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Topobase™

# Archive – Technical Training

## Autodesk Topobase Administrator



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# Chapter Overview

- This chapter teaches you how to load and symbolize existing data in Autodesk Topobase 2009.
- You will learn how to
  - handle display models with one or more data views at the same time,
  - load layers automatically when opening the workspace, and
  - use powerful tools to generate expressions for the stylization of features.

# Display Model


# Chapter Objectives

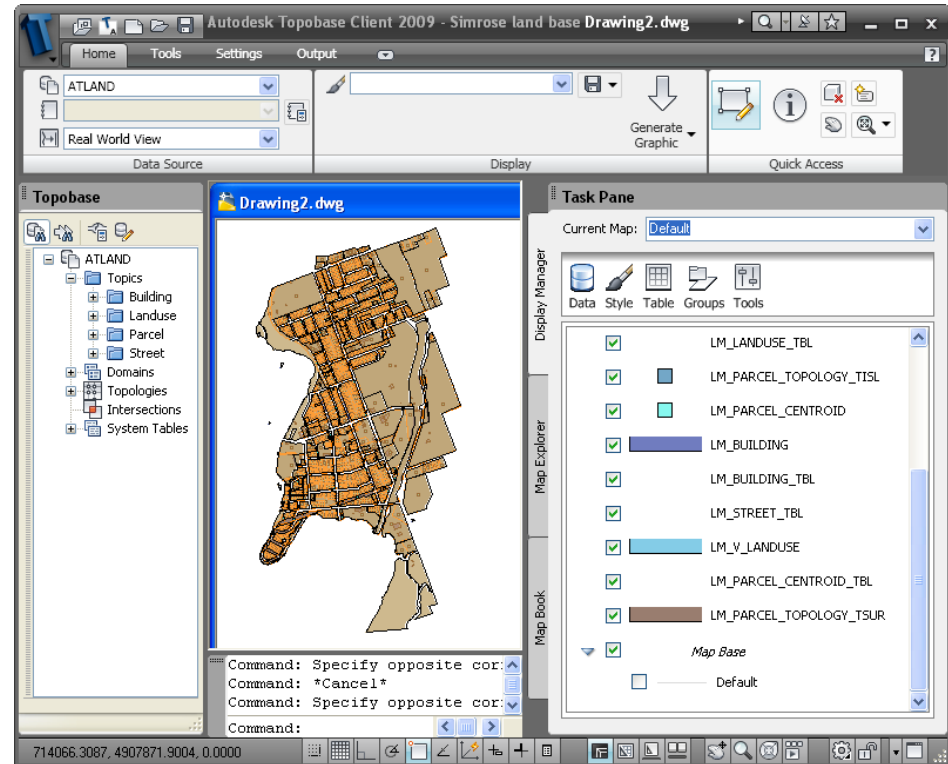
By the end of this chapter, you will be able to:

- Explain how to load and save a display model.
- Handle display models with one or more views at the same time.
- Create a default stylization.
- Generate a stylization with the Topobase Feature Data Object (FDO) provider.
- Symbolize data.
- Load specific areas and save them as viewports.




