

Calvert County Planimetric & Topographic Mapping

Geodatabase Design

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Document Control

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Version	Issue Date	Changes
1.0	03/26/2012	Initial document development (H. Hammel)
1.1	09/05/2012	Updated based on County Comments (D. Henry)
1.2	09/26/2012	Updated based on County Comments (D. Henry)
2.0	10/8/2012	Final Document

Introduction

The Calvert County government is in need of updated topographic and planimetric information to support its internal and external activities. This document details the initial geodatabase design for the Planimetric and Topographic Mapping Project.

This document will specify in detail the characteristics and behaviors for each planimetric or topographic entity that will be included in the final geodatabase deliverable.

Background

The Calvert County government last updated planimetrics and topography in 2003. The county has undergone significant change since then, limiting the usefulness of the 2003 data.

The primary objectives of this project are to obtain 100 scale planimetric and topographic data as well as a digital elevation model using the 2011 ortho-imagery and LIDAR data collected and compiled by AXIS Geospatial in the spring of 2011. These planimetric and topographic data products will completely replace the existing GIS data currently being used by Calvert County and provide a consistent and comprehensive base mapping for future use.

Topology Rules

Calvert County does not have a current plan to update or maintain this data. Therefore there is no need to establish topology within the data deliverable. The contractor will establish topology rules and validation procedures for the purpose of QA/QC.

Spatial Reference (all deliverables)

The geodatabase design will store feature coordinates as Maryland State Plane feet. Published specifications for this projection are itemized in the following paragraphs.

Horizontal Coordinate System

Projected Coordinate System Name: NAD_1983_StatePlane_Maryland_FIPS_1900_Feet
Projection: Lambert Conformal Conic
False_Easting: 1312333.333333
False_Northing: 0
Central_Meridian: -77.00000
Standard Parallel: 38.300000
Standard Parallel: 39.450000
Latitude_of_Origin: 37.666667
Linear Unit: Foot_US (0.304801)

Geographic Coordinate System Name: GCS_North_America_1983
Angular Unit: Degree (0.017453292519943295)
Prime Meridian: Greenwich (0.000000000000000000)
Datum: D_North_American_1983
Spheroid: GRS_1980
Semimajor Axis: 6378137
Semiminor Axis: 6356752.3141403561
Inverse Flattening: 298.257222101000020000

Tolerance

The XY Tolerance will be 0.00328083. The XY Tolerance reflects the accuracy of the coordinate data. The tolerance value is the minimum distance between coordinates. In this case, if two coordinates are within 0.003 feet of each other, they are interpreted as being at the same location.

Resolution

The XY Resolution will be 0.000328083. The resolution represents the detail, or precision, in which a feature class depicts the location and shape of geographic features. It is the minimum distance that separates x values and y values.

Bridge

Geometry Capture Rules

Bridge - All bridges will be digitized as polygons. No other features can make a side of a bridge. The bridge polygon should include only the part of the bridge deck that is not supported by land and will be captured at its outer extents to form a complete polygon. Features on the bridge such as curbs, walls, railroads, sidewalks etc. will be captured using the appropriate feature class as outlined in this document and those features may overlap the bridge polygon. Bridges will be attributed by surface type. Road polygons in the Transportation_Poly feature class will have coincident geometry with sides of a bridge polygon.

Calvert County DPW estimates a countywide inventory of approximately 30 bridges and major structures that will need to be captured in this feature class and will provide a map or listing of their locations to the contractor.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dBridgeFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SURFACE	Text (25)	dBridgeSurf	AXIS	Surface type
SHAPE_Length	Double		AXIS	Feature perimeter
SHAPE_Area	Double		AXIS	Feature area

Table 1 – Bridge Feature Attributes

FEATURE_CODE: dBridgeFType

100	Bridge
101	Bridge Walkway/Sidewalk

SURFACE_TYPE: dBridgeSurf

ASPHALT	ASPHALT
CONCRETE	CONCRETE
WOOD	WOOD
UNCERTAIN	UNCERTAIN
UNDER CONST	UNDER CONST

Building

Geometry Capture Rules

Roof type and building height are attributes required for building features. Building height will be determined relative to the ground elevation at the entrance or front side of the building. All buildings must be compiled as complete polygons and squared accordingly. Buildings may only have coincident geometry with driveways, sidewalks, walkways or parking lots unless noted below. On larger buildings, overhead rooftops/canopies will be shown as a separate feature.

