FEATURE CODE SUMMARY

MONTANA
MDT
DEPARTMENT OF TRANSPORTATION

Information in this document is subject to change without notice. The following was developed by and for the Montana Department of Transportation. Its intended use is to assist in the operation of instruments and software according to standards and procedures set by the Montana Department of Transportation.

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GENERAL

The document's intended use is to aid the end user in their effort to complete a Project by providing guidelines for collecting features (data points), while utilizing the current software and hardware of the Data Collection System.

This document will provide the end user with a better understanding of the Data Collection System by supplying them with the current Feature Codes and Attributes.

FEATURE CODES

Feature Codes are a way to describe each individual data point by giving them unique names by their physical features. In addition to the Feature Codes, the data points will be given Attributes for collecting additional information that will further describe the data point.

When collecting data points, there are two distinct types of Feature Codes: Linear & Point Features.

Point Features

Point Features are represented by a single data point. Point Features should be used when a single data point or a small group of data points (not represented by a line) are to be collected.

Linear Features

Linear Features are represented by a series of two or more data points and will be connected together by a line. Make sure to use a Linear Feature if one is warranted, a series of Point Features are not a substitution.

There are also a few features that are single data points but will be collected as a linear feature to show not only the location of the data point but also a direction.

In addition to the feature types, there are two feature categories, DTM Features and non-DTM Features.

DTM Features

DTM Features are those data points that are to be included in the 3D/Digital Terrain Model (DTM) that will represent the shape of the existing surface and will be used to calculate areas or volumes.

When collecting DTM Features, one must make sure to include all horizontal and vertical breaks in the existing surface to assure an accurate representation of the existing terrain.

Non-DTM Features

Non-DTM Features are those data points that are representing items above or below the existing surface and will not be used to calculate volumes.

When collection non-DTM Features, a general rule is that only the horizontal breaks in the existing surface be included for collection purposes. However, if a non-DTM Feature is to be later used as a DTM Feature, it must follow the guidelines for a DTM Feature or the Volumetric results may not be very representative of the existing terrain.

DOCUMENT LAYOUT

The table/field layout is used to display as much information as possible in the space allotted. There is similarity of the tables from feature to feature to assist in displaying the information so that it is easier to understand and access.

Feature Code Field

The Feature Code is used in all aspects of the Data Collection System from the data collector to the processing software to design. It is an abbreviated term representing the collected feature consisting of 2 to 8 characters.

Attributes Field

The Attributes for a Feature Code are unique to each feature and are explained in the specific fields that follow the Attributes. There are three different data types; Text, Numeric and List Fields utilized when entering information into the Attributes' fields.

The **Text Field** is used when the Attribute contains information that will be generic in nature. The user has the flexibility to use any character available when entering the data. String Fields.

The **Numeric Field** is used when the Attribute contains information that will be of a numeric nature. The user is limited to using only numerals and the number of decimals assigned for the specific Attribute field.

The **List Field** is used when the Attribute contains information that will be specific in nature. The user is limited to the given choices for the specific Attribute field. In addition, a choice of other is given when something unexpected or rare is encountered for the Attribute. In this case, the user should further explain by collecting additional information in another manner or format (ie adding comments or notes or by taking digital photos, etc).

Line strings

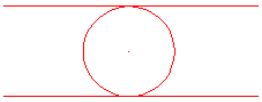
Line Strings give the user the ability to use feature codes with numeric suffixes over and over by beginning and ending lines. You can run as many lines as you desire by increasing the numeric value at the end of your code (EOP02). Line strings also allow for multiple codes for a single shot by inserting a space between them.

Line Control Codes

BL - Starts a new line joining sequence (EOP01 BL).
CL - Closes a line to the first point in the sequence (EOP01 CL).
EL - Ends the line joining sequence (EOP01 EL).
ESC – Ends a smooth curve (EOP01 ESC).
JTP – Joins to a specified point name (JTP 50000).
SOL – Starts an offset line at the specified horizontal offset (EOP01 SOL10).
SSC – Starts a smooth curve. (EOP01 SSC)

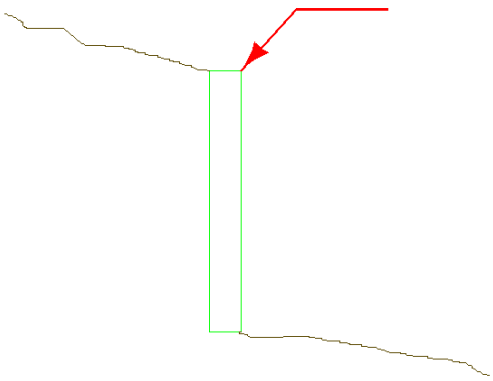
FEATURES

2FACE	Category	Feature Type
	Road	Point (not included in surface)
Description	Sign – Two Face	
General Summary		



This feature is to represent a single-post two-faced sign. The data point collected should represent the center of the post.

ABUT	Category	Feature Type
	Structure	Line (included in surface)
Description	Abutment – Retaining Wall	
General Summary		

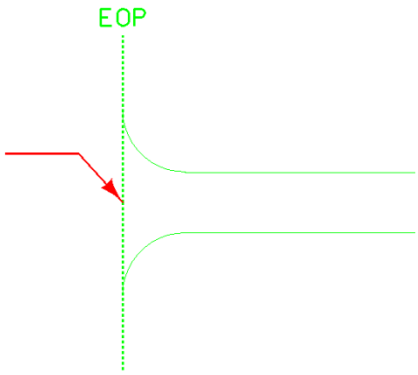


This feature is to represent a concrete abutment or retaining wall. The data points collected should represent the top of the leeward face of the abutment or retaining wall.

Additional data points will need to be collected for the existing ground at both the bottom and top of the concrete abutment/retaining wall.

Attributes	
WIDTH	A Numeric Field used to enter the **Width** of the Abutment or Retaining Wall. Decimals: 2, Units: (FT)

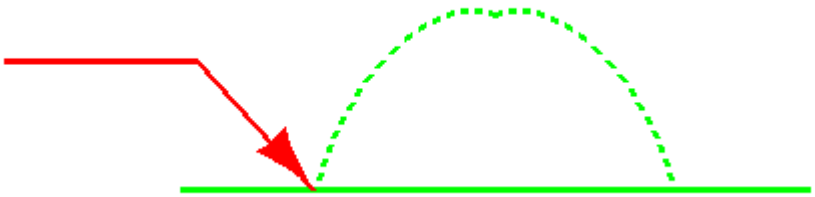
APP	Category	Feature Type
	Road	Point (not included in surface)
Description	Approach	
General Summary		



This feature is to represent an approach. The data point collected should represent the center of the approach at the edge of the Finished Surface.

Attributes	
TYPE	A Menu Field used to select the **Type** of Approach being collected. The values are Farm Field, Public, Private, Urban Driveway and other.

BITCURB	Category	Feature Type
	Road	Line (included in surface)
Description	Bituminous Curb	
General Summary		

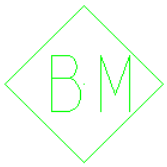


This feature is to represent a bituminous curb. The data points collected should represent the front (centerline side) of the bituminous curb.

Bituminous Curb can be collected in conjunction with guardrail (GRRL), since they should produce the same horizontal line.

BLDG	Category	Feature Type
	Structure	Line (not included in surface)
Description	Building Boundary	
General Summary		
This feature is to represent a building boundary. The data points collected should represent the outside edges (walls/corners) of the building. Make sure to include all irregular shapes and enclose the building boundary as an area.		
Attributes		
NAME/ADDRESS	A String Field used to enter the **Name**, **Owner** or **Address** of the building.	

