Chapter 4

Feature Codes

Table of Contents

4. Feature Codes

A. The Use of Feature Codes

When performing a preliminary survey, specific features such as pavement, pipes, ditches, or utilities are associated with a feature code. A feature code is a group of letters, numbers, and/or symbols used to define each data collection point. There are more than 200 individual codes that represent natural and man-made features that the surveyor can use to most accurately represent the terrain. While every single feature that a surveyor encounters cannot be accounted for, P&S has identified the most common.

Assigning the proper feature code is an important surveying skill. Using the feature codes may seem difficult at first, but with practice most surveyors are able to utilize a fairly large set of feature codes. The Photogrammetry & Surveys Section (P&S) provides "pocket" flip charts for each feature code list. These flip charts provide the surveyor with the complete set of feature codes along with a brief description.

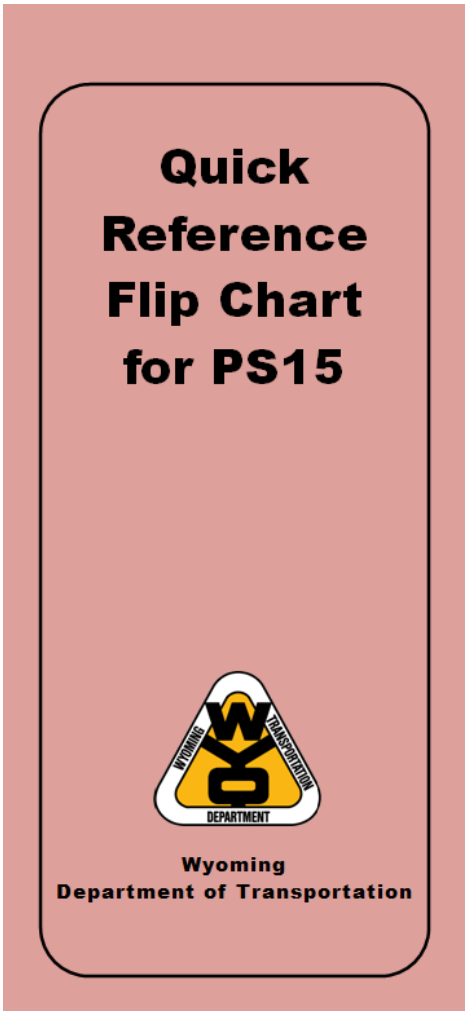

Figure 4-1. PS15 flip chart.

When mapping preliminary survey data with MicroStation and Geopak software, the linking and feature codes will determine, at a minimum, the following information:

- Whether a feature will be mapped as a point, line, or shape.
- The level, color, line weight and style, and symbol used to represent the code.
- What information will be mapped (e.g. point number, point name, elevation, attributes, and comments).

Refer to Chapter 8 in this manual for more information on mapping survey data.

B. The Survey Crew

Typically, a survey crew consists of an instrument person and a rod person. However, additional personnel may be required to assist with traffic control in high traffic areas or with tree trimming in heavily wooded areas. Each member of the survey crew should be familiar with the intent and extent of the preliminary survey. The intent refers to the specific features to be collected, while extent refers to the collection area (i.e. project limits). Refer to the Survey Meeting report for specific details of the preliminary survey.

The accuracy and completeness of the survey depends greatly upon the rod person's determination of the order, number, and feature code for each measurement. An insufficient number of measurements taken or measurements collected in the wrong place for a feature will result in an inaccurate representation in the mapping.

The rod person and the instrument person should be equally involved in the planning and execution of the survey. During the survey, it is their responsibility to:

- Use feature codes and control codes consistently and correctly.
- Ensure the proper sequence of collection (this is especially important when collecting multiple lines simultaneously).
- Ensure adequate coverage within the collection area.
- Include appropriate rod heights, attributes, and comments with each survey measurement.

When complete, it is equally important for the survey crew to review the collected data. It is good surveying practice to keep notes during the collection. Surveying notes will greatly assist with the editing process to reduce the potential for mapping errors.