Barn – Barns are defined as large farm buildings typically used for storing farm products or sheltering livestock. A small number of preserved historic barns are still standing within developed residential areas.

Building – Building structures include residential single/multifamily structures as well as commercial structures regardless of the number of stories or height. For multi-family structures, firewalls or roof breaks will be digitized to show individual adjacent structures within them, when it can be determined that it is a separate unit. If there is any uncertainty about individual units, no firewall or roof break will be shown.

Building Under Construction – All structures appearing in the source imagery as being under construction will be classified as such.

Mobile homes – Mobile homes will be captured and assigned the appropriate feature code.

Outbuildings - Outbuildings with an area of 100 square feet or larger will be captured.

Overhead rooftop/canopy – Larger building structures may have overhead canopies; some decorative and some functional. These will be captured as separate features. . Other features, such as roads and sidewalks, will not be cut out where overhead rooftops/canopies are above.

Parking garage – Parking garages are uncommon in Calvert County. If discovered they will be captured from the imagery and classified accordingly.

Ruin - A ruin is any structure that has fallen into extreme disrepair as evidenced by a fallen roof, serious structural failure and/or vegetation invading the structure.

Boathouse/Pierhouse - A boathouse/pierhouse is a roofed, waterfront structure that is associated with a pier or dock. Pier features may be overlaid by boathouse/pierhouse features.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dBuildingFType	AXIS	Feature code
HEIGHT	Double		AXIS	Structure height
ROOF_TYPE	Text(20)	dBuildingRoofType	AXIS	Type of roof material
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature length
SHAPE_Area	Double		AXIS	Feature area

Table 2 –Buildings Feature Attributes

FEATURE_CODE: dBuildingFType domain

- 220 BARN
- 221 BUILDING
- 222 BUILDING UNDER CONSTRUCTION
- 223 MOBILE HOME
- 224 OUTBUILDING
- 225 OVERHEAD ROOFTOP/CANOPY
- 226 PARKING GARAGE
- 227 RUIN
- 228 BOATHOUSE/PIERHOUSE

HEIGHT: Height in feet, format is XXX

ROOF_TYPE: dBuilding_Type_Poly domain

- FLAT FLAT
- GABLE GABLE
- UNCERTAIN UNCERTAIN
- NOT APPLICABLE NOT APPLICABLE

Compilation_Limits

Geometry Capture Rules

Approximate Area – The compiler must make a best guess or interpretation in areas where the imagery detail is limited by shadows, dense vegetation, heavy tree cover, building lean, etc. These areas are thought to be within accuracy standards but are not guaranteed. No other feature can have coincident geometry with these areas.

Obscured Area - Areas in the compilation imagery where all detail is obscured by shadows, dense vegetation, heavy tree cover, building lean, etc. to the degree that nothing can be seen or interpolated to meet accuracy or project scope shall be void of any data. No other features can have coincident geometry with these areas.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dCompilationLimitsType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter
SHAPE_Area	Double		AXIS	Feature area

Table 3 – Compilation_Limits Feature Attributes

FEATURE_CODE: dCompilationLimitsType domain

 110 Approximate Area

 111 Obscured Area

Contours

Geometry Capture Rules

Two foot contours will be created from the county's 2011 LIDAR data using appropriate software. No text labels will be placed on contours. Approximate contours will be used in areas where the ground is difficult to see due to tree cover, dense brush, shadows, etc. Contours that run into buildings and under bridges will be coded as hidden. Contours will not be shown on bridges.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dContoursFType	AXIS	Feature code
ELEVATION	Short Integer		AXIS	Elevation in feet
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter

Table 4 – Contours Feature Attributes

FEATURE_CODE: dContoursFType domain

- 120 Contour Index
- 121 Contour Index Approximate
- 122 Hidden Contour Index
- 123 Hidden Contour Index Approximate
- 124 Contour Index Depression
- 125 Contour Index Depression Approximate
- 126 Hidden Contour Index Depression
- 127 Hidden Contour Index Depression Approximate
- 128 Contour Intermediate
- 129 Contour Intermediate Approximate
- 130 Hidden Contour Intermediate
- 131 Hidden Contour Intermediate Approximate
- 132 Contour Intermediate Depression
- 133 Contour Intermediate Depression Approximate
- 134 Hidden Contour Intermediate Depression
- 135 Hidden Contour Intermediate Depression Approximate

ELEVATION: Elevation in feet, Format is XXX

Hydro_Line

Geometry Capture Rules

Hydro_Line features may not have coincident geometry with any other feature class, but may be overlaid by features in the Hydro_Poly feature class.

