



SURVEY FEATURE CODES

April 2023

TDOT Survey Feature Codes

TRANSPORTATION FEATURES		
Feature Code	Description	IN DTM
BE	Business Entrance	Y-2
BIKE	Bike Path	Y-2
CU	Curb (At Bottom W/BL At Top)	Y-2
DR	Driveway	Y-2
EP	Edge of Pavement	Y-2
FE	Field Entrance	Y-2
GRCB	Cable Barrier	NO
GRM	Guardrail Median	NO
GRL	Guardrail Left	NO
GRR	Guardrail Right	NO
IMP	Impact Attenuator	Y-1
JB	Jersey Barrier	Y-2
PK	Parking Lot	Y-2
RD	Edge of Road	Y-2
RR	Railroad	Y-2
RWAY	Airport Runway	Y-2
RWT	Ret. Wall (At Bottom W/BL At Top)	Y-2
RWTWF	Ret. Wall W/Fence (At Bottom W/BL At Top)	Y-2
SWT	Sidewalk	Y-2
SH	Edge Of Shoulder	Y-2
TRAIL	Trail	Y-2
TUN	Tunnel	NO
XHRAMP	Handicap Curb Opening	NO
XRRSW	Railroad Switch	Y-1

NON-TRANSPORTATION FEATURES		
Feature Code	Description	IN DTM
AFLD	Athletic Field	Y-2
BC	Building	Y-4
CNPY	Fuel/Service Station Canopy	NO
CG	Cattle Guard	Y-1
CEM	Cemetery	Y-1
FN	Fence	Y-1
GATE	Gate	Y-1
GRAVE	Grave	Y-1

NON-TRANSPORTATION FEATURES		
Feature Code	Description	IN DTM
PAD	Miscellaneous Pad	Y-2
PIT	Quarry or Pit	Y-2
ROCKWL	Rock Wall Left	Y-2
ROCKWR	Rock Wall Right	Y-2
RWP	Ret. Wall (Private) (AT BOTTOM W/BL AT TOP)	Y-2
RWPWF	Ret. Wall W/Fence (AT BOTTOM W/BL AT TOP)	Y-2
SEP	Septic Field Line	Y-1
SIGNP	Sign (Private)	NO
SWP	Sidewalk (Private)	Y-2
TANK	Tank (UG or Above Ground)	NO
TOWER	Tower	Y-1
XFE	Floor Elevation	NO
XFLAG	Flag Pole	Y-1
XFP	Fence Post	Y-1
XMB	Mail Box	Y-1
XSATLIT	Satellite Dish	Y-1
XSEP	Septic Tank	Y-1
XSIGNP	Small Private 1-Post Sign	Y-1
XWELL	Well	NO

DRAINAGE		
Feature Code	Description	IN DTM
ABUT	Bridge Abutment	Y-2
APRON	Paved Apron	Y-2
BEAM	Bridge Bottom Beam	NO
BRI	Bridge	NO
CRK	Creek	Y-2
CRKB	Creek Bed	Y-2
CV	Culvert	Y-1
DAM	Dam	Y-2
DECK	Bridge Deck breaklines	NO
DIT	Paved Ditch	Y-2
DOWN	Downstream Flood Section	NO
EW	End Wall (At Bottom W/BL At Top)	Y-2
GAGE	Stream Gage	Y-1
LAKE	Lake	Y-2
LEVEE	Levee	Y-2

DRAINAGE		
Feature Code	Description	IN DTM
PIER	Bridge Pier	Y-2
PIPE	Pipe	Y-1
POND	Pond	Y-2
RIVER	River	Y-2
RPDS	Rapids/Waterfall	Y-2
RRAP	Rip-Rap	Y-2
SINK	Sinkhole	Y-2
SPILL	Spillway	Y-2
?STS	Storm Sewer	NO
SKE	Bridge Sketch	NO
TB	Top Of Bank	Y-2
UP	Upstream Flood Section	NO
WET	Wetland Boundary	Y-2
XBOTST	Bottom Of Storm MH, CB, Etc	NO
XCB	Catch Basin	Y-1
XDECK	Bridge Deck	NO
XDI	Drop Inlet	Y-1
XHW	High Water Elevation Point	Y-2
XNW	Normal Water Elevation Point	Y-2
XOHW	Ordinary High Water Mark	NO
XSPRING	Spring	Y-1
XMHSTS	Storm Sewer Manhole	Y-1

R.O.W./PROPERTY		
Feature Code	Description	IN DTM
ESMT	Easement	NO
ESMTD	Drainage Easement	NO
PARCEL	Parcels	NO
PL	Property Line	NO
PLWF	PL W/Fence	NO
ROW	ROW Line	NO
ROWWF	ROW W/Fence	NO
XIP	Iron Pin Existing	NO
XMON	Concrete Marker	NO
XPL	Property Corner	NO
XROW	R.O.W. Monument	NO
XROWA	R.O.W. Monument (inline)	NO

R.O.W./PROPERTY		
Feature Code	Description	IN DTM
XROWB	R.O.W. Monument (corner)	NO

POLITICAL BOUNDARIES		
Feature Code	Description	IN DTM
CITY	City Limits	NO
COUNTY	County Line	NO
STATE	State Line	NO

UTILITIES		
Feature Code	Description	IN DTM
?GL	Gas Line	NO
OHW	Overhead Wire	NO
PTOW	Trans. Tower	Y-1
?SAS	Sanitary Sewer	NO
?FMS	Force Main Sanitary Sewer	NO
XBOTSA	Bottom Of Sanitary Manhole	NO
XCA	SUE Level-A Cable Point	NO
XEA	SUE Level-A Electric Point	NO
XFOA	SUE Level-A Fiber Optic Point	NO
XFMA	SUE Level-A Force Main Point	NO
XGA	SUE Level-A Gas Point	NO
XTA	SUE Level-A Telephone Point	NO
XWA	SUE Level-A Water Point	NO
UGF	Fiber Optic (UG)	NO
UGP	Power (UG)	NO
UGT	Telephone (UG)	NO
UGC	Cable (UG)	NO
?WL	Water Line	NO
XFH	Fire Hydrant	NO
YGAA	Guy Device Angle Anchor	Y-1
XGM	Gas Meter	NO
XGV	Gas Valve	NO
YGVA	Guy Device Vertical Anchor	Y-1
XGW	Guy Wire	Y-1
XLP1	Light Pole 1 Light	Y-1

UTILITIES		
Feature Code	Description	IN DTM
XLP2	Light Pole 2 Lights	Y-1
XLP3	Light Pole 3 Lights	Y-1
XLP4	Light Pole 4 Lights	Y-1
XLW	Low Wire Crossing	NO
XMH	Manhole	Y-1
XMHC	Cable Manhole	Y-1
XMHF	Fiber Optic Manhole	Y-1
XMHG	Manhole Gas	Y-1
XMHP	Manhole Power	Y-1
XMHSAS	Sewer Manhole	Y-1
XSM	Sewer Meter	NO
XSV	Sewer Valve	NO
XUM	Misc. Utility Feature	NO
UM	Misc. Utility Line	NO
XMHT	Telephone Manhole	Y-1
XMHW	Manhole Water	NO
XPB	Utility Boxes (Pull Box)	NO
XUP	Utility Pole	Y-1
XUPL	Utility Pole with Light	Y-1
XHMLPH	High Mast Light (Half)	Y-1
XHMLPF	High Mast Light (Full)	Y-1
XLCC	Lighting Control Center	NO
XEV	Electric Vehicle Charging Station	Y-1
XTBOX	Telephone Box	Y-1
XTOWER	Radio/TV Tower	Y-1
XPED	Tele. Pedestal	Y-1
XPED	Fiber-Optic Pedestal	Y-1
XCPED	Cable Pedestal	Y-1
XWM	Water Meter	NO
XWV	Water Valve	NO

VEGETATION		
Feature Code	Description	IN DTM
TREE	Tree Drip Line	Y-1
HEDGE	Hedge Line	Y-1
XBUSH	Bush	Y-1
XTREES	Small Tree under 6" Diameter	Y-1
XTREEM	Med. Tree 6" – 12" Diameter	Y-1
XTREEL	Large Tree over 12" Diameter	Y-1

NOTE: (Descriptor Format: =??" TREE TYPE)

TRAFFIC CONTROL		
Feature Code	Description	IN DTM
BARR	Barricade	NO
LDECT	Loop Detector	NO
LLD	Lane Line Dashed	Y-1
LLDS	Lane Line Dashed Short	Y-1
LLS	Lane Line Solid	Y-1
SIGNT	Transportation Sign	NO
XOHS	Overhead Sign EX: SCHOOL X	NO
XPDMC	Pad Mounted Controller	NO
XPDSHN	Pedestrian Signal	NO
XPLMC	Pole Mounted Controller	NO
XPPH	Pedestrian Pushbutton	NO
XPULLB	Pull Box	NO
XRRFS	RR Flashing Signal Crossing	NO
XRRFSG	RR Flashing Signal Crossing W/Gate	NO
XRRSIG	Railroad Signal	NO
XSHN	Traffic Signal Head	NO
XSHNB	Signal Head W/Backplate	NO
XSIGN1	Small 1-Post Sign	Y-1
XSIGN2	Small 2-Post Sign	Y-1
X2SIGN	Small 2-Faced Sign	Y-1
XSPSS	Strainpole	Y-1
XWPSS	Wood Signal Pole	Y-1

TRAFFIC CONTROL (PAVT. MARKING)		
Feature Code	Description	IN DTM
CWALK	Crosswalk	NO
STOP	Stop Bar	NO
YIELD	Yield Bar (Triangles)	NO
XLAR	Left Arrow Pavement Marking	NO
XLRAR	Lt & Rt Arrow	NO
XONLY	Only Pavement Marking	NO
XPVTEXT	Pave. Marking Words (CENTER)	NO
XRAR	Right Arrow Pavement Marking	NO
XRRPAV	Railroad Xing Pavement Marking	NO
XSAR	Straight Arrow	NO
XRARI	Right Arrow Interstate	NO
XSARI	Straight Arrow Interstate	NO
XSRARI	Straight & Right Arrow Interstate	NO
XHOV	HOV Diamond	NO
XSLAR	Straight & Lt Arrow	NO
XSLRAR	Straight, Lt & Rt Arrow	NO
XSRAR	Straight & Rt Arrow	NO
XRLAR	Roundabout Left Arrow	NO
XRSLAR	Roundabout Straight/Left Arrow	NO
XRSLRAR	Roundabout Straight/Left/Right Arrow	NO
XSUBIKE	Bike Pavement Marking Suburban	NO
XUBIKE	Bike Pavement Marking Urban	NO
XYIELD	Pavement Yield Marking (Spelled Out)	NO
XHC	Parking Handicap Symbol (Locate Center)	NO

NOTE: Locate all pavement arrows at center of traffic lane relative to bottom of arrow.

TERRAIN MODEL		
Feature Code	Description	IN DTM
BL	Breakline	Y-2
OL	Obscure Line	Y-4
XP	Ground Point	Y-1

SURVEY CONTROL		
Feature Code	Description	IN DTM
XBM	Benchmark	NO
XCP	Control Point	Y-1
XCK	Check Point	NO
XTRAV	Traverse Point	Y-1
XSPUR	Temporary Survey Point	NO
XH	Horz. Photo Point	Y-1
XV	Vert. Photo Point	Y-1
XHV	Horz/Vert Photo Point	Y-1

MISCELLANEOUS & DEFAULT CODES		
Feature Code	Description	IN DTM
DEFAULT_CHAIN	Default Item	NO
DEFAULT_CURVE	Default Item	NO
DEFAULT_LINE	Default Item	NO
DEFAULT_PARCEL	Default Item	NO
DEFAULT_POINT	Default Item	NO
DEFAULT_SPIRAL	Default Item	NO
DASH	Dash Line	NO
DOT	Dotted Line	NO
LD	Long Dash Line	NO
MISC	Miscellaneous	NO
SOLID	Solid Line	NO
XMISC	Misc. Unknown Point	NO

OFFICE CODES		
Feature Code	Description	IN DTM
CL	Proposed Centerline	NO
DBDRY	Drainage Map Boundary	NO
EXCL	Existing Centerline	NO
X_PROPERTY	Property Development	NO
XPOINT	HiVis Generic Office Pt	NO

DTM CODES	
NO	Do Not Include in DTM
Y-1	Include as a Spot in DTM
Y-2	Include as a Spot and a Break Line in DTM
Y-3	Include as a Void in DTM
Y-4	Include as a Drape Void in DTM
Y-5	Include as a Break Void in DTM
Y-6	Include as an Island in DTM
Y-7	Include as a Boundary in DTM
Y-8	Include as a Contour in DTM

The term “feature” refers to any “material object” or “item” or “thing” that exists in the field. Features can be overhead, at ground level, underground, or under water.

The term “locate” refers to using a Total Station, GPS RTK equipment, or scanning equipment to obtain the position of a feature.

All features in a project should be located in the field. However, features located on an aerial survey don’t need to be located in the field, except for roads. This data is imported into a Field Book in Open Roads Designer (ORD). Data that is imported into a Field Book is automatically drawn in ORD. The ORD files are used by roadway designers, bridge designers, hydraulics designers, ROW personnel, utilities personnel, and others.

Survey “Points” are used to create the survey drawings.