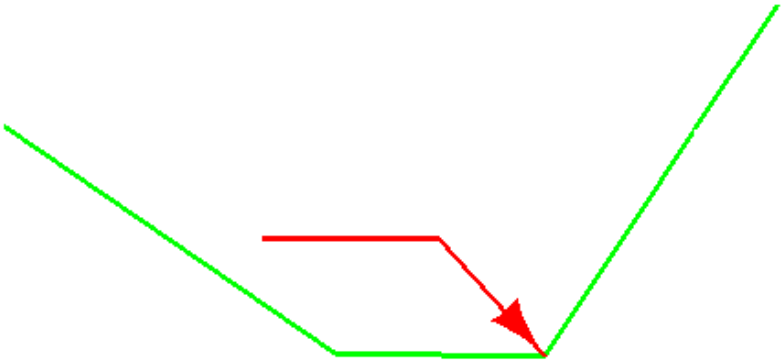
BM	Category	Feature Type
	Survey	Point (not included in surface)
Description	Benchmark	
General Summary		



This feature is to represent a benchmark. The data point collected should represent the top center of the mark.

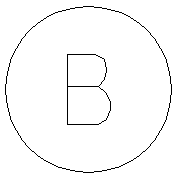
BOB	Category	Feature Type
	Natural	Line (included in surface)
Description	Bottom of Bank	
General Summary		
This feature is to represent a bottom of bank (natural made slope). The data points collected should represent the lower most break of the bank.		

BOD	Category	Feature Type
	Road	Line (included in surface)
Description	Bottom of Ditch	
General Summary		



This feature is to represent the bottom of a ditch section. The data points collected should represent the lower most break of the ditch. In the event the ditch is not a V-ditch, the lower most is usually the farthest from centerline; however, this does not alleviate the need to pick up the front break in the ditch section.

BOLLARD	Category	Feature Type
	Road	Point (not included in surface)
Description	Bollard	
General Summary		



This feature is to represent a bollard or other such barrier. The data point collected should represent the center of the bollard.

Attributes	
DIAMETER	A Numeric Field used to enter the **Diameter** of the Bollard. Decimals: 0, Units: (in)

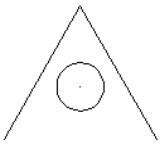
BOS	Category	Feature Type
	Road	Line (included in surface)
Description	Bottom of Slope	
General Summary		
This feature is to represent a bottom of slope (man-made slope). The data points collected should represent the lower most break of the slope.		

BRCOR	Category	Feature Type
	Structure	Line (not included in surface)
Description	Bridge Boundary	
General Summary		
This feature is to represent a bridge boundary. The data points collected should represent the overall shape of the bridge. Include additional collected points as necessary to completely represent the structure for irregular shapes and for curvature. Make sure to enclose the bridge boundary as an area.		

CATGRD	Category	Feature Type
	Barrier	Line (not included in surface)
Description	CATTLEGUARD	
General Summary		

This feature is to represent a cattle guard. The data points collected should represent the outer most edge and center along stationing of the cattle guard grate (see above graphic).

CK	Category	Feature Type
	Construction	Point (not included in surface)
Description	Check Shot	
General Summary		
This feature is to represent a check shot. The data points collected should be collectedat the beginning of a survey and at the end. The data point collected should represent the center of the punch of the traverse (control) point mark of the marker. Naming should be the name of the control point with the prefix CK (ex. CK AB9379)		

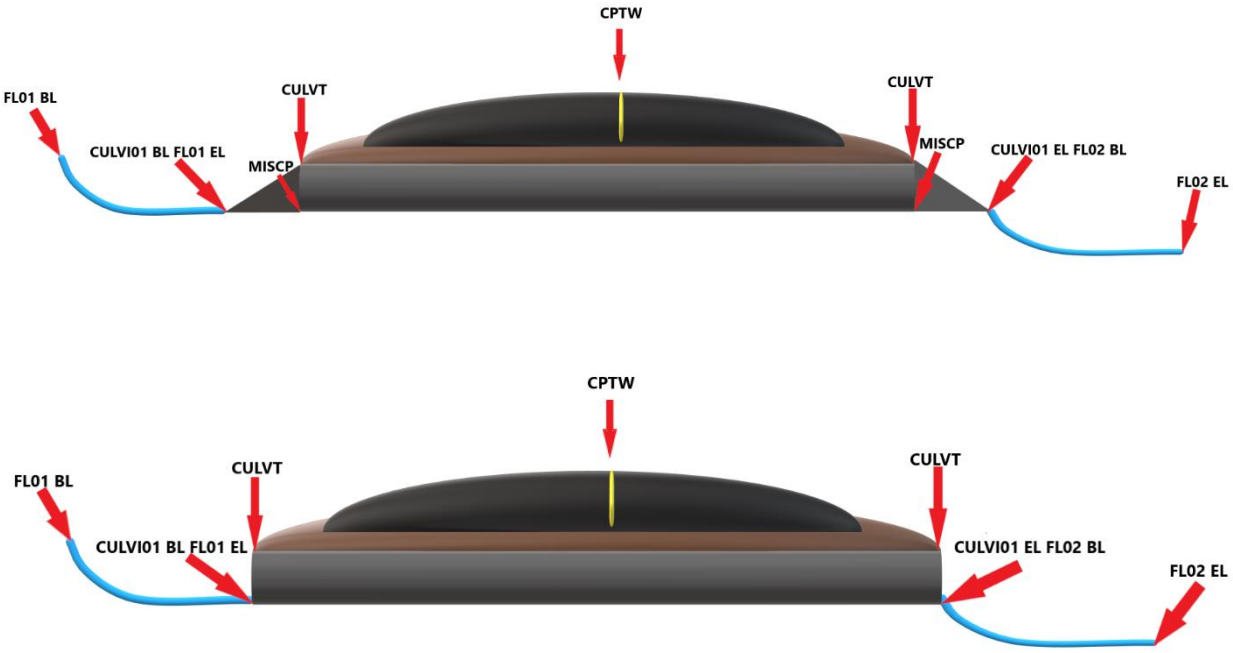
CHEV	Category	Feature Type
	Road	Point (not included in surface)
Description	Sign - Chevron	
General Summary		
 This feature is to represent a chevron sign. The data point collected should represent the center of the post.		
Attributes		
TYPE	A Menu Field used to select the **Type** of Chevron being collected. The values are Dual, Single and other.	

CONC	Category	Feature Type
	Road	Line (included in surface)
Description	Concrete	
General Summary		
This feature is to represent the defining point/edge or the angular breakpoint of concrete. The data points collected should represent all horizontal or vertical changes in the concrete feature being defined.		

CORE	Category	Feature Type
	Miscellaneous	Point (not included in surface)
Description	Drill Hole	
General Summary		
 This feature is to represent a core/drill hole. The data point collected should represent the center of the hole.		

CP	Category	Feature Type
	Construction	Point (included in surface)
Description	Catch Point	
General Summary		
This feature is to represent a position on the ground at the intersection of either the top of a cut or toe of fill area with the existing ground.		

CULVI	Category	Feature Type
	Drainage	Line (not included in surface)
Description	Culvert Invert	
General Summary		



This feature is to represent an end of pipe or culvert invert. The data points collected should represent the outer most edge of the pipe. The end section will be collected as part of the procedure by identifying it in the Attributes.