C. Revisions to the Feature Code List

While it is P&S's responsibility to develop the feature code list, these codes are not all encompassing. Periodically it becomes necessary to update the WYDOT feature code list. Previous editions include PS96, PS97, PS02, PS06, and PS09. If additional feature codes are needed, suggestion should be submitted to the State Photogrammetry and Surveys Engineer. Any valid changes or additions to the feature code list will be included in subsequent versions.

D. The WYDOT PS15 Feature Code List

PS15 is the most recent feature code list developed by P&S. Earlier feature code lists are still active because many older projects are still in the mapping process and the codes need to be consistent. See the tables at the end of this chapter for a complete list of the revised feature codes. These tables contain the following collection and mapping information for each code:

1. Feature Code
Each feature has a 3 to 6 letter abbreviation or acronym. The feature codes are separated into specific use categories. These categories are linking codes, project and photo control codes, DTM codes, map codes, and geology codes.

2. Point, Line, or Shape
Each survey measurement is an individual point. However, linking codes and feature codes will determine if it will be mapped as an individual point or part of a line or shape.

Note: Feature codes represented by a line or shape may be followed by a number to distinguish between multiple collections of the same feature (e.g. CRS1, EP2, UPOW5, etc.).

3. Description
Each feature code has a brief description of what it is intended to represent.

4. Attributes
Attributes are characteristics that further define a specific feature. During a preliminary survey, the data collector will prompt the user to enter a response for each attribute.

5. DTM Feature
This column indicates how the feature codes contribute to the Digital Terrain Model (DTM). A DTM is a three-dimensional (3-D) model representing the terrain for a portion of the Earth's surface. If this column is blank, then the feature does not contribute to the DTM.

a. Point
A "point" represents a specific location and is used to create the DTM.

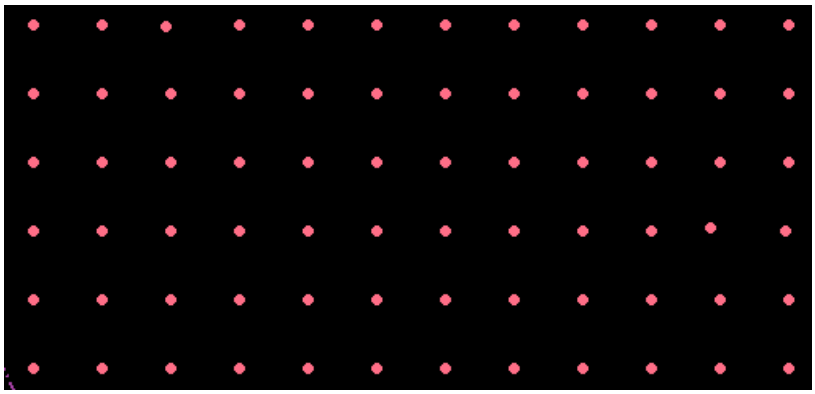

Figure 4-2. DTM points.

b. Break
A "break" is a line created from a series of points with similar codes. The individual points contribute to the DTM, but break lines are used to define abrupt terrain changes in the triangulated irregular network (TIN). A TIN model is another representation of the terrain that is arranged in a network of non-overlapping triangles that uses individual DTM points as vertices.

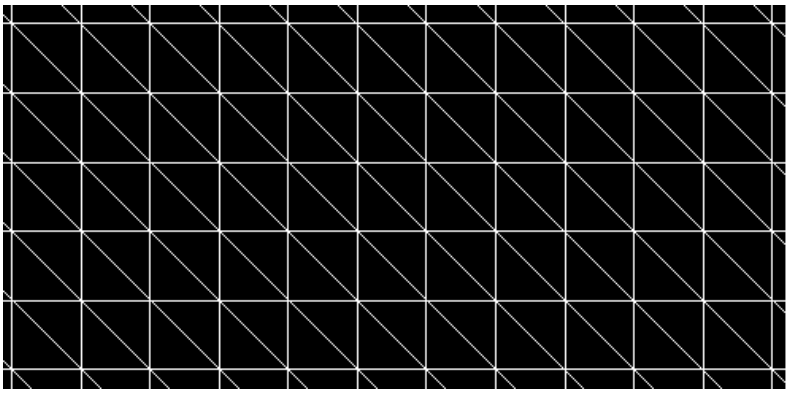

Figure 4-3. Triangulation irregular network (TIN).