Dam – Man-made, structural dams will be shown as a single line for small dams found in creeks.

Water Canal - is a man-made channel for water used for transportation and usually includes flood gates. This does not include man-made ditches. This feature is captured at the water's edge.

Water Cooling Channel - is a man-made channel for water that flows in or out of industrial type structures such as nuclear power plants before entering rivers, lakes or natural water body types. This feature is captured at the water's edge.

Drainage Connector - this feature is used to provide connectivity to the hydrology layer. Drainage connectors allow conceptual and topological flow between disjointed hydrographic features. They are used to connect surface hydrology features. These lines follow topography or obvious points of storm water entry and exit systems of lakes, rivers, ponds, ditches, drains and culverts. This feature is digitized in the direction of flow at the endpoints of hydrology features and connected to other hydrology features to connect the drainage systems. Ditches are not required to be shown with the project and therefore will not be part of the hydrology layer and will not be connected using drainage connectors.

Stream - for this project streams are defined as a natural channel that may or may not contain water. Streams will be captured as a continuous series of polylines broken only at junctions with other stream polylines. Stream features will be digitized in the direction of flow. Dried streams will show a drainage pattern and will connect to the main stream that contains water. This feature will be digitized as lines at the water line edge or bottom of the dried stream channel. If the stream is 10 feet in width or less it will be captured as a single polyline at the centerline of the stream or channel and assigned a single line stream feature code. If the stream is greater than 10 feet in width the stream centerline will be captured as a single polyline and assigned a double-line stream feature code. Stream features will be digitized and snapped up to the corresponding Shoreline feature. Stream features under bridges will be digitized without use of drainage connectors.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dHydroLFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature length

Table 5 – Hydro_Line Feature Attributes

FEATURE_CODE:	dHydroLFType domain
170	Dam
171	Water Canal
172	Hidden Water Canal
173	Water Cooling Channel
174	Hidden Water Cooling Channel
175	Drainage Connector
176	Single Line Stream
177	Hidden Single Line Stream
178	Double Line Stream
179	Hidden Double Line Stream

Hydro_Point

Geometry Capture Rules

Pilings – Pilings for this project are considered to be individual single poles that are found in water around docks or piers. Pilings that are part of a structure or on land will not be shown.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dHydroPFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry

Table 6 - Hydro_Point Feature Attributes

FEATURE_CODE: dHydroPFType domain
 180 PILING

Hydro_Poly

Geometry Capture Rules

Hydro_Poly features may not have coincident geometry with other feature classes.

Canal – Canals are man-made channels for water used for transportation and usually include flood gates. Larger canals will be shown as a polygon. No elevation required.

Sediment Trap – Sediment traps are small, temporary bodies of water on active construction sites. Sediment traps will be captured.

Water Body – Lakes, ponds and reservoirs will be captured as polygon features at the water line edge.

Stream/Creek - Streams and creeks wider than 10' will be digitized as polygons. No elevation required.

Wetlands - Wetlands are areas of low-lying ground where water collects; either tidal or non-tidal. Wetlands will be captured using clues from imagery including water and vegetation. Water bodies within a wetland are to be captured if they are larger than one acre in size. Streams/creeks passing through a wetland will be captured using their appropriate feature code. Polygons representing water bodies and streams/creeks may not intersect or overlap wetlands polygons. No elevation required.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dHydroPolyFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature length
SHAPE_Area	Double		AXIS	Feature area

Table 7 - Hydro_Poly Feature Attributes

FEATURE_CODE:	dHydroPolyFType domain
190	CANAL
191	HIDDEN WATER BODY
192	SEDIMENT TRAP
193	STREAM CREEK
194	WATER BODY
195	WETLAND

Shoreline

Geometry Capture Rules

The apparent, countywide shoreline will be captured as a single polyline with coincident beginning and ending vertices. The shoreline will follow the apparent water's edge visible in the imagery. The shoreline

will not be made to follow jetties that protrude into the water but will be made to follow and have coincident geometry with manmade structures such as bulkheads and the water-facing side of revetments. The shoreline polyline will be captured into creeks upstream to the point where the creek width becomes < 20 feet.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dShoreFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter

Table 8 – Shoreline Feature Attributes

FEATURE_CODE: dShoreFType domain
 290 SHORELINE

Slope

Geometry Capture Rules

A slope map will be developed from the surface model data depicting slope categories 0-5%, 5-15%, 15%-25%, 25-50% and > 50%.

