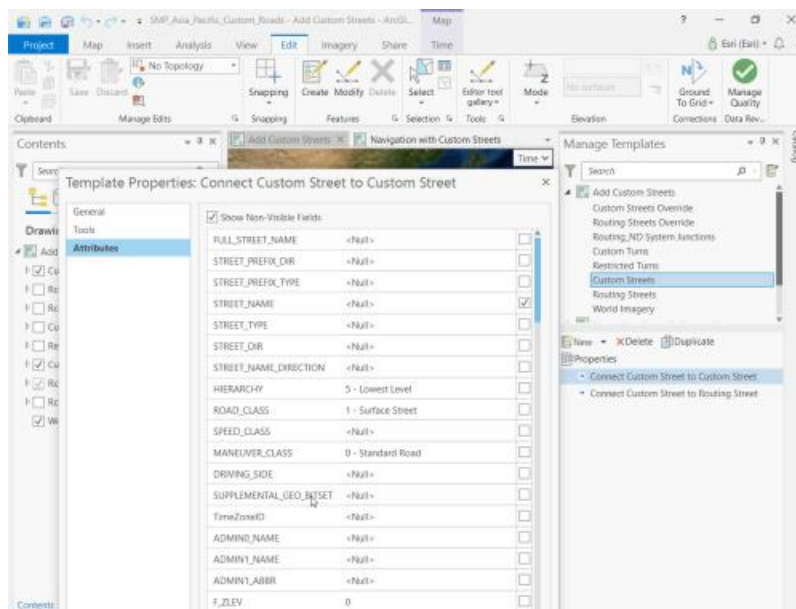
6. Close the dialogs, and make sure to save the changes to the editing templates by saving your ArcGIS Pro project (.aprx). Then continue with editing.

See Configure a feature template in the ArcGIS Pro help for other modifications or more information.

Loading Pre-existing Street Segments

Although existing road features may be appended into the custom streets layers, the connectivity and attribute requirements for routing are not automatically enforced when appending. Additional editing to enforce network connectivity and to populate attribution is required if existing roads are appended to the custom streets layers. Refer to the Layer descriptions section above for the rules that will enforce network connectivity in your custom network.

Tasks

The StreetMap Premium Custom Roads project (used within ArcGIS Pro) includes editing tasks to help you merge your own street data into the StreetMap Premium Custom_Streets feature class and network dataset. Tasks are a standard feature of ArcGIS Pro and can greatly help manage merging data features. **You must have at least the ArcGIS Desktop Standard license to run the tools associated with the editing tasks.** The tasks use standard ArcGIS Pro tools as well as custom tools. The custom tools are contained in the SMP_<Region>_Custom_Roads toolbox (.tbx). Your organization may also create new tasks specific to your editing needs. The following tasks and custom tools are part of the ArcGIS Pro project and summarized below.

Tasks and custom tools within the Custom Roads ArcGIS Pro Project
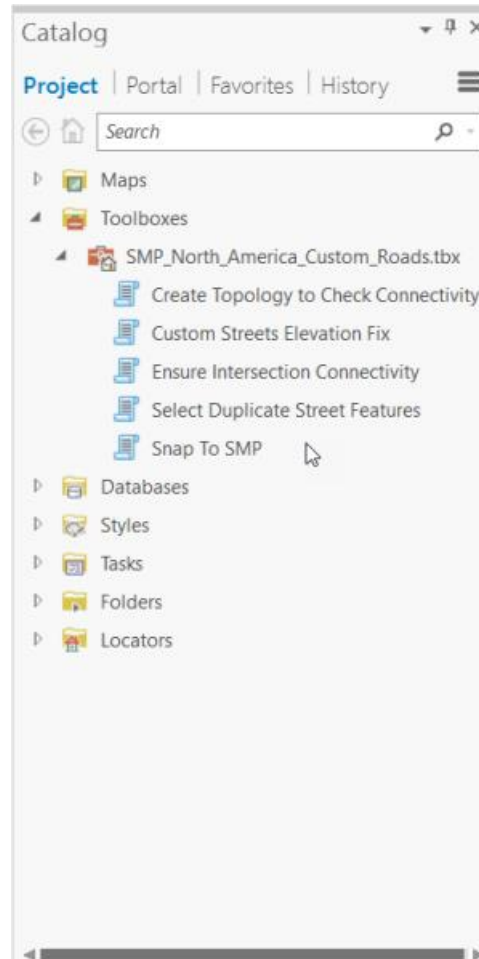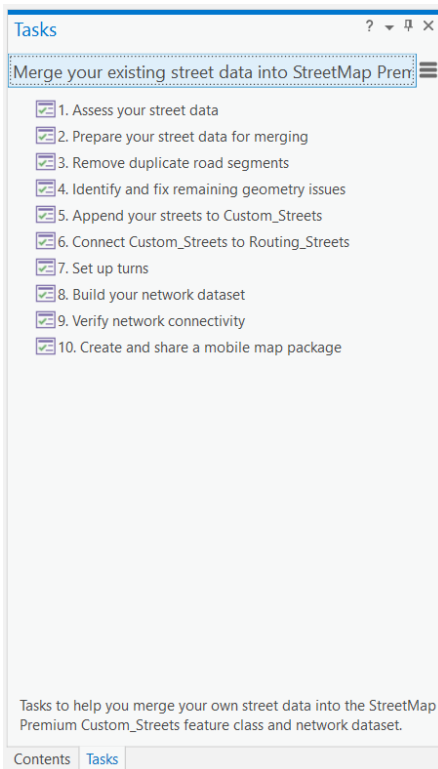
Merge existing street data into StreetMap Premium network dataset

In the ArcGIS Pro Tasks Pane, click each numbered task to review it. Double-click each Task to begin using the task. Use the 'Skip' or 'Next Step' button in ArcGIS Pro to review each of the following tasks and steps in more detail without performing any data editing or processing. This will give you an overall understanding of best practices for merging your existing street data into the StreetMap Premium network dataset. **For each consecutive release of the StreetMap**

Premium Custom Roads product, you should always maintain your data within one of the three feature classes: Custom_Streets, Custom_Streets_Override and Custom_Turns. This makes it easier to copy these feature classes into the next update of StreetMap Premium Custom Roads. Editing of Routing_Streets or other feature classes and tables associated with the StreetMap Premium Custom Roads network dataset is against the terms and use of the product license, except as noted above in the Layer descriptions and Loading Pre-existing Streets Segments, where adding vertices may be required. If editing of Routing_Streets or other feature classes and tables associated with the StreetMap Premium Custom Roads network is desired for a different use or workflow than described herein, you are then responsible for maintaining the connectivity and correctness of all road segments and attributes and standard technical support will not be available for addressing potential issues encountered.

With ArcGIS Pro 2.9 or later, as you begin your editing, you will notice a new default symbology for dirty areas of the network dataset (Routing_ND) begin to appear in the map (see below).

Dirty areas allow you to see where edits to source features have been made since the last time the network dataset was built. Rectangles surround and highlight the portions of the network dataset that are out of date due to the edits. When you rebuild the network, only the dirty areas are rebuilt, which can be much faster than rebuilding the entire network. If properties of the network dataset are altered, the entire network dataset may be covered by a dirty area, indicating all the elements of the network need to be rebuilt. When the network is successfully rebuilt, the rectangles should disappear from the map.

Dirty areas in the Custom Roads ArcGIS Pro project
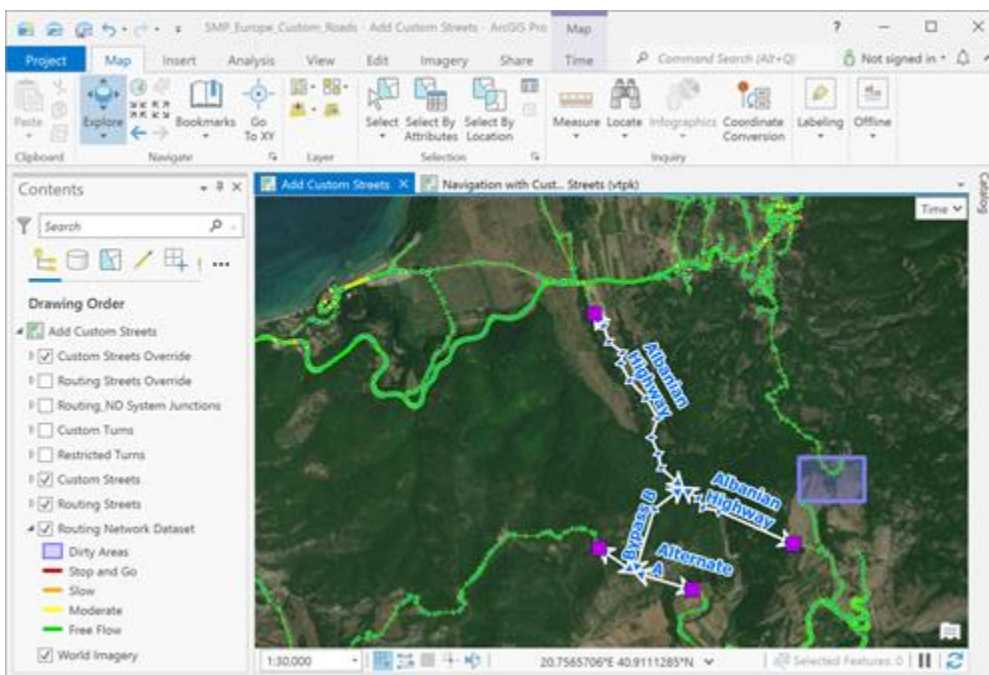
Task 1: Assess your street data

In Task 1, steps are given to examine and prepare your own street data prior to merging with StreetMap Premium data. This task walks you through some attribute and geometry checks to ensure that your data is ready for merging.