## 3.2 Generating a Default Display Model

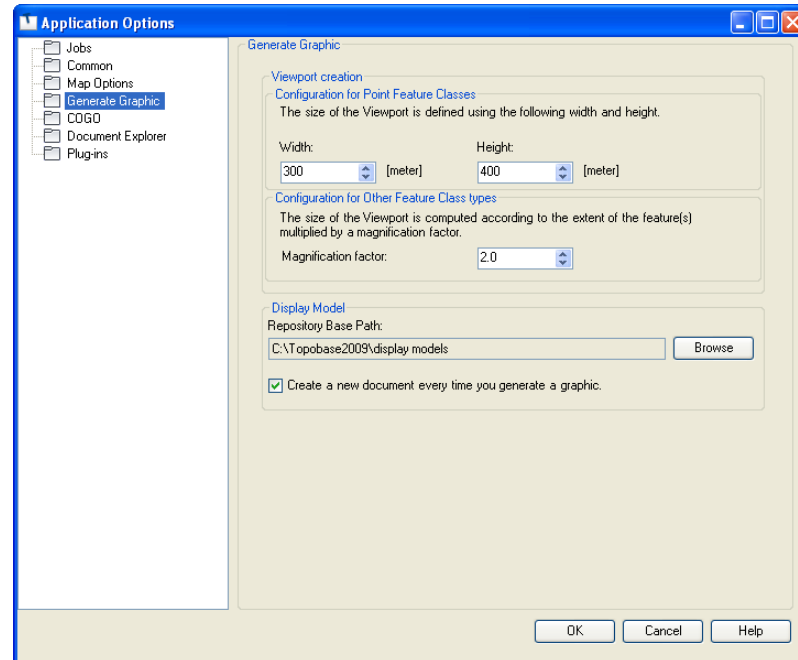
- To get a default stylization, click **Generate Graphic** .
- You will see an automatically generated layer in the Display Manager and the generated graphics in “drawing2.dwg”.



## 3.3.1 Repository Base Path

It is recommended that you set a *repository base path* in a root folder which contains subfolders for the different stylizations.

To set the path, click the **Settings** tab and then click  in the setup panel.






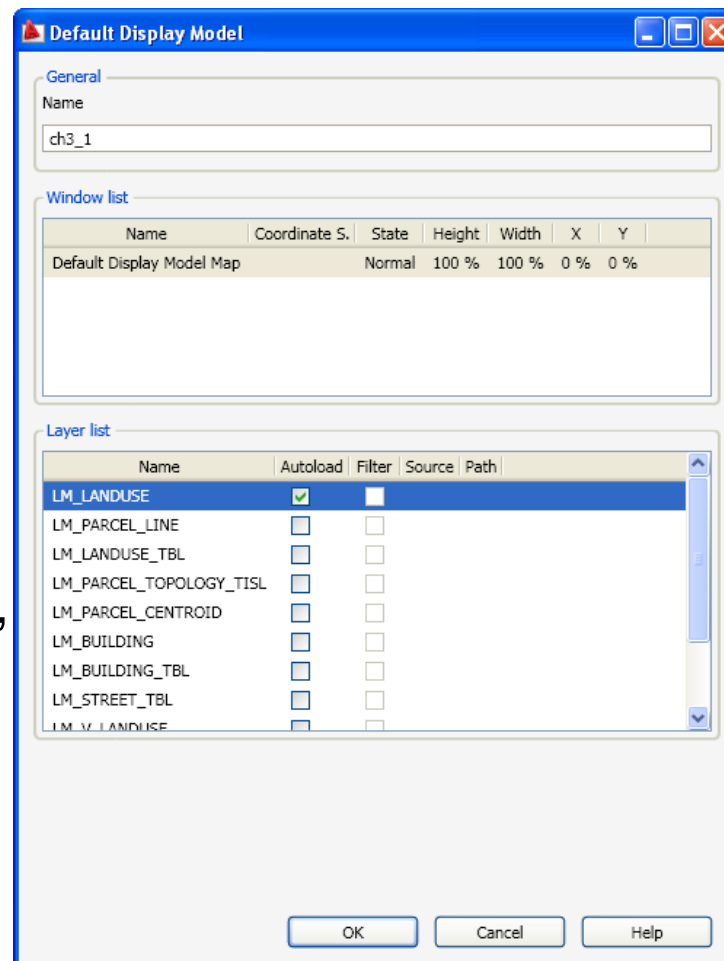
## 3.3.2 XML File Types

Display models can be saved in an xml-file structure with the following file types:

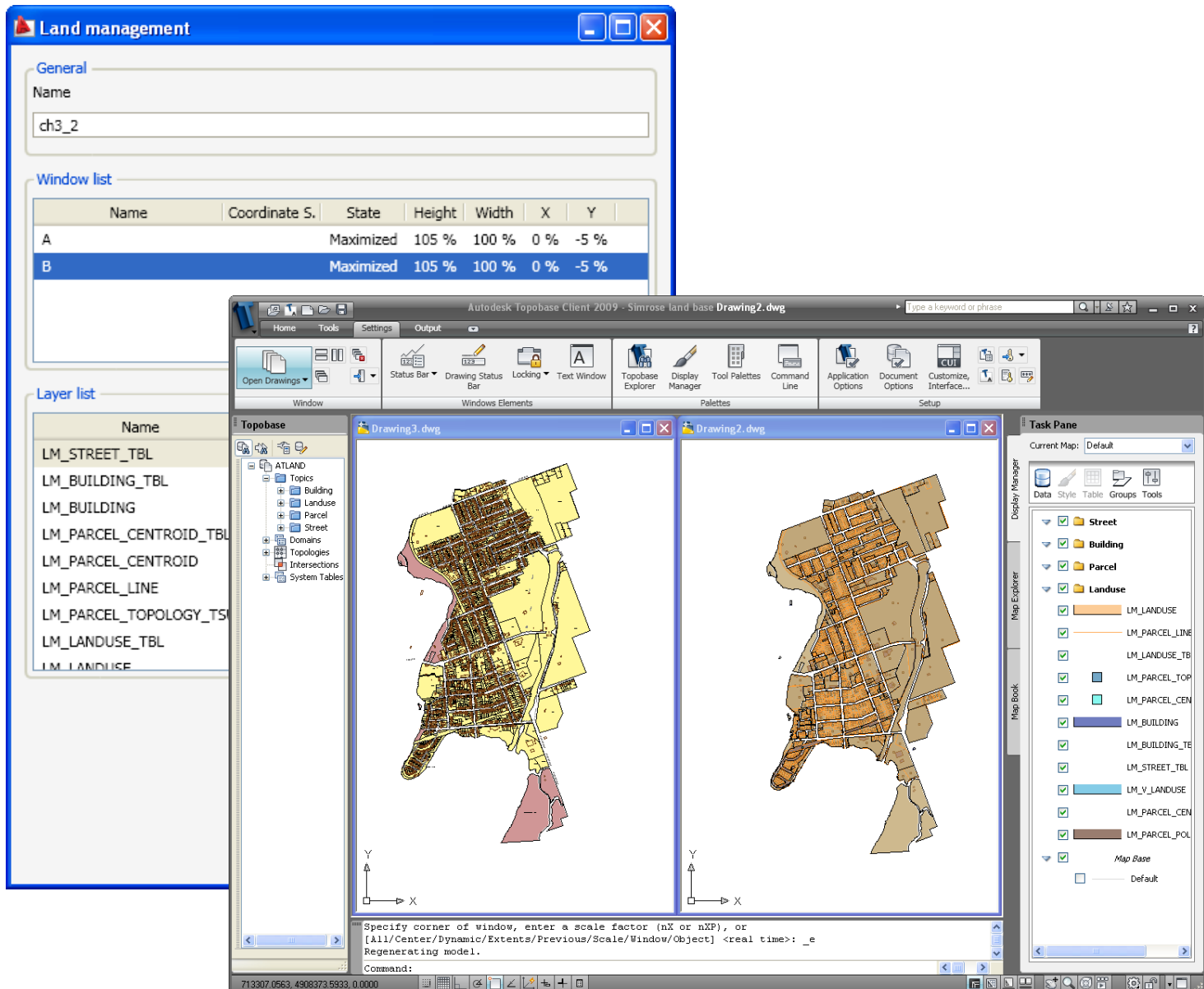
- <chosen display name>.tbdm file
- Map1.tbdmmap file, Map2.tbdmmap file,...
- \*.layer files

## 3.3.3 Display Model with One Display Model Map

- Select the **Save Display Model As** icon 
- **Filter:** If you see fields in the Filter row toggled on, you have zoomed in before clicking 'Save Display Model As'.
- **Autoload:** If you toggle on Autoload, the layers are loaded automatically when opening the workspace.
- The next time you open Topobase the layer will load automatically in the display model map.