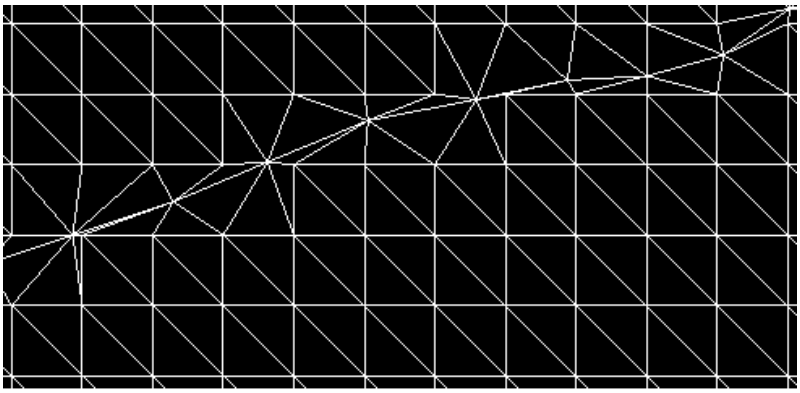

Figure 4-4. TIN with a breakline.

c. Check

A "check" is a point that does not contribute to the DTM but is used by the Photogrammetry group to check the DTM elevation at that location.

d. Void

A "void" is a shape that does not contain DTM information. Voids are caused by buildings, heavy vegetation, or bodies of water. These areas are typically filled by field supplementation.

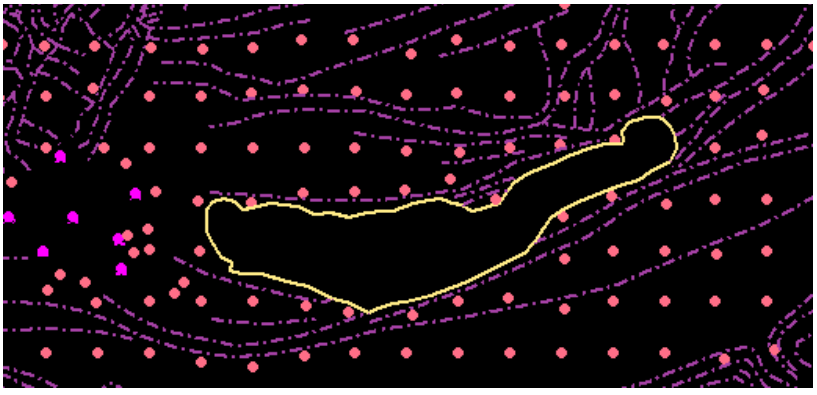

Figure 4-5. Void area.

6. Feature Code Tables

Each feature code list is divided into several categories that represent distinct survey data features.

a. Linking Codes

Linking codes are used in conjunction with feature codes to define the starting and ending points for each line or shape. They are separated from the feature code by an asterisk (e.g. BL*EPS). See chapter 6 for more information on setting linking codes and feature codes in the Trimble data collector.

Note: The use of the curve fit (CF) linking code has been eliminated due to mapping problems encountered when Geopak plots curves defined by these codes. The placement of survey shots around curves should be of sufficient density that the curve is accurately represented.

Linking Code	Point, Line, or Shape	Description	Comments
BL	L or S	Begin line	Connects points in a chain until an end line or close figure code is encountered.
CL	S	Close figure	Connects the end of the chain with the beginning to close the shape.
EL	L	End line	Ends the chain.

b. Project and Photo Control Codes

These codes represent permanent and temporary project control monuments and photo control targets.

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
AUXC	P	Auxiliary supplemental control point	Monument Type					
EMKR	P	Engineering marker	Station	Project Number	Monument Type			
PCPT	P	Project control point	Monument Type					
TCP	P	Temporary control point	Monument Type					
PAUX	P	Photo control, picked point (no target)						Check
PFLT	P	Photo control, flight-line target						Check
PWPT	P	Photo control, wing point						Check

c. DTM Codes

DTM codes represent the ground surface and are used to develop the (DTM). Codes with this symbol (♠) do not have a planimetric component (i.e. point, line, or shape) and will not be visible in the project mapping.