Task 2: Prepare your street data for merging

This task helps you to identify and correct intersection connectivity. In order for your network dataset to function properly, your street data must be well connected at intersections. This task guides you through some steps to ensure good connectivity at intersections within your own street data.

The StreetMap Premium network dataset uses End Point connectivity. Consequently, for the road features in your network dataset to connect properly at intersections, your features must touch at end points. Note that if your data contains bridges, tunnels, overpasses, or other locations where streets cross over or under each other but do not physically connect, you will have to fix these locations if these features should not intersect.

Task 3: Remove duplicate road segments

Task 3 helps you identify road segments in your street data that duplicate StreetMap Premium road segments, and then review the selection and delete them. The **Select Duplicate Street Features** tool is provided to help accomplish this task.

Task 4: Identify and fix remaining geometry issues

This task uses the **Create Topology to Check Connectivity** tool to create a topology with rules to look for common causes of connectivity problems.

The tool creates a new feature dataset with a copy of your streets in the specified workspace. Then it creates a topology and adds rules to it which help identify areas of problem geometry.

Task 5: Append your streets to Custom_Streets

This task helps you transfer your roads into the empty Custom_Streets feature class for use with the StreetMap Premium dataset. It also helps you transfer any relevant attributes from your original data.

Task 6: Connect Custom_Streets to Routing_Streets

To ensure good network connectivity, the features in Custom_Streets must intersect with the street features in Routing_Streets. If you are merging existing data into StreetMap Premium, it is likely your own roads will not be coincident with the existing StreetMap Premium data. Intersection points will fall short of connecting or will have dangles. Additionally, points of connection must have either feature end points or vertices with coincident override junctions. Use this task to correct these problems and ensure good network dataset connectivity between Custom_Streets and Routing_Streets. The **Custom Streets Elevation Fix**, **Ensure Intersection Connectivity**, and **Snap to SMP** tools are provided to help accomplish this task.

Task 7: Set up turns

Use this task to set up turns to control turn restrictions at intersections. There are many types of turn features and restrictions that can be added to network datasets. The ArcGIS Network Analyst data prep tutorial provides detailed instructions and graphics to guide you in digitizing turns. These tutorials may be reviewed before getting started adding or editing turn restrictions.

Task 8: Build your network dataset

Use the **Build Network** tool to incorporate your network dataset edits into the StreetMap Premium network dataset (Routing_ND). If you get build errors, review them along with the Common build errors documentation page. Fix any errors and run the Build Network tool again.

Task 9: Verify network connectivity

This task will help you assess whether your network dataset is adequately connected using network functions like Service Area and Route analyses.

Task 10: Create and share a mobile map package

In this task, use the **Create Mobile Map Package** tool to package your custom network dataset along with mapping layers and a locator for mobile use. Since the StreetMap Premium Custom Roads extent is for the entire region, do not use the Default extent setting, use your Area of Interest instead to create a small package size efficient for mobile use. When packaging the network dataset, warnings about live traffic may be ignored because a live traffic service cannot be used in a mobile map package. Similarly, other online mapping services cannot be packaged for mobile use. Note that the Navigator app requires a map package to contain a locator to be recognized as a valid map package. Only one composite locator or an individual locator is usable by the package.

Then, use the **Share Package** tool to share your package with your ArcGIS organization so users can download the package for use with the Navigator app.

Update process

Once data is captured into the custom data layers, your organization will want to use these features with future StreetMap Premium updates. The following process should be followed for migrating custom streets features into a new update of StreetMap Premium:

1. Append the Custom_Streets, Custom_Streets_Override, and Custom_Turns features from your existing version of StreetMap Premium into the equivalent feature classes in the new version of StreetMap Premium.
2. Review the segments and points that you just loaded into the new StreetMap Premium database. Compare the Custom_Streets segments against the Routing_Streets segments to identify situations where updates to the Routing_Streets layer will impact connectivity to your Custom_Streets.
    *   Identify any situation where a Routing_Streets segment now represents a Custom_Streets segment.
        o   In these situations, delete your Custom_Streets segment to avoid duplication of streets.
        o   Edit any Custom_Streets segments that may have been connected to your newly deleted feature, as appropriate.
    *   Identify any situation where a Routing_Streets segment has moved resulting in your Custom_Streets segments no longer being connected to it.
        o   Edit and move the endpoint of your Custom_Streets to be coincident to the Routing_Streets. If a Custom_Street_Override is present at this location, also edit and move it.

    Note: To identify these situations and locations, you may want to use a topology rule.

3. Review the Custom_Turns segments that you just loaded into the new StreetMap Premium database. Identify any situations where updates to the Routing_Streets layer will impact the connectivity and snapping of your Custom_Turns segments.
    *   For example, if a Routing_Streets segment has moved, move the Custom_Turns segment to snap to the segment once again.

    Note: To identify these situations and locations, you may want to use a topology rule.

4. Run Update by Geometry on the updated Custom_Turns feature class.
5. Select all Routing_Streets segments that intersect the Custom_Streets segments. Run Integrate with a cluster tolerance of 0. This will insert a vertex where these two locations intersect. Note that a Custom_Streets_Override point must exist at this intersection, or network connectivity will not be enforced.
6. Run Build Network. This will connect the network dataset for routing using the newly loaded Custom_Streets features.
7. Test the network to ensure connectivity by using test stop locations and the ArcGIS Network Analyst extension.

    Note: Where the addition of a Custom_Streets feature may have split a Routing_Streets feature in the original data, this update process does not split the Routing_Streets, and connectivity is enforced via vertex and Custom_Street_Override in the new data.

Reference documents

Learn more about ArcGIS StreetMap Premium:

- esri.com/data/streetmap
- doc.arcgis.com/en/streetmap-premium/get-started/overview.htm
- pro.arcgis.com/en/pro-app/help/data/streetmap-premium/what-is-streetmap-premium-.htm

Learn more about network datasets and how to build one:

- pro.arcgis.com/en/pro-app/help/analysis/networks/what-is-network-dataset-.htm

Learn more about the Network Analyst extension:

- pro.arcgis.com/en/pro-app/help/analysis/networks/what-is-network-analyst-.htm
- pro.arcgis.com/en/pro-app/tool-reference/network-analyst/an-overview-of-the-network-analyst-toolbox.htm

Learn more about creating turns:

- pro.arcgis.com/en/pro-app/latest/help/analysis/networks/turns-in-the-network-dataset.htm
- pro.arcgis.com/en/pro-app/latest/tool-reference/network-analyst/create-turn-feature-class.htm

Learn more about setting directions:

- pro.arcgis.com/en/pro-app/help/analysis/networks/setting-directions.htm

Learn more about preparing maps for use with ArcGIS Navigator:

- doc.arcgis.com/en/navigator/android-phone/help/prepare-maps.htm

Support

For technical restrictions, system requirements, and other support information regarding ArcGIS StreetMap Premium Custom Roads, see [ArcGIS StreetMap Premium](#) on the ArcGIS website.

Data dictionary

Point layers

Custom Streets Override Points (Custom_Streets_Override)

The Custom Streets Override Points (Custom_Streets_Override File Geodatabase Feature Class) point layer is an empty feature class to contain connection points indicating where connectivity occurs mid-span along merged line features of the dissolved network dataset, Routing_ND.

This layer contains the following fields:

Field Name	Description	Values
OBJECTID	Internal feature number	Sequential unique whole numbers that are automatically generated.
Shape	Feature geometry	Coordinates defining the features.
ELEV	Relative Z-level	The relative vertical position of connection points that indicate where connectivity occurs mid-span along the merged line features of the dissolved network dataset, Routing_ND. The ELEV field is set by either the geodatabase or template default; values are generally NULL. Values must be NULL for segments with mid-span vertex connectivity.

Line layers

Custom Streets for network (Custom_Streets)

The Custom Streets for network (Custom_Streets File Geodatabase Feature Class) line layer is an empty feature class to contain user-defined streets to be added to the existing network, Routing_ND, for routing. Custom_Streets has the same attribute schema as Routing_Streets, except the values are blank or empty and are meant to be defined by the user. Additional attributes included after the Shape_Length field are specific to Custom_Streets and are intended for road speeds or custom street symbolization for use in creating mobile map packages.