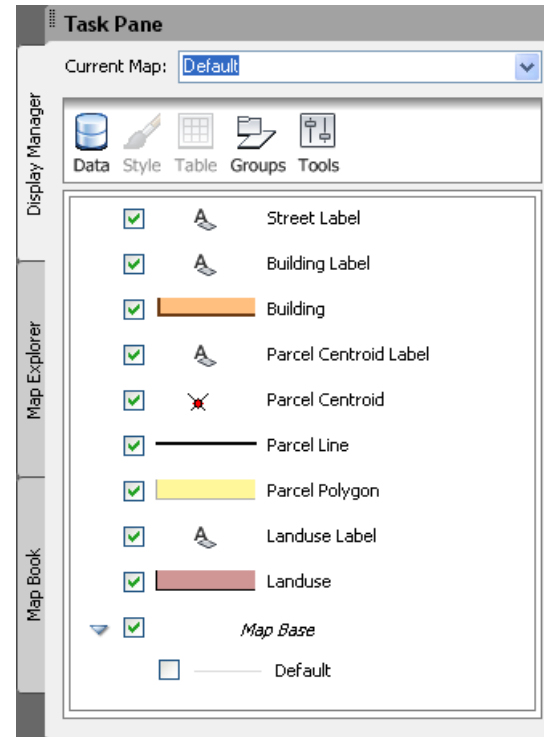


# 3.3.4 Display Model with Multiple Display Model Maps





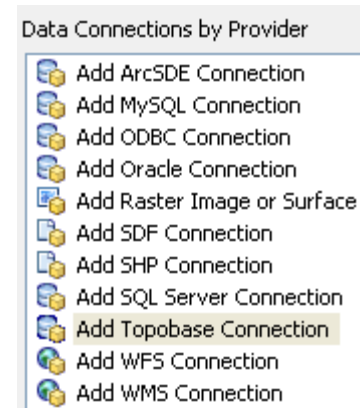
## 3.4 Display Manager

To assign different display styles to feature classes, use the Display Manager.



