ArcGIS 9.0 Topographic GeoDatabase -Data Dictionary

City of Columbia, Missouri

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TOPOGRAPHIC GEODATABASE

This Topographic GeoDatabase is one component of a suite of integrated GeoDatabases designed by Pinnacle for local government. Our other GeoDatabases address Planimetrics, Orthophotography, Cadastral, Public Works, Utilities, Asset Management, Environmental, Emergency Management, Public Safety, and Economic Development. All of our GeoDatabases are designed and developed by Pinnacle for the exclusive use of our Photogrammetry and GIS mapping clients.

Pinnacle has designed the topographic GeoDatabase to leverage the power of ArcGIS 9. The resulting GeoDatabase can immediately be used out-of-the-box with ESRI's ArcCatalog, ArcMap, other Extensions, and 3rd-party applications without the need to translate or re-engineer the delivered data. As our clients create more mapping and GIS data layers our suite of GeoDatabases also provide plug-and-play expansion capabilities.

Pinnacle also offers several optional extensions to help our clients integrate the delivered data with other applications. For example, extensions for Pinnacle's Planimetric GeoDatabase include:

- Transportation Model Management and Integration Tools allows end-users to easily conflate the transportation network graphics with GDT Dynamap2000 data.
- Hydrology Model Management and Integration Tools allows end-users to easily conflate the hydrology network graphics with the National Hydrographic Dataset (NHD) Reach Index Model.
- Cadastral Integration Tools allows end-users to integrate the new basemap graphics with commercial off-the-shelf parcel management applications (e.g. Bruce Harris and Associates)
- HAZUS-MH Integration Tools allows end users to integrate the new Basemap data layers into FEMA's Multi Hazard loss estimating GIS application.

The following sections describe the PROPOSED ArcGIS 9 GeoDatabase and the data dictionary for the Planimetric Basemap features being captured for Columbia, MO (Project P0511305) by Pinnacle Mapping Technologies, Inc..



GEODATABASE PARAMETERS

Properties

GeoDatabase Name: Topographic_GeoDatabase.mdb

Coordinate System: NAD 1983 State Missouri Central FIPS 2402 (Feet)

Storage Units: t.b.d Spatial Domains:*

Min X:	1,612,700	Max X:	1,762,700
Min Y:	1,013,300	Max Y:	1,253,300
X/Y Precision:	8,947.8485		
Min Z:	200	Max Z:	2,000
Z Precision:	1,193,046.469		
Min M:	0	Max M:	396,000
M Precision:	5,422.9384		

*Note: The GeoDatabase stores coordinates as positive 4-byte integers that have a maximum value of 4,147,483,645. This range of integers is called a spatial domain. We define the spatial domain values by manually setting our precision and adjusting the Min X,Y,Z, and M values accordingly to generate Max values appropriate for the intended use.

Setting the ArcGIS Geoprocessing Environment:

Setting the geoprocessing environment on your machine to use a specific spatial reference

- 1. In ArcCatalog or ArcMap, from the Tools menu, click Options.
- 2. Click the Geoprocessing tab.
- 3. Click the Environments button.
- 4. Expand General Settings.
- 5. For Output Spatial Reference, click As Specified Below.
- 6. Next to the following input box, click the folder icon.
- 7. On the Coordinate System tab, click Select.

a. Browse to:

/Projected Coordinate Systems/State Plane/NAD 1983 (Feet)/

b. Select the following .prj file:

NAD 1983 State Missouri Central FIPS 2402 (Feet)

c. Click Add.

10. Click OK to all the open dialogs.

All subsequent geoprocessing operations, including importing new data, performed by the current user on this machine, will use this spatial reference.



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2FT_TOPO FEATURE DATASET

The 2FT_TOPO Feature Dataset consists of feature classes to the surface accurately modeled to a 2' Contour Interval. All Feature Classes support this level of modeling.

CONTOUR (Line)

Properties

Feature Dataset 2FT_TOPO Feature Class CONTOUR

Type: Polyline

Topology/Network: n/a

Description

Contours modeled from the Digital Terrain Model captured for this project.