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
DTM - Bridge/Approach Slab/Retaining Walls								
BAS	L or S	Bridge approach slab						Break
BRDG	L	Bridge end						Break
RWB (♠)	L	Retaining, head and wing walls, bottom front	Type	Other Notes				Break
RWT	L	Retaining, head and wing walls, top back	Type	Other Notes				Break

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
DTM - Buildings/Sidewalks/Curb & Gutter/Concrete Items								
BLD	L or S	Building						Break or Void
CON (♠)	P	Selected concrete point						Point
CSP	L or S	Concrete slope protection						Break
FLC (♠)	L	Flow line of curb & gutter or valley pan						Break
SLAB	L or S	Concrete slab						Break
SWC	L	Sidewalk edge, concrete						Break
SWE	L	Sidewalk edge, not concrete	Type					Break
TBC	L	Top, back of curb						Break

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
DTM - Roadway/Railroads/Parking Areas								
CRS (♠)	L	Center of roadway, surfaced						Break
CRUS	L	Center of roadway, unsurfaced						Break
EP	L	Edge of pavement						Break
EPS	L	Edge of paved shoulder						Break
ESD	L	Edge of surfaced driveway						Break
ESPL	L	Edge of surfaced parking lot	Type					Break
ETW	L	Edge of traveled way						Break
EUR	L	Edge of unsurfaced road						Break
EUSD	L	Edge of unsurfaced driveway						Break
EUSPL	L	Edge of unsurfaced parking lot						Break
PAV (♠)	P	Selected pavement point						Point
RRBS (♠)	L	Railroad bed shoulder						Break
TRL	L	Pack trail or two-track vehicle trail						Break

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
DTM - Terrain								
BKLS (♠)	L	Breakline, generic ground break						Break
GRD (♠)	P	Selected original ground point						Point
SPILE	S	Base of stock piles	Type					Break or Void

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
DTM - Water/Drainage Structures								
CLDB	L	Concrete lined ditch, bottom	Other Notes					Break
CLDT	L	Concrete lined ditch, top	Other Notes					Break
DBI	L	Drainage bottom, irrigation						Break
DTI	L	Drainage top, irrigation						Break
DFL	L	Drainage flow line, natural ground						Break
WAT	L	Existing water edge as breakline						Break
WATVOI	S	Existing water edge as void						Void

d. Map Codes

Map codes are used to define two-dimensional planimetric features and are represented by a point, line, or shape in the mapping. Some map codes do not contribute to the DTM but are used by P&S to check the DTM and should be shot on the ground.

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Bridges/Barriers/Guardrails/Railroads								
BREJ	L	Bridge expansion joint						
BRG	S	Bridge	Number					
BRP	P	Bridge pier						Check
COB	L	Concrete barrier	Other Notes					
COPB	P	Concrete post barrier						Check
GR	L	Bridge and roadway guardrails	Type					Check
RCS	P	Railroad crossing signal						Check
RR	L	Railroad; center of tracks						(1)
SRCP	P	Structure roadway clearance point	Structure Type					(2)
(1) The elevation for this feature is at the top of a tie or ballast, which may or may not be on the DTM surface. (2) The elevation for this feature is a shot at the lowest clearance point of the structure above the road.								

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Campgrounds/Rest Areas								
BBQ	P	Campground barbecue pit or fire pit						
FBX	P	Fee box depository						Check
PICT	P	Campground picnic table	Type					
RVDP	P	RV water and sanitation dump site						Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Culverts/Pipes/Tanks								
BCUL	S	Box culvert	Type	Size				
CULL	S	Pipe Culvert, 60" and larger	Type	Size				
CULS	L	Pipe Culvert, smaller than 60" (2 pt. line)	Type	Size				
DP	L	Above ground drain pipe	Type	Size				
FLP	P	Flow line, bottom of pipe						(3)
FLRD	L	Flared end (2 pt. line)						
IRP	L	Pipe used for crop irrigation	Type	Size				
LFLD	L	Leach field						Check
SPTC	P	Septic tank	Other Notes					
STK	P	Stock tank						
TANK	S	Storage tank	Other Notes					Break or Void
TPC	P	Top of pipe culvert	Type	Size	Other Notes			(3)
UDT	L	Underground drain pipe	Type	Size				Check
UDTO	P	Above ground and underground drain pipe outlet	Type	Size				Check
(3) This feature is shot at the pipe inlet or outlet and must be dug out if silted in.								

