Essential Pipeline Referencing vocabulary

ArcGIS Pro 3.0

In this topic

Available with Location Referencing license.

Activity

Often used in the context of edit activities, which are discrete capabilities supported by ArcGIS Pipeline Referencing to edit LRS Networks. Pipeline Referencing supports the following edit activities: create route, extend route, realign route, cartographic realignment of route, reassign route, and retire route.

Asset

In linear referencing, an asset refers to a type of linear referenced event that represents a physical object, such as a milepost, pipe segment, or pipe fitting.

Branch route

A route with a geometry that branches, so that you could not traverse the entirety of the route without having to re-traverse at least one portion of the route.

Calibration point

A point feature that defines the measure for a specific location on an LRS route. Pipeline Referencing uses calibration points to define the measures on the routes. The measures between two calibration points on a route are derived by linear interpolation.

Centerline

A polyline feature that defines part (or all) of the geometry of an LRS route. Routes in Pipeline Referencing can have multiple centerlines, and routes in different networks can share centerlines.

Complex route

A route with a geometry that self-closes, self-intersects, or branches. Examples include loop routes, cul-de-sac routes, branch routes, and cloverleaf ramp routes.

Concurrency

A data scenario in which two or more routes in the same LRS Network share part or all of a centerline for their shape. Note that two routes with different centerlines are not considered a concurrency, even if they share the same geographic location.

Conflict prevention

Functionality in Roads and Highways that improves support for a multiuser enterprise geodatabase LRS Network and event editing by coordinating route and event edits.

Continuous network

A network composed of routes with continuous, uninterrupted measures that increase as you traverse the route. There are no equation points or stationing in a continuous network.

Engineering network

A network composed of multiple routes logically grouped together in lines that can increase or decrease in measure as you traverse them. Equation points are used at locations where one route ends and another route begins. Events on engineering networks can span routes. In Pipeline Referencing, an engineering network is called an LRS line network.

Equation

During LRS edit activities, gaps or overlaps in measures can be introduced between the adjacent routes in a Line Network. These points of discontinuity in measures between the routes are referred to as equations.

Event

In linear referencing, an event refers to data that is located by its association with an LRS route and measure location. There are two event types: Point events have a single measure along a route, while linear events have a from and to measure along a route. Events are typically modeled in a database with a column for the route ID that the record references, a measure column for the location on the route (two measure columns if it's a linear event), and a value (pipe coating). Additional temporal information can also be modeled on the time frames to ensure that the event is valid.

An example of a point event is an anomaly location referenced on a route that occurred at measure 1,000 feet on the pipe. An example of a linear event is the record of an operating pressure of 400 PSI on a route from measure 0 feet to 1,000 feet.

Event behavior

In the context of linear referencing and Pipeline Referencing, event behavior refers to the configuration that defines how event measures and route associations respond to changes or edits in the LRS Network.

Pipeline Referencing, based on network edits, supports the following event behaviors:

- Stay Put—Keeps events geographically fixed in a location, which can result in event measures changing on modified portions of routes
- Snap—Reassigns (or snaps) events to reassigned routes on modified portions of routes
- Move—Keeps event measures fixed, which can result in events geographically moving on modified portions of routes
- Retire—Retires events on portions of routes that change

Event Editor

ArcGIS Event Editor is a web-based event editing app included with Pipeline Referencing.

Event lock

Event locks are a capability in Pipeline Referencing conflict prevention that allow a user to prevent other users from editing events for an event layer on a specific route. When events for an event layer on a route are locked, only the lock owner can edit those events on the route in the version the lock was acquired. Other users can acquire event locks for the same route on a different event layer, if needed. To release an event lock, you must post changes to the locked events to the lock root version. If any event locks exist for a route, no ones can edit the route until all event locks are released.

Internal event

Linear or point events that reside inside the geodatabase where the LRS is configured. When registered, Pipeline Referencing creates an event feature class and manages the shape of the feature based on the route, measure, and to and from dates.

Line

A continuous logical grouping of one or more routes used for a measure system, specifically used in conjunction with an LRS Line Network.

Linear event

An event that represents a segment of a route from a starting measure (or from measure) to an ending measure (or to measure).

A linear event can be configured to span multiple routes in a Line Network, which configures from route and to route fields.

LRM

Acronym for linear referencing method, a method for defining measurements along linear features for the purpose of linear referencing. Examples of LRMs include continuous stationing in continuous networks and engineering stationing in engineering networks.

LRS

Acronym for linear referencing system, the method of storing geographic locations by using relative positions along a measured linear feature.

LRS Derived Network

A network generated from a Line Network. In a Derived Network, routes that belong to the same line are merged together to create one route with a beginning measure of zero.

LRS Line Network

A logical grouping of routes to a line where the measure can increase or decrease monotonically. This type of network supports events that span routes and also supports equations.

Learn more about LRS Networks

LRS Network (Nonline)

A collection of routes, measured to a specific LRM, in ArcGIS Pipeline Referencing.

Measure

A location along a route based on a distance from a known point of origin.

Point event

An event that represents a single point location on a route at a specific measure.

Project stationing

A system of stationing in which the starting reference station is established at the base of a project location, and all distances along the route centerline are measured from that point location.

Redline

A feature in Pipeline Referencing that can be added to the redline feature class and can be used to communicate desired modifications to the LRS Network. Redline features can be edited using the ArcGIS Event Editor web app.

Referent

A fixed location along a route that has a discrete measure value from which other locations are determined.

Referent offset

A fixed distance from a referent; it can be positive or negative.

Referent offset event

An event whose location is modeled as being a specific distance along a route relative to another event on the route.

Route

A linear LRS feature. In Pipeline Referencing, a route is a run of a physical pipe where measure values are strictly increasing or decreasing monotonically. Routes are polyline features that contain m-measures and are built on centerlines that are polyline features that do not contain m-measures.

Route dominance

Rules configured for each LRS Network used to determine which route is the primary, or dominant, route when there is a concurrency. Configuration of these rules is optional.

Route lock

Route locks are a capability in Pipeline Referencing conflict prevention that allow a user to prevent other users from editing a route and events on a route while the route is being edited. When a route is locked, only the lock owner can edit the route and events on the route in the version the lock was acquired. To release a lock on a route, you must post changes to the route and events on the route to the lock root version.

Station

Reference points with numerical values that are placed along the horizontal measurement of a route, centerline, or baseline at a regular interval. Station numbers increase from west to east or south to north based on the cardinal direction of the overall network.

Stationing

The fundamental system of measurement used by surveyors. For highway or pipeline projects, a starting reference station is first established; then all distances along the route centerline are measured from that point location. Generally, the distance between two adjoining stations along a route is 100 feet. The first station located at the beginning of the baseline is 0+00 and the next station located 100 feet away from it is 1+00. For example, a station number of 10+34.05 depicts 1034.05 feet (10*100 + 34.05) away from the starting station.