Name (Alias)	Type	Length	Default Value	Domain	Index	System, Required, Optional	Data Source	Description
OBJECTID (FID)	Object ID	Long	<not null></not 		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Line			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null></not 			S	ArcMap	Internal attribute with calculated length of the polyline (assigned by ArcMap)
DATE_OF_PHOTOGRAPHY	Text	15	<null></null>			R	Pinnacle	Assigned by Pinnacle, this attribute contains the date of photography used during compilation.
MAP_SCALE	Text	4	<not null></not 			R	Pinnacle	Assigned by Pinnacle, this attribute contains the targeted map scale of the compiled data.
UPDATE_DATE	Text	15	<null></null>			0		Reserved for future use, to reflect the feature capture date when data is added outside of the photo compilation process.
CODE	Integer		1	Y	0	R	Pinnacle	Assigned by Pinnacle, this attribute is a code identifying the feature. The description of the feature code is displayed.
ELEVATION	Integer		<not null></not 			R	Pinnacle	Assigned by Pinnacle, this attribute will hold the elevation of the feature.
LAYER	String	254	<null></null>			R	AutoCAD	Name of AutoCAD Layer
COLOR	Long	9				R	AutoCAD	Color assigned in AutoCAD to the Layer
LINETYPE	String	254	<null></null>			R	AutoCAD	AutoCAD Linestyle



Feature Subtype Domain Definitions

CODE	DESCRIPTION	Level	Color	Weight	Style	Description	Capture Rules
1	TO_CONT_IDX	40	40	0	0	Every fifth contour shall be depicted as an index contour.	Data is modeled using InRoads within MicroStation.
2	TO_CONT_IDX_HID	41	41	0	0	Index contours clipped for contour annotation or structures.	Data is modeled using InRoads within MicroStation
3	TO_CONT_IDX_DEP	42	42	0	0	Index contours representing a closed depression	Data is modeled using InRoads within MicroStation
4	TO_CONT_IDX_DEP_HID	43	43	0	0	Index contours representing a closed depression clipped for contour annotation or structures.	Data is modeled using InRoads within MicroStation
5	TO_CONT_IDX_APP	44	44	0	0	Index contours that are obstructed by dense vegetation shall be delineated as hidden index contours.	Data is modeled using InRoads within MicroStation
6	TO_CONT_IDX_APP_HID	45	45	0	0	Index contours in areas of dense vegetation or shadows clipped for contour annotation or structures.	Data is modeled using InRoads within MicroStation
7	TO_CONT_IDX_DEP_APP	46	46	0	0	Index contours representing a closed depression in areas of dense vegetation or shadows. Approximate contour.	Data is modeled using InRoads within MicroStation
8	TO_CONT_IDX_DEP_APP_HID	47	47	0	0	Index contours representing a closed depression in areas of dense vegetation or shadows clipped for contour annotation or structures.	Data is modeled using InRoads within MicroStation
9	TO_CONT_INT	48	48	0	0	Four intermediate contours exist between two index contours.	Data is modeled using InRoads within MicroStation.
10	TO_CONT_INT_HID	49	49	0	0	Intermediate contours clipped for contour annotation or structures.	Data is modeled using InRoads within MicroStation



CODE	DESCRIPTION	Level	Color	Weight	Style	Description	Capture Rules
11	TO_CONT_INT_DEP	50	50	0	0	Intermediate contours representing a closed depression	Data is modeled using InRoads within MicroStation
12	TO_CONT_INT_DEP_HID	51	51	0	0	Intermediate contours representing a closed depression clipped for contour annotation or structures.	Data is modeled using InRoads within MicroStation7
13	TO_CONT_INT_APP	52	52	0	0	Intermediate contours that are obstructed by dense vegetation shall be delineated as hidden Intermediate contours.	Data is modeled using InRoads within MicroStation
14	TO_CONT_INT_APP_HID	53	53	0	0	Intermediate contours in areas of dense vegetation or shadows clipped for contour annotation or structures.	Data is modeled using InRoads within MicroStation
15	TO_CONT_INT_DEP_APP	54	54	0	0	Intermediate contours representing a closed depression in areas of dense vegetation or shadows. Approximate contour.	Data is modeled using InRoads within MicroStation
16	TO_CONT_INT_DEP_APP_HID	55	55	0	0	Intermediate contours representing a closed depression in areas of dense vegetation or shadows clipped for contour annotation or structures.	Data is modeled using InRoads within MicroStation
17	TO_CONT_CLOSE	56	56	0	0	Artificial line for representation of multiple contours in areas of extreme vertical elevation difference.	Line is captured with an elevation of -9999.