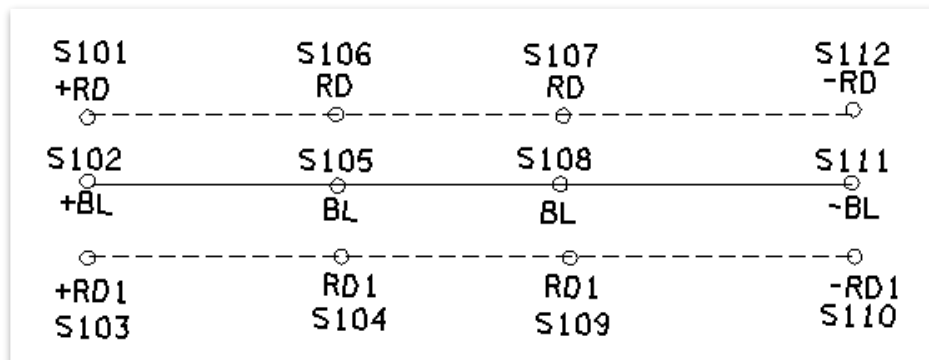
- Points’ names are alphanumeric, and begin with an “S” (for Survey), followed by either a number (Example: S101), or by other letters and a number (Example: SMP101)
- Point numbers are in ascending order, like the ASCII Points list below.

```
S2,734560.977,1979252.352,513.780,XCP
S6,735958.749,1980677.032,510.710,XCP
S10,733973.954,1978899.516,515.380,+RD
S11,733974.522,1978898.644,515.301,+SH
S12,734007.251,1978919.232,515.174,RD
S13,734008.100,1978918.267,515.088,SH
S14,734045.109,1978940.752,514.876,SH
S15,734044.446,1978941.658,514.954,RD
S16,734078.331,1978962.385,514.650,RD
S17,734078.993,1978961.247,514.617,SH
S18,734111.900,1978981.211,514.408,SH
S19,734110.918,1978982.304,514.495,RD
S20,734145.717,1979003.434,514.256,RD
S21,734146.328,1979002.164,514.194,SH
```

- Every point should be given a TDOT Feature Code, along with a descriptor as required.
- A Feature Code for a point will result in drawing one of two things
 - A Symbol
 - A Line
- Symbol: When any Feature Code starts with the letter “X”, a symbol will be drawn. Example: XUP draws a utility pole .
- Line: When any Feature Code does not start with the letter “X”, a line will be drawn.
 - The starting point on a line has to have a “Linking Code”. We use “+” (Example: +FN)
 - The ending point on a line has to have a different “Linking Code”. We use “-” (Example: -FN)
 - Any middle points on a line have just the code. (Example: FN)
 - To close a figure, we use “*” (Example: *FN)
 - Other Line Linking Codes, for Begin Curve, Point on Curve, End Of Curve, etc. are not covered in this document.
 - After a line is ended, that same code can be used again. Even the next point is okay.

```
S5003,733960.5840,1978923.4490,514.5905,+SH
S5004,733968.5402,1978927.1700,514.6391,-SH
S5005,733980.2806,1978933.5584,514.6291,+SH
S5006,733984.2121,1978933.2145,514.6667,SH
S5007,733986.2878,1978934.0319,514.7172,SH
S5008,733995.9284,1978939.3569,514.6552,-SH
```

- More than one line can be “open” at a time, as in the example below.



- A point may need a descriptor, which will be “drawn” as text in Microstation. To add a descriptor, a delimiter character is placed after the Feature Code, and the descriptor is typed after that. Use “=”. For lines, the descriptor should be recorded on only one point on the line. If it is recorded for every point on the line, many text elements would be drawn and would have to be erased. Adding the descriptor to the first point on a line is expected.

Examples: XUP=P/T/C +RD=MAIN ST. (ASP.)

- For most Feature Codes, if a solid or a dashed line is to be drawn by the code, there should be text on the drawing to describe what it is, so it should have a descriptor.
- On any vertical features, code the bottom as the feature, and locate a breakline along the top. Vertical features include curbs, retaining walls, end walls, and bridge abutments.
- For Box Culverts and Oval Pipes, always list the span length first.
- If a Feature has a formal name, use it in the descriptor. This includes lakes, creeks, rivers, ponds, tunnels, athletic fields, buildings, cemeteries, and bridges.
- Most symbols will require a descriptor.
- Locate all pavement arrows at the center-bottom of the arrow.



The Feature Codes

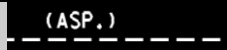
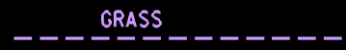
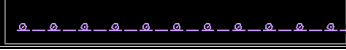
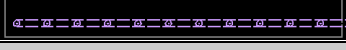
The following is a listing of:

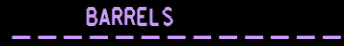
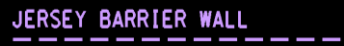
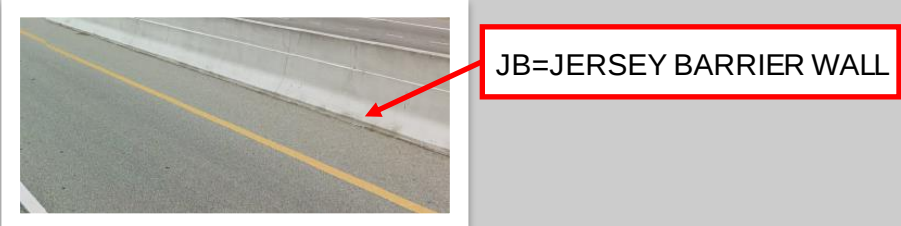
- Each Feature Code
- What the code represents
- An example of what to type in the data collector
- What it will draw in Microstation
- Samples of possible descriptors, in square-brackets
- Photos showing the feature and where to locate it
- Any other general information about the code.

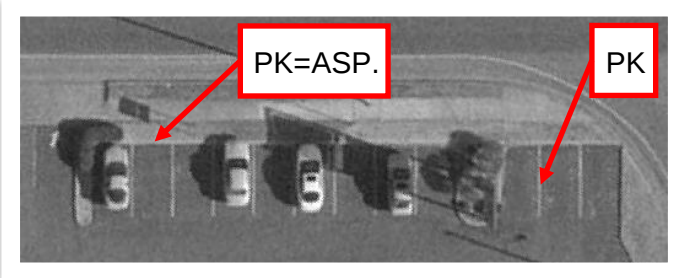
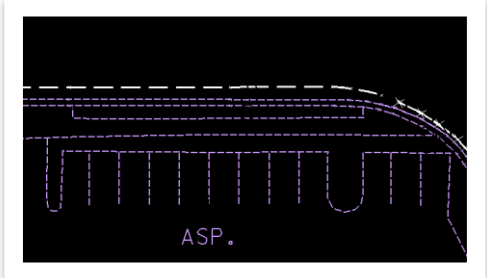
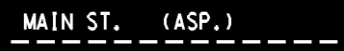
In the Microstation drawing examples for lines, just one straight line and any text for it is shown.

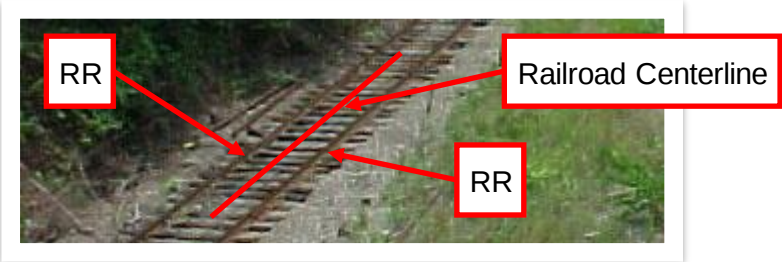
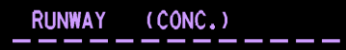
Transportation Features

TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
BE**	Business Entrance	BE=ASP.	ASP.
[ASPH., CONC.] This is a driveway for a business.			
BIKE**	Bike Path	BIKE=BIKE PATH (ASP.)	BIKE PATH (ASP.)
[BIKE PATH (ASPH.)] This is a multi-use path, paved or unpaved, that is separate from or adjacent to the traveled way. If unpaved, locate the center of the path.			
CU**	Curb	CU=CURB	CURB
[C & G, CURB, MOUNTABLE CURB] Locate the bottom edge of the curb. See A.14.1 Road Photo 1 for more details.			

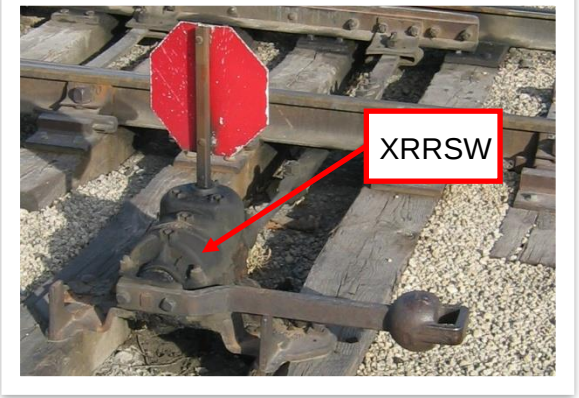
TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
DR**	Driveway	DR=GR.	
<i>[GR., ASPH., CONC., DIRT, PEA GR.] Locate driveways from the road to the DTM limits at a minimum. Don't just locate a driveway for a few feet, then stop.</i>			
EP**	Edge of Pavement	EP=(ASPH.)	
<i>This code is only used in special circumstances where the changes in pavement material needs to be located.</i>			
FE**	Field Entrance	FE=GRASS	
<i>[DIRT, GRASS, GR.] FE is a driveway into a field or other undeveloped land.</i>			
GRCB	Cable Barrier		
<i>Locate the center of the cable rail, at ground elevation.</i>			
GRL	Guardrail Left		
<i>Locate the face of the rail, at ground elevation. GRL draws the posts on the left side of the rail. Continue guardrail across bridges if it does so in the field.</i>			
			
GRM	Guardrail Median		
<i>Locate the centerline of the guardrail.</i>			
			

TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
GRR	Guardrail Right		
Locate the face of the rail, at ground elevation. GRR draws the posts on the right side of the rail. Continue guardrail across bridges if it does so in the field.			
			
IMP**	Impact Attenuator	IMP=BARRELS	
[IMPACT BARRELS, IMPACT ATTENUATOR] Locate around outside of impact attenuator at ground level.			
 			
JB**	Jersey Barrier	JB=JERSEY BARRIER WALL	
[JERSEY BARRIER WALL] Locate both sides of the wall, where the wall meets the road.			
			

TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
PK**	Parking Lot	PK=ASP.	
<i>[ASP., CONC., GR.] PK is used for the edges of a parking lot. If there is a curb around the parking area, use the CU Feature Code. A descriptor is required for the general parking lot boundary, but not for each parking space line. For all parking stripes, use the LLS Feature Code.</i>			
 			
RD**	Edge Of Road	RD=MAIN ST. (ASP.)	
<i>On a Road, the actual lanes that vehicles drive in are known as the “Traveled Way”. Outside the Traveled Way can be shoulders. Shoulders may not have as thick and strong a base material as the Traveled Way; therefore, the Traveled Way and the shoulder are two different features.</i> <i><u>The edges of the Traveled Way should always be located.</u></i> <i>If the road has no distinguishing features, the outside edge of pavement marking should be used. If a road doesn’t have these lines, use a best-judgement determination of the location of the Traveled Way. If edge of traveled way and edge of pavement marking are less than 2 feet apart only locate edge of traveled way as RD. See A.14.1 Road Photo 1, A.14.2 Road Photo 2, A.14.3 Road Photo 3, A.14.4 Road Photo 4, and A.14.5 Road Photo 5 for more details.</i>			
			

TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
RR	Railroad		
Locate the top center of each individual rail on a railroad. A railroad centerline is computed in the office for each set of rails.			
			
RWAY**	Airport Runway	RWAY=RUNWAY (CONC.)	
[RUNWAY]			
RWT**	Ret. Wall (Transportation)	RWT=STONE RET. WALL	
[STONE RET. WALL, BLOCK RET. WALL] RWT is for retaining walls that are part of the transportation system. Locate the face of the wall, at the bottom of the wall.			
			

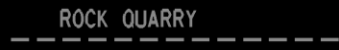
TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
RWTWF**	Ret. Wall w/ Fence (Trans.)	RWTWF=BLOCK RET. WALL W/FENCE	
Same as RWT, but with a fence on top of the wall. Use this code at the top of the retaining wall next to the fence not at the face of the retaining wall.			
SH**	Edge of Shoulder	SH=ASP.	
[ASPH., CONC., GR.] Locate shoulders. Do not locate pavement outside the edge of the Traveled Way as a shoulder unless it is approximately 2' wide or wider. See Feature Code RD and A.14.3 Road Photo 3 for more details.			
SWT**	Sidewalk (Transportation)	SWT=S.W.	
[S.W., S.W. (BRICK), S.W. (STONE)] SWT is for sidewalks that were built as part of the transportation system. Describe the sidewalk's material if it is not concrete.			
TRAIL**	Trail	TRAIL=GR.	
[GR., ASPH., CONC.]			
TUN**	Tunnel	TUN=TUNNEL	
[TUNNEL] Locate the outer edges of the tunnel. If the tunnel has a name, add that to the descriptor. No BL's or RD's or SH's go into the tunnel. The descriptor contains the dimensions (width first), the material(s) the tunnel is made of, the tunnel's shape, and the word "TUNNEL".			
 TUN=30' X 21' STONE ARCH TUNNEL RD BL RD=SR-10 (ASP.)			

TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XHRAMP	Handicap Curb Opening		
 			
XRRSW	Railroad Switch		
			

****A descriptor is required.**

Non-Transportation Features

NON-TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
AFLD**	Athletic Field	AFLD=BASEBALL FIELD	BASEBALL FIELD
[FOOTBALL FIELD, BASEBALL FIELD, SOCCER FIELD, GOLF COURSE] Outline fields only if not bounded by a fence.			
BC**	Building	BC=1-S-B	1-S-B RES.
[1-S-B RES., 2-S-BL, 1-S-F ABC ELECTRIC COMPANY, MCDONALD'S RESTAURANT, STRIP SHOPPING (VACANT), SHED, BARN, TRAILER, WELL HOUSE] The full outline of the building should be drawn. Buildings within the DTM limits of the project shall be located. Digitize the shape of the back of large buildings that extend far beyond DTM width.			
CG**	Cattle Guard	CG=CATTLE GUARD	CATTLE GUARD
[CATTLE GUARD] Locate the outline of the cattle guard.			
 CG=CATTLE GUARD			
CEM**	Cemetery	CEM=DOE CEMETERY	DOE CEMETERY
[CEMETERY] Locate the boundary of the cemetery.			
CNPY**	Canopy	CNPY=GAS STATION CANOPY	GAS STATION CANOPY
[GAS STATION CANOPY, OVERHANG] Locate the outline of the canopy.			
FN**	Fence	FN=BARBED WIRE	BARBED WIRE
[BARBED WIRE, WOVEN WIRE, ELECTRIC, BOARD, PVC] Locate all fences or portions thereof within the dtm limits. Fences are important, no matter the age or type, can help determine property and ROW lines.			
GATE	Gate		GATE

NON-TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
GRAVE**	Grave	GRAVE=GRAVE	
[GRAVE] Locate either the outline of the grave, or just a single line along the length of the grave. If a cemetery boundary line has been located, just locate the graves closest to the centerline.			
PAD**	Miscellaneous Pad	PAD=CONC. PAD	
[CONC. PAD] Locate the outline of the entire pad.			
PIT**	Quarry or Pit	PIT=ROCK QUARRY	
[PIT, ROCK QUARRY]			
ROCKWL**	Rock Wall	ROCKWL=1.3' WIDE STONE WALL	
Locate the left face of the wall, at ground elevation. The feature will show to the left of the survey chain. The descriptor requires the width and material.			
 ROCKW=1.3' WIDE STONE WALL			
ROCKWR**	Rock Wall	ROCKWR=1.3' WIDE STONE WALL	
Locate the right face of the wall, at ground elevation. The feature will show to the right of the survey chain. The descriptor requires the width and material.			
 ROCKW=1.3' WIDE STONE WALL			

NON-TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
RWP**	Ret. Wall (Private)	RWP=STONE RET. WALL	STONE RET. WALL
[STONE RET. WALL] RWP is a retaining wall that is privately owned. See Feature Code RWT for further details.			
RWPWF**	Ret. Wall w/Fence	RWPWF=BLOCK RET. WALL W/FENCE	BLOCK RET. WALL W/FENCE
Same as RWP, but with a fence on top of the wall.			
SEP**	Septic Field Line	SEP=FIELD LINES	FIELD LINES
[FIELD LINES] All septic tanks and field lines near the proposed roadway shall be located.			
SIGNP**	Sign (Private)	SIGNP=SIGN	SIGN
[SIGN, BILLBOARD] SIGNP is for signs that are privately owned. Locate the extent of the sign including overhanging portions. Only describe what is written on the sign if it is historical.			
 +SIGNP=SIGN -SIGNP  +SIGNP=SIGN -SIGNP			
SWP**	Sidewalk (Private)	SWP=S.W.	S.W.
[S.W., S.W. (BRICK), S.W. (STONE)] SWP is for sidewalks that are privately owned. Describe the sidewalk's material if it is not concrete.			

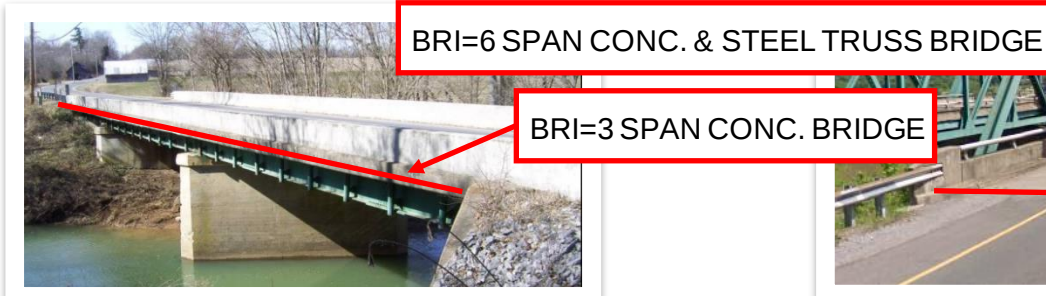
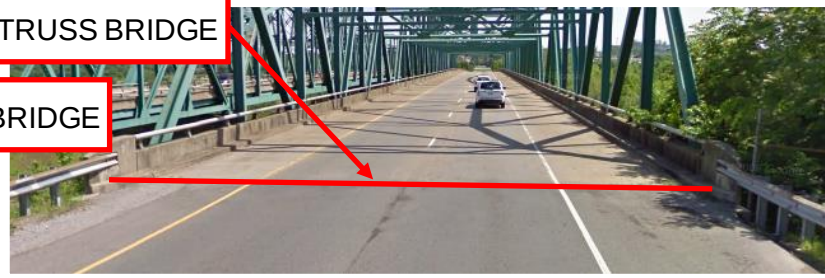
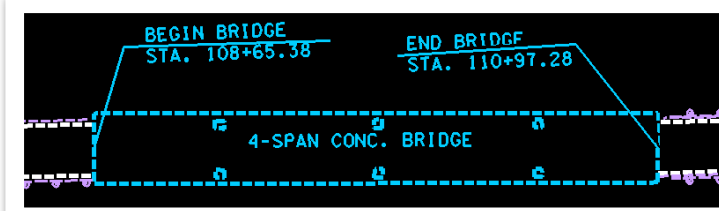
NON-TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
TANK**	Tank (UG or Above Ground)	TANK=PROPANE TANK	PROPANE TANK -----
<i>[PROPANE TANK] Locate the outline of the tank.</i>			
			
TOWER**	Tower	TOWER=RADIO TOWER	RADIO TOWER _____
<i>[RADIO TOWER, LOOKOUT TOWER] Locate around all tower legs.</i>			
 TOWER=LOOKOUT TOWER			
XFE	Floor Elevation		FL. EL. - 524.35
<i>Use XFE only in areas prone to flooding.</i>			
XFLAG	Flag Pole		FLAG

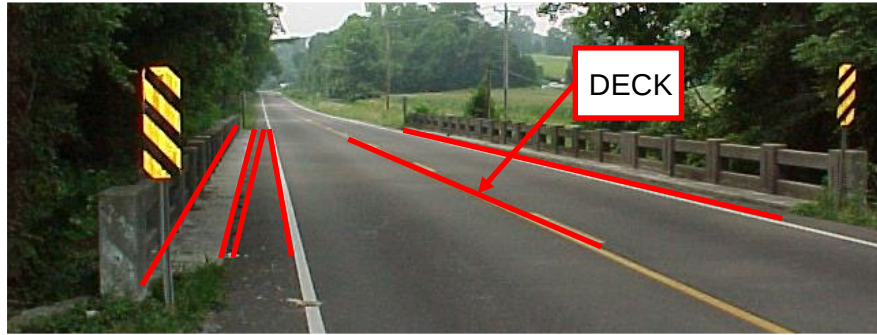
NON-TRANSPORTATION FEATURES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XFP	Fence Post		
<i>Locate the center of the fence post. Only locate individual posts not captured along a fence line.</i>			
XMB	Mail Box		
Mailboxes don't need to be located unless they are large, expensive ones. Locate the Center of the mailbox.			
XSATLIT	Satellite Dish		
<i>Locate the center of the satellite dish support. Do not locate satellite dishes attached to buildings.</i>			
XSEP	Septic Tank		
XSIGNP	Small Private 1-Post Sign		
<i>Locate the center of the sign. If the face of the sign is wide, use the Feature Code SIGNP. In the office, rotate the sign to face correctly.</i>			
			
XWELL	Well		
<i>For any wells (Oil, Gas or Water) that will be within the limits of the proposed ROW, capture the location of the center of the well and note the name and address of the driller, the date drilled, the depth of the well and name of the property owner at the time the well was drilled.</i>			

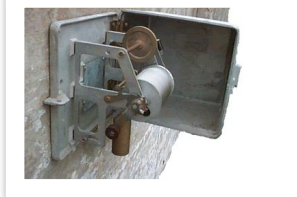
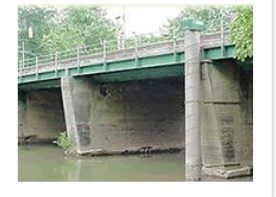
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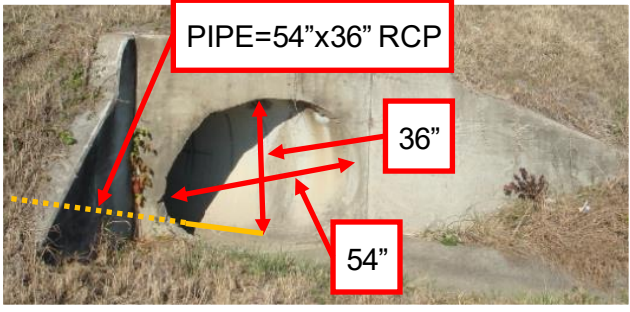
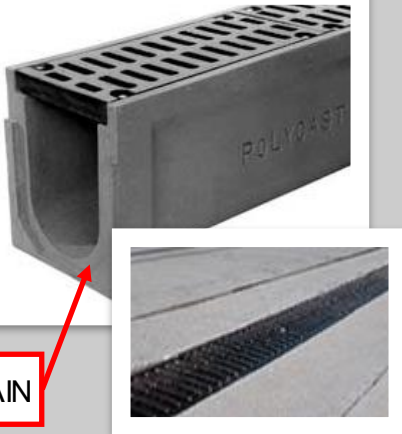
Drainage

DRAINAGE			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
ABUT	Bridge Abutment		
See A.14.9 Bridge Photo 1 , A.14.10 Bridge Photo 2 , A.14.11 and Bridge Photo 3 for more details.			
			
APRON**	Paved Apron	APRON=APRON	
[CONC. APRON]			
 			
BEAM	Bridge Bottom Beam		
BEAM is the bottom of the low beam on a bridge.			
			

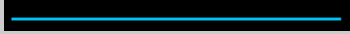
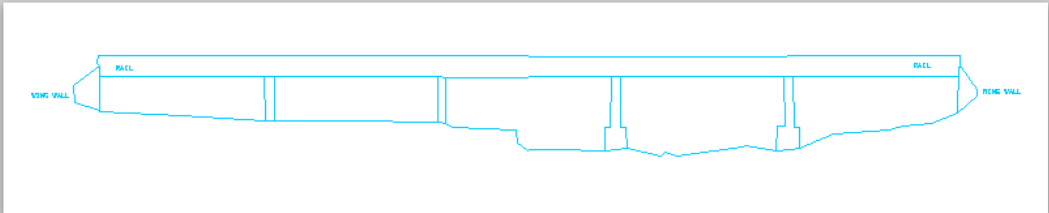
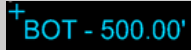
DRAINAGE			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
BRI**	Bridge	BRI=4 SPAN CONC. BRIDGE	4 SPAN CONC BRIDGE
[4 SPAN CONC. BRIDGE, 1 SPAN WOOD BRIDGE, 3 SPAN STEEL TRUSS BRIDGE, 3 SPAN CONC. ARCH BRIDGE] Locate the 4 outermost corners of the bridge. This will draw lines along the back edges of the abutments (not the “face” of the abutment), and along the outside edges of the sides of the bridge. If the bridge is in a curve, or is chorded, then more points will have to be located along the sides in order to draw that shape. The descriptor is: the number of spans, the material(s) the bridge is made of, and the word BRIDGE. In general, no BL’s or RD’s or SH’s go onto the bridge deck.			
The Outer Edges		The Back Edge of the Abutments	
			
			
CRK**	Creek	CRK=LITTLE FORK CREEK	LITTLE FORK CREEK
Locate both the edges of the water in a creek, or a single creek line if there is little water width or if the creek bed is dry. BL’s need to be located to make a correct DTM within the creek area, and CRKB and TB lines need to be located in streams where a bridge survey will be required. Use BL to do roadside ditches. See A.14.8 Creek Photo 1 for more details. A descriptor is required if the creek has a name, or if some creek detail needs noting.			

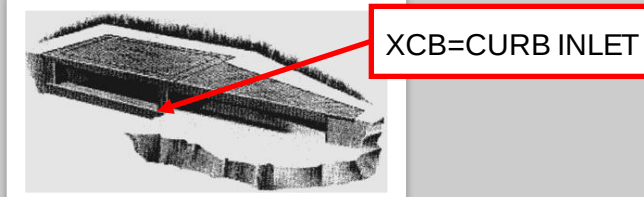
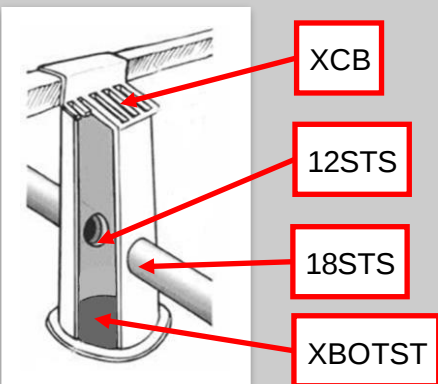
DRAINAGE			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
CRKB	Creek Bed		
Use CRKB in a creek or a river. TB is used <u>only</u> when doing a bridge survey. Locate the lowest flow line. If there were just a trickle of water, it would flow in the CRKB line. See A.14.8 Creek Photo 1 for more details.			
CV**	Culvert	CV=12'X7.5' CONC. BOX CULV.	
[3 @ 5'x4' CONC. BOX CULV., 10.5' x 4.8' CONC. BOX CULV.] List the number of openings (if more than one), span (width), height, and type. If the total span(s) length is over 20', use the Feature Code BRI. See A.14.6 Box Culvert Photo 1 for more details.			
DAM**	Dam	DAM=HOOVER DAM	
[DAM, WEIR] A dam runs across or through a body of water and can have water on both sides of it. Its main purpose is to retain water. Locate beaver dams that obstruct the flow of water. Also locate Spillways and lowest spillway elevation (see SPILL code.)			
DECK	Bridge Deck Breaklines		
Locate DECK lines for the length of the bridge. Locate one in the center, and one at each traveled way line. If there is a curb/sidewalk on the sides, locate DECK lines at the bottom and the top of the curb. Locate a DECK line at the bridge rail. Deck lines will not be breaklines for creating a DTM from Geopak elements. A separate DTM of the deck can be created by drawing just these DECK lines in an empty DGN file, and then in Geopak do an EXTRACT GRAPHICS to create the TIN file.			
			

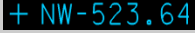
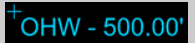
DRAINAGE			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
DIT**	Paved Ditch	DIT=CONC. DITCH	
[CONC. DITCH, RIP-RAP DITCH] DIT is only used to locate a man-made ditch with a concrete, rip-rap, or other manmade bottom. Locate both sides of the ditch as DIT code and locate at least one breakline between them with the BL code.			
			