This layer contains the following fields:

Field Name	Description	Values
OBJECTID	Internal feature number	Sequential unique whole numbers that are automatically generated.
Shape	Feature geometry	Coordinates defining the features.
FULL_STREET_NAME	Full Street Name	Full Street Name—this is the preferred street name. **Note:** It can also be a Route Number, Exit Number, or Junction Name, if such a name is the preferred Street Name.
STREET_PREFIX_DIR	Street Name Prefix	Directional identifier that precedes the name of the road: see Directional

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Field Name	Description	Values
		[Identifiers](#) for values.
STREET_PREFIX_TYPE	Street Type Before	Street Type of the Street Name that appears before the Base Name. Street Types such as "Calle" or "Rue".
STREET_NAME	Street Name Base	Base Name of the Street Name.
STREET_TYPE	Street Type After	Street Type of the Street Name that appears after the Base Name. Street Types such as "Ave", "Avenue", "Fry", "Hwy", "Rd", "St", "Trl", or "Walk".
STREET_DIR	Street Name Suffix	Directional identifier that follows the name of the road: see [Directional Identifiers](#) for values.
STREET_NAME_DIRECTION	Street Highway Direction	Official directional identifier assigned to the highway that is the official direction and not necessarily the travel direction: see [Direction on Sign](#) for values.
STREET_LANGUAGE	Street Name Language Code	The language associated with the street name.
HIERARCHY	Hierarchy	Hierarchy is the order or rank assigned to network elements. A street network may have an attribute on the source features that breaks the roads down into classes: see [Hierarchy](#) for values.
ROAD_CLASS	Road Class	Road Class provides specific directions for different types of roads: see [Road Class](#) for values.
SPEED_CLASS	Speed Class	Classification for road speeds in the routing index: see [Speed Classes](#) for values.
MANEUVER_CLASS	Maneuver Class	Indicates type of maneuver at a Link: see [Maneuver Class](#) for values.
DRIVING_SIDE	Driving Side	Indicates the side of the street a driver legally drives on when the street is a two-way street: L (Left) or R (Right).
SUPPLEMENTAL_GEO_BITSET	Supplemental Geometry Bit set	Provides a classification for road geometry types included for special or limited use.
TimeZoneID	Time Zone Identifier	Time Zone Identifier.
ADMIN0_NAME	Order0 Administrative Area Name	Name of the Country.
ADMIN1_NAME	Order1 Administrative Area Name	Name of the State or Province.

Field Name	Description	Values
ADMIN1_ABBR	Order1 Administrative Area Abbreviated Name	Two or three letter abbreviation for the Order1 name.
F_ZLEV	From Relative Z-level	From Relative Z-level models a relative stacking order for the "from" end of the link when navigable links are crossing other navigable links or other cartographic features. F_ZLEV should be set to NULL unless needing to disambiguate multiple endpoints that aren't connected due to being on different vertical planes. Value must be NULL if the segment connects mid-span at a vertex to another street.
T_ZLEV	To Relative Z-level	To Relative Z-level models a relative stacking order for the "to" end of the link when navigable links are crossing other navigable links or other cartographic features. T_ZLEV should be set to NULL unless needing to disambiguate multiple endpoints that aren't connected due to being on different vertical planes. Value must be NULL if the segment connects mid-span at a vertex to another street.
METERS *	Length of the link	Lengths (meters) for the features. When features are created, the METERS field contains a NULL value. When this value is NULL, then the network dataset will utilize geodesic distances derived from the feature's geometry for distance calculation; if the user populates a value in this field for a feature, then that value is used for distance calculation (the feature's geometry is not used for distance calculation).
FT_MINUTES	From Traveling Time in Minutes	Traveling time in the From direction in minutes.
TF_MINUTES	Toward Traveling Time in Minutes	Traveling time in the Toward direction in minutes.
FT_TRUCK_MINUTES	From Truck Traveling Time	Defines truck traveling time calculation in the From direction (in minutes).
TF_TRUCK_MINUTES	Toward Truck Traveling Time	Defines truck traveling time calculation in the Toward direction (in minutes).
FULL_STREET_NAME_ALT1	1st Alternate Full	Alternate Full Street Name or Route

Field Name	Description	Values
	Street Name	Number including the Street Name Prefix, Street Name Suffix, Street Types, and Direction on Sign (for Route Numbers when available).
STREET_PREFIX_DIR_ALT1	1st Alternate Street Name Prefix	Directional identifier that precedes the name of the road: see Directional Identifiers for values.
STREET_PREFIX_TYPE_ALT1	1st Alternate Street Type Before	Street Type of the Street Name that appears before the Base Name. Street Types such as "Calle" or "Rue".
STREET_NAME_ALT1	1st Alternate Base Name	Base Name of the Street Name.
STREET_TYPE_ALT1	1st Alternate Street Type After	Street Type of the Street Name that appears after the Base Name. Street Types such as "Ave", "Avenue", "Fry", "Hwy", "Rd", "St", "Trl", or "Walk".
STREET_DIR_ALT1	1st Alternate Street Name Suffix	Directional identifier that follows the name of the road: see Directional Identifiers for values.
STREET_NAME_DIRECTION_ALT1	1st Alternate Street Highway Direction	Official directional identifier assigned to the highway that is the official direction and not necessarily the travel direction: see Direction on Sign for values.
STREET_LANGUAGE_ALT1	1st Alternate Street Name Language Code	The language associated with the street name.
FULL_STREET_NAME_ALT2	2nd Alternate Full Street Name	Alternate Full Street Name or Route Number including the Street Name Prefix, Street Name Suffix, Street Types, and Direction on Sign (for Route Numbers when available).
STREET_PREFIX_DIR_ALT2	2nd Alternate Street Name Prefix	Directional identifier that precedes the name of the road: see Directional Identifiers for values.
STREET_PREFIX_TYPE_ALT2	2nd Alternate Street Type Before	Street Type of the Street Name that appears before the Base Name. Street Types such as "Calle" or "Rue".
STREET_NAME_ALT2	2nd Alternate Base Name	Base Name of the Street Name.
STREET_TYPE_ALT2	2nd Alternate Street Type After	Street Type of the Street Name that appears after the Base Name. Street Types such as "Ave", "Avenue", "Fry", "Hwy", "Rd", "St", "Trl", or "Walk".
STREET_DIR_ALT2	2nd Alternate Street Name Suffix	Directional identifier that follows the name of the road: see Directional Identifiers for values.

Field Name	Description	Values
STREET_NAME_DIRECTION_ALT2	2nd Alternate Street Highway Direction	Official directional identifier assigned to the highway that is the official direction and not necessarily the travel direction: see Direction on Sign for values.
STREET_LANGUAGE_ALT2	2nd Alternate Street Name Language Code	The language associated with the street name.
FULL_STREET_NAME_ALT3	3rd Alternate Full Street Name	Alternate Full Street Name or Route Number including the Street Name Prefix, Street Name Suffix, Street Types, and Direction on Sign (for Route Numbers when available).
STREET_PREFIX_DIR_ALT3	3rd Alternate Street Name Prefix	Directional identifier that precedes the name of the road: see Directional Identifiers for values.
STREET_PREFIX_TYPE_ALT3	3rd Alternate Street Type Before	Street Type of the Street Name that appears before the Base Name. Street Types such as "Calle" or "Rue".
STREET_NAME_ALT3	3rd Alternate Base Name	Base Name of the Street Name.
STREET_TYPE_ALT3	3rd Alternate Street Type After	Street Type of the Street Name that appears after the Base Name. Street Types such as "Ave", "Avenue", "Fry", "Hwy", "Rd", "St", "Trl", or "Walk".
STREET_DIR_ALT3	3rd Alternate Street Name Suffix	Directional identifier that follows the name of the road: see Directional Identifiers for values.
STREET_NAME_DIRECTION_ALT3	3rd Alternate Street Highway Direction	Official directional identifier assigned to the highway that is the official direction and not necessarily the travel direction: see Direction on Sign for values.
STREET_LANGUAGE_ALT3	3rd Alternate Street Name Language Code	The language associated with the street name.
FULL_STREET_NAME_ALT4	4th Alternate Full Street Name	Alternate Full Street Name or Route Number including the Street Name Prefix, Street Name Suffix, Street Types, and Direction on Sign (for Route Numbers when available).
STREET_PREFIX_DIR_ALT4	4th Alternate Street Name Prefix	Directional identifier that precedes the name of the road: see Directional Identifiers for values.
STREET_PREFIX_TYPE_ALT4	4th Alternate Street Type Before	Street Type of the Street Name that appears before the Base Name. Street Types such as "Calle" or "Rue".
STREET_NAME_ALT4	4th Alternate Base	Base Name of the Street Name.