AutoCAD Attributes

LAYER	Color	LINETYPE	THICKNESS
TO_CONT_IDX	251	Continuous	0
TO CONT IDX HID	251	Continuous	0



LAYER	Color	LINETYP <u>E</u>	THICKNESS
TO_CONT_IDX_DEP	251	Continuous	0
TO_CONT_IDX_DEP_HID	251	Continuous	0
TO_CONT_IDX_APP	251	Continuous	0
TO_CONT_IDX_APP_HID	251	Continuous	0
TO_CONT_IDX_DEP_APP	251	Continuous	0
TO_CONT_IDX_DEP_APP_HID	251	Continuous	0
TO_CONT_INT	253	Continuous	0
TO_CONT_INT_HID	253	Continuous	0
TO_CONT_INT_DEP	253	Continuous	0
TO_CONT_INT_DEP_HID	253	Continuous	0



LAYER	Color	LINETYPE	THICKNESS
TO_CONT_INT_APP	253	Continuous	0
TO_CONT_INT_APP_HID	253	Continuous	0
TO_CONT_INT_DEP_APP	253	Continuous	0
TO_CONT_INT_DEP_APP_HID	253	Continuous	0
TO_CONT_CLOSE	251	Continuous	0

Index Contour Annotation (TO_CONT_IDX_TEXT)

Reference	1:1200				
Scale					
Font Size	10				
Font	Arial				
Color	251				
Note: All other fields are default values generated by the ESRI Import CAD					
Annotation Text					



SPOT ELEVATION (Point)

Properties

Feature Dataset 2FT_TOPO Feature Class SPOT_ELEVATION Type: Point

Topology/Network: n/a

Description

Supplemental elevation points used in conjunction with contour information.

			Default			System, Required,		
Name (Alias)	Туре	Length	Value	Domain	Index	Optional	Data Source	Description
OBJECTID (FID)	Object ID		<not null></not 		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Point			S	ArcMap	Internal geometry (assigned by ArcMap)
DATE_OF_PHOTOGRAPHY	Text	15	<null></null>			R	Pinnacle	Assigned by Pinnacle, this attribute contains the date of photography used during compilation.
MAP_SCALE	Text	4	<not null></not 			R	Pinnacle	Assigned by Pinnacle, this attribute contains the targeted map scale of the compiled data.
UPDATE_DATE	Text	15	<null></null>			0		Reserved for future use, to reflect the feature capture date when data is added outside of the photo compilation process.
CODE	Integer		1	Y	0	R	Pinnacle	Assigned by Pinnacle, this attribute is a code identifying the feature. The description of the feature code is displayed.
ELEVATION	Integer		<not null></not 			R	Pinnacle	Assigned by Pinnacle, this attribute will hold the elevation of the feature.
LAYER	String	254	<null></null>			R	AutoCAD	Name of AutoCAD Layer
COLOR	Long	9				R	AutoCAD	Color assigned in AutoCAD to the Layer
LINETYPE	String	254	<null></null>			R	AutoCAD	AutoCAD Linestyle
ELEVATION	Double	19				S	AutoCAD	Elevation
THICKNESS	Double	19				R	AutoCAD	Weight of feature



Feature Subtype Domain Definitions

CODE	DESCRIPTION	Leve	Color	Weight	Style	Description	Capture Rules
1	TO_CONT_GND_ELEV	57	57	0	0	Supplemental elevation points used in conjunction with contour information.	Spot elevations are manually placed at all road and/or railroad intersections; at each end of bridges on centerline of road; at centerline of roads above culverts; at the highest point of closed contour tops; at the lowest point of closed depressions, significant saddles and quarries; t points visible through dense vegetation in obscured areas; at any location necessary to provide that no more than 2 inches exist between any contour and spot elevation.
2	TO_CONT_BRDG_ELEV	58	58	0	0	Elevation of the surface of a bridge.	Bridge elevation is manually placed on the bridge surface.
3	TO_CONT_WATR_ELEV	62	62	0	0	Elevation of the surface of a body of water.	Water Elevation is manually placed on the surface of a pond or lake.