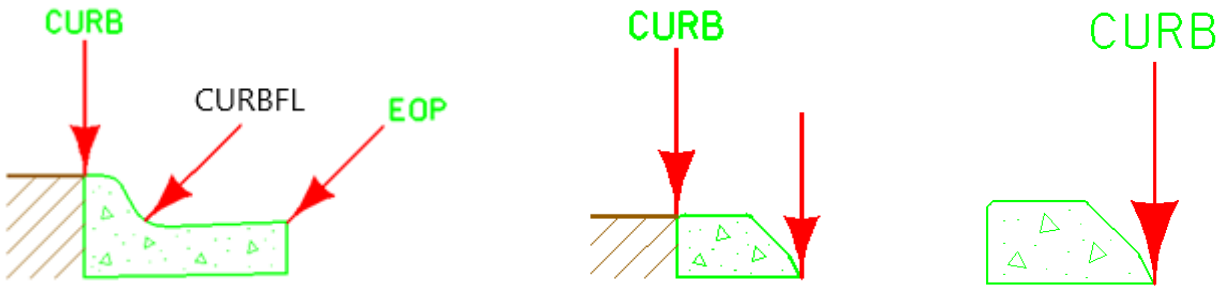
The common data points associated with this feature are centerline of roadway (CPTW), top of culvert/pipe (CULVT), end of pipe/culvert invert (CULVI), end of (MISCP) and a representation of the surrounding surface of the inlet and outlet. The flow lines (FL) do not connect through the culvert; use separate chain codes for each one.

The number of data points collected for the surrounding surface, is dependent on the type of survey requested and on what is to be done to the culvert during the Construction Phase of the Project. In addition, Hydraulics would like pictures of; upstream, culvert face, inside of one end of pipe, inside of other end, face of the other end and downstream.	
Attributes	
TYPE	A Menu Field used to select the **Type** of Culvert being collected. The values are CMP, HDPE, PVC, RCP, SSPP, CMPA, RCPA, SSPPA, RCB – Single Cell, RCB – Double Cell and other.
COATING	A Menu Field used to select the type of **Coating** is on the Culvert being collected. The values are Bituminous and other.
USAGE	A Menu Field used to select the type of **Usage** the Culvert has that is being collected. The values are Drainage, Irrigation, Siphon, Stockpass, and other.
SIZE	A Numeric Field used to enter the **Size-Equivalent** (diameter) of the Culvert. For a RCB or Arch pipe enter the height and the width in the comment field. Decimals: 0, Units: (in)
CULVERT END	A Menu Field used to select the type of **Culvert End** that is at the end of the Culvert being collected. The values are Square, FETS, RACET, Step Bevel, RCB Sloped, RCB Flared and other.
END TREATMENT	A Menu Field used to select the type of **End Treatment** that is at the end of the Culvert being collected. The values are Cutoff Walls and other.
EDGE PROTECTION	A Menu Field used to select the type of **Edge Protection** that is at the end of the Culvert being collected. The values are Concrete, Riprap and other.
DAMAGED END	A Menu Field used to select if there is a **Damaged End** that is at the end of the Culvert being collected, if any. The values are Yes and No.
CLEAN	A Menu Field used to select the type of **Cleaning** that is needed at the end of the Culvert being collected, if any. The values are 0% Full, 25% Full, 50% Full, 75% Full, 100% Full, Buried, Obstruction and other.
COMMENT	A String Field used to enter general comments.
PHOTO	Optional image of the feature.

CULVT	Category	Feature Type
	Drainage	Point (not included in surface)
Description	Top of Culvert	
General Summary		

This feature is to represent the top of culvert or pipe. The data point collected should represent the top edge of the culvert or pipe, excluding the end section.

CURB	Category	Feature Type
	Road	Line (includes in surface)
Description	Curb	
General Summary		



This feature is to represent a curb section. The data points collected should represent the top back of the curb if the curb is back filled (see first and second graphics) and the front face of the curb if there is no back fill (see third graphic).

The first and second graphics represent typical curb & gutter and cast-in-place median curb, respectively. The third graphic is representative for pin-down curb (ie parking lot barriers).

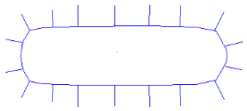
Other data points may be necessary to fully define this feature.

Attributes	
TYPE	A Menu Field used to select the **Type** of Curb being collected. The values are Curb & Gutter, Valley Gutter, Cast-in-Place, Pin-Down, Cut-Off, Standup Curb and other.
COLOR	A Menu Field used to select the **Color** of Curb being collected. The values are None, Yellow, Blue and other.

CURBFL	Category	Feature Type
	Road	Line (included in surface)
DESCRIPTION	Curb Flowline	
GENERAL SUMMARY		
This feature is to represent the flowline of a curb.		

DATAPT	Category	Feature Type
	Miscellaneous	Point (not included in surface)
Description	Misc. Data Point	
General Summary		
This feature is to represent a miscellaneous data point. The data point collected should represent a feature that is secondary data point.		

DTCHBLK	Category	Feature Type
	Drainage	Point (not included in surface)
Description	Ditch Block	
General Summary		



This feature is to represent a ditch block. The data point collected should represent the top center of the ditch block.

Additional grade break information will be necessary to define the ditch block for DTM purposes.

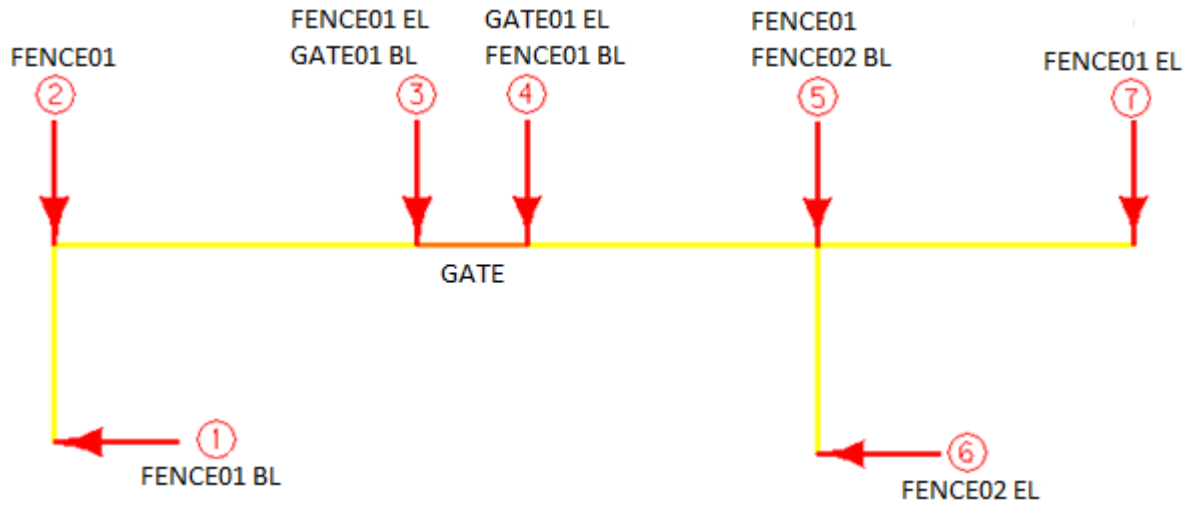
EDGEWAT	Category	Feature Type
	Natural	Line (included in surface)
Description	Edge of Water	
General Summary		
This feature is to represent the edge of water. The data points collected should represent the outer edge of a waterway.		

EOG	Category	Feature Type
	Road	Line (included in surface)
Description	Edge of Road - Gravel	
General Summary		
This feature is to represent a gravel roadway. The data points collected should represent the outer edges of the gravel roadway.		

EOP	Category	Feature Type
	Road	Line (included in surface)
Description	Edge of Road - Pavement	
General Summary		
This feature is to represent a paved roadway. The data points collected should represent the outer edges (top finished surface) of the paved roadway.		

EOT	Category	Feature Type
	Road	Line (included in surface)
Description	Edge of Road - Trail	
General Summary		
This feature is to represent an un-maintained roadway. The data points collected should represent the outer edges of the un-maintained roadway.		