DOWN	Downstream Flood Section		
EW	End Wall		
Locate the face of the end wall at the bottom of the end wall. If the slope of the ground changes along the length of the end wall, locate additional points for this. For the top breakline, locate just one BL on the ground in back of the top of the end wall. See A.14.6 Box Culvert Photo 1 for details.			
GAGE**	Stream Gauge	GAGE=STREAM GAUGE	
[STREAM GAUGE] Locate the approximate shape of the gauge.			
Staff Gauge  Wire Gauge  Vertical Pipe Gauge  			

DRAINAGE			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
LAKE**	Lake	LAKE=PLEASANT LAKE	
<i>[LAKE] Locate the edge of the water.</i>			
LEVEE**	Levee	LEVEE=LEVEE	
<i>[LEVEE] A levee runs along or parallel to a body of water such as river. It only operates to restrict water in times of high flow. Most of the time a levee is not submerged. Digitize the outline of the levee (along toe of slopes). Breaklines will be required within and along the levee.</i>			
PIER	Bridge Pier		
<i>PIER is used for bridge piers and bridge bents. A bridge Pier is located in water. A bridge Bent is located on land. Locate the shape of the pier/bent at ground elevation. See A.14.9 Bridge Photo 1 for details.</i>			
PIPE**	Pipe	PIPE=18" CMP	
<i>[18" CMP, 24" RCP, 18" PLASTIC, 6" TRENCH DRAIN] Locate the invert at both ends of the pipe. Do not use pipe for enclosed / underground storm sewer pipe inverts.</i>			
• PIPE (round) – List the size, the type (example: 30" RCP). • PIPE (oval) – For the size of an oval, list the span (width) first (example: 36"x24" RCP).			
  			

DRAINAGE			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
POND**	Pond	POND=POND	
<i>[POND] Locate the edge of the water.</i>			
RIVER**	River	RIVER=TENNESSEE RIVER	
<i>[RIVER] Locate the edge of the water.</i>			
RPDS**	Rapids / Waterfall	RPDS=RAPIDS	
<i>[RAPIDS] Locate rapids/waterfalls at the nearest safe location with a descriptor further specifying the footprint / location.</i>			
RRAP**	Rip-Rap	RRAP=CONC. RIP-RAP	
<i>[RIP-RAP] Outline areas of rip-rap and close as a shape.</i>			
			
SINK	Sinkhole		
<i>Locate all around the boundary of the sink hole. The drawing should show the line's ticks pointing toward the center of the sink hole.</i>			
SPILL**	Spillway	SPILL=SPILLWAY	
<i>[SPILLWAY]</i>			
?STS	Storm Sewer		
<i>The "?" means to enter the size (diameter, in inches) of the line. Locate the invert at both ends of the line. See Feature Code XCB for more details. Use STS for any enclosed drainage system.</i>			

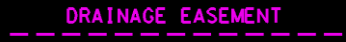
DRAINAGE			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
SKE	Bridge Sketch		
<i>SKE draws a vertical view of the openings under a bridge. In the office, this sketch is labeled with horizontal and vertical dimensions.</i>			
 			
TB**	Top Of Bank	TB=TOP OF BANK	
<i>[TOP OF BANK] TB is used to locate the top banks of a creek or river. It is not used for other tops of banks. See A.14.8 Creek Photo 1 for details.</i>			
UP	Upstream Flood Section		
WET	Wetland Boundary		
<i>Locate all around the boundary of the wetland. The drawing should show the line's vegetation marks pointing toward the center of the wetland.</i>			
XBOTST	Bottom of Storm MH, CB, etc.		
<i>See Feature Code XCB for more details.</i>			

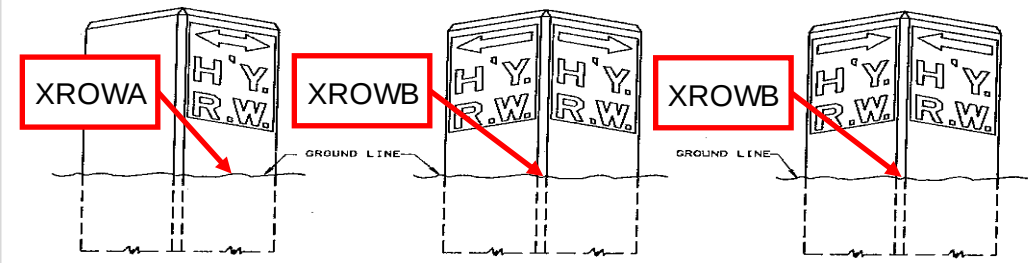
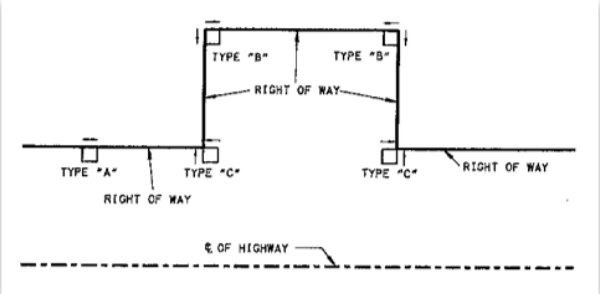
DRAINAGE			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XCB	Catch Basin		
[2 GRATES, NO GRATE] A descriptor is required if there is no grate, or if there is more than one grate.			
   			
XDECK**	Bridge Deck	XDECK=BORE HOLE	
[WEEP HOLE, BORE HOLE] XDECK is used for individual points on a bridge deck. A descriptor is required if the point is used for more than just a DTM spot point.			
			

DRAINAGE			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XDI	Drop Inlet		
<i>A drop inlet is a concrete or stone "box" at the inlet end of a pipe. Its purpose is to keep dirt out of the pipe. When it is far enough from a road, so it won't be dangerous to traffic, no grate is necessary.</i>			
XHW	High Water Elevation Point		
<i>When doing a bridge survey, locate a point, near the bridge site, which is at the highest flooding elevation. Note the source of the elevation and year. Ex. XHW=Mudline, XHW=Local Farmer Hearsay.</i>			
XMHSTS	Storm Sewer Manhole		
<i>Locate the center top of the manhole.</i>			
XNW	Normal Water Elev. Point		
<i>When doing a bridge survey, locate a point, near the bridge site, which is at an elevation the stream flows at most of the time.</i>			
XOHW	Ordinary High Water Elevation		
<i>To be determined by Environmental Office.</i>			
XSPRING	Spring		
<i>In the drawing, rotate the symbol to point in the direction of water flow.</i>			

****A descriptor is required.**

R.O.W. / Property

R.O.W. / PROPERTY			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
ESMT**	Easement	ESMT=UTILITY ESMT.	
<i>[20' WATER ESMT.] ESMT is for office use.</i>			
ESMTD**	Drainage Easement	ESMTD=DRAINAGE ESMT.	
<i>[20' DRAINAGE EASEMENT] ESMTD is for office use.</i>			
PARCEL	Parcels		
<i>PARCEL is for office use, when making parcels.</i>			
PL	Property Line		
<i>PL is for office use, when making property lines.</i>			
PLWF	Property Line w/ Fence		
<i>PLWF is for office use, when making property lines.</i>			
ROW	ROW Line		
<i>ROW is for office use, when making Present Right Of Way lines.</i>			
ROWWF	ROW w/ Fence		
<i>The ROWWF is for office use, when making Present Right Of Way lines.</i>			
XIP**	Iron Pin Existing	XIP=AXLE	
<i>[AXLE, PIPE, ROD] Locate the center of the pin, where it enters the ground. Describe the type of property corner including the information from the rod cap if applicable.</i>			

R.O.W. / PROPERTY			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XMON**	Concrete Marker	XMON=CONC.	
<i>XMON is <u>not</u> a highway ROW monument. It is a monument usually found at a property corner. Locate the center of the monument. Describe the size and any markings present.</i>			
			
XPL**	Property Corner	XPL=PILE OF STONES	PILE OF STONES
<i>Use this code for all other property line monumentation. Locate the center of the corner point.</i>			
XROW	R.O.W. Monument		
<i>XROW is Type "A". It is the same as Feature Code XROWA.</i>			
 			

R.O.W. / PROPERTY			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XROWA	R.O.W. Monument (Inline)		
<i>XROWA is the same as Feature Code XROW; the origin of the cell is the middle of one side of the square. See Feature Code XROW for details.</i>			
XROWB	R.O.W. Monument (Corner)		
<i>XROWB is for ROW monument Types "B" and "C"; the origin of the Microstation cell is a corner of the square. See Feature Code XROW for details.</i>			

****A descriptor is required.**

Political Boundaries

Political boundary features are created by office staff from maps and collected field evidence. Label the state, county and/or city on their respective side of the line.

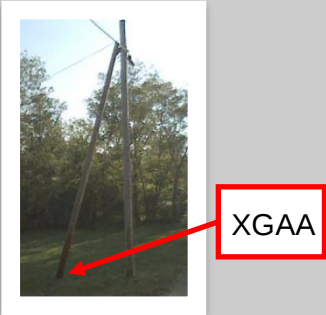
POLITICAL BOUNDARIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
CITY	City Limits		
COUNTY	County Line		
STATE	State Line		

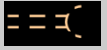
Utilities

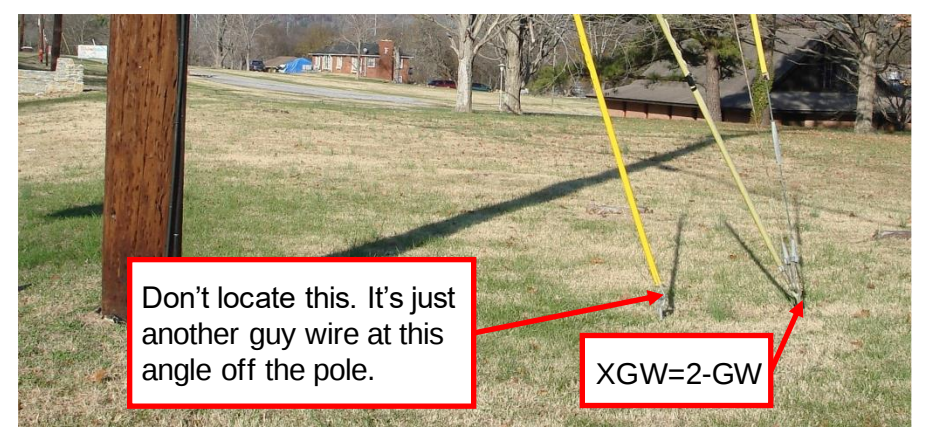
UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
?GL	Gas Line		
The “?” means to enter the size (diameter, in inches) of the line. Note: Typically the gas line is located on the ground surface where it has been marked. If the utility owner does not know the actual depth of the gas line, then it should be vertically offset -2 feet by default and noted as such.			
OHW	Overhead Wire		
OHW is <u>only</u> used when an overhead utility wire crosses a survey centerline. Locate the end points of this line at the two poles involved. The linestyle in Open Roads Designer draws a stub on each end of the line, and the rest of the line is not visible. An XLW point must be located in conjunction with this line. See Feature Code XLW, A.14.13 Utility Photo 1 and A.14.14 Utility Photo 2 for details.			
PTOW	Transmission Tower		
Locate all 4 tower legs at ground elevation. This will draw an approximate square shape. In the office, draw diagonal lines within the square. These lines can also be drawn by the crew in the field.			
 			
?SAS	Sanitary Sewer		
The “?” means to enter the size (diameter, in inches) of the line. Locate the invert at both ends of the line.			

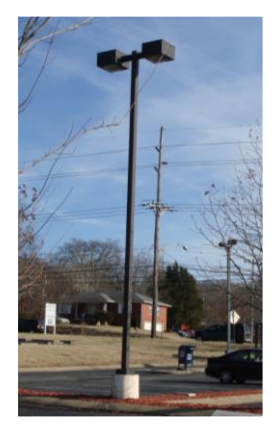
UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
?FMS	Force Main Sanitary Sewer		
<i>The “?” means to enter the size (diameter, in inches) of the line. Note: Typically the force main sewer is located on the ground surface where it has been marked. If the utility owner does not know the actual depth of the force main sewer, then it should be vertically offset -3 feet by default and noted as such.</i>			
XBOTSA	Bottom of Sanitary MH		
<i>XBOTSA is for locating the bottom elevation of a sanitary sewer manhole.</i>			
XCA**	SUE Utility Cable Point	XCA=6" duct bank_AthensCable_2.1' deep	
<i>XCA is for SUE Quality level A where the underground utility has been exposed so its location can be measured directly. A descriptor is required for office labeling. Include size, material, owner, and depth to top of line.</i>			
XEA**	SUE Utility Electric Point	XEA=2" PVC Conduit_Lighting_1.8' deep	
<i>XCA is for SUE Quality level A where the underground utility has been exposed so its location can be measured directly. A descriptor is required for office labeling. Include size, material, owner, and depth to top of line.</i>			
XFOA**	SUE Utility Fiber Optic Point	XFOA=3" PVC_CarterCo_3.3' deep	
<i>XFOA is for SUE Quality level A where the underground utility has been exposed so its location can be measured directly. A descriptor is required for office labeling. Include size, material, owner, and depth to top of line.</i>			
XFMA**	SUE Utility Force Main Point	XFMA=4" DIP_VincentTN_at surface	
<i>XFMA is for SUE Quality level A where the underground utility has been exposed so its location can be measured directly. A descriptor is required for office labeling. Include size, material, owner, and depth to top of line.</i>			

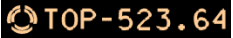
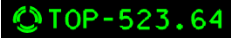
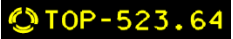
UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XGA**	SUE Utility Gas Point	XGA=8" Steel_fuel_Avgas_6.8'deep	
<i>XGA is for SUE Quality level A where the underground utility has been exposed so its location can be measured directly. A descriptor is required for office labeling. Include size, material, owner, and depth to top of line.</i>			
XTA**	SUE Utility Telephone Point	XTA=0.5" direct buried line_BellNorth_0.9'deep	
<i>XTA is for SUE Quality level A where the underground utility has been exposed so its location can be measured directly. A descriptor is required for office labeling. Include size, material, owner, and depth to top of line.</i>			
XWA**	SUE Utility Water Point	XWA=16" DIP_WestcoWater_12.6'deep	
<i>XWA is for SUE Quality level A where the underground utility has been exposed so its location can be measured directly. A descriptor is required for office labeling. Include size, material, owner, and depth to top of line.</i>			
UGC	Cable (UG)		
Note: Typically underground cable is located on the ground surface where it has been marked. If the utility owner does not know the actual depth of the cable, then it should be vertically offset -1.5 feet by default and noted as such.			
UGF	Fiber Optic (UG)		
Note: Typically underground fiber is located on the ground surface where it has been marked. If the utility owner does not know the actual depth of the fiber, then it should be vertically offset -1.5 feet by default and noted as such.			
UGP	Power (UG)		
Note: Typically underground power is located on the ground surface where it has been marked. If the utility owner does not know the actual depth of the power, then it should be vertically offset -1.5 feet by default and noted as such.			
UGT	Telephone (UG)		
Note: Typically underground telephone is located on the ground surface where it has been marked. If the utility owner does not know the actual depth of the telephone, then it should be vertically offset -1.5 feet by default and noted as such.			

UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
?WL	Water Line		
<i>The “?” means to enter the size (diameter, in inches) of the line. Note: Typically the water line is located on the ground surface where it has been marked. If the utility owner does not know the actual depth of the water line, then it should be vertically offset -2.5 feet by default and noted as such.</i>			
XFH	Fire Hydrant		
<i>Locate the center of the fire hydrant at ground elevation.</i>			
			
XGAA	Guy Device Angle Anchor		
<i>XGAA is a “device”, like a pole. <u>It is not a wire.</u> In the office, rotate the symbol so the line is toward the pole.</i>			
			

UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XGM	Gas Meter		
XGV	Gas Valve		
<i>Locate the center of the valve lid at ground level. If possible, note the depth from the lid to the top of the inline valve below.</i>			
XGVA	Guy Device Vertical Anchor		
<i>XGVA is a "device", like a pole. <u>It is not a wire.</u> In the office, rotate the symbol so the line is toward the pole.</i>			
			

UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XGW**	Guy Wire	XGW=4-GW	
<i>[2-GW, 3-GW, 4-GW] XGW is for locating guy wires. When there's only one guy anchor point, no descriptor is needed. With more than one at the <u>same angle</u> from a pole, locate the one furthest from the pole, and use a descriptor. In the office, rotate the symbol so the stub is toward the pole.</i>			
			
XLP1	Light Pole 1 Light		
<i>XLP1 is just a light pole. There are no utility lines going to this pole, except the electric line for the light.</i>			
			

UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XLP2	Light Pole 2 Lights		
<i>XLP2 is just a light pole. There are no utility lines going to this pole, except the electric line for the light.</i>			
			
XLP3	Light Pole 3 Lights		
<i>XLP3 is just a light pole. There are no utility lines going to this pole, except the electric line for the light.</i>			
			

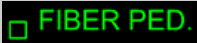
UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XLP4	Light Pole 4 Lights		
<i>XLP4 is just a light pole. There are no utility lines going to this pole, except the electric line for the light.</i>			
			
XLW**	Low Wire Crossing	XLW=8P-86DEG	
<i>[3P2T1C, 8P-86DEG] Locate an XLW point where an overhead utility wire crosses a survey centerline, at the elevation of the wire. Don't use XLW for a service line. Use the descriptor to specify how many Power, Telephone, and Cable wires there are, and the temperature (for high-tension power lines only). An OHW line must be located in conjunction with this point. See Feature Code OHW, A.14.13 Utility Photo 1 and A.14.14 Utility Photo 2 for details.</i>			
XMH**	Manhole	XMH=UNKNOWN	
<i>[UNKNOWN] XMH is used when the type of the manhole is unknown or for other manholes without a feature code in this document. Locate the center top of the manhole.</i>			
XMHC	Cable Manhole		
<i>Locate the center top of the manhole.</i>			
XMHF	Fiber Optic Manhole		
<i>Locate the center top of the manhole.</i>			
XMHG	Gas Manhole		
<i>Locate the center top of the manhole.</i>			

UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XMHP	Power Manhole		 TOP-523.64
<i>Locate the center top of the manhole.</i>			
XMHSAS	Sanitary Sewer Manhole		 TOP-523.64
<i>Locate the center top of the manhole.</i>			
XSM	Sanitary Sewer Meter		 S.M.
XSV	Sanitary Sewer Valve		 S.V.
<i>XSV is a valve in a force main sanitary sewer. Locate the center of the valve lid at ground level. If possible note the depth from the lid to the top of the inline valve below.</i>			
XUM**	Misc. Utility Feature	XUM=GAS LINE MARKER	 GAS LINE MARKER
<i>[GAS LINE MARKER]</i>			
XMHT	Telephone Manhole		 TOP-523.64
<i>Locate the center top of the manhole.</i>			
XMHW	Water Manhole		 TOP-523.64
<i>Locate the center top of the manhole.</i>			
XPB**	Utility Boxes (pull box)	XPB=CABLE	 CABLE
<i>[TELE., CABLE, FIBER OPTIC] Use XPB for utility pull boxes not traffic signal pull boxes. Use XPULLB for pull boxes associated with traffic control signal systems.</i>			
XUP**	Utility Pole	XUP=P/T/C	 P/T/C
<i>[P, P/T, P/T/C, ITS RADAR, ITS CAMERA] Locate pole at ground elevation. A descriptor must be used to show the types of wires attached to the pole (Power, Telephone, Cable). See A.14.13 Utility Photo 1 and A.14.14 Utility Photo 2 for details.</i>			

UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XUPL**	Utility Pole with Light	XUPL=P/T/C	
<i>[P, P/T, P/T/C, P/T 4-LIGHTS] Locate pole at ground elevation. A descriptor must be used to show the types of wires attached to the pole, and if there is more than one light. On the drawing, rotate the symbol to show the light facing the correct way.</i>			
			
XHMLPH	High Mast Light (half)		
<i>Locate the center of the utility pole at ground elevation.</i>			
			

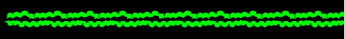
UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XHMLPF	High Mast Light (full)		
<i>Locate the center of the utility pole at ground elevation.</i>			
			
XLCC	Lighting Control Center		
<i>Locate the center of the box.</i>			
			
XEV	Electric Vehicle Charging Station		
<i>Locate at the face of the charging station at ground elevation.</i>			

UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XTBOX	Telephone Box		
 			
XTOWER**	Radio / TV Tower	XTOWER=RADIO TOWER	 RADIO TOWER
<i>[RADIO TOWER, ITS WEATHER TOWER] Only use this spot tower code for the center of towers where the legs are less than 5 feet apart.</i>			
 XTOWER=RADIO TOWER 			
XCPED	Cable Pedestal		 CATV PED.
<i>Locate at ground elevation. Describe with the owner of the pedestal if available.</i>			
			

UTILITIES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XFPED	Fiber-Optic Pedestal		
<i>Locate the center, at ground elevation. Describe with the owner of the pedestal if available.</i>			
			
XTPED	Telephone Pedestal		
<i>Locate at ground elevation. Describe with the owner of the pedestal if available.</i>			
			
XWM^^	Water Meter	XWM=4meters	
<i>[4-] Locate the center of the water meter. If there is more than one water meter within a few feet of each other, locate a center point between them, and use a descriptor of the number of meters. In the office, move and rotate the descriptor to be next to the "W.M."</i>			
XWV	Water Valve		
<i>Locate the center of the valve lid at ground level. If possible, note the depth from the lid to the top of the inline valve below.</i>			
UM**	Misc. Utility Line	UM=TRANSFORMER & PAD	
<i>[TRANSFORMER & PAD]</i>			

****A descriptor is required. ^^A descriptor is optional.**

Vegetation

VEGETATION			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
HEDGE	Hedge Line		
<i>Locate the centerline of the hedge at ground elevation.</i>			
TREE	Tree Drip Line		
<i>Locate the outer edge of the tree limbs in a wooded area at ground elevation.</i>			
XBUSH	Bush		
<i>Locate the center of the bush at ground elevation. If many bushes are aligned together, use hedge line.</i>			
XTREES**	Small Tree (0"-6" diameter)		 6" OAK
<i>Locate the center of the tree at ground elevation. The descriptor is the diameter of the tree about 4' above the ground, followed by the type of tree.</i>			
XTREEM**	Medium Tree (6"-12" diameter)		 12" PINE
<i>Locate the center of the tree at ground elevation. The descriptor is the diameter of the tree about 4' above the ground, followed by the type of tree.</i>			
XTREEL**	Large Tree (12+ diameter)		 24" ELM
<i>Locate the center of the tree at ground elevation. The descriptor is the diameter of the tree about 4' above the ground, followed by the type of tree.</i>			

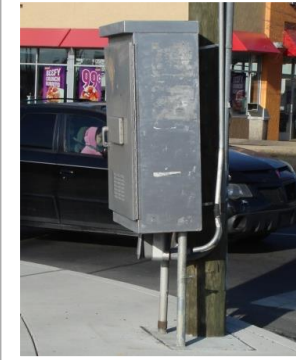
****A descriptor is required.**

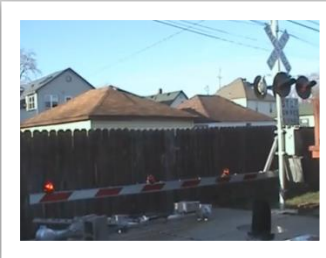
Traffic Control

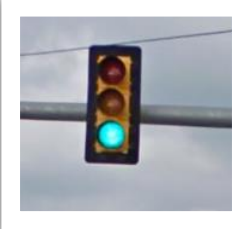
TRAFFIC CONTROL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
BARR**	Barricade	BARR=BARRICADE	
[BARRICADE]			
 			
LDECT**	Loop Detector	LDECT=LOOP DETECTOR	
[LOOP DETECTOR] The loop detectors are in pavement cuts and are in all the lanes.			
			
LLD	Lane Line Dashed		
LLDS	Lane Line Dashed Short		
LLS	Lane Line Solid		
Use LLS to locate lane lines and <u>on-street</u> parking stripes. See A.14.3 Road Photo 3 for details.			

TRAFFIC CONTROL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
SIGN**	Transportation Sign	SIGNT=SIGN	
[SIGN, OVERHEAD SIGN, CANTILEVER SIGN] SIGNT is for wide signs that are part of the transportation system. Do not describe what is written on the sign. If the sign is not wide, use Feature Code XSIGN1, XSIGN2, or X2SIGN.			
  			
XOHS**	Overhead Sign	XOHS=SCHOOL ZONE	
[SCHOOL ZONE] XOHS is used for small overhead signs. Locate at the lowest edge of the sign.			
			

TRAFFIC CONTROL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XPDMC	Pad Mounted Controller		
<i>The box contains controls for a traffic signal.</i>			
			
XPDSHN	Pedestrian Signal		
<i>Locate the center of the signal at ground elevation. In the office, point the arrow the way the light faces.</i>			
			

TRAFFIC CONTROL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XPLMC	Pole Mounted Controller		
<i>The box contains controls for a traffic signal.</i>			
			
XPPH	Pedestrian Pushbutton		
			
XPULLB	Pull Box		
<i>Use XPULLB for pull boxes associated with traffic control signal systems not utility pull boxes. Use XPB for utility pull boxes.</i>			

TRAFFIC CONTROL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XRRFS	RR Flashing Signal Crossing		
			
XRRFSG	RR Flash Sig Cross w/ Gate		
			
XRRSIG	Railroad Signal		
 			

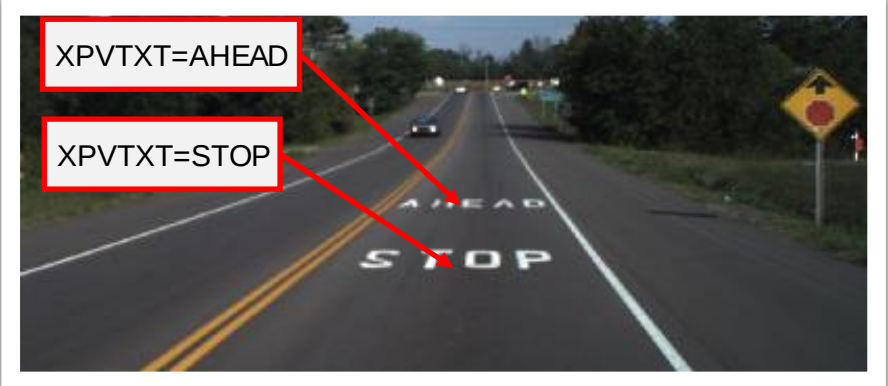
TRAFFIC CONTROL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XSHN	Traffic Signal Head		
			
XSHNB	Signal Head w/ Backplate		
			
XSIGN1**	Small 1-Post Sign	XSIGN1=MM3	
Locate the center of the sign. If the face of the sign is wide, use the Feature Code SIGNT. A descriptor is required only for a mile marker sign. In the office, rotate the sign to face correctly.			
 			

TRAFFIC CONTROL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XSIGN2	Small 2-Post Sign		
Locate the center of the sign. It is not necessary to describe what is written on the sign. If the face of the sign is wide, use the Feature Code SIGNT.			
			
X2SIGN	Small 2-Faced Sign		
XSPSS	Strainpole		
Locate pole at ground elevation.			
			
XWPSS	Wood Signal		
Same As Feature Code XSPSS, except that the pole is wood. See Feature Code XSPSS for details.			

****A descriptor is required.**

Traffic Control (Pavement Marking)

TRAFFIC CONTROL (PAVEMENT MARKING)			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
CWALK**	Crosswalk	CWALK=CROSSWALK	
Locate an outline of the crosswalk area.			
			
STOP	Stop Bar		
See Feature Code CWALK for details. Locate the length of the stop bar down the center.			
XHC	Handicap Parking		
Locate Handicap parking symbol in the center.			
XHOV	HOV Diamond		
Locate in the center of the diamond.			
XONLY	Only Pavement Marking		
Locate the bottom-center of the text "ONLY" painted on the pavement.			
			