The minimum polygon size for slope features will be 1000 sq. ft.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
SEVERITY	Short Integer	dSlopeSeverity	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature length
SHAPE_Area	Double		AXIS	Feature area

Table 9 – Slope Feature Attributes

RANGE: dSlopeSeverity domain

- 200 SLOPES BETWEEN 0% AND 5%
- 201 SLOPES BETWEEN 5% AND 15%
- 202 SLOPES BETWEEN 15% AND 25%
- 203 SLOPES BETWEEN 25% AND 50%
- 204 SLOPES > 50%

Spot_Elevation

Geometry Capture Rules

Spot elevations will be selected from the surface model and placed at all major saddles, crests, summits, depressions, road and railroad intersections and in areas where contours are more than 2 inches apart for a final map scale (200') so that no place on the map is more than 1.5 inches from either a contour or spot elevation. No annotation will be placed on spot elevations or waterline elevations. Approximate spot elevations will be used in areas where the ground is difficult to see due to tree cover, dense brush, shadows, etc. Bridge spot elevation will be used on bridges and placed in the approximate center of the bridge. Water elevation feature will be used on all lakes, ponds and reservoirs.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
ELEVATION	Float		AXIS	Spot elevation
FEATURE_CODE	Short Integer	dSpotFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry

Table 10 – Spot_Elevation Feature Attributes

ELEVATION: Elevation in feet, format is XXX.X

FEATURE_CODE: dSpotFType domain

- 210 SPOT ELEVATION
- 211 SPOT ELEVATION APPROXIMATE
- 212 WATER ELEVATION
- 213 WATER ELEVATION APPROXIMATE

Structure_Line

Geometry Capture Rules

Structure_Line features may have coincident geometry with other feature classes unless prohibited by the capture rules of another feature class. Material is not a required attribute.

Culvert - Culverts are underground, linear drainage structures typically found under roadways or driveways. Culverts will be captured as polylines representing the actual pipe length, excluding end flares, and will be digitized in the direction of flow.

Fence – All fences will be captured as a single line with height changes necessitating a new line segment. Material is a required attribute. Fences around athletic fields (including backstops) will be digitized.

Headwall - Headwalls will only be shown at the larger underground drainage areas. The culvert feature will not be used at these larger drainage areas. Material is a required attribute.

Wall – All walls will be captured as single line with height changes necessitating a new line segment. Height of walls is a required attribute for this project. Wall material and height are required attributes.

Retaining Wall – All retaining walls will be captured as single line with height changes necessitating a new line segment. Height of retaining walls is a required attribute. Retaining walls usually have different heights on each side of the wall, however the maximum height of the wall will be used as the height attribute for the retaining wall feature. Small residential walls that have varying heights will be shown as a single line at the maximum height elevation and will not be broken up into separate height segments.

Bulkheads – Retaining walls along the waterfront will be captured as bulkheads. Material and height are required attributes for bulkheads.

Breakwater - Breakwaters are linear structures in the water that protect the shore from wave action. Material is a required attribute for this feature.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dStructureLFType	AXIS	Feature code
HEIGHT	Double		AXIS	Height
MATERIAL	Text(12)	dStructureLMaterial	AXIS	Type of material
SHAPE	Geometry		AXIS	Feature geometry

Table 11 – Structure_Line Feature Attributes

FEATURE_CODE: dStructureLFType domain

140	BULKHEAD
141	BREAKWATER
142	CULVERT
143	FENCE
144	HEADWALL
145	WALL

HEIGHT: Height of feature in feet, format is XXX

TYPE: dStructureLMaterial domain

Silt	SILT
Plastic	PLASTIC
Metal	METAL
Wood	WOOD
Brick	BRICK
Concrete	CONCRETE
Stone	STONE
Uncertain	UNCERTAIN

Structure_Point

Geometry Capture Rules

Light Pole – Light poles will be captured.

Utility Pole - Utility poles, including phone, electric and other poles will be captured.