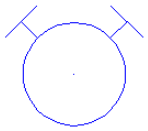
FENCE	Category	Feature Type
	Barrier	Line (not included in surface)
Description	Fence	
General Summary		



This feature is to represent a fence. The data points collected should represent the face of the fence on top of the existing surface. Data points should be collected at center face of posts when encountering changes in direction and fence openings.

Each new fence must have a new feature name for the fence. There must be a space separating the feature name, control code or any other feature code (double coding).

FET	Category	Feature Type
	Drainage	Line (not included in surface)
Description	Fet	
General Summary		
This feature is to represent a culvert fet. The data points collected should represent the beginning center of the fet to the center start of the pipe.		

FH	Category	Feature Type
	Utility	Point (not included in surface)
Description	Fire hydrant	
General Summary		
 This feature is to represent a fire hydrant. The data point collected should represent the center of the fire hydrant at the existing surface.		

FIBERU	Category	Feature Type
	Utility	Line (not included in surface)
Description	Fiber Optic Cable Underground	
General Summary		
This feature is to represent an underground fiber optic cable. The data points collected should represent the painted/flagged marks located on the existing surface.		

FIBERX	Category	Feature Type
	Utility	Line (not included in surface)
Description	Fiber Optic Cable Overhead	
General Summary		
This feature is to represent an overhead fiber optic cable. The data points collected should represent the center of the fiber optic cable. Actual elevations are required for the overhead fiber optic cable.		

FL	Category	Feature Type
	Natural	Line (included in surface)
Description	Flow Line – with flow	
General Summary		
This feature is to represent a flow line. The data points collected should represent the lowest point in the flow area and should be collected in the direction of flow.		

FLU	Category	Feature Type
	Natural	Line (included in surface)
Description	Flow Line – against flow	
General Summary		
This feature is to represent a flow line. The data points collected should represent the lowest point in the flow area and should be collected against the direction of flow.		

GAS	Category	Feature Type
	Utility	Line (not included in surface)
Description	Gas Line Underground	
General Summary		
This feature is to represent an underground gas line. The data points collected should represent the painted/flagged marks located on the existing surface.		

GASM	Category	Feature Type
	Utility	Point (not included in surface)
Description	Gas Meter	
General Summary		

This feature is to represent a gas meter. The data point collected should represent the center of the gas meter.

GASV	Category	Feature Type
	Utility	Point (not included in surface)
Description	Gas Valve	
General Summary		
 This feature is to represent a gas valve. The data point collected should represent the center of the gas valve.		

GATE	Category	Feature Type
	Barrier	Line (not included in surface)
Description	Gate	
General Summary		
This feature is to represent a fence gate. The data points collected should represent the opening of the gate (i.e. center face of fence post).		

GB	Category	Feature Type
	Natural	Line (included in surface)
Description	Grade Break – Break Line	
General Summary		
This feature is to represent a generic break line or grade break. The data points collected should represent the break.		

GRND	Category	Feature Type
	Natural	Point (included in surface)
Description	Ground Shot	
General Summary		
 This feature is to represent a random ground shot or mass point. The data point collected should represent the center of the mass.		

GRRL	Category	Feature Type
	Barrier	Line (not included in surface)
Description	GUARDRAIL	
General Summary		
This feature is to represent guardrail. The data points collected should represent the face of the guardrail at existing surface level. Data points should be collected at post locations to best represent angle points in the guardrail. The end sections are just an extension of the guardrail; therefore, the data points shall be included in the run of guardrail for collection purposes.		
Attributes		
TYPE	A Menu Field used to select the **Type** of the Guardrail being collected. The values are W-Beam, Cable, Box Beam and other.	
HEIGHT	A Numeric Field used to enter the **Height** of the Guardrail. Decimals: 0, Units: (in)	

GUYWIRE	Category	Feature Type
	Utility	Line (not included in surface)
Description	Guy Wire Anchor	
General Summary		
This feature is to represent a guy wire. The data points collected should represent the center of the wire and should be collected with the ground anchor first and the pole connection second. Actual elevations are required for the overhead portion of the guy wire.		
Attributes		

HIWATER	Category	Feature Type
	Natural	Point (not included in surface)
Description	High Water Mark	
General Summary		

This feature is to represent a high water mark. The data point collected should represent the upper most part of the watermark.

Attributes	
WHEN	A String Field used to enter **When** the high water occurred.
WHO	A String Field used to enter **Who** gave the high water occurrence information.

INLET	Category	Feature Type
	Drainage	Point (not included in surface)
Description	Inlet – Square Top	
General Summary		

This feature is to represent a square top inlet. The data point collected should represent the center of the inlet cover/grate. Additional information will be needed to define the concrete perimeter.

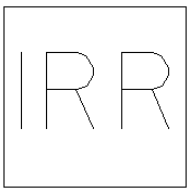
An Inlet can be in conjunction with a manhole; therefore, two data points may need to be collected, one for the Inlet and one for the Manhole (ie MHSD).

INLETR	Category	Feature Type
	Drainage	Point (not included in surface)
Description	Inlet – Round Top	
General Summary		

This feature is to represent a round top inlet. The data point collected should represent the center of the inlet cover/grate. Additional information will be needed to define the concrete perimeter.

An Inlet can be in conjunction with a manhole; therefore, two data points may need to be collected, one for the Inlet and one for the Manhole (ie MHSD).

IRR	Category	Feature Type
	Drainage	Point (not included in surface)
Description	Irrigation Feature	
General Summary		



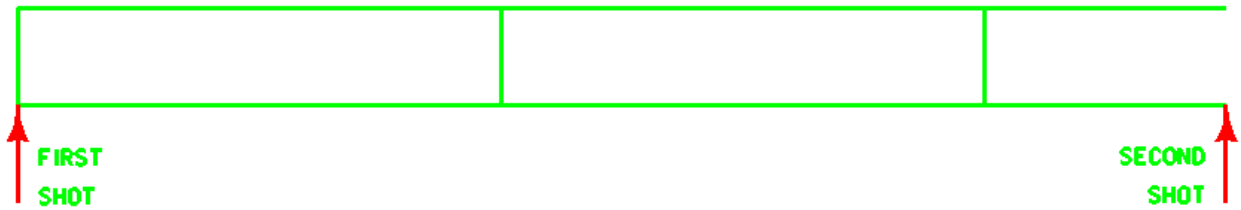
This feature is to represent an irrigation structure. The data point collected should represent the top center of the irrigation structure. Additional information will be needed to define the concrete perimeter.

ISLAND	Category	Feature Type
	Misc	Line (included in surface)
Description	DTM Island	
General Summary		

This feature is to represent a DTM island boundary. A DTM island is an area that contains data on the inside of the boundary and not on the outside. Can be used inside an obscure area.

The data points collected should represent the outer most data points of the area being collected. Make sure to enclose the DTM island boundary as an area. Multiple boundaries may be utilized in one project, if the areas to be collected are not adjacent to one another.

JRRL	Category	Feature Type
	Barrier	Line (not included in surface)
Description	Jersey Rail	
General Summary		



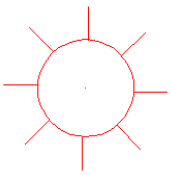
This feature is to represent Jersey rail. The data points collected should represent one face of the Jersey rail at the existing surface level.

The transition section is used to taper from standard to tall types of Jersey rail as well as to other types of connections. The transition section will need two data points, one for each end.

For design purposes, this feature is non-symmetrical; therefore, make sure to collect data points for the same face of rail or transpose the appropriate chain segments so that they go in the same direction.