Field Name	Description	Values
	Name	
STREET_TYPE_ALT4	4th Alternate Street Type After	Street Type of the Street Name that appears after the Base Name. Street Types such as "Ave", "Avenue", "Fry", "Hwy", "Rd", "St", "Trl", or "Walk".
STREET_DIR_ALT4	4th Alternate Street Name Suffix	Directional identifier that follows the name of the road: see Directional Identifiers for values.
STREET_NAME_DIRECTION_ALT4	4th Alternate Street Highway Direction	Official directional identifier assigned to the highway that is the official direction and not necessarily the travel direction: see Direction on Sign for values.
STREET_LANGUAGE_ALT4	4th Alternate Street Name Language Code	The language associated with the street name.
FERRY	Ferry Type	Indicates if the link is a ferry: Y (Ferry) or N (Not a Ferry).
CONTROLLED_ACCESS	Controlled Access	Identifies roads with limited entrances and exits that allow uninterrupted high speed traffic flow: Y (Controlled Access) or N (Not Controlled Access).
PAVED	Paved	Indicates the road is paved (made of materials that create a solid surface, such as concrete, asphalt, brick or cobblestone): Y (Paved) or N (Not paved).
FT_RST_ROAD_UNDER_CONSTR	From-Toward Roads Under Construction Prohibited	Indicates if the link in the From-Toward direction is affected by construction and closed to public use: Y (Link is closed) or N (Link is not closed). **Note:** When a road is closed, no traffic can travel on the road for the duration of the construction.
TF_RST_ROAD_UNDER_CONSTR	Toward-From Roads Under Construction Prohibited	Indicates if the link in the Toward-From direction is affected by construction and closed to public use: Y (Link is closed) or N (Link is not closed). **Note:** When a road is closed, no traffic can travel on the road for the duration of the construction.
PUBLIC_ROAD	Public Access	Indicates if the link allows public access: Y (Public access allowed) or N (Public access not allowed).
CARPOOL_ROAD	Carpool Road	Identifies a link where, at specific times, all lanes serve as carpool lanes: Y (Carpool Road) or N (Not a Carpool

Field Name	Description	Values
		Road).
EXPRESS_LANE	Express Lane	Identifies a link that serves as an express lane: Y (Express Lane) or N (Not an Express Lane).
RST_TOLL_ROAD_AUTOMOBILES	Avoid Toll Roads for Passenger Cars	Indicates if the Usage Fee Required (toll) applies to Passenger Cars: Y (Applies) or N (Does not apply). **Note:** The Usage Fee Required is applied to all links that are affected by any type of toll and can be used for routing and guidance (for example, for enabling avoidance of toll roads).
RST_TOLL_ROAD_TRUCKS	Avoid Toll Roads for Trucks	Indicates if the Usage Fee Required (toll) applies to Trucks or Deliveries: Y (Applies) or N (Does not apply). **Note:** The Usage Fee Required is applied to all links that are affected by any type of toll and can be used for routing and guidance (for example, for enabling avoidance of toll roads).
FT_RST_AUTOMOBILES	From Automobiles Restricted	Indicates if Automobiles are legally restricted from using the link in the From direction: Y (Applies) or N (Does not apply).
TF_RST_AUTOMOBILES	Toward Automobiles Restricted	Indicates if Automobiles are legally restricted from using the link in the Toward direction: Y (Applies) or N (Does not apply).
FT_RST_BUSES	From Buses Restricted	Indicates if Buses are legally restricted from using the link in the From direction: Y (Applies) or N (Does not apply).
TF_RST_BUSES	Toward Buses Restricted	Indicates if Buses are legally restricted from using the link in the Toward direction: Y (Applies) or N (Does not apply).
FT_RST_TAXIS	From Taxis Restricted	Indicates if Taxis are legally restricted from using the link in the From direction: Y (Applies) or N (Does not apply).
TF_RST_TAXIS	Toward Taxis Restricted	Indicates if Taxis are legally restricted from using the link in the Toward direction: Y (Applies) or N (Does not apply).
RST_PEDESTRIANS	Pedestrians Restricted	Indicates if Pedestrians are legally restricted from using the link: Y (Applies) or N (Does not apply).

Field Name	Description	Values
FT_RST_TRUCK_DELIVERY_ONLY	From Trucks Restricted (Except Local Deliveries)	Indicates if Trucks are allowed only to make a Delivery in the local vicinity using the link in the From direction: Y (Applies) or N (Does not apply).
TF_RST_TRUCK_DELIVERY_ONLY	Toward Trucks Restricted (Except Local Deliveries)	Indicates if Trucks are allowed only to make a Delivery in the local vicinity using the link in the Toward direction: Y (Applies) or N (Does not apply).
RST_THROUGH_TRAFFIC	Through Traffic Restricted	Indicates if Automobile Through Traffic is restricted from using the link: Y (Applies) or N (Does not apply).
FT_RST_TRUCKS	From Trucks Restricted	Indicates if Trucks are legally restricted from using the link in the From direction: Y (Applies) or N (Does not apply).
TF_RST_TRUCKS	Toward Trucks Restricted	Indicates if Trucks are legally restricted from using the link in the Toward direction: Y (Applies) or N (Does not apply).
FT_RST_EMERGENCY_VEHICLES	From Emergency Vehicles Restricted	Indicates if Emergency Vehicles are legally restricted from using the link in the From direction: Y (Applies) or N (Does not apply).
TF_RST_EMERGENCY_VEHICLES	Toward Emergency Vehicles Restricted	Indicates if Emergency Vehicles are legally restricted from using the link in the Toward direction: Y (Applies) or N (Does not apply).
FT_RST_MOTORCYCLES	From Motorcycles Restricted	Indicates if Motorcycles are legally restricted from using the link in the From direction: Y (Applies) or N (Does not apply).
TF_RST_MOTORCYCLES	Toward Motorcycles Restricted	Indicates if Motorcycles are legally restricted from using the link in the Toward direction: Y (Applies) or N (Does not apply).
FT_RST_HEIGHT	From Vehicle Height Restriction	Indicates a Transport Access legal vehicle height restriction in meters in the From direction on the link.
TF_RST_HEIGHT	Toward Vehicle Height Restriction	Indicates a Transport Access legal vehicle height restriction in meters in the Toward direction on the link.
FT_RST_WEIGHT	From Vehicle Weight Restriction	Indicates a Transport Access legal vehicle (total) weight restriction in kilograms in the From direction on the link.
TF_RST_WEIGHT	Toward Vehicle	Indicates a Transport Access legal

Field Name	Description	Values
	Weight Restriction	vehicle (total) weight restriction in kilograms in the Toward direction on the link.
FT_RST_WEIGHT_PER_AXLE	From Vehicle Weight per Axle Restriction	Indicates a Transport Access legal vehicle weight per axle restriction in kilograms in the From direction on the link.
TF_RST_WEIGHT_PER_AXLE	Toward Vehicle Weight per Axle Restriction	Indicates a Transport Access legal vehicle weight per axle restriction in kilograms in the Toward direction on the link.
FT_RST_LENGTH	From Vehicle Length Restriction	Indicates a Transport Access legal vehicle length restriction in meters in the From direction on the link.
TF_RST_LENGTH	Toward Vehicle Length Restriction	Indicates a Transport Access legal vehicle length restriction in meters in the Toward direction on the link.
FT_RST_WIDTH	From Vehicle Width Restriction	Indicates a Transport Access legal vehicle width restriction in meters in the From direction on the link.
TF_RST_WIDTH	Toward Vehicle Width Restriction	Indicates a Transport Access legal vehicle width restriction in meters in the Toward direction on the link.
FT_RST_KINGPIN_REAR_AXL_LENGTH	From Vehicle Length (from Kingpin to Rear Axle) Restriction (North America only)	Indicates a Transport Access legal vehicle length (from Kingpin to Rear Axle) restriction in meters in the From direction on the link.
TF_RST_KINGPIN_REAR_AXL_LENGTH	Toward Vehicle Length (from Kingpin to Rear Axle) Restriction (North America only)	Indicates a Transport Access legal vehicle length (from Kingpin to Rear Axle) restriction in meters in the Toward direction on the link.
FT_RST_TRUCK_TRAILERS	From Trailer Type Restriction	Indicates a Transport Access trailer type legal restriction in the From direction on the link: NULL (Restriction does not apply), 1 (Truck with one or more trailers is restricted), 2 (Truck with two or more trailers is restricted), or 3 (Truck with three or more trailers is restricted).
TF_RST_TRUCK_TRAILERS	Toward Trailer Type Restriction	Indicates a Transport Access trailer type legal restriction in the Toward direction on the link: NULL (Restriction does not apply), 1 (Truck with one or more