TRAFFIC CONTROL (PAVEMENT MARKING)			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XPVTEXT**	Pavement Marking Words (Center)	XPVTEXT=AHEAD	AHEAD
Locate the text at the bottom-center.			
			
XRRPAV	Railroad Crossing Pavement Marking		
Locate in the center of the cross.			
XRARI	Right Arrow Interstate		
Locate at the center of the base of the arrow.			
XSARI	Straight Arrow Interstate		
Locate at the center of the base of the arrow.			
XSRARI	Straight & Right Arrow Interstate		
Locate at the center of the base of the arrow.			
XLAR	Left Arrow Pavement Marking		
Locate at the center of the base of the arrow.			

TRAFFIC CONTROL (PAVEMENT MARKING)			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XRAR	Right Arrow Pavement Marking		
<i>Locate at the center of the base of the arrow.</i>			
XSAR	Straight Arrow		
<i>Locate at the center of the base of the arrow.</i>			
XLRAR	Left & Right Arrow		
<i>Locate at the center of the base of the arrow.</i>			
XSLAR	Straight & Left Arrow		
<i>Locate at the center of the base of the arrow.</i>			
XSLRAR	Straight, Left & Right Arrow		
<i>Locate at the center of the base of the arrow.</i>			
XSRAR	Straight & Right Arrow		
<i>Locate at the center of the base of the arrow.</i>			
XRLAR	Roundabout Left Arrow Pavement Marking		
<i>Locate at the center of the base of the arrow.</i>			
XRSLAR	Roundabout Straight / Left Arrow Pavement Marking		
<i>Locate at the center of the base of the arrow.</i>			
XRSLRAR	Roundabout Straight / Left / Right Arrow Pavement Marking		
<i>Locate at the center of the base of the arrow.</i>			

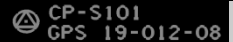
TRAFFIC CONTROL (PAVEMENT MARKING)			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XSUBBIKE	Bike Pavement Marking – Suburban		
<i>Locate at the tip of the arrow.</i>			
XUBIKE	Bike Pavement Marking – Urban		
<i>Locate at the tip of the arrow.</i>			
XYIELD	Pavement Yield Label		
<i>Locate at the bottom center of the word YIELD.</i>			
YIELD	Pavement Yield Line		

****A descriptor is required.**

Terrain Model

TERRAIN MODEL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
BL	Breakline		
<i>BL is located where the surface of the terrain “breaks” and another Feature Code will not locate it as a DTM breakline. It is used for the crown of a two-lane road, tops of banks, bottoms of banks, tops of curbs, tops of wing walls, tops of end walls, tops of abutments, bottoms of streams, bottoms of concrete and rip-rap ditches, and more.</i>			
OL	Obscure Line		
<i>OL is used in the office, mainly with an aerial survey DTM.</i>			
XP	Ground Point		
<i>XP is a spot point, for DTM creation. Spacing is approximately a 50', or less, grid pattern, plus any extra points as needed to densify the data to create a correct DTM.</i>			

Survey Control

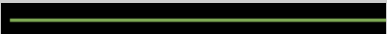
SURVEY CONTROL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XBM**	Benchmark	XBM=SPIKE IN POLE	
<i>XBM is a high-quality benchmark, set using differential leveling equipment.</i>			
XCK**	Check Point	XCK=GPS 17	
<i>[GPS 17] When using RTK (Real Time Kinetic) GPS techniques, it is necessary to check into a known point's coordinates and elevation before starting, and at the end of, data collection work. Use XCK to record that checking point. The descriptor does not have to be the full, exact, name of the point being checked into.</i>			
XCP**	Control Point	XCP=GPS 19-012-08	
<i>XCP is a high quality, 3D control point; probably set using the methods in the survey manual. It will be listed in the Control Point Table and will be drawn on the profile as a control point.</i>			
XH**	Horizontal Photo Point	XH=PIP	
<i>[PIP, CLOTH FLAG, PAINTED FLAG] XH is a Photo Control Point for an aerial survey, and only has north & east coordinates. Photo Control Points are either PIP (photo-identifiable point, like the corner of a sidewalk), or a cloth flag or a painted flag.</i>			
XHV**	Horiz & Vert Photo Point	XHV=PAINTED FLAG	
<i>[PIP, CLOTH FLAG, PAINTED FLAG] XHV is a Photo Control Point for an aerial survey, and has north & east coordinates, and elevation. Photo Control Points are either PIP (photo-identifiable point, like the corner of a sidewalk), or a cloth flag or a painted flag.</i>			
XSPUR^^	Temporary Survey Point	XSPUR=PK NAIL	
<i>XSPUR is a 3D control point that is just a spur point and is not in a closed or adjusted traverse. It will not be listed in the Control Point Table, and will not be a benchmark.</i>			
XTRAV**	Traverse Point	XTRAV=REBAR & CAP	
<i>XTRAV is a 3D control point in a closed adjusted traverse.</i>			

SURVEY CONTROL			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
XV**	Vertical Photo Point	XV=CLOTH FLAG	
[PIP, CLOTH FLAG, PAINTED FLAG] XV is a Photo Control Point for an aerial survey, and only has an elevation. Photo Control Points are either PIP (photo-identifiable point, like the corner of a sidewalk), or a cloth flag or a painted flag.			

******A descriptor is required. **^^**A descriptor is optional.

Miscellaneous & Default Codes

The six DEFAULT codes below are for drawing items that do not have a valid code. In the office, change the code on these items to one that is in the codes' list.

MISCELLANEOUS & DEFAULT CODES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
DEFAULT_CHAIN	Default Item		
DEFAULT_CURVE	Default Item		
DEFAULT_LINE	Default Item		
DEFAULT_PARCEL	Default Item		
DEFAULT_POINT	Default Item		
DEFAULT_SPIRAL	Default Item		
DASH**	Dash Line	DASH=OLD BARBWIRE ON GROUND	
The dashed line will be drawn with the Non-Transportation Features.			
DOT**	Dotted Line	DOT=SEP DRAIN FLD?	
The dotted line will be drawn with the Non-Transportation Features.			

MISCELLANEOUS & DEFAULT CODES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
LD**	Long Dash Line	LD=CATTLE PATH PER FARMER	
<i>The long dashed line will be drawn with the Non-Transportation Features.</i>			
MISC**	Miscellaneous	MISC=ABOVE GROUND POOL	
<i>The solid line will be drawn with the Non-Transportation Features.</i>			
SOLID**	Solid Line	SOLID=ABOVE GROUND POOL	
<i>The solid line will be drawn with the Non-Transportation Features.</i>			
XMISC**	Misc. Unknown Point	XMISC=FILLER CAP	
<i>[FILLER CAP] The circle will be drawn with the Non-Transportation Features.</i>			

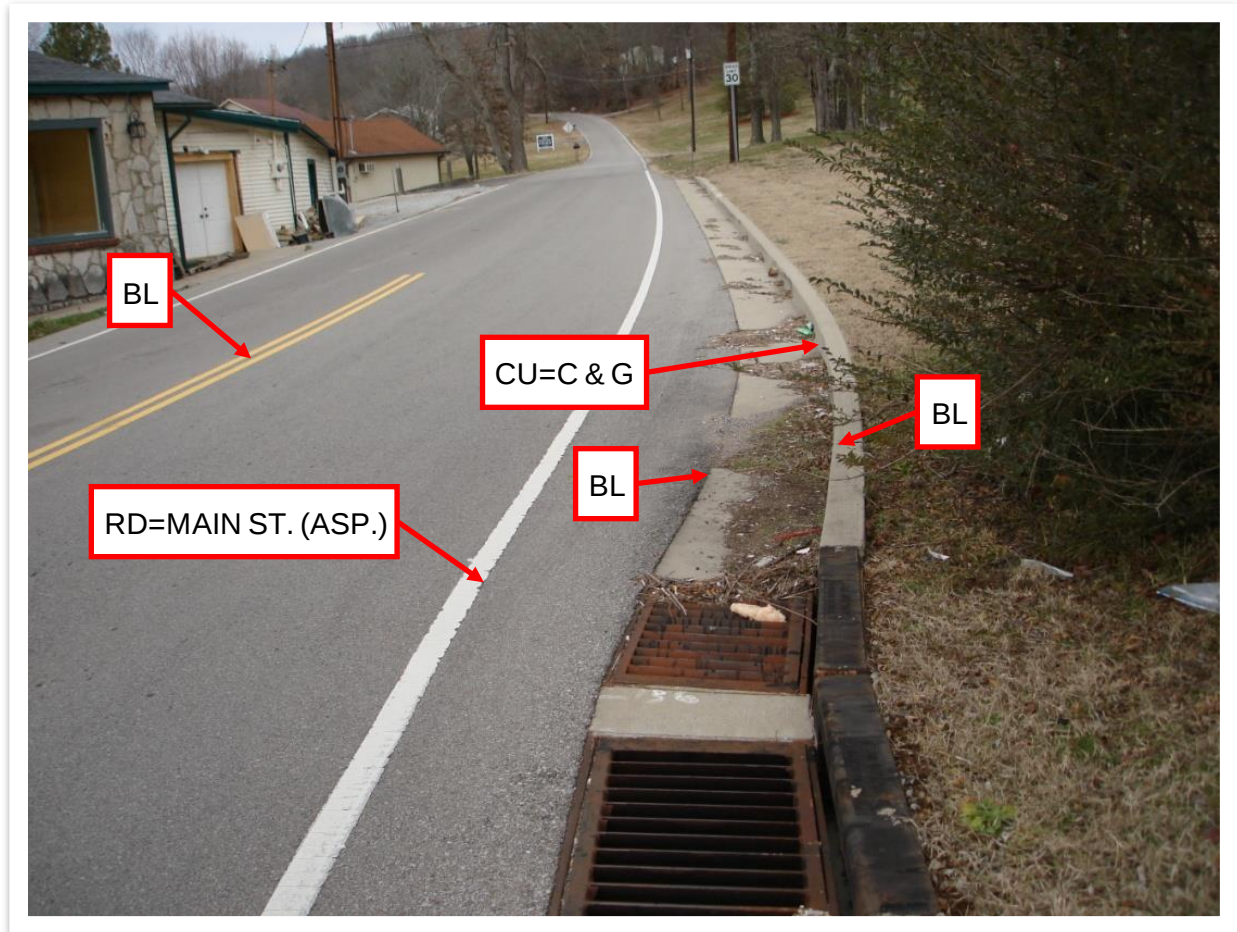
****A descriptor is required.**

Office Codes

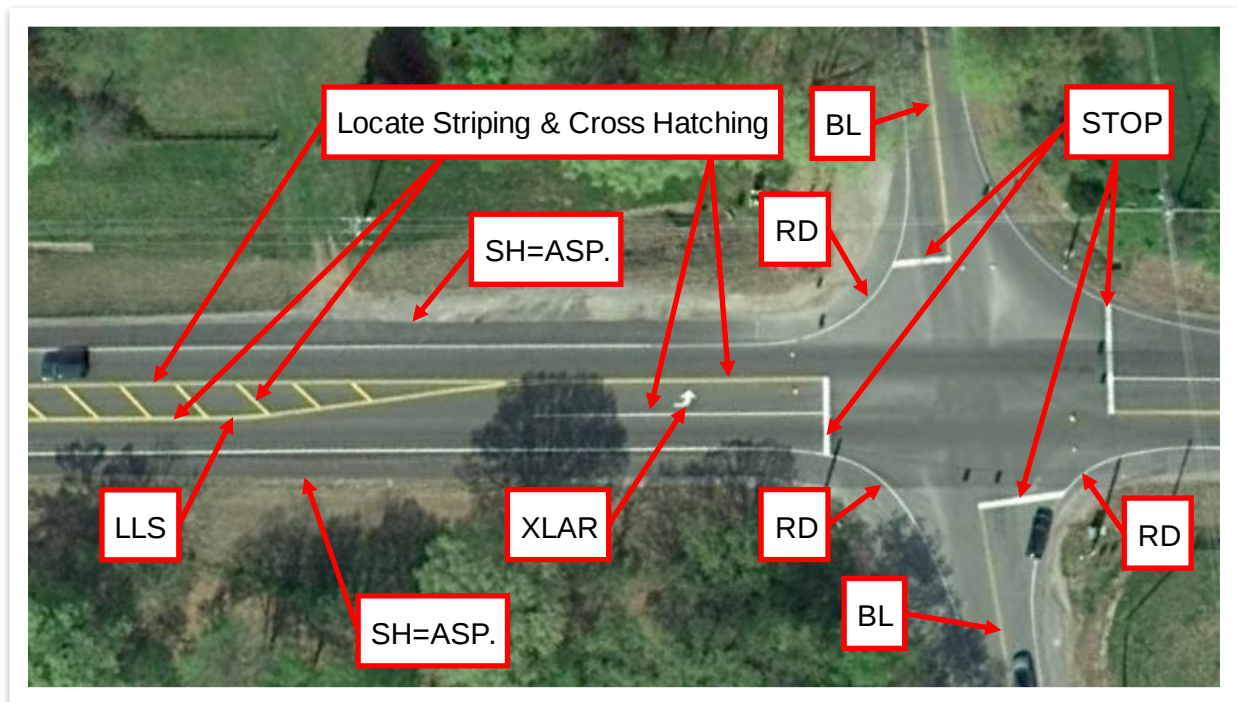
OFFICE CODES			
Feature Code	Description	Descriptor (if applicable)	Graphic(s)
CL	Proposed Centerline		+ S101 
<i>CL is not used in the field. In the office, use it for preliminary centerline development. It draws both points and lines.</i> Preliminary Centerline: Centerline developed by the surveyor <u>or</u> designer as part of the survey process. It will then be used by survey to station the applicable annotation off of, and then re-submitted to the designer as part of the survey deliverables. Note: The Proposed Centerline is the preliminary centerline that is re-featurized by the designer and then carried through the design with the necessary geometric updates.			
DBDRY	Drainage Map Boundary		
<i>For every location where there will be a structure (a pipe, a box culvert, or a bridge over water), DBDRY is for locating the complete boundary line around the drainage area for that structure. Rain water that falls within that area will end up going through the pipe or box culvert, or under the bridge. This drainage boundary line might be located in the field, in the office, or a combination of both.</i>			
EXCL	Existing Centerline		+ S101 
EXCL is used in the office to develop the existing centerline as part of the survey process based on the field collected points. Fully label this centerline and plot its profile.			
X_PROPERTY	Property Development		+ SP217 
<i>X_PROPERTY is used in the office for property and ROW development. It draws both points and lines.</i>			
XPOINT	HiVis Generic Office Point		+ SP217 
<i>XPOINT is used in the office for development of anything that requires COGO. It draws both points and lines.</i>			