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Fences & Accessories								
CTGD	L	Cattle guard (2 pt. line)	Size					Check
FBP	L	Fence, buck and pole	Height	Other Notes				Check
FBR	L	Fence; block, brick, or rock	Type	Height				Check
FBW	L	Fence, barbed wire	Number of Wires	Post Type				Check
FBWW	L	Fence, barbed w/ woven wire	Number of Wires	Post Type				Check
FEO	L	Fence, other	Type	Height				Check
FIND	L	Fence, industrial wire	Type	Height	Post Type			Check
FSN	L	Fence, snow	Type	Height	Post Type			Check
FWD	L	Fence, wooden	Type	Height	Post Type			Check
FWW	L	Fence, woven wire	Type	Height	Post Type			Check
GATE	L	Gate for fence (2 pt. line)	Type					Check
POST	P	Single fence post	Type					Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Fields/Foundations/Rocks								
CULB	L	Cultivated field boundary						Check
FOND	L or S	Foundation						
ROCS	L	Rock outcropping or boulder field						Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Miscellaneous								
MISCB	S	Miscellaneous boundary features	Other Notes					Check
MISCL	L	Miscellaneous line features	Other Notes					
MISCP	P	Miscellaneous point features	Other Notes					
PROF	L	Profile of specific features	Type					(4)

(4) This feature is used specifically for creating a profile and is NOT included in the DTM or mapping files. The feature is typically shot on the terrain surface and used as a DTM check. Note: When a profile is used for railroad tracks, the shot is taken on top of each rail and is not used as a DTM check but will be included in the mapping files.

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Signs/Man-Made Items								
CEMT	L	Cemetery						Check
FP	P	Flag pole						Check
GRAV	P	Grave						Check
HRMP	P	Highway reference marker post	Mile Number					
ITSS	P	Intelligent transportation system sign (weather stations/web cams)	Other Notes					Check
MB	P	Mailbox						Check
MEM	P	Memorial marker						Check
PB	L	Parking block (2 pt. line)						
SBB	L	Billboard	Other Notes					Check
SHP	P	Heavy duty single pole sign	Other Notes					Check
SMP	L	Multi-post major highway sign/VMS sign	Other Notes					Check
SOLP	P	Solar panel	Other Notes					Check
SP	P	Single post small highway sign	Other Notes					Check
SST	L	Overhead structural sign	Other Notes					Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Trees/Bushes								
BRL	L	Brush line	Other Notes					Check
BU	P	Bush, single	Other Notes					Check
TR	P	Tree, single	Other Notes					Check
TRLN	L	Tree line	Other Notes					Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Fiber Optics)								
FOBX	P	Fiber optic junction or pull box	Company					Check
FOMH	P	Manhole, fiber optic	Company					Check
OFOW	L	Overhead fiber optic wire	Company	Number of Wires				Check
UFO	L	Underground fiber optic line	Company					Check
UMFO	P	Underground fiber optic marker post	Company					Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Gas)								
AGG	L	Above ground gas or methane line	Company					
GASM	P	Gas meter	Company					Check
PROT	L	Propane tank (2 pt. line)	Company					
UGAS	L	Underground gas or methane line	Type	Company				Check
UMGS	P	Underground gas or methane marker post	Company					Check
VG	P	Valve, gas	Company					Check
WELG	P	Well, gas or methane	Company					

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Inverts and Pothole Locations)								
INVRT	P	Manhole/drop inlet invert elevation point	Other Notes					
PINVRT	P	Pipe invert elevation point	Other Notes					
POTH	P	Utility pothole location	Utility Type	Depth	Pipe Type	Size	Other Notes	

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Oil)								
AGO	L	Above ground oil line	Company					
GASP	P	Gasoline pump	Company					
UMOL	P	Underground oil line marker post	Company					Check
UOIL	L	Underground oil line	Company					Check
WELO	P	Well, oil	Company					