Field Name	Description	Values
		trailers is restricted), 2 (Truck with two or more trailers is restricted), or 3 (Truck with three or more trailers is restricted).
FT_RST_SEMI_TRACTOR_TRAILERS	From Trailer Type (Semi or Tractor with one or more trailers) Restriction	Indicates a Transport Access trailer type (Semi or Tractor with one or more trailers) legal restriction in the From direction on the link: Y (Restriction applies), N (Restriction does not apply), or No value (Information is unknown).
TF_RST_SEMI_TRACTOR_TRAILERS	Toward Trailer Type (Semi or Tractor with one or more trailers) Restriction	Indicates a Transport Access trailer type (Semi or Tractor with one or more trailers) legal restriction in the Toward direction on the link: Y (Restriction applies), N (Restriction does not apply), or No value (Information is unknown).
FT_RST_ANY_HAZMAT	From All Hazardous Material Types Restriction	Indicates a Transport Access hazardous material type—Explosives (Class 1), Gas, Flammable, Flammable solid/Combustible, Organic, Poison, Radioactive, Corrosive, Other, Any Hazardous Material, Poisonous Inhalation Hazard (PIH), Goods Harmful for Water, or Explosive and Flammable—legal restriction in the From direction on the link: Y (Restriction applies), N (Restriction does not apply), or No value (Information is unknown).
TF_RST_ANY_HAZMAT	Toward All Hazardous Material Types Restriction	Indicates a Transport Access hazardous material type—Explosives (Class 1), Gas, Flammable, Flammable solid/Combustible, Organic, Poison, Radioactive, Corrosive, Other, Any Hazardous Material, Poisonous Inhalation Hazard (PIH), Goods Harmful for Water, or Explosive and Flammable—legal restriction in the Toward direction on the link: Y (Restriction applies), N (Restriction does not apply), or No value (Information is unknown).
FT_RST_AXLE_COUNT	From Number of Axles Restriction	Indicates a Transport Access number of axles legal restriction in the From direction on the link: NULL (Restriction does not apply), 1 (Two or more axles are restricted), 2 (Three or more axles are restricted), 3 (Four or more axles

Field Name	Description	Values
		are restricted), 4 (Five or more axles are restricted), or 5 (Six or more axles are restricted).
TF_RST_AXLE_COUNT	Toward Number of Axles Restriction	Indicates a Transport Access number of axles legal restriction in the Toward direction on the link: NULL (Restriction does not apply), 1 (Two or more axles are restricted), 2 (Three or more axles are restricted), 3 (Four or more axles are restricted), 4 (Five or more axles are restricted), or 5 (Six or more axles are restricted).
FT_RST_SINGLE_AXLE_VEHICLE	From Number of Axles (Single Axle) Restriction	Indicates a Transport Access number of axles (single axle) legal restriction in the From direction on the link: Y (Restriction applies), N (Restriction does not apply), or No value (Information is unknown).
TF_RST_SINGLE_AXLE_VEHICLE	Toward Number of Axles (Single Axle) Restriction	Indicates a Transport Access number of axles (single axle) legal restriction in the Toward direction on the link: Y (Restriction applies), N (Restriction does not apply), or No value (Information is unknown).
FT_RST_TANDEM_AXLE_VEHICLE	From Number of Axles (Tandem Axle) Restriction	Indicates a Transport Access number of axles (tandem axle) legal restriction in the From direction on the link: Y (Restriction applies), N (Restriction does not apply), or No value (Information is unknown).
TF_RST_TANDEM_AXLE_VEHICLE	Toward Number of Axles (Tandem Axle) Restriction	Indicates a Transport Access number of axles (tandem axle) legal restriction in the Toward direction on the link: Y (Restriction applies), N (Restriction does not apply), or No value (Information is unknown).
FT_RST_PREF_TRUCK	From STAA, TD, and Local Preferred Route	Indicates a Transport preferred route is part of the Surface Transportation Assistance Act (STAA) in the U.S. or a federally-designated truck route in other countries, TD (Truck Designated route – state-designated highway network in the U.S. or a state-designated truck route in other countries), and Local (locally-designated truck route) in the From direction on the link: Y (Preferred route applies), N (Preferred route does not

Field Name	Description	Values
		apply), or No value (Information is unknown).
TF_RST_PREF_TRUCK	Toward STAA, TD, and Local Preferred Route	Indicates a Transport preferred route is part of the Surface Transportation Assistance Act (STAA) in the U.S. or a federally-designated truck route in other countries, TD (Truck Designated route – state-designated highway network in the U.S. or a state-designated truck route in other countries), and Local (locally-designated truck route) in the Toward direction on the link: Y (Preferred route applies), N (Preferred route does not apply), or No value (Information is unknown).
FT_RST_PREF_HAZMAT	From All Hazardous Materials and Goods Preferred Route	Indicates a Transport preferred route for transporting—National Repository of non-radioactive Hazardous Materials (NRHM), Class 1 (Explosive hazardous materials), Poisonous Inhalation Hazard (PIH) materials, Medical Waste, or Radioactive hazardous materials, or General Hazardous Goods—in the From direction on the link: Y (Preferred route applies), N (Preferred route does not apply), or No value (Information is unknown).
TF_RST_PREF_HAZMAT	Toward All Hazardous Materials and Goods Preferred Route	Indicates a Transport preferred route for transporting—National Repository of non-radioactive Hazardous Materials (NRHM), Class 1 (Explosive hazardous materials), Poisonous Inhalation Hazard (PIH) materials, Medical Waste, or Radioactive hazardous materials, or General Hazardous Goods—in the Toward direction on the link: Y (Preferred route applies), N (Preferred route does not apply), or No value (Information is unknown).
FT_RST_SPEED_LIMIT	From Speed Limit	Indicates the speed limit applicable to automobiles in the From direction on the link in KPH.
TF_RST_SPEED_LIMIT	Toward Speed Limit	Indicates the speed limit applicable to automobiles in the Toward direction on the link in KPH.
FT_RST_TRUCK_SPEED_LIMIT	From Truck Speed Limit	Indicates the speed limit applicable to trucks in the From direction on the link

Field Name	Description	Values
		in KPH.
TF_RST_TRUCK_SPEED_LIMIT	Toward Truck Speed Limit	Indicates the speed limit applicable to truck in the Toward direction on the link in KPH.
RST_PEDESTRIAN_PREFERRED	Preferred Pedestrian Route Restriction	Identifies a road segment suitable for pedestrian navigation: Y (Suitable for pedestrian navigation), N (Not suitable for pedestrian navigation), or No value (Information is Unknown).
RST_STAIRS_TRAVERSAL	Stairs Restriction	Identifies whether stairs should be avoided on a pedestrian suitable route: Y (Stairs should be avoided on a pedestrian suitable route), N (Stairs should not be avoided on a pedestrian suitable route), or No value (Information is Unknown).
Shape_Length *	Length of feature in internal units	Positive real numbers that are automatically generated.
CARTO	Carto	Cartographic value for rendering streets: see Carto Values for more information.
SHIELD_LABEL	Shield Label	Abridged shield number (used for labeling purposes to improve cartographic display): Characters for the features derived from the StreetNameBase fields. **Note:** Priority for selecting shield label from multiple alternative names is based on the level of route type and official language code for specified country.
SHIELD_CLASS	Shield Class	Classification for shields labeling.
LABEL_TYPE	Label Type	Used for displaying Routing_Streets feature class labels in ArcGIS Pro and Navigator. The default is for custom streets feature labels to draw at all scales. If you don't want custom streets feature labels to draw at all scales, code the custom streets feature attributes based on the Routing_Streets features which they connect to for a similar cartographic effect.
LABEL_PRIORITY	Label Priority	Used for displaying Routing_Streets feature class labels in ArcGIS Pro and Navigator. The default is for custom streets feature labels to draw at all scales. If you don't want custom streets feature labels to draw at all scales, code

Field Name	Description	Values
		the custom streets feature attributes based on the Routing_Streets features which they connect to for a similar cartographic effect.
FT_KPH	From KPH	Indicates the kilometers per hour (KPH) in the From direction on the link.
TF_KPH	Toward KPH	Indicates the kilometers per hour (KPH) in the Toward direction on the link.
FT_TRUCK_KPH	From Truck KPH	Indicates the kilometers per hour (KPH) for trucks in the From direction on the link.
TF_ TRUCK_KPH	Toward Truck KPH	Indicates the kilometers per hour (KPH) for trucks in the Toward direction on the link.

* The Shape_Length field contains the projected planar distance in the Web Mercator coordinate system. The [Web Mercator projection](#) does not preserve distances well, so the Shape_Length field is less desirable to use as a distance measure. The Web Mercator projection distorts distances most in north-south directions but east-west directions as well with distance from the equator also a factor. For this reason, it's best to calculate (and keep updated due to any geometry edits) the geodesic distance in the METERS field.

Custom Turn Restrictions (Custom_Turns)

The Custom Turn Restrictions (Custom_Turns File Geodatabase Feature Class) line layer is an empty feature class to contain restrictions to the network which are defined based on two or more links.