Photos

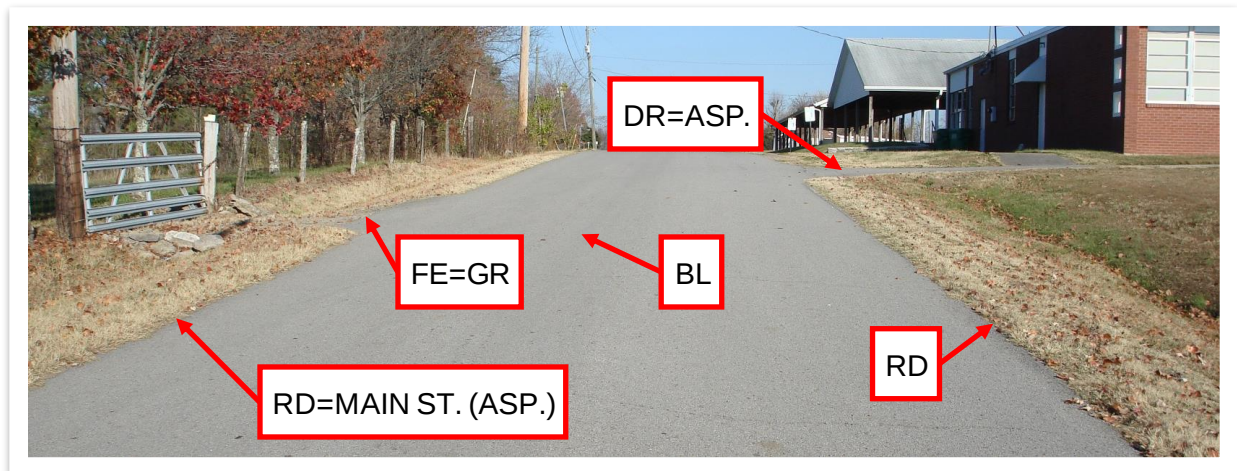
Road Photo 1



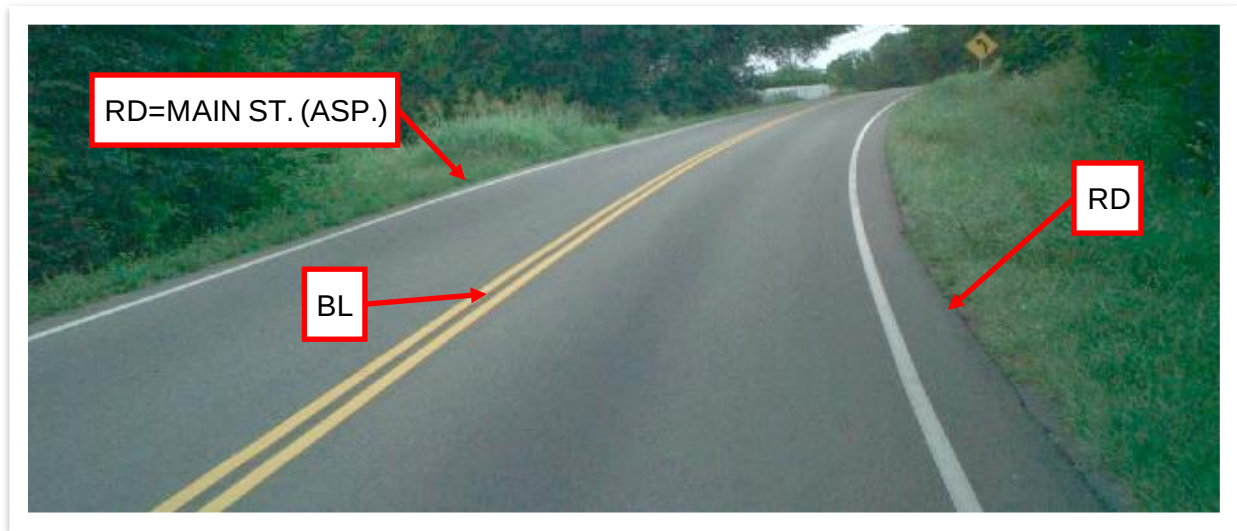
Road Photo 2



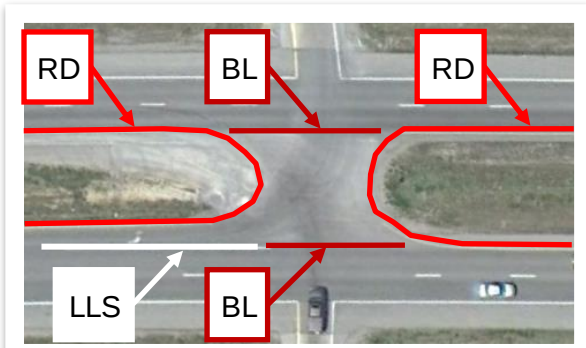
Road Photo 3



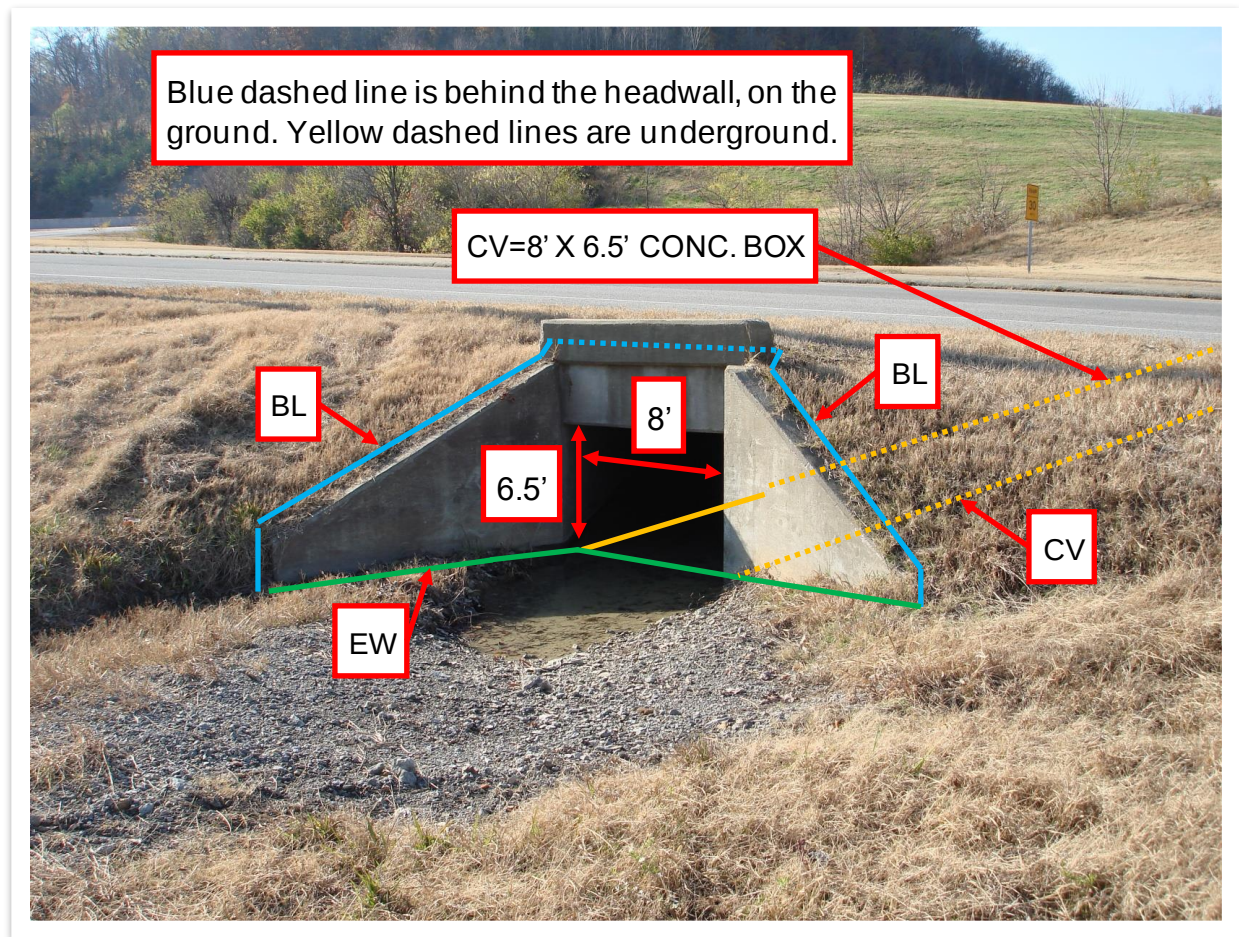
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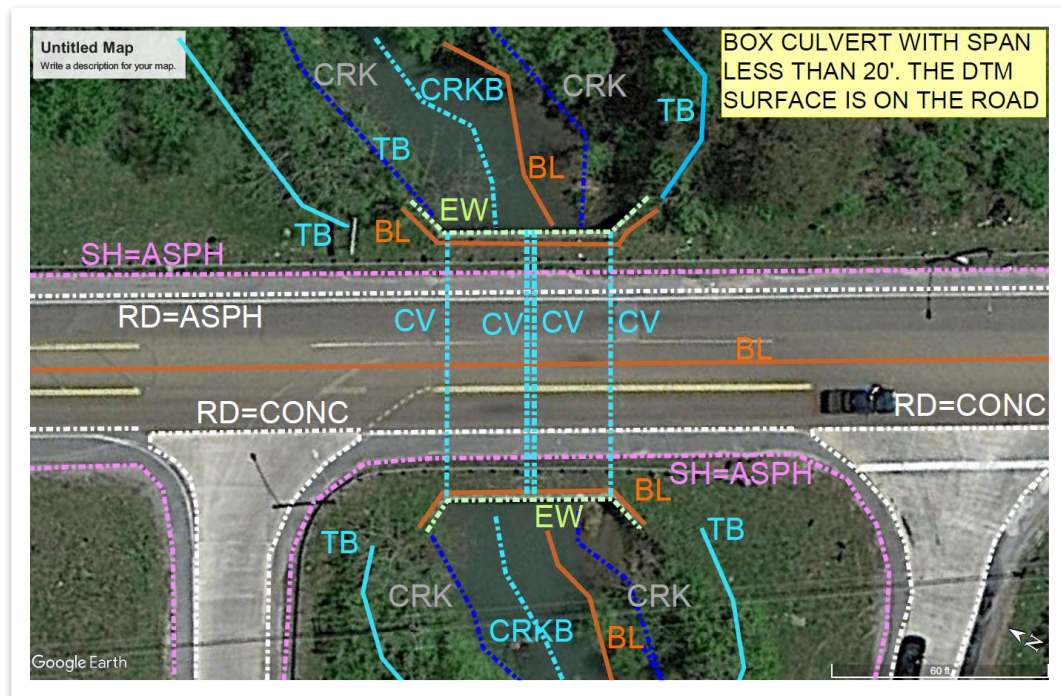
Road Photo 5