Attributes	
TYPE	A Menu Field used to select the **Type** of the Jersey Rail being collected. The values are Portable, Cast-in-Place and other.
HEIGHT	A Menu Field used to select the **Height** of the Jersey Rail being collected. The values are Standard, Tall and other.
END SECTION	A Menu Field used to select the **End Section** of the Jersey Rail being collected. The values are Impact Attenuator, Tapered End, Transition Section and other.

LIGHT	Category	Feature Type
	Utility	Point (not included in surface)
Description	Light Pole	
General Summary		



This feature is to represent a light pole. The data point collected should represent the center of the light pole.

LOWBEAM	Category	Feature Type
	Structure	Point (not included in surface)
Description	Low Beam	

General Summary

This feature is to represent the low beam elevation of a structure.

There may be numerous data points for the low beam on any given structure. Low beam data points should be collected for, but not limited to, the following locations: in close proximity to the centerline of PTW or individual RR rails; waterway crossings; multi-level or curved structures (both horizontal & vertical).

If uncertain if a beam is on grade or if in a curved or spiraled section, collect data points near each end of each beam.

MAIL	Category	Feature Type
	Road	Point (not included in surface)
Description	Mailbox	

General Summary

This feature is to represent a mailbox. The data point collected should represent the center of the post for a single-post or the center of the conglomeration of mailboxes for a multi-post.

MH	Category	Feature Type
	Utility	Point (not included in surface)
Description	Manhole – Misc.	

General Summary

This feature is to represent a generic manhole. The data point collected should represent the top center of the manhole lid or opening.

MHELEC	Category	Feature Type
	Utility	Point (not included in surface)
Description	Manhole - Electrical	
General Summary		

This feature is to represent an electrical manhole. The data point collected should represent the top center of the manhole lid or opening.

MHSD	Category	Feature Type
	Utility	Point (not included in surface)
Description	Manhole – Storm Drain	
General Summary		

This feature is to represent a storm drain manhole. The data point collected should represent the top center of the manhole lid or opening.

MHSS	Category	Feature Type
	Utility	Point (not included in surface)
Description	Manhole – Sanitary Sewer	
General Summary		

This feature is to represent a sanitary sewer manhole. The data point collected should represent the top center of the manhole lid or opening.

MHTEL	Category	Feature Type
	Utility	Point (not included in surface)
Description	Manhole - Telephone	
General Summary		

This feature is to represent a telephone manhole. The data point collected should represent the top center of the manhole lid or opening.

MILEP	Category	Feature Type
	Road	Point (not included in surface)
Description	Mile Post	
General Summary		

This feature is to represent a milepost sign. The data point collected should represent the center of the pole.

Attributes

MISCAB	Category	Feature Type
	Utility	Line (not included in surface)
Description	Missile Cable	
General Summary		

This feature is to represent a missile cable. The data points collected should represent the painted/flagged marks located on the existing surface.

MISCDL	Category	Feature Type
	Miscellaneous	Line (included in surface)
Description	Misc. DTM Line	
General Summary		
This feature is to represent a generic DTM feature. The data points collected should represent the break.		

MISCDP	Category	Feature Type
	Miscellaneous	Point (included in surface)
Description	Misc. DTM Point	
General Summary		
 This feature is to represent a generic DTM point. The data point collected should represent the center of the mass.		

MISCL	Category	Feature Type
	Miscellaneous	Line (not included in surface)
Description	Misc. Non-DTM Line	
General Summary		
This feature is to represent a generic non-DTM feature. The data points collected should represent the break.		

MISCP	Category	Feature Type
	Miscellaneous	Point (not included in surface)
Description	Misc. Non-DTM Point	
General Summary		

This feature is to represent a generic non-DTM point. The data point collected should represent the center of the mass.

OBSCURE	Category	Feature Type
	Miscellaneous	Line (included in surface)
Description	Obscure Area	
General Summary		

This feature is to represent a DTM obscure boundary. A DTM obscure area (void) is an area that contains data on the outside of the boundary, but not on the inside.

The data points collected should represent the outer most data points of the area being collected. Make sure to enclose the DTM obscure boundary as an area. Multiple boundaries may be utilized in one project if the areas to be collected are not adjacent to one another.

PEDBASE	Category	Feature Type
	Utility	Line (not included in surface)
Description	Pedestal Base	
General Summary		

This feature is to represent a pedestal base or any other base that needs to be collected (Light or Signal Poles). The data points collected should represent the outer edge of the pedestal base. Make sure to enclose the pedestal base as an area.

PEDXING	Category	Feature Type
	Utility	Point (not included in surface)
Description	Pedestrian Crossing	
General Summary		

This feature is to represent a pedestrian crossing. The data point collected should represent the center of the pole/post.

PM	Category	Feature Type
	Survey	Point (not included in surface)
Description	Project Marker	
General Summary		

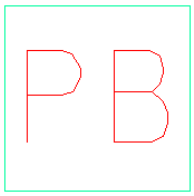
This feature is to represent a project marker. The data point collected should represent the top center of the marker.

PRKMETER	Category	Feature Type
	Road	Point (not included in surface)
Description	Parking Meter	
General Summary		

This feature is to represent a parking meter. The data point collected should represent the center of the post.

PTW	Category	Feature Type
	Road	Line (included in surface)
Description	PTW – Centerline	
General Summary		
This feature is to represent the centerline of the PTW. The data points collected should represent the break located at or near the centerline.		

PULLBOX, PULLBOXF, PULLBOXPWRM	Category	Feature Type
	Utility	Point (not included in surface)
Description	Pull Box, Pull Box – Fiber, Pull Box - Power	
General Summary		



This feature is to represent a service pull box. The data point collected should represent the top center of the pull box lid.

PVTMARK	Category	Feature Type
	Road	Line (included in surface)
Description	Pavement Markings	
General Summary		
This feature is to represent the pavement striping. The striping data points collected should represent the center of the stripe.		
Attributes		
WIDTH	A Numeric Field used to enter the **Width** of the Striping. The values are 4”, 6”, 8”, 12” and 24”.	
COLOR	A Menu Field used to select the **Color** of the Pavement Marking being collected. The values are White, Yellow and other.	
STRIPING	A Menu Field used to select the **Striping** type of the Pavement Marking being collected. The values are Skip, Solid, Crosswalk, Stop Bar, Diagonal, Chevron and other.	
MATL TYPE	A Menu Field used to select the **Material Type** of the Pavement Marking being collected. The values are Paint, Tape, Inlaid and other.	

PVTSYM	Category	Feature Type
	Road	Point (included in surface)
Description	Pavement Symbol	
General Summary		

This feature is to represent pavement markings. The striping data points collected should represent the center of the symbol.

Attributes	
COLOR	A Menu Field used to select the **Color** of the Pavement Marking being collected. The values are White, Yellow, Blue and other.
SYMBOL	A Menu Field used to select the **Symbol** of the Pavement Marking being collected. The values are Left Turn Arrow, Right Turn Arrow, Straight Arrow, Combination (LT-Straight), Combination (RT-Straight), Railroad Crossing, Bike Lane, Handicapped, Sharrow (Shared Use), Directional Arrow, Ramp Arrow, Lane Reduction Arrow, Yield Triangle, Speed Hump, Preferential Lane and Other.
TEXT	A Menu Field used to select the **Text** of the Pavement Marking being collected. The values are Only, Left, Right, Lane, Turn, Stop, Ahead, School, Bus and Other.

PWRPED, CPED, FPED, TELPED	Category	Feature Type
	Utility	Point (not included in surface)

Description	Power Pedestal, Cable Pedestal, Telephone Pedestal

General Summary

This feature is to represent a power pedestal. The data point collected should represent the center of the power pedestal.