Traffic Signal Pole – Traffic signal poles will be captured.

SWMP Riser – The riser or dewatering structure in each storm water management pond (SWMP) will be captured.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dStructurePTFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry

Table 12 – Structure_Point Feature Attributes

FEATURE_CODE:	dTransportationLFType domain	
	310	LIGHT POLE
	311	UTILITY POLE
	312	TRAFFIC SIGNAL POLE
	313	SWMP RISER

Structure_Poly

Geometry Capture Rules

Structure_Poly features may have coincident geometry with other feature classes unless prohibited by another feature classes' capture rules or outlined below. Material is a required attribute unless noted otherwise.

Athletic Court – Hard surface athletic courts (such as basketball courts) are to be captured. Material is a required attribute.

Deck – Accessory decks with an area of > 50 square feet are to be captured in both residential and commercial areas.

Jetty – A Jetty is a polygonal structure extending into a body of water, which protects a harbor or coastline from the effects of currents, tides and erosion.

Offshore Breakwater – Off-shore breakwaters are polygonal structures constructed to protect a shoreline from the effects of currents, tides and erosion. Minimum capture size for an offshore breakwater is 100 square feet.

Pier - Piers are to be captured as complete polygons.

Revetment – Revetments are polygonal structures constructed along the shore to protect the shoreline from the effects of currents, tides and erosion.

Play Area - The boundaries of children's play areas are to be digitized as delineated by a timber border or edge of play surfacing/mulch. Play areas with no recognizable border are not to be captured. Actual play structures within a play area are not to be captured. Minimum capture size for a play area is 200 square feet. The material attribute is not required.

Pool-Above Ground – Above ground pools will be captured. The concrete or hard surface around the pools should be digitized with the pad feature code. Pool-Above Ground polygons will not overlap or intersect Pad polygons. The material attribute is not required.

Pool-In Ground - In-ground pools will be captured. The concrete or hard surface around the pools should be digitized with the pad feature code. Pool-In Ground polygons will not overlap or intersect Pad polygons. The material attribute is not required.

Pad – Pads are any hard surface, ground level structures except athletic courts. Minimum capture size for pads is greater than 100 square feet in area.

Tanks – Only large storage tanks such as water or fuel are to be captured. No propane tanks within residential properties are needed or gas station tanks. Tank polygons must not intersect or overlap pad polygons.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dStructurePFTtype	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter
SHAPE_Area	Double		AXIS	Feature area
MATERIAL	Text(20)	dStructurePMaterial	AXIS	Type of material

Table 13 - Structure_Poly Feature Attributes

FEATURE_CODE: dStructurePFTtype domain

150	ATHLETIC COURT
151	DECK
152	JETTY
153	OFFSHORE BREAKWATER
154	OTHER STRUCTURE
155	PIER
156	REVTMENT
157	PLAY AREA
158	POOL-ABOVE GROUND
159	POOL-IN GROUND
160	PAD
161	TANK

MATERIAL: dStructurePMaterial domain

ASPHALT	ASPHALT
BRICK	BRICK
CONCRETE	CONCRETE
METAL	METAL
STONE	STONE
WOOD	WOOD
UNCERTAIN	UNCERTAIN
NOT APPLICABLE	NOT APPLICABLE

SWMP

Geometry Capture Rules

Storm water management ponds (SWMP) are a type of best management practice (BMP) used to improve the quality of storm water runoff. SWMPS will be captured as polygons along the bottom of the slope or minimum water level. County can provide a tabular inventory of known county-maintained SWMPs to assist the contractor with SWMP identification.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dSWMPFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter
SHAPE_Area	Double		AXIS	Feature area

Table 14 – SWMP Feature Attributes

FEATURE_CODE: dSWMPFType domain
 300 SWMP

Transportation_Line

Geometry Capture Rules

Transportation_Line features may have coincident geometry with other feature classes. Curb features may form a side of a parking area.

Curbs - Curbs for roads and parking areas will be captured at the flow line of the curb where it meets the travel surface or parking surface.