This layer contains the following fields:

Field Name	Description	Values
OBJECTID	Internal feature number	Sequential unique whole numbers that are automatically generated.
Shape	Feature geometry	Coordinates defining the features.
Edge1End	Edge 1 End	Indicates if the second Edge connects at the From End or To End of the first Edge. Values: Y (Turn passes through the end of the first edge) or N (Turn passes through the beginning of the first edge).
Edge1FCID	Edge 1 Feature Class ID	The Feature Class ID corresponding to the first edge element in the turn restriction maneuver sequence.
Edge1FID	Edge 1 Feature ID	The Feature ID corresponding to the first edge element in the turn restriction maneuver sequence. The

Field Name	Description	Values
		Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge1Pos	Edge 1 Position	The position along the linear feature that represents the first edge element in the turn restriction maneuver sequence. This allows for the usage of streets composed of multiple edge elements.
Edge2FCID	Edge 2 Feature Class ID	The Feature Class ID corresponding to the second edge element in the turn restriction maneuver sequence.
Edge2FID	Edge 2 Feature ID	The Feature ID corresponding to the second edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge2Pos	Edge 2 Position	The position along the linear feature that represents the second edge element in the turn restriction maneuver sequence.
Edge3FCID	Edge 3 Feature Class ID	The Feature Class ID corresponding to the third edge element in the turn restriction maneuver sequence.
Edge3FID	Edge 3 Feature ID	The Feature ID corresponding to the third edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge3Pos	Edge 3 Position	The position along the linear feature that represents the third edge element in the turn restriction maneuver sequence.
Edge4FCID	Edge 4 Feature Class ID	The Feature Class ID corresponding to the fourth edge element in the turn restriction maneuver sequence.
Edge4FID	Edge 4 Feature ID	The Feature ID corresponding to the fourth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge4Pos	Edge 4 Position	The position along the linear feature that represents the fourth edge element in the turn restriction

Field Name	Description	Values
		maneuver sequence.
Edge5FCID	Edge 5 Feature Class ID	The Feature Class ID corresponding to the fifth edge element in the turn restriction maneuver sequence.
Edge5FID	Edge 5 Feature ID	The Feature ID corresponding to the fifth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge5Pos	Edge 5 Position	The position along the linear feature that represents the fifth edge element in the turn restriction maneuver sequence.
Edge6FCID	Edge 6 Feature Class ID	The Feature Class ID corresponding to the sixth edge element in the turn restriction maneuver sequence.
Edge6FID	Edge 6 Feature ID	The Feature ID corresponding to the sixth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge6Pos	Edge 6 Position	The position along the linear feature that represents the sixth edge element in the turn restriction maneuver sequence.
Edge7FCID	Edge 7 Feature Class ID	The Feature Class ID corresponding to the seventh edge element in the turn restriction maneuver sequence.
Edge7FID	Edge 7 Feature ID	The Feature ID corresponding to the seventh edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge7Pos	Edge 7 Position	The position along the linear feature that represents the seventh edge element in the turn restriction maneuver sequence.
Edge8FCID	Edge 8 Feature Class ID	The Feature Class ID corresponding to the eighth edge element in the turn restriction maneuver sequence.
Edge8FID	Edge 8 Feature ID	The Feature ID corresponding to the eighth edge element in the turn restriction maneuver sequence. The

Field Name	Description	Values
		Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge8Pos	Edge 8 Position	The position along the linear feature that represents the eighth edge element in the turn restriction maneuver sequence.
Edge9FCID	Edge 9 Feature Class ID	The Feature Class ID corresponding to the ninth edge element in the turn restriction maneuver sequence.
Edge9FID	Edge 9 Feature ID	The Feature ID corresponding to the ninth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge9Pos	Edge 9 Position	The position along the linear feature that represents the ninth edge element in the turn restriction maneuver sequence.
Edge10FCID	Edge 10 Feature Class ID	The Feature Class ID corresponding to the tenth edge element in the turn restriction maneuver sequence.
Edge10FID	Edge 10 Feature ID	The Feature ID corresponding to the tenth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge10Pos	Edge 10 Position	The position along the linear feature that represents the tenth edge element in the turn restriction maneuver sequence.
Edge11FCID	Edge 11 Feature Class ID	The Feature Class ID corresponding to the eleventh edge element in the turn restriction maneuver sequence.
Edge11FID	Edge 11 Feature ID	The Feature ID corresponding to the eleventh edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge11Pos	Edge 11 Position	The position along the linear feature that represents the eleventh edge element in the turn restriction maneuver sequence.

Field Name	Description	Values
Edge12FCID	Edge 12 Feature Class ID	The Feature Class ID corresponding to the twelfth edge element in the turn restriction maneuver sequence.
Edge12FID	Edge 12 Feature ID	The Feature ID corresponding to the twelfth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge12Pos	Edge 12 Position	The position along the linear feature that represents the twelfth edge element in the turn restriction maneuver sequence.
Edge13FCID	Edge 13 Feature Class ID	The Feature Class ID corresponding to the thirteenth edge element in the turn restriction maneuver sequence.
Edge13FID	Edge 13 Feature ID	The Feature ID corresponding to the thirteenth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge13Pos	Edge 13 Position	The position along the linear feature that represents the thirteenth edge element in the turn restriction maneuver sequence.
Edge14FCID	Edge 14 Feature Class ID	The Feature Class ID corresponding to the fourteenth edge element in the turn restriction maneuver sequence.
Edge14FID	Edge 14 Feature ID	The Feature ID corresponding to the fourteenth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge14Pos	Edge 14 Position	The position along the linear feature that represents the fourteenth edge element in the turn restriction maneuver sequence.
Edge15FCID	Edge 15 Feature Class ID	The Feature Class ID corresponding to the fifteenth edge element in the turn restriction maneuver sequence.
Edge15FID	Edge 15 Feature ID	The Feature ID corresponding to the fifteenth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the

Field Name	Description	Values
		Routing_Streets layer.
Edge15Pos	Edge 15 Position	The position along the linear feature that represents the fifteenth edge element in the turn restriction maneuver sequence.
Edge16FCID	Edge 16 Feature Class ID	The Feature Class ID corresponding to the sixteenth edge element in the turn restriction maneuver sequence.
Edge16FID	Edge 16 Feature ID	The Feature ID corresponding to the sixteenth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge16Pos	Edge 16 Position	The position along the linear feature that represents the sixteenth edge element in the turn restriction maneuver sequence.
Edge17FCID	Edge 17 Feature Class ID	The Feature Class ID corresponding to the seventeenth edge element in the turn restriction maneuver sequence.
Edge17FID	Edge 17 Feature ID	The Feature ID corresponding to the seventeenth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge17Pos	Edge 17 Position	The position along the linear feature that represents the seventeenth edge element in the turn restriction maneuver sequence.
Edge18FCID	Edge 18 Feature Class ID	The Feature Class ID corresponding to the eighteenth edge element in the turn restriction maneuver sequence.
Edge18FID	Edge 18 Feature ID	The Feature ID corresponding to the eighteenth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge18Pos	Edge 18 Position	The position along the linear feature that represents the eighteenth edge element in the turn restriction maneuver sequence.
Edge19FCID	Edge 19 Feature Class ID	The Feature Class ID corresponding to the nineteenth edge element in the

Field Name	Description	Values
		turn restriction maneuver sequence.
Edge19FID	Edge 19 Feature ID	The Feature ID corresponding to the nineteenth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge19Pos	Edge 19 Position	The position along the linear feature that represents the nineteenth edge element in the turn restriction maneuver sequence.
Edge20FCID	Edge 20 Feature Class ID	The Feature Class ID corresponding to the twentieth edge element in the turn restriction maneuver sequence.
Edge20FID	Edge 20 Feature ID	The Feature ID corresponding to the twentieth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge20Pos	Edge 20 Position	The position along the linear feature that represents the twentieth edge element in the turn restriction maneuver sequence.
Edge21FCID	Edge 21 Feature Class ID	The Feature Class ID corresponding to the twenty-first edge element in the turn restriction maneuver sequence.
Edge21FID	Edge 21 Feature ID	The Feature ID corresponding to the twenty-first edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge21Pos	Edge 21 Position	The position along the linear feature that represents the twenty-first edge element in the turn restriction maneuver sequence.
Edge22FCID	Edge 22 Feature Class ID	The Feature Class ID corresponding to the twenty-second edge element in the turn restriction maneuver sequence.
Edge22FID	Edge 22 Feature ID	The Feature ID corresponding to the twenty-second edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.

Field Name	Description	Values
Edge22Pos	Edge 22 Position	The position along the linear feature that represents the twenty-second edge element in the turn restriction maneuver sequence.
Edge23FCID	Edge 23 Feature Class ID	The Feature Class ID corresponding to the twenty-third edge element in the turn restriction maneuver sequence.
Edge23FID	Edge 23 Feature ID	The Feature ID corresponding to the twenty-third edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge23Pos	Edge 23 Position	The position along the linear feature that represents the twenty-third edge element in the turn restriction maneuver sequence.
Edge24FCID	Edge 24 Feature Class ID	The Feature Class ID corresponding to the twenty-fourth edge element in the turn restriction maneuver sequence.
Edge24FID	Edge 24 Feature ID	The Feature ID corresponding to the twenty-fourth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge24Pos	Edge 24 Position	The position along the linear feature that represents the twenty-fourth edge element in the turn restriction maneuver sequence.
Edge25FCID	Edge 25 Feature Class ID	The Feature Class ID corresponding to the twenty-fifth edge element in the turn restriction maneuver sequence.
Edge25FID	Edge 25 Feature ID	The Feature ID corresponding to the twenty-fifth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge25Pos	Edge 25 Position	The position along the linear feature that represents the twenty-fifth edge element in the turn restriction maneuver sequence.
Edge26FCID	Edge 26 Feature Class ID	The Feature Class ID corresponding to the twenty-sixth edge element in the turn restriction maneuver sequence.