PWRU	Category	Feature Type
	Utility	Line (not included in surface)

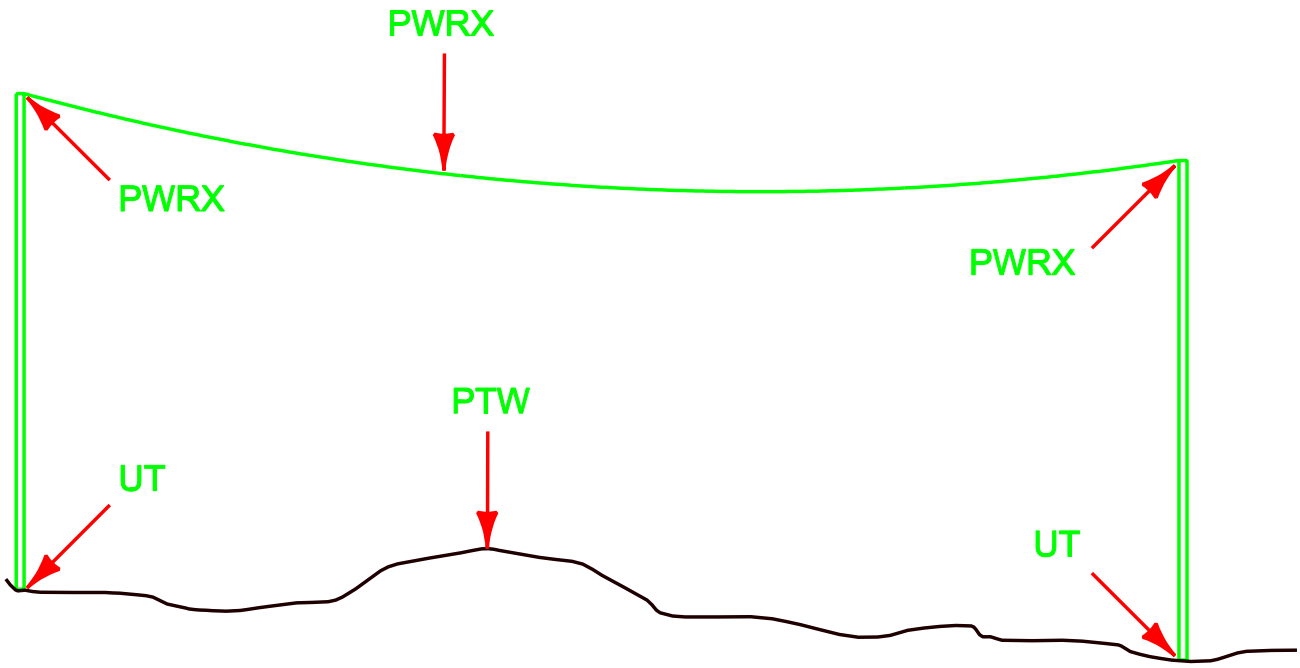
Description	Powerline Underground

General Summary

This feature is to represent an underground power cable. The data points collected should represent the painted/flagged marks located on the existing surface.

Attributes	
COMMENT	A String Field used to enter general comments.
PHOTO	Optional image of the feature.

PWRX	Category	Feature Type
	Utility	Line (not included in surface)
Description	Overhead Powerline	
General Summary		



When collecting data points for a power line (or similar) crossing, collect the data points as indicated in the above graphic. This feature is to represent an overhead power cable. The data points collected should represent the center of the power cable. Actual elevations are required for the overhead power line.

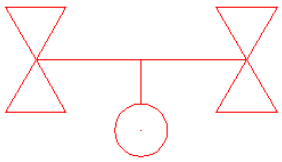
Attributes	
NUMBER OF WIRES	A Numeric Field used to enter the number of wires on the pole.

RIPRAP	Category	Feature Type
	Drainage	Line (included in surface)
Description	Riprap Boundary	
General Summary		
This feature is to represent a riprap boundary. The data points collected should represent the outer most data points of the area being collected. Make sure to enclose the riprap boundary as an area.		

RP	Category	Feature Type
	Construction	Point (not included in surface)
Description	REFERENCE POINT	
General Summary		
This feature is to represent a point that references another point at a certain distance.		

RRCL	Category	Feature Type
	Road	Line (not include in surface)
Description	RR Centerline	
General Summary		
This feature is to represent the centerline of the railway/rail road. The data points collected should represent the center of the tracks of the railway/rail road.		

RRCRL	Category	Feature Type
	Road/RR	Point (not include in surface)
Description	RR Crossing Light	
General Summary		



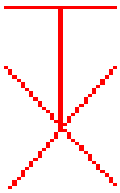
This feature is to represent a railroad crossing light. The data point collected should represent the center of the pole.

RRRAIL	Category	Feature Type
	Road/RR	Line (not include in surface)
Description	RR Rail - Top	
General Summary		

This feature is to represent the rail of the railway/rail road. The data points collected should represent the top center of each track of the railway/rail road.

This feature is only necessary where it crosses under an existing structure and at a minimum shall consist of three evenly spaced data points (approximately 30 feet apart) on each side of and one directly underneath the structure for a total of seven data points per rail.

RRSW	Category	Feature Type
	Road	Point (not included in surface)
Description	RR Switch	
General Summary		



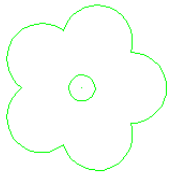
This feature is to represent a railroad switch. The data point collected should represent the center of the switch mechanism.

SANSEW	Category	Feature Type
	Utility	Point (not included in surface)
Description	Sanitary Sewer Line	
General Summary		

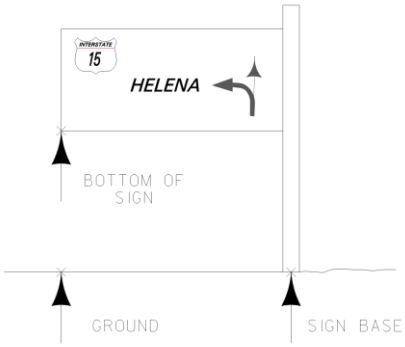
This feature is to represent an underground sanitary sewer line. The data points collected should represent the invert elevations at all locations accessible through manholes, inlets, etc.

SHLD	Category	Feature Type
	Road	Line (included in surface)
Description	Shoulder	
General Summary		

This feature is to represent the shoulder of the roadway section. The data points collected should represent the break defined by the shoulder.

SHRUB	Category	Feature Type
	Natural	Point (not included in surface)
Description	SHRUB	
General Summary		
 This feature is to represent a shrub. The data point collected should represent the center of the shrub.		

SIGNC	Category	Feature Type
	Road	Line (not included in surface)
Description	Sign - Cantilever	
General Summary		



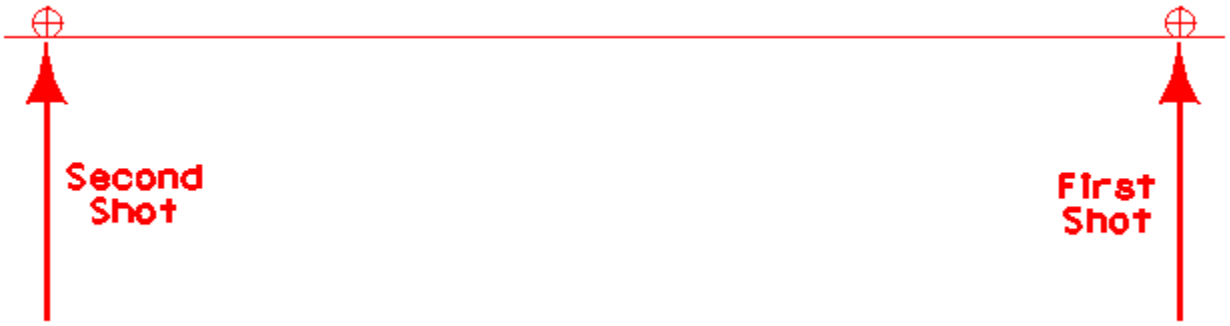
This feature is to represent a cantilever or overhead sign. The data points collected should represent the center of signpost, existing surface level, and the bottom of sign.