Guard Rails – Guard rails will be captured where visible on the imagery.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dTransportationLFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter

Table 1 – Transportation_Line Feature Attributes

FEATURE_CODE: dTransportationLFType domain

 230 CURB

 231 GUARD RAIL

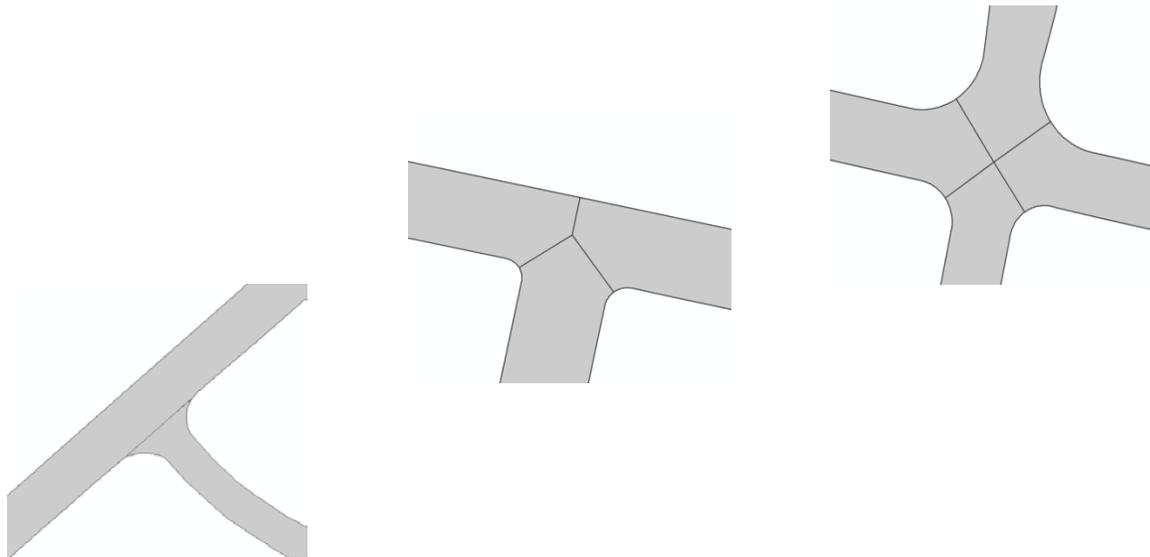
Transportation_Poly

Geometry Capture Rules

Roads - Road edges need to be compiled by surface type of concrete, asphalt, gravel, dirt, or under construction. Road edges are defined as the edge of the improved surface including the shoulder (if improved) and attributed with the appropriate surface type attribute. The road network should be compiled to have all open intersections unless the surface type changes. Areas within the road network where surface type changes, a pavement change line will be drawn connecting the edge of the road at the change to the centerline at the change to the other side of the road edge at the change. Road edges should stop at all bridges and snap to the bridge polygon. Roads have precedence over parking areas and can be used for sides of parking areas. The goal is to create polygons of the road network by surface type.

Contractor will create road polygons based on surface type and will connect the road intersections to form an X within the intersection with the midpoint of the X being the center of the intersection. This X will be snapped to the road centerline at the midpoint of the X as well.

For roads that do not fully intersect, a line will be drawn straight across where the two roads meet or a Y intersection will be used as seen in the figures.



Runways and Taxiways - All airport runways and taxiways will be captured and their surface type noted with the appropriate surface type code.

Parking Areas - Parking areas will be captured and their surface type noted by the appropriate surface type code. They will be captured as polygons that reach to the outer extents of the parking area including the driving lanes and the access road that comes off of the main road. Other feature classes may have coincident geometry with the sides of a parking area.

Driveways - All driveways will be captured and their surface type noted by the appropriate surface code. Other feature classes may have coincident geometry to one or more sides of a driveway.

Sidewalks and Walkways - All private and public walkways will be captured. Their surface material will be noted using the appropriate surface code. The walkways will include steps as part of the feature if they exist and this includes large steps leading to commercial or public buildings. Steps will not be included as a separate feature. It is valid for polygons to overlap where sidewalks or walkways cross over driveways.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dTransportationPolyFType	AXIS	Feature code
SURFACE	Text(20)	dTransportationPSurfType	AXIS	Surface material
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter
SHAPE_Area	Double		AXIS	Feature area

Table 2 – Transportation_Poly Feature Attributes

FEATURE_CODE: dTransportationPolyFType domain

240	DRIVEWAY
241	PARKING AREA
242	ROAD
243	RUNWAY/TAXIWAY
244	WALKWAY/SIDEWALK

SURFACE: dTransportationPSurfType domain

ASPHALT	ASPHALT
CONCRETE	CONCRETE
DIRT	DIRT
GRAVEL	GRAVEL
OTHER HARD SURFACE	OTHER HARD SURFACE
UNCERTAIN	UNCERTAIN
UNDER CONSTRUCTION	UNDER CONSTRUCTION