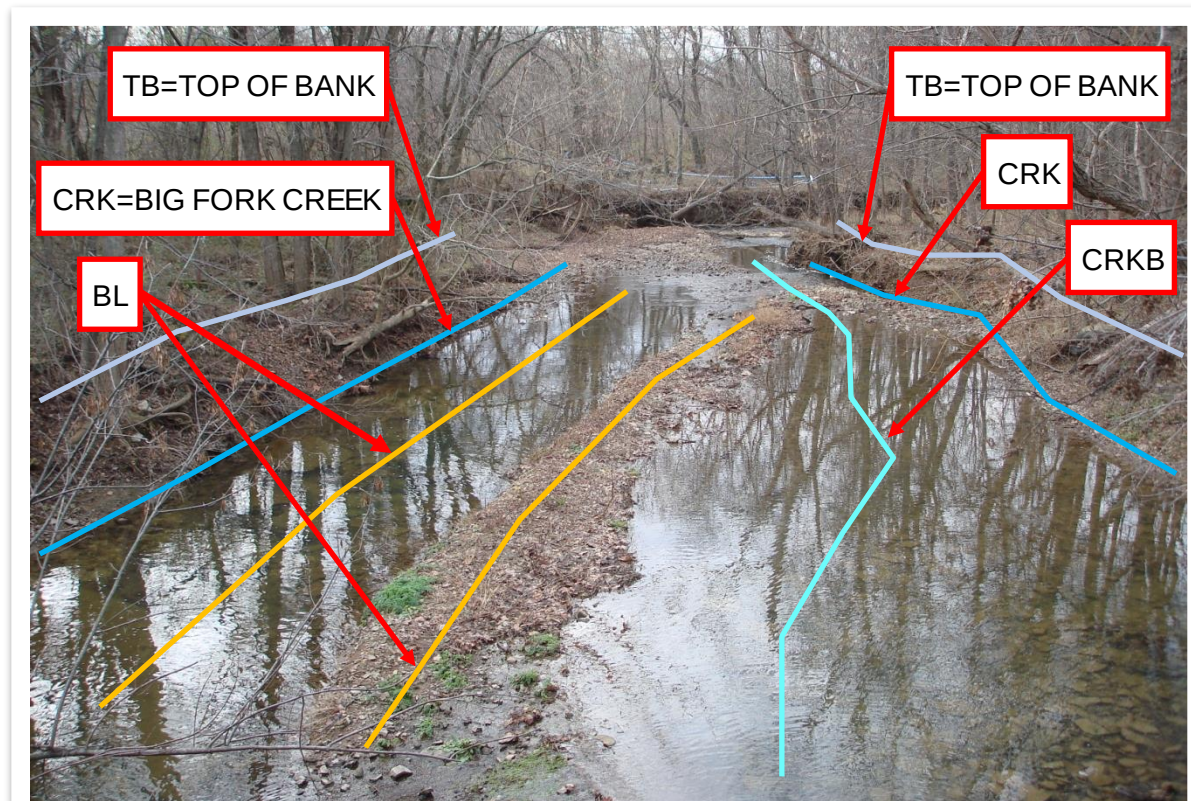
Box Culvert Photo 1



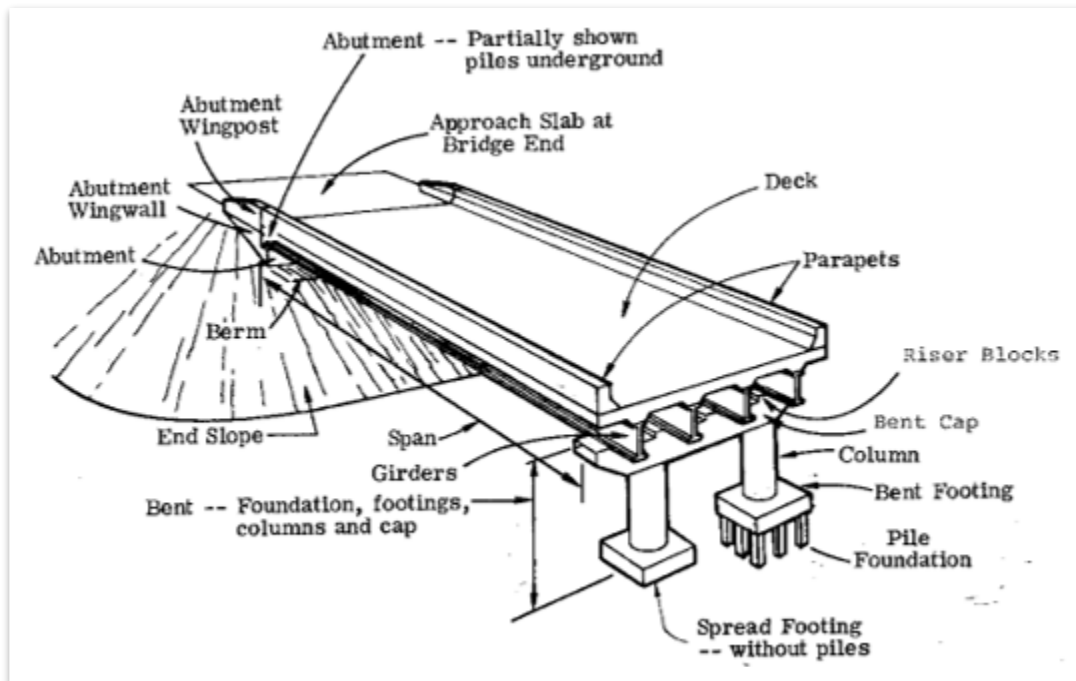
Box Culvert Photo 2



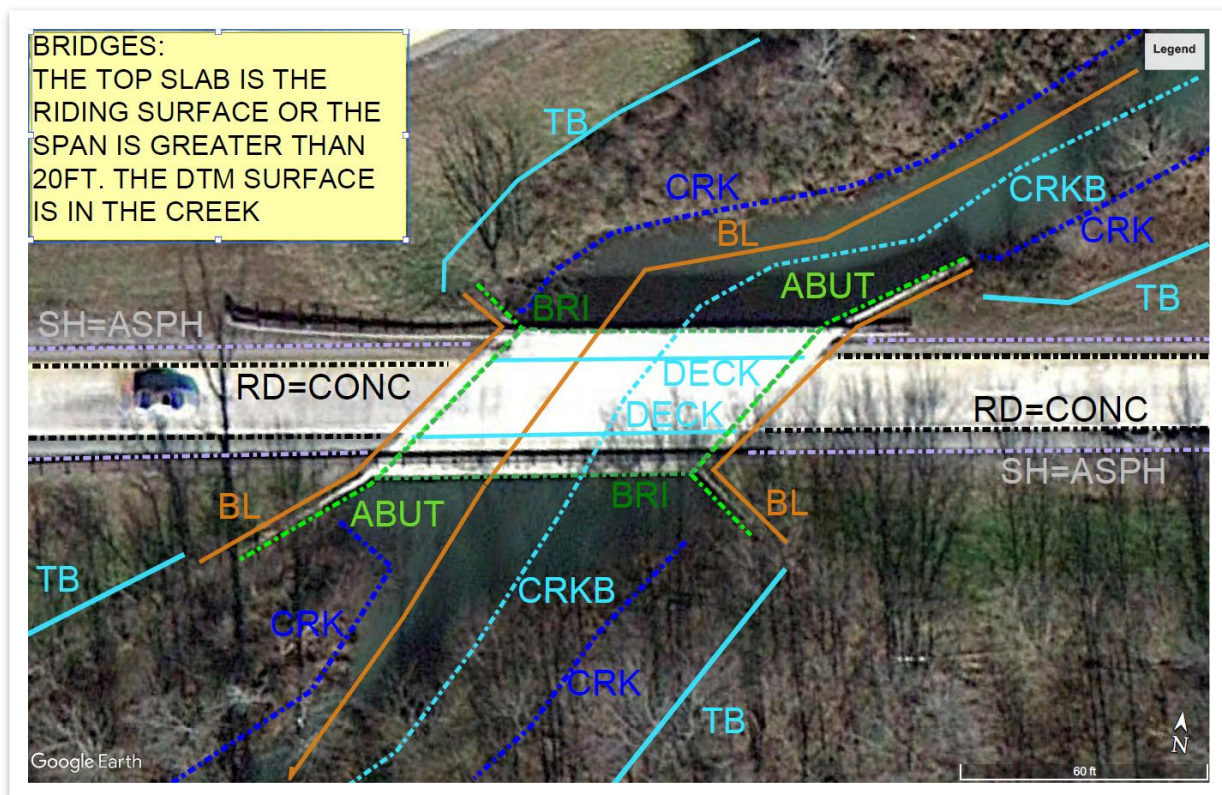
Creek Photo 1



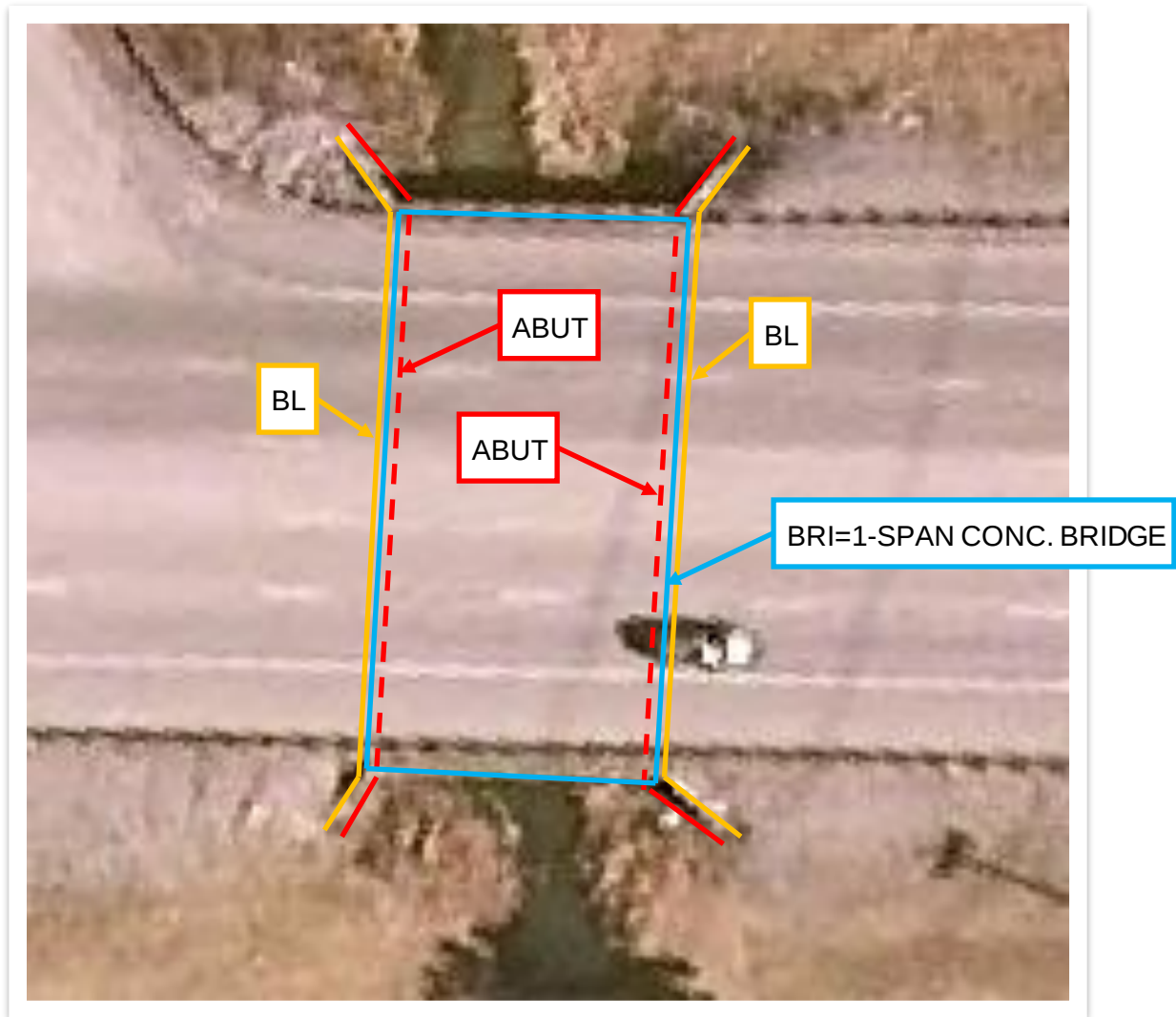
Bridge Photo 1



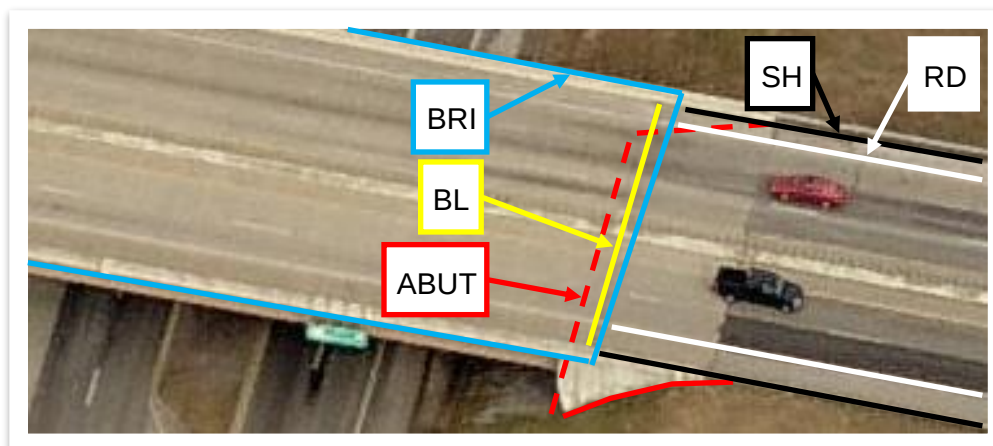
Bridge Photo 2



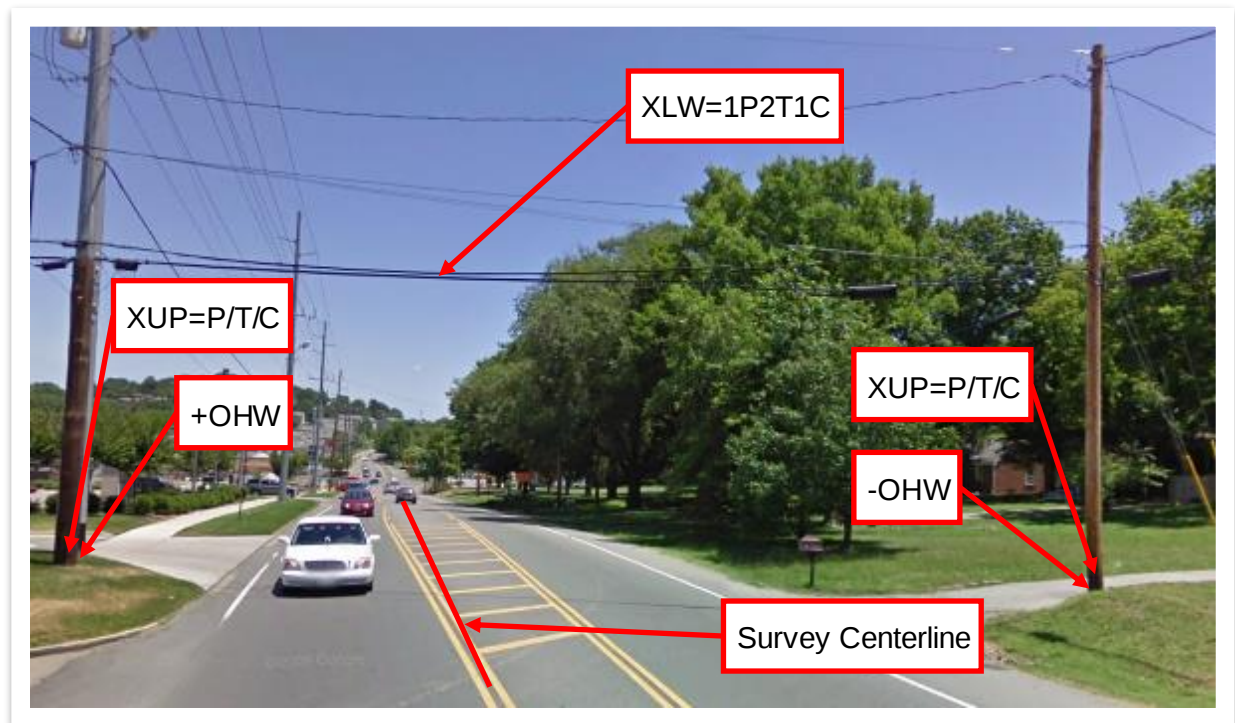
Bridge Photo 3



Bridge Photo 4



Utility Photo 1



Utility Photo 2