Field Name	Description	Values
Edge26FID	Edge 26 Feature ID	The Feature ID corresponding to the twenty-sixth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge26Pos	Edge 26 Position	The position along the linear feature that represents the twenty-sixth edge element in the turn restriction maneuver sequence.
Edge27FCID	Edge 27 Feature Class ID	The Feature Class ID corresponding to the twenty-seventh edge element in the turn restriction maneuver sequence.
Edge27FID	Edge 27 Feature ID	The Feature ID corresponding to the twenty-seventh edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge27Pos	Edge 27 Position	The position along the linear feature that represents the twenty-seventh edge element in the turn restriction maneuver sequence.
Edge28FCID	Edge 28 Feature Class ID	The Feature Class ID corresponding to the twenty-eighth edge element in the turn restriction maneuver sequence.
Edge28FID	Edge 28 Feature ID	The Feature ID corresponding to the twenty-eighth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge28Pos	Edge 28 Position	The position along the linear feature that represents the twenty-eighth edge element in the turn restriction maneuver sequence.
Edge29FCID	Edge 29 Feature Class ID	The Feature Class ID corresponding to the twenty-ninth edge element in the turn restriction maneuver sequence.
Edge29FID	Edge 29 Feature ID	The Feature ID corresponding to the twenty-ninth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge29Pos	Edge 29 Position	The position along the linear feature

Field Name	Description	Values
		that represents the twenty-ninth edge element in the turn restriction maneuver sequence.
Edge30FCID	Edge 30 Feature Class ID	The Feature Class ID corresponding to the thirtieth edge element in the turn restriction maneuver sequence.
Edge30FID	Edge 30 Feature ID	The Feature ID corresponding to the thirtieth edge element in the turn restriction maneuver sequence. The Edge Feature ID is an Esri-specific ID and refers to the Object ID in the Routing_Streets layer.
Edge30Pos	Edge 30 Position	The position along the linear feature that represents the thirtieth edge element in the turn restriction maneuver sequence.
RST_AUTOMOBILES	Automobiles Restricted	Indicates if Automobiles are restricted from traversing the turn: Y (Applies) or N (Does not apply).
RST_BUSES	Buses Restricted	Indicates if Buses are restricted from traversing the turn: Y (Applies) or N (Does not apply).
RST_TAXIS	Taxis Restricted	Indicates if Taxis are restricted from traversing the turn: Y (Applies) or N (Does not apply).
RST_PEDESTRIANS	Pedestrians Restricted	Indicates if Pedestrians are restricted from traversing the turn: Y (Applies) or N (Does not apply).
RST_TRUCK_DELIVERY_ONLY	Trucks Restricted (Except Local Deliveries)	Indicates maneuvers where Trucks are allowed only to make a Delivery in the local vicinity: Y (Applies) or N (Does not apply).
RST_THROUGH_TRAFFIC	Through Traffic Restricted	Indicates if Automobile Through Traffic is restricted from traversing the turn: Y (Applies) or N (Does not apply).
RST_TRUCKS	Trucks Restricted	Indicates maneuvers where Trucks are prohibited from travel at all times: Y (Applies) or N (Does not apply).
RST_EMERGENCY_VEHICLES	Emergency Vehicles Restricted	Indicates if Emergency Vehicles are restricted from traversing the turn: Y (Applies) or N (Does not apply).
RST_MOTORCYCLES	Motorcycles Restricted	Indicates if Motorcycles are restricted from traversing the turn: Y (Applies) or N (Does not apply).
RST_GATE_KEY	Keyed Access	Identifies the presence of a gate

Field Name	Description	Values
	Entryway	requiring key access: Y (Applies) or N (Does not apply).
RST_GATE_PERMISSIONS	Guard Controlled Entryway	Identifies the presence of a guard controlled gate: Y (Applies) or N (Does not apply).
RST_HEIGHT	Height Restriction	Restricts vehicles exceeding a specific height in meters.
RST_WEIGHT	Weight Restriction	Restricts vehicles exceeding a specific weight in kilograms.
RST_WEIGHT_PER_AXLE	Weight per Axle Restriction	Restricts vehicles exceeding a specific weight per axle in kilograms.
RST_LENGTH	Length Restriction	Restricts vehicles exceeding a specific length in meters.
RST_WIDTH	Width Restriction	Restricts vehicles exceeding a specific width in meters.
RST_TRUCK_TRAILERS	Truck with Trailers Restriction	Specifies the occurrence of a restriction on a link or lane related to trucks with a specified number of trailers: NULL (Restriction does not apply), 1 (Truck with one or more trailers is restricted), 2 (Truck with two or more trailers is restricted), or 3 (Truck with three or more trailers is restricted).
RST_SEMI_TRACTOR_TRAILERS	Semi or Tractor with One or more Trailers Forbidden	Indicates a turn restriction for semi or tractor trucks with one or more trailers: Y (Applies) or N (Does not apply).
RST_HAZMAT_EXPLOSIVES	Hazmat: Explosives	Indicates a restriction for Hazardous Materials (Explosives): Y (Applies) or N (Does not apply).
RST_HAZMAT_GAS	Hazmat: Gas	Indicates a restriction for Hazardous Materials (Gas): Y (Applies) or N (Does not apply).
RST_HAZMAT_FLAMABLE_LIQUID	Hazmat: Flammable	Indicates a restriction for Hazardous Materials (Flammable): Y (Applies) or N (Does not apply).
RST_HAZMAT_FLAMABLE_SOLID	Hazmat: Flammable Solid/Combustible	Indicates a restriction for Hazardous Materials (Flammable Solid/Combustible): Y (Applies) or N (Does not apply).
RST_HAZMAT_ORGANIC	Hazmat: Organic	Indicates a restriction for Hazardous Materials (Organic): Y (Applies) or N (Does not apply).
RST_HAZMAT_POISON	Hazmat: Poison	Indicates a restriction for Hazardous

Field Name	Description	Values
		Materials (Poison): Y (Applies) or N (Does not apply).
RST_HAZMAT_RADIOACTIVE	Hazmat: Radioactive	Indicates a restriction for Hazardous Materials (Radioactive): Y (Applies) or N (Does not apply).
RST_HAZMAT_CORROSIVE	Hazmat: Corrosive	Indicates a restriction for Hazardous Materials (Corrosive): Y (Applies) or N (Does not apply).
RST_HAZMAT_OTHER	Hazmat: Other	Indicates a restriction for Hazardous Materials (Other): Y (Applies) or N (Does not apply).
RST_ANY_HAZMAT_MATERIAL	All Hazmats	Indicates a restriction for All Hazardous Materials: Y (Applies) or N (Does not apply).
RST_HAZMAT_POISONOUS	Hazmat: Poisonous Inhalation Hazard	Indicates a restriction for Hazardous Materials (Poisonous Inhalation Hazard): Y (Applies) or N (Does not apply).
RST_GOODS_HARMFUL_WATER	Goods Harmful to Water	Indicates a restriction for All Trucks with Natural Goods that can be Harmful to Water: Y (Applies) or N (Does not apply).
RST_HAZMAT_EXPLOSIVES_FLAMABLE	Explosive and Flammable Goods	Indicates a restriction for All Trucks with Explosive and Flammable Goods: Y (Applies) or N (Does not apply).
RST_AXLE_COUNT	Axle Count Restriction	Specifies the occurrence of a turn restriction related to trucks with a specified number of Axles: NULL (Restriction does not apply), 1 (Two or more axles are restricted), 2 (Three or more axles are restricted), 3 (Four or more axles are restricted), 4 (Five or more axles are restricted), or 5 (Six or more axles are restricted).
RST_SINGLE_AXLE_VEHICLE	Single Axle Vehicles Prohibited	Indicates a turn restriction for Single Axle vehicles: Y (Applies) or N (Does not apply).
RST_TANDEM_AXLE_VEHICLE	Tandem Axle Vehicles Prohibited	Indicates a turn restriction for Tandem Axle Vehicles: Y (Applies) or N (Does not apply).
Shape_Length	Length of feature in internal units	Positive real numbers that are automatically generated.

Reference

Carto Values

Carto (CARTO) is used in the Custom Streets for network (Custom_Streets) line layer for rendering streets features. The values below are also used in the Roads<scale> and One Way Arrows<scale> feature classes in the .aprx file. If you want your Custom_Streets to display like Roads<scale> in your maps, follow the example coding below.