AutoCAD Attributes

LAYER	Color	LINETYPE	THICKNESS
TO_CONT_GND_ELEV	251	Continuous	0
TO_CONT_BRDG_ELEV	251	Continuous	0
TO_CONT_WATR_ELEV	251	Continuous	0

Ground Elevation Annotation (TO_CONT_GND_ELEV_TEXT)

Reference	1:1200
Scale	
Font Size	10
Font	Arial
Color	251
Note: All other field	ds are default values generated by the ESRI Import CAD
Annotation Text	- • •



Bridge Elevation Annotation (TO_BRDG_TEXT)

Reference	1:1200						
Scale							
Font Size	10						
Font	Arial						
Color	251						
Note: All other fields are default values generated by the ESRI Import CAD							
Annotation Text							

Water Elevation Annotation (TO_WATR_TEXT)

Reference	1:1200						
Scale							
Font Size	10						
Font	Arial						
Color	251						
Note: All other fields are default values generated by the ESRI Import CAD							
Annotation Text							



OBSCURED AREA (Polygon)

Properties

Feature Dataset 2FT_TOPO Feature Class OBSCURED_AREA Type: Polygon

Topology/Network: n/a

Description

Obscured area relates to the covering of ground features to the extent that they are not accurately interpretable from the aerial photography.

			Default			System, Required.		
Name (Alias)	Туре	Length	Value	Domain	Index	Optional	Data Source	Description
OBJECTID (FID)	Object ID		<not null></not 		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Polygon			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null></not 			S	ArcMap	Internal attribute with calculated length of the polyline (assigned by ArcMap)
SHAPE_AREA	Double		<not null></not 			S	ArcMap	Internal attribute with calculated area of the polygon (assigned by ArcMap)
DATE_OF_PHOTOGRAPHY	Text	15	<null></null>			R	Pinnacle	Assigned by Pinnacle, this attribute contains the date of photography used during compilation.
MAP_SCALE	Text	4	<not null></not 			R	Pinnacle	Assigned by Pinnacle, this attribute contains the targeted map scale of the compiled data.
UPDATE_DATE	Text	15	<null></null>			0		Reserved for future use, to reflect the feature capture date when data is added outside of the photo compilation process.
CODE	Integer		1	Y	0	R	Pinnacle	Assigned by Pinnacle, this attribute is a code identifying the feature. The description of the feature code is displayed.
HANDLE	String	16	<null></null>			S	AutoCAD	
LAYER	String	254	<null></null>			R	AutoCAD	Name of AutoCAD Layer
COLOR	Long	9				R	AutoCAD	Color assigned in AutoCAD to the Layer
LINETYPE	String	254	<null></null>			R	AutoCAD	AutoCAD Linestyle
ELEVATION	Double	19				S	AutoCAD	Elevation
THICKNESS	Double	19				R	AutoCAD	Weight of feature
TEXT	String	254	<null></null>			0	AutoCAD	Description of feature



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Feature Subtype Domain Definitions

CODE	DESCRIPTION	Level	Color	Weight	Style	Description	Capture Rules
1	TO_OBSURED_AREA	59	59	0	0	This boundary represents an area completely obscured from the aerial photography. The resultant ground data compiled may not meet the mapping accuracy specifications / requirements in this area.	Collect as a closed polygon around area that is completely obscured.

AutoCAD Attributes

LAYER	Color	LINETYPE	THICKNESS
TO_OBSURED_AREA	7	Continuous	0



2FT_DTM FEATURE DATASET

The 2FT_DTM Feature Dataset consists of feature classes representing the Digital Terrain Model (DTM). These feature classes are used as the basis for modeling the resultant 2' contours.

BREAKLINE (Line)

Properties

Feature Dataset 2FT_DTM Feature Class BREAKLINE Type: Polyline

Topology/Network: n/a

Description

Breaklines used to depict either a sharp or gradual relief of the Earth.