When collecting data points for a cantilever sign, collect the data points as indicated in the above graphic.

Attributes	
TYPE	A Menu Field used to select the **Type** of the Cantilever Sign being collected. The values are Guide, Regulatory, Warning and other.
TEXT	A String Field used to enter the sign **Text**.
POST	A Menu Field used to select the **Post** type of the Cantilever Sign being collected. The values are Metal, Wood, Pole Mount and other.
POST SIZE	A Numeric Field used to enter the **Post Size** of the Post. Decimals: 0, Units: (in)

SIGNM	Category	Feature Type
	Road	Line (not include in surface)
Description	Sign – Multi Post	

General Summary

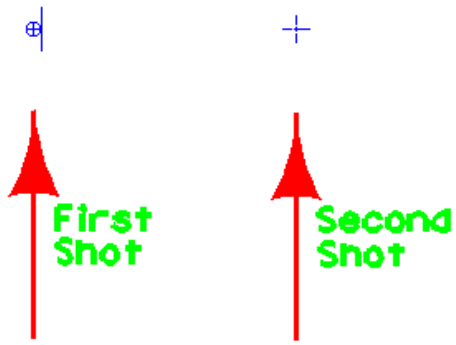


This feature is to represent a multi-post sign. The data points collected should represent the center of each signpost.

Multi-post signs shall be collected in a right to left manner when facing the sign (ie able to read the sign text). See above graphic.

Attributes	
TYPE	A Menu Field used to select the **Type** of the Multi-post Sign being collected. The values are Guide, Regulatory, Warning and other.
TEXT	A String Field used to enter the sign **Text**.
POST	A Menu Field used to select the **Post** type of the Multi-post Sign being collected. The values are Metal, Wood, Pole Mount and other.
POST SIZE	A Numeric Field used to enter the **Post Size** of the Post. Decimals: 0, Units: (in)

SIGNS	Category	Feature Type
	Road	Line (not included in surface)
Description	Sign – Single Post	
General Summary		



This feature is to represent a single-post sign. The data points collected should represent first, the location of the center of the sign post and second, the direction the sign is facing. The second (directional "SIGNS" point) can be as easy as taking one pace in the direction away from the sign face. See above graphic.

The second data point should use the Feature Code SIGNS.

Attributes	
TYPE	A Menu Field used to select the **Type** of the Single-post Sign being collected. The values are Guide, Regulatory, Warning and other.
TEXT	A String Field used to enter the sign **Text**.
POST	A Menu Field used to select the **Post** type of the Single-post Sign being collected. The values are Metal, Wood, Pole Mount and other.
POST SIZE	A Numeric Field used to enter the **Post Size** of the Post relative to the type of Post. Decimals: 0, Units: (in)
BREAK-AWAY	A Menu Field used to select if there is a **Break-Away** on the Sign being collected, if any. The values are Yes and No.

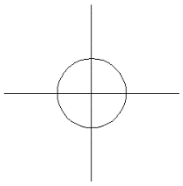
SM	Category	Feature Type
	Survey	Point (not included in surface)
Description	Station Marker	
General Summary		

This feature is to represent a station marker. The data point collected should represent the top center of the station marker.

SNOWF	Category	Feature Type
	Barrier	Line (not included in surface)
Description	Snow Fence	
General Summary		

This feature is to represent a snow fence. The data points collected should represent the face of the fence on top of the existing surface. Data points should be collected at center face of posts when collecting changes in direction.

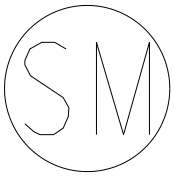
STID	Category	Feature Type
	Road	Point (not included in surface)
Description	Sign – Streat ID	
General Summary		



This feature is to represent a street ID sign. The data point collected should represent the center of the post.

Attributes	
TEXT	A String Field used to enter replaceable **Text**.
MOUNT TYPE	A Menu Field used to select the **Mount Type** of the Street ID Sign being collected. The values are Ground, Overhead and other.

STRMDR	Category	Feature Type
	Utility	Line (not included in surface)
Description	Storm Drain Line	
General Summary		
This feature is to represent an underground storm drain line. The data points collected should represent the invert elevations at all locations accessible through manholes, inlets, etc.		
Attributes		
SIZE	A Numeric Field used to enter the inside **Size** (diameter) of the Lateral or Trunk Lines as measured at a manhole or inlet. Decimals: 0, Units: (in)	

SURV	Category	Feature Type
	Survey	Point (not included in surface)
Description	SURVEY MONUMENT	
General Summary		
 This feature is to represent a generic survey monument. The data point collected should represent the center of the punch mark if one exists or the center of the monument if not.		

SW	Category	Feature Type
	Road	Line (included in surface)
Description	Sidewalk	
General Summary		
This feature is to represent the top edge of a concrete sidewalk. The data points collected should represent the top edge of the concrete.		

TANK	Category	Feature Type
	Structure	Point (not included in surface)
Description	Storage Tank - Round	
General Summary		

This feature is to represent a round storage tank. The data point collected should represent the center of the tank.

TANKSH	Category	Feature Type
	Structure	Line (not included in surface)
Description	Storage Tank - Shape	
General Summary		
This feature is to represent a storage tank shape. The data points collected should represent the outer most edge of the tank. Make sure to enclose the tank shape as an area.		

TELPED, PWRPED, CPED, FPED,	Category	Feature Type
	Utility	Point (not included in surface)
Description	Telephone Pedestal, Power Pedestal, Cable Pedestal, Fiber Pedestal	
General Summary		

This feature is to represent a telephone pedestal. The data point collected should represent the center of the pedestal.

TELU	Category	Feature Type
	Utility	Line (not included in surface)
Description	Telephone Line - Underground	
General Summary		
This feature is to represent an underground telephone line. The data points collected should represent the painted/flagged marks located on the existing surface.		

TELX	Category	Feature Type
	Utility	Line (do not include in surface)
Description	Telephone Line - Overhead	
General Summary		
This feature is to represent an overhead telephone line. The data points collected should represent the center of the telephone line. Actual elevations are required for the overhead telephone line.		

THALWEG	Category	Feature Type
	Natural	Line (included in surface)
Description	Thalweg of Waterway	
General Summary		
This feature is to represent the thalweg of a waterway. The data points collected should represent the lowest point of the waterway.		
Attributes		
WATERWAY NAME	A String Field used to enter the **Waterway Name** given to the waterway being collected.	

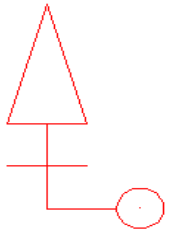
TOB	Category	Feature Type
	Natural	Line (included in surface)
Description	Top of Bank	
General Summary		
This feature is to represent a top of bank (natural made slope). The data points collected should represent the upper most break of the bank.		

TOS	Category	Feature Type
	Road	Line (included in surface)
Description	Top of Slope	
General Summary		
This feature is to represent a top of slope (man-made slope). The data points collected should represent the upper most break of the slope.		

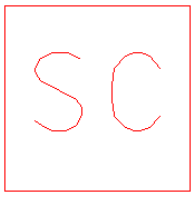
TOWER	Category	Feature Type
	Utility	Point (do not include in surface)
Description	TOWER FEATURE	
General Summary		

This feature is to represent a tower feature. The data point collected should represent the center of the tower.