The CARTO field values and description are shown below:

CARTO	Description
1	Freeway
2	Highway
3	Major Arterial
4	Minor Arterial
5	Local
6	Pedestrian
25	Virtual Pedestrian Path[1]
7	Service
8	Ramp
9	Ramp Highway
10	Ramp Major Arterial
11	Ramp Minor Arterial
12	Ramp Local
13	Ferry (Boat)
14	Roundabout Freeway
15	Roundabout Highway
16	Roundabout Major Arterial
17	Roundabout Minor Arterial
18	Roundabout Local
24	Ferry (Rail)

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[1] A virtual pedestrian path is generally one that is not defined by an existing visible sidewalk, trail, or path. Pedestrians may use virtual paths to walk between a grouped set of buildings or structures or across an area like an open field.

Directional Identifiers

Definition: Directional identifier that precedes or follows the feature name. These identifiers can be added to the STREET_PREFIX_DIR or STREET_DIR attributes in the Custom_Roads feature class.

Code	Description
E	East, Est, Este
N	North, Nord, Norte
NE	Northeast, Nord-est, Noreste
NW, NO	Northwest, Nord-ouest Noroeste
S	South, Sud, Sur
SE	Southeast, Sud-est, Sureste
SW, SO	Southwest, Sud-ouest, Suroeste
W, O	West, Ouest, Oeste
No value	No value

Direction on Sign

Definition: Official directional identifier assigned to the highway that is the official direction and not necessarily the travel direction. These identifiers can be added to the STREET_NAME_DIRECTION attribute in the Custom_Roads feature class.

Code	Description
E	East (Language Code = 'ENG'), Est (Language Code = 'FRE'), Este (Language Code = 'SPA').
N	North (Language Code = 'ENG'), Nord (Language Code = 'FRE'), Norte (Language Code = 'SPA').
O	Ouest (Language Code = 'FRE'), Oeste (Language Code = 'SPA').
S	South (Language Code = 'ENG'), Sud (Language Code = 'FRE'), Sur (Language Code = 'SPA').
W	West (Language Code = 'ENG').
No value	Not applicable.

Hierarchy

Definition: Defines a hierarchical network used to determine a logical and efficient route for a traveler. During hierarchical analyses, if you want the solver to analyze your Custom_Streets in a similar manner as Routing_Streets, follow the example below by adding the codes to the HIERARCHY attribute in the Custom_Streets feature class. It is important not to break hierarchy classes, for example don't create a road with Hierarchy = 2 connecting two roads having Hierarchy = 1. For more information, read the hierarchy help documentation.

Code	Description
1	Roads that allow for high-volume, maximum speed traffic movement between and through major metropolitan areas. Applied to roads with very few, if any, speed changes. Access to the road is usually controlled.
2	Roads used to channel traffic to Hierarchy = 1 roads for travel between and through cities in the shortest amount of time. Applied to roads with very few, if any speed changes that allow for high-volume, high-speed traffic movement.
3	Roads that interconnect Hierarchy = 2 roads and provide a high volume of traffic movement at a lower level of mobility than Hierarchy = 2 roads.
4	Roads that provide for a high volume of traffic movement at moderate speeds between neighborhoods. These roads connect with roads in higher hierarchy levels to collect and distribute traffic between neighborhoods.
5	Roads that have volume and traffic movement below that of any hierarchy level. In addition, walkways, truck only roads, bus only roads, and emergency vehicle only roads receive Hierarchy = 5. Also includes access roads and parking lanes in North America, and roads in marginal and illegal settlements in developing countries.

Maneuver Class

The ManeuverClass attribute identifies to the driving directions small connecting roads inside of or adjacent to the street intersection. It is a descriptor attribute of type integer whose values are shown in the following table. Add these codes to the MANEUVER_CLASS attribute in the Custom_Streets feature class.

ManeuverClass Value	ManeuverClass Type	Description
0	Default	Default value assigned to streets outside street intersections.
1	Intersection Internal	Street segments internal to an intersection of double-digitized roads.
2	Maneuver	Street segments forming a turning slip lane (often found where streets intersect at a sharp angle).

Road Class

The Road Class attribute provides specific directions for different types of roads. It is a descriptor attribute of type integer. If you want the driving directions text for your custom streets to be formatted similarly to that of Routing_Streets, follow the example below by adding these codes to the ROAD_CLASS attribute:

Road Class Value	Type of Road Class	Example Directions Text
1	Surface street	Turn left on Main St.
2	Highway	Go east on I-55.
3	Highway Ramp	Take ramp and go on US-59 N.
4	Ferry Crossing	Take Lake Expy ferry.
5	Roundabout	Take roundabout and proceed south on Main St.
6	Major road	Continue east on Central Ave.

Speed Categories

The speed category classifies the general speed trend of a road based on posted or legal speed and is provided to enhance route calculation and the timing of route guidance. Speed category values represent the combination of several factors besides legal speed limit (for example, physical restrictions or access characteristics). Therefore, speed category values can differ from speed limit values, which represent the legal speed limit only. These speed categories are used to assign speed classes in the SPEED_CLASS attribute.

SpeedCat	Kilometers per hour (KPH)	Miles per hour (MPH)
No value	Not Applicable	Not Applicable
1	More than 130 KPH	More than 80 MPH
2	101–130 KPH	65–80 MPH
3	91–100 KPH	55–64 MPH
4	71–90 KPH	41–54 MPH
5	51–70 KPH	31–40 MPH
6	31–50 KPH	21–30 MPH
7	11–30 KPH	6–20 MPH
8	Less than 11 KPH	Less than 6 MPH

Speed Classes

Speed Class (SPEED_CLASS) is a combination of speed category, controlled access, and frontage road. See Speed Categories (SpeedCat) above for details about speed categories.

Controlled Access (CONTROLLED_ACCESS) identifies roads with limited entrances and exits that allow uninterrupted high speed traffic flow: Y (Controlled Access) or N (Not Controlled Access).

Frontage road (FRONTAGE) indicates that the road (for example, service road) is a local road that runs parallel to and usually contains the names and addresses of a road with a higher traffic flow: Y (Frontage road) or N (Not a frontage road). Note that the FRONTAGE attribute is not part of the Routing_Streets or Custom_Streets feature classes, the attribute is created during a temporary processing step.

Add the Speed Class codes to the SPEED_CLASS attribute in the Custom_Streets feature class.

SPEED_CLASS	SpeedCat	ContrAcc	FRONTAGE
1	1	Y	N
2	2	Y	N
3	3	Y	N
4	4	Y	N
5	5	Y	N
6	6	Y	N
7	7	Y	N
8	8	Y	N
9	1	N	N
10	2	N	N
11	3	N	N
12	4	N	N
13	5	N	N
14	6	N	N
15	7	N	N
16	8	N	N
17	1	N	Y
18	2	N	Y
19	3	N	Y
20	4	N	Y
21	5	N	Y
22	6	N	Y
23	7	N	Y
24	8	N	Y

Contents

The ArcGIS StreetMap Premium Custom Roads project file (.aprx) contains both maps and basemaps as well as the following content.

Map or Basemap Name	Map or Basemap Layers		
Add Custom Streets map	World Imagery	Custom network layers	Network dataset
Navigation with Custom Streets (vtpk) map	Navigation vector tile package	Custom Streets	Network dataset
Navigation with Custom Streets map	Mapping layers	Custom Streets	Network dataset
Navigation with Custom Streets (vtpk) basemap	Navigation vector tile package	Custom Streets	Network dataset
Navigation Day with Custom Streets basemap	Mapping layers	Custom Streets	Network dataset
Navigation Night with Custom Streets basemap	Mapping layers	Custom Streets	Network dataset

Maps and basemaps are distinguished by different icons in the ArcGIS Pro Contents Pane. The ArcGIS Pro project file (.aprx) includes basemaps created from the Custom Roads maps in case a basemap from ArcGIS Online is purposefully or accidentally added to one of the Custom Roads maps, in effect removing the Custom Roads map from the project. You may add the Custom Roads basemap back in from the list of basemaps or close the .aprx file without saving.

The mapping layers in the 'Navigation with Custom Streets' map are not listed in a data dictionary format as the layers were optimized for drawing speed and do not contain any significant attribute information.

The following table details the data that is shipped with ArcGIS StreetMap Premium Custom Roads as well as whether the ArcGIS StreetMap Premium extension is required to use each component.

ArcGIS StreetMap Premium Custom Roads product/component	ArcGIS Desktop (ArcMap)	ArcGIS Pro	ArcGIS Enterprise (ArcGIS Server)	ArcGIS Navigator
Editable file geodatabase (.gdb) for mapping and routing	StreetMap Premium extension*	StreetMap Premium extension*	StreetMap Premium extension*	Not applicable
Vector tile package (.vtpk) for mapping	Not applicable	Not applicable	Not applicable	Not applicable
Locators	Not applicable	StreetMap Premium extension*	StreetMap Premium extension*	Not applicable
Mobile map packages (.mmpk)**	Not applicable	StreetMap Premium extension*	Not applicable	Not applicable

*Refer to ArcGIS Pro help for instructions on enabling a StreetMap Premium extension for ArcGIS Pro or ArcGIS Enterprise.

**The StreetMap Premium extension is required for any mobile map package created from the ArcGIS StreetMap Premium Custom Roads dataset and opened in ArcGIS Pro.