Utilities_Line

Geometry Capture Rules

Major transmission lines will be digitized as a line feature connecting the network of transmission towers together. Lines will be digitized at the height of the line representing the direction the line is traveling. Only a single line digitized down the center and snapped to the tower symbols will be drawn to represent all lines.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dUtilitiesLFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter

Table 3 – Utilities_Line Feature Attributes

FEATURE_CODE: dUtilitiesLFType domain
 250 Transmission Line

Utilities_Point

Geometry Capture Rules

Transmission Towers - Major transmission towers will be digitized as a point feature and classified as either a lattice type or monopole type structure using the appropriate feature code. The tower will be digitized at the highest point in the center of the tower structure. Contractor will extract the tower height from this point by comparing it against the surface model directly below it. Major transmission towers are the cross country type usually found outside of populated areas. They are not found in residential areas. Monopole structures are single poles without any lattice. Lattice structures contain the criss-crossed frame work throughout the tower structure and usually have 3-4 poles anchored in the ground.

Transmission and Broadcast Towers - This feature will be classified as a lattice type or, monopole type with an additional attribute of collocated type structure. This feature is a combination of a transmission tower and a broadcast tower attached to the same lattice type or monopole structure. Contractor will extract the tower height by comparing it against the surface model directly below it.

Broadcast Towers - Broadcast towers will be classified as either a lattice type or monopole type structure using the appropriate feature code. The height of the tower is also required therefore; the tower will be digitized at the highest point in the center of the tower structure. Contractor will extract the tower height from this point by comparing it against the surface model directly below it.

Collocated Broadcast Equipment - Collocated broadcast equipment refers to conditions where broadcast equipment, for example cellular equipment, is physically situated either as a monopole structure inside a lattice tower power line structure, or on another freestanding structure not purposely built for it. This feature is considered a transmission and broadcast tower and should be digitized using that feature code.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dUtilitiesPFTType	AXIS	Feature code
HEIGHT	Short Integer		AXIS	Height at top
TYPE	Text(20)	dUtilities_PDdesc	AXIS	Tower type
SHAPE	Geometry		AXIS	Feature geometry

Table 4 – Utilities_Point Feature Attributes

FEATURE_CODE: dUtilitiesPFTType domain

260	TRANSMISSION TOWER
261	FREE STANDING BROADCAST TOWER
262	TRANSMISSION/BROADCAST TOWER

HEIGHT: Height in feet, format is XXX

TYPE: dUtilitiesPDesc domain

LATTICE	LATTICE
MONOPOLE	MONOPOLE
COLLOCATED	COLLOCATED
UNCERTAIN	UNCERTAIN

Utilities_Poly

Geometry Capture Rules

Substations - are a subsidiary station of an electricity generation, transmission and distribution system. This feature can be permanent or portable and will be coded accordingly.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dUtilitiesPolyFTtype	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter
SHAPE_Area	Double		AXIS	Feature area

Table 5 – Utilities_Poly Feature Attributes

FEATURE_CODE: dUtilitiesPolyFTtype domain

 270 SUBSTATION PERMANENT

 271 SUBSTATION PORTABLE

Vegetation

Vegetation features will be captured as the canopy drip line edge which means that vegetation features may intersect and overlap other features such as buildings and driveways.

Geometry Capture Rules

Woodland - will be captured for all wooded areas that exceed 5000 square feet in size.

Single Trees - The drip edge of single, significant, specimen trees or small groups of significant trees will be captured outside of wooded areas if their drip canopy area exceeds 2000 square feet.

Feature Class Attributes

The following schema will be used to capture features:

Field Name	Data Type	Domain	Source	Description
OBJECTID	Object ID		AXIS	Object identifier
FEATURE_CODE	Short Integer	dVegetationFType	AXIS	Feature code
SHAPE	Geometry		AXIS	Feature geometry
SHAPE_Length	Double		AXIS	Feature perimeter
SHAPE_Area	Double		AXIS	Feature area

Table 6 – Vegetation Feature Attributes

FEATURE_CODE: dVegetationFType domain

280	WOODLAND
281	SINGLE TREE