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Power)								
DGA	P	Down guy anchor, all utility poles						Check
ELMT	P	Electrical meter	Company					
OPOW	L	Overhead power wire	Company	Number of Wires				Check
PP	P	Power pole	Company	Number of Wires				Check
PPC	P	Combination power pole	Company 1	Company 2	Number of Wires	Other Notes		Check
PWBX	P	Power junction or pull box	Company					Check
PWWT	P	Power wind turbine	Company					Check
TRAT	P	Transmission tower	Company	Number of Wires				
UMPO	P	Underground power marker post	Company					
UPOW	L	Underground power line	Company					

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Sanitary Sewer and Storm Drains)								
DI	L	Median and curb & gutter drop inlets (2 pt. line)	Type	Depth				Check
GD	L	Gutter slotted drain (2 pt. line)						Check
LSSA	P	Lift station, sanitary sewer						
MHSA	P	Manhole, sanitary sewer	Company	Depth				Check
MHST	P	Manhole, storm drain	Company	Depth				Check
USAS	L	Underground sanitary sewer	Company					Check
USTS	L	Underground storm drain	Company	Size				Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Telephone)								
CT	P	Communication tower	Company	Other Notes				
MHT	P	Manhole, telephone	Company	Depth				Check
OTEL	L	Overhead telephone wire	Company	Number of Wires				Check
TBX	P	Telephone junction or pull box	Company					Check
TP	P	Telephone pole	Pole Number	Company	Number of Wires			Check
UMTL	P	Underground telephone marker post	Company					Check
UTEL	L	Underground telephone line	Company					Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Television)								
TVBX	P	Television junction box or pull box	Company					Check
UMTV	P	Underground television marker post	Company					Check
UTVC	L	Underground Television cable	Company					Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Traffic)								
LP	P	Luminaire pole	Company					Check
TS	P	Traffic or pedestrian signal pole	Company					Check
TSB	P	Traffic signal box	Company					Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Undefined Items)								
MH	P	Manhole, undefined	Depth	Other Notes				Check
OUTL	L	Overhead utility, undefined wire	Number of Wires					
POLE	P	Single pole	Other Notes					Check
UMUN	P	Undefined underground marker post	Other Notes					Check
UNBX	P	Undefined junction box or pull box	Other Notes					Check (5)
UUTIL	L	Underground utility, undefined	Other Notes					Check
UVAL	P	Undefined valve	Other Notes					Check
VALT	L or S	Utility vault	Company	Type				
VENT	P	Underground utility vent	Company					Check
(5) This feature code may also be used for a sprinkler valve box.								

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Utilities (Water)								
AGW	L	Above ground water line	Company	Other Notes				
FHY	P	Fire hydrant						Check
MHW	P	Manhole, water	Company	Depth				Check
UMWA	P	Underground water line marker post	Company					Check
UWAT	L	Underground water line	Company	Size				Check
VW	P	Valve, water	Company					Check
WM	P	Water meter	Company					Check
WSP	P	Water spigot						Check

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
Map - Water/Drainage Structures								
DAM	L	Dam or dike (2 pt. line)	Other Notes					Check
HWL	L	High water line						Check
IRBX	S	Irrigation box	Other Notes					
IRHG	P	Irrigation headgate	Other Notes					
IRSH	P	Irrigation sprinkler head	Other Notes					
IRWR	P	Weir						(6)
MARB	L	Marsh boundary						Check
RIPL	L	Riprap line						
RIPS	S	Riprap shape						
WELW	P	Well, water						
WML	P	Windmill						
(6) The elevation for this feature is at the lowest point of the weir.								

e. Geology Survey Codes

Geology survey codes are used to describe specific geologic features as defined by the Geology Program.