			Default			System, Required.		
Name (Alias)	Туре	Length	Value	Domain	Index	Optional	Data Source	Description
OBJECTID (FID)	Object ID		<not null></not 		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Line			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null></not 			S	ArcMap	Internal attribute with calculated length of the polyline (assigned by ArcMap)
DATE_OF_PHOTOGRAPHY	Text	15	<null></null>			R	Pinnacle	Assigned by Pinnacle, this attribute contains the date of photography used during compilation.
MAP_SCALE	Text	4	<not null></not 	Y		R	Pinnacle	Assigned by Pinnacle, this attribute contains the targeted map scale of the compiled data.
UPDATE_DATE	Text	15	<null></null>			0		Reserved for future use, to reflect the feature capture date when data is added outside of the photo compilation process.
CODE	Integer		1	Y	Y	R	Pinnacle	Assigned by Pinnacle, this attribute is a code identifying the feature. The description of the feature code is displayed.
HANDLE	String	16	<null></null>			S	AutoCAD	
LAYER	String	254	<null></null>			R	AutoCAD	Name of AutoCAD Layer
COLOR	Long	9				R	AutoCAD	Color assigned in AutoCAD to the Layer



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			Default			System, Required.		
Name (Alias)	Туре	Length	Value	Domain	Index	Optional	Data Source	Description
LINETYPE	String	254	<null></null>			R	AutoCAD	AutoCAD Linestyle
ELEVATION	Double	19				S	AutoCAD	Elevation
THICKNESS	Double	19				R	AutoCAD	Weight of feature
TEXT	String	254	<null></null>			0	AutoCAD	Description of feature

Feature Subtype Domain Definitions

CODE	DESCRIPTION	Level	Color	Weight	Style	Description	Capture Rules
1	TO_DTM_	60	60	0	0	Breakline represents a gradual or	Digitize all breaks on surface (e.g., top of slope,
	BREAKLINES					sharp break in the Earth's terrain.	bottom of slope). Any planimetric feature like
							roads, drives, sidewalks, etc. that is collected at
							ground level will be utilized as breaklines in the
							DTM.

AutoCAD Attributes

LAYER	Color	LINETYPE	THICKNESS
TO_DTM_BREAKLINES	7	Continuous	0



MASS POINT (Point)

Properties

Feature Dataset 2FT_DTM Feature Class MASS_POINT Type: Point

Topology/Network: n/a

Description

Supplemental elevation points used to densify the surface as defined by the breaklines.

			Default			System, Required,		
Name (Alias)	Туре	Length	Value	Domain	Index	Optional	Data Source	Description
OBJECTID (FID)	Object ID		<not< td=""><td></td><td>Y</td><td>S</td><td>ArcMap</td><td>Internal object / feature ID number</td></not<>		Y	S	ArcMap	Internal object / feature ID number
			null>					(assigned by ArcMap)
SHAPE	Geometry		Point			S	ArcMap	Internal geometry (assigned by ArcMap)
DATE_OF_PHOTOGRAPHY	Text	15	<null></null>			R	Pinnacle	Assigned by Pinnacle, this attribute contains
								the date of photography used during
								compilation.
MAP_SCALE	Text	4	<not< td=""><td>Y</td><td></td><td>R</td><td>Pinnacle</td><td>Assigned by Pinnacle, this attribute contains</td></not<>	Y		R	Pinnacle	Assigned by Pinnacle, this attribute contains
			null>					the targeted map scale of the compiled data.
UPDATE_DATE	Text	15	<null></null>			0		Reserved for future use, to reflect the
								feature capture date when data is added
								outside of the photo compilation process.
CODE	Integer		1	Y	Y	R	Pinnacle	Assigned by Pinnacle, this attribute is a
								code identifying the feature. The
								description of the feature code is displayed.
HANDLE	String	16	<null></null>			S	AutoCAD	
LAYER	String	254	<null></null>			R	AutoCAD	Name of AutoCAD Layer
COLOR	Long	9				R	AutoCAD	Color assigned in AutoCAD to the Layer
LINETYPE	String	254	<null></null>			R	AutoCAD	AutoCAD Linestyle
ELEVATION	Double	19				S	AutoCAD	Elevation
THICKNESS	Double	19				R	AutoCAD	Weight of feature
TEXT	String	254	<null></null>			0	AutoCAD	Description of feature



Feature Subtype Domain Definitions

CODE	DESCRIPTION CLASS	Level	Color	Weight	Style	Description	Capture Rules
1	TO_DTM_POINTS	61	61	0	0	Supplemental elevation points used to densify the surface as defined by breaklines. Also used more densely in open areas that do not require breakline placement.	Mass points are to be collected at a given grid spacing based on the map scale. This is set at $\frac{1}{2}$ of the map scale.

AutoCAD Attributes

LAYER	Color	LINETYPE	THICKNESS
TO_DTM_POINTS	7	Continuous	0

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