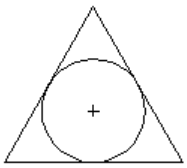
TRAF	Category	Feature Type
	Utility	Point (not included in surface)
Description	Traffic Signal	
General Summary		



This feature is to represent a traffic signal/light. The data point collected should represent the center of the pole.

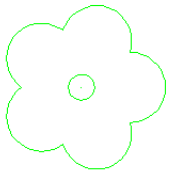
TRAFBOX	Category	Feature Type
	Utility	Point (not included in surface)
Description	Traffic Signal Controller Box	
General Summary		
 This feature is to represent a traffic/signal controller box. The data point collected should represent the center of the box.		
Attributes		
BOX NUMBER	A String Field used to enter the **Box Number** found on the Traffic Signal/Controller Box.	
COMMENT	A String Field used to enter general comments.	
PHOTO	Optional image of the feature.	

TRAV	Category	Feature Type
	Survey	Point (not included in surface)
Description	TRAVERSE MARKER	
General Summary		



This feature is to represent a traverse (control) point. The data point collected should represent the center of the punch mark of the marker.

TREE	Category	Feature Type
	Natural	Point (not included in surface)
Description	Tree	
General Summary		



This feature is to represent a tree. The data point collected should represent the center of the tree.

Attributes	
SPECIES	A Menu Field used to select the **Species** of the Tree being collected. The values are deciduous and evergreen.
TOTAL HEIGHT	A Numeric Field used to enter the **Total Height** of the Tree. Decimals: 0, Units: (FT)
TRUCK DIAMETER	A Numeric Field used to enter the **Trunk Diameter** of the Tree. Decimals: 1, Units: (FT)
CANOPY RADIUS	A Numeric Field used to enter the **Canopy Radius** of the Tree. Decimals: 0, Units: (FT)

TREELN	Category	Feature Type
	Natural	Line (not included in surface)
Description	Tree Line Boundary	
General Summary		

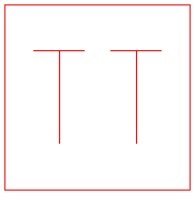
This feature is to represent a tree line boundary. The data points collected should represent the outer most data points of the area being collected. Make sure to enclose the tree line boundary as an area if applicable. See above graphic.

Note that the line is non-symmetrical; therefore, the data points will need to be collected so that trees are enclosed on the appropriate side of the line. See above graphic.

TREEROW	Category	Feature Type
	Natural	Line (not included in surface)
Description	Tree Row	
General Summary		

This feature is to represent a tree row. The data points collected should represent the center of the tree row.

TRNSTWR	Category	Feature Type
	Utility	Point (not included in surface)
Description	Transmission Tower	
General Summary		

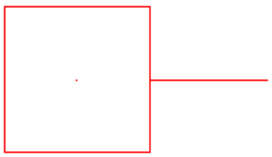


This feature is to represent a transmission tower. The data point collected should represent the center of the tower.

TVU	Category	Feature Type
	Utility	Line (not included in surface)
Description	Cable TV - Underground	
General Summary		
This feature is to represent an underground cable TV. The data points collected should represent the painted/flagged marks located on the existing surface.		

UHS	Category	Feature Type
	Miscellaneous	Line (not included in surface)
Description	Hazard Site – Underground	
General Summary		
This feature is to represent an underground hazard site. The data points collected should represent the outer most data points of the area being collected. Make sure to enclose the underground hazard site as an area if applicable.		

UT	Category	Feature Type
	Utility	Point (not included in surface)
Description	Utility Pole	
General Summary		



This feature is to represent all utility poles. The data point collected should represent the center of the pole.

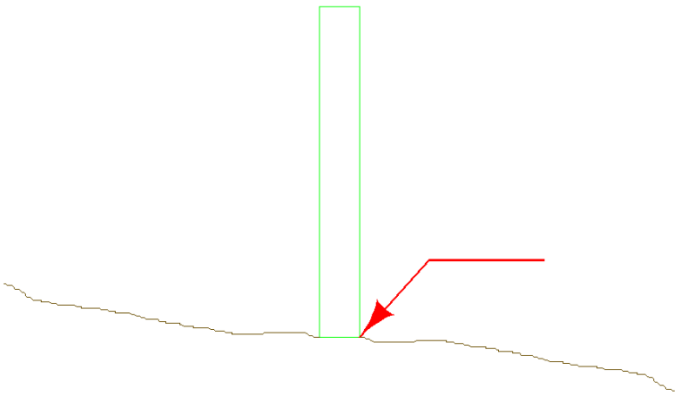
VALVE	Category	Feature Type
	Utility	Point (not included in surface)
Description	Valve – Misc.	
General Summary		

This feature is to represent a generic valve. The data point collected should represent the center of the valve.

VEG	Category	Feature Type
	Natural	Line (not included in surface)
Description	Vegetation Boundary	
General Summary		

This feature is to represent a vegetation boundary. The data points collected should represent the outer most data points of the area being collected. Make sure to enclose the vegetation boundary as an area if applicable.

WALL	Category	Feature Type
	Structure	Line (not included in surface)
Description	Wall – Free Standing	
General Summary		

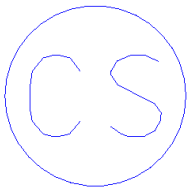


This feature is to represent a freestanding wall. The data points collected should represent the bottom of the freestanding wall.

In some situations, an actual elevation may be desirable for the top of the wall.

Attributes	
TYPE	A Menu Field used to select the **Type** of the Wall being collected. The values are Concrete, Wood, Metal and Other.
HEIGHT	A Numeric Field used to enter the **Height** of the Wall. Decimals: 0, Units: (FT)
WIDTH	A Numeric Field used to enter the **Width** of the Wall. Decimals: 0, Units: (FT)

WATCS	Category	Feature Type
	Utility	Point (not included in surface)
Description	Water Curb Stop	
General Summary		



This feature is to represent a water curb stop. The data point collected should represent the center of the water curb stop.

WATER	Category	Feature Type
	Utility	Line (not included in surface)
Description	Waterline - Underground	
General Summary		
This feature is to represent an underground water line. The data points collected should represent the painted/flagged marks located on the existing surface.		
Attributes		
TYPE	A Menu Field used to select the **Type** of the Water Line being collected. The values are Main, Service Line and other.	

WATHYD	Category	Feature Type
	Utility	Point (not included in surface)
Description	Water Hydrant	
General Summary		

This feature is to represent a water hydrant. The data point collected should represent the center of the water hydrant.

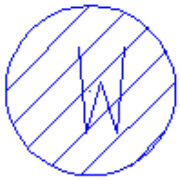
WATM	Category	Feature Type
	Utility	Point (not included in surface)
Description	Water Meter	
General Summary		

This feature is to represent a water meter. The data point collected should represent the center of the water meter.

WATV	Category	Feature Type
	Utility	Point (not include in surface)
Description	Water Valve	
General Summary		

This feature is to represent a water valve. The data point collected should represent the center of the water valve.

WELL	Category	Feature Type
	Utility	Point (not included in surface)
Description	Well	
General Summary		



This feature is to represent a well. The data point collected should represent the center of the well.

WETLB	Category	Feature Type
	Natural	Line (included in surface)
Description	Wetland Boundary	
General Summary		
This feature is to represent a wetland boundary. The data points collected should represent the outer most data points of the area being collected. Make sure to enclose the wetland boundary as an area if applicable.		

XSECT	Category	Feature Type
	Miscellaneous	Line (not included in surface)
Description	CROSS-SECTION LINE	
General Summary		
This feature is to represent a generic cross section line. The data points collected should represent the best possible straight line perpendicular to the base line. For the purpose of Hydraulic X-Sections, the actual Feature Codes for the break lines that are crossed should be used (TOB, BOB, EDGEWAT, THALWEG, etc.)		