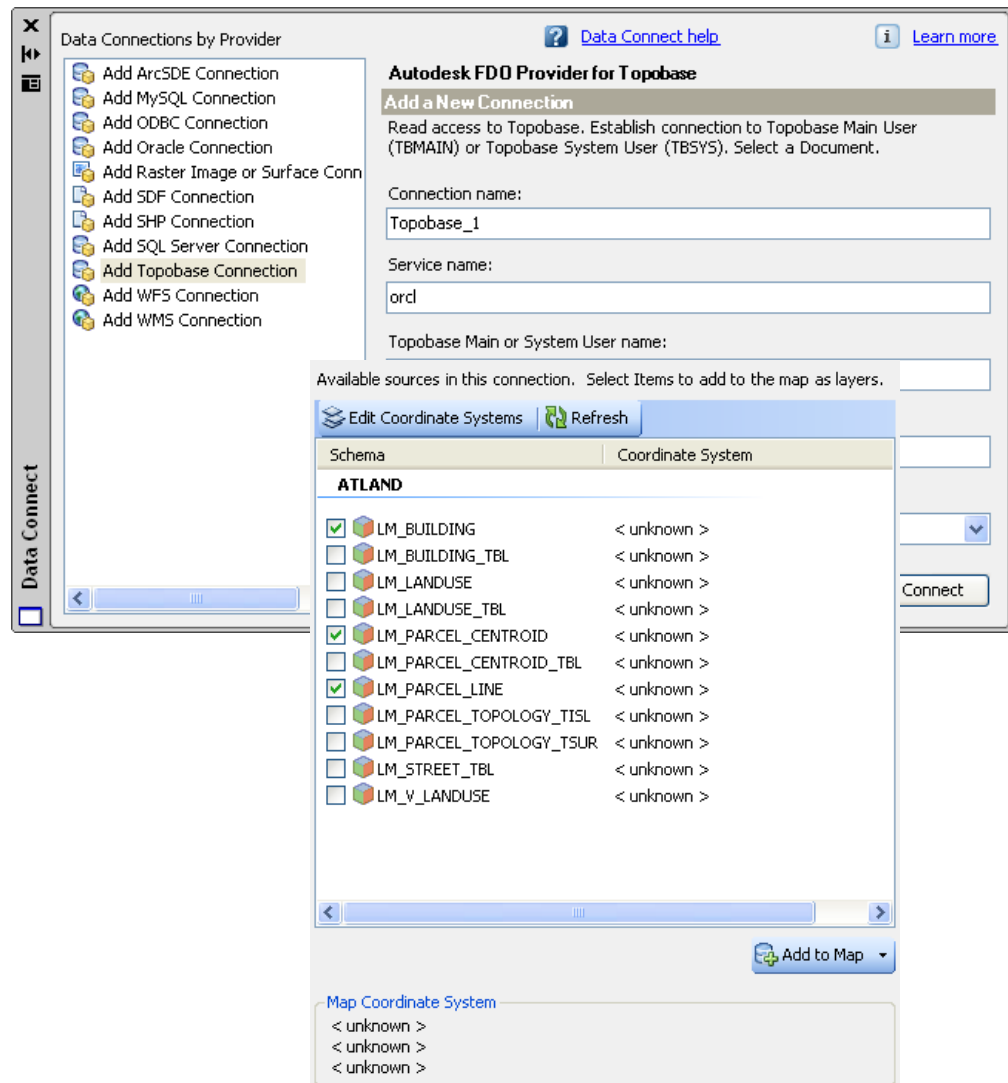
## 3.5 Data Connections

- The workspace you created or opened is a container for geospatial data.
- Map 3D connects to feature data through *Feature Data Object*, or FDOs.
- To connect to feature data, click the **Data** icon , and select **Connect to Data**  from the shortcut menu.
- The Map 3D Data Connect window appears.



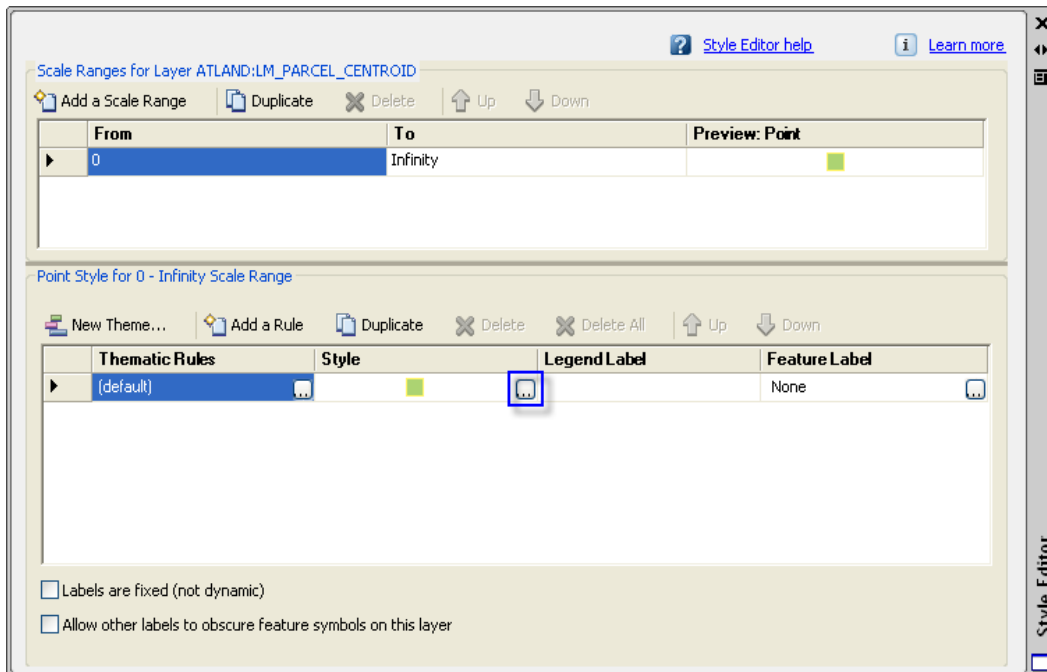
## 3.5.1 Connecting to Autodesk Topobase 2009 Data

- Add Topobase Connection.
- The feature classes (Oracle tables) available in the schema