Feature Code	Point, Line or, Shape	Description	Attributes					DTM Feature
			Info 1	Info 2	Info 3	Info 4	Info 5	
DTM - Geology Survey Codes								
GENG	L	Natural ground to paleo-surface	Other Notes					Break
Map - Geology Survey Codes								
GEBH	P	Backhoe hole	Number	Other Notes				
GEBHP	P	Old backhoe hole	Number	Other Notes				
GEDL	L	Depleted pit limit	Other Notes					Check
GEFC	L	Formation contact	Other Notes					Check
GEGM	P	Monitoring tube	Number	Size	Other Notes			
GEIN	P	Inclinometer tube	Number	Other Notes				
GEIP	P	General geology information point	Other Notes					
GEIS	P	Instrument station	Number	Other Notes				
GELS	L	Deformation limits	Other Notes					Check
GEPB	L	Permit area boundary	Other Notes					Check
GEPL	L	Pit limit	Other Notes					Check
GEQL	L	Quarry top or bottom limits	Other Notes					Check
GERP	L	Reject piles	Other Notes					Check
GESC	L	Scarp	Other Notes					
GESL	L	Seismic lines	Other Notes					
GESP	P	Settlement platform	Other Notes					
GESRP	P or L	Soil retention piling	Other Notes					Check
GESS	P	Surface sample location	Other Notes					Check
GEST	L	Slide toe	Other Notes					Check
GETC	L	Tension cracks	Other Notes					
GETE	L	Terrace edge	Other Notes					Check
GETH	P	Test hole	Number	Other Notes				
GETHP	P	Old test hole	Number	Other Notes				

GETP	L	Topsoil pile	Other Notes					Check
GEUS	P	Unknown survey point	Other Notes					
GEWC	L	Weathered or unweathered contact	Other Notes					

E. Feature Code Changes

The following is a list of the feature code changes from PS09 to PS15.

1. Deleted Codes from PS09

a. Survey Codes

BMP - Permanent Bench Mark
BMT - Temporary Bench Mark

b. DTM Codes

ILV - Island Void
OBA - Obscure Void Area

c. Non-DTM Codes

BHIV - Beehive Boundary
MAR - Marsh
OWE - Overhead Wire Elevation
RRBN - Railroad; Center of Tracks, Burlington Northern
RRUP - Railroad; Center of Tracks, Union Pacific
RRWC - Railroad; Center of Tracks, Wyoming-Colorado
TBTH - Telephone Booth
USIG - Underground Signal Control Line

d. Miscellaneous Codes

CHKPTS - DTM/TIN Elevation Check Point

e. As Constructed Codes

SS - As Constructed Slope Stake Location

f. Land Survey Codes

ACC - Accessory to Land or Property Corner
HMON - Highway Monument
LCOR - USPLSS Land Corner
PCOR - Property Corner
CALC - Calculated Land Survey Point

g. Wetland Codes

SAS - Special Aquatic Site
WEBX - Wetland External Boundary
WTDM - Deep Marsh (Type 4)
WTIM - Inland Saline Marsh (Type 10)
WTOW - Open Water (Type 5)
WTSB - Seasonally Flooded Basin (Type 1)

WTSF - Inland Saline Flat (Type 9)
WTSM - Shallow Marsh (Type 3)
WTSP - Sample Point
WTSS - Shrub Swamp (Type 6)
WTSW - Inland Open Saline Water (Type 11)
WTWM - Wet Meadow (Type 2)
WTWR - Woody Riparian Wetland (Type 12)
WUP - Upland
WUS - Waters of U.S.

2. Added Codes

a. DTM Codes

DTI - Drainage top, irrigation

b. Map Codes

INVRT - Manhole/drop inlet invert elevation point
ITSS - Intelligent transportation system sign (weather stations/web cams)
RIPL - Riprap line
RIPS - Riprap shape
SOLP - Solar panel

3. Modified Codes

a. Map Codes

MINVRT - Manhole, Invert Elevation Point

This code was changed to INVRT to also include drop inlet inverts.

RIP - Riprap

This code was changed to RIPL and RIPS to differentiate riprap collected as a line (less than 6' in width) or a shape (greater than 6' in width).

SMP - Multi-post major highway sign

This code was changed to include variable message signs (VMS).

4. Attributes

In addition to feature code changes, many attributes were also deleted, added, or modified. The attribute changes have been incorporated into the Trimble and Leica data collector PS15 files. A generic text file with feature codes and attributes is available for data collectors other than Trimble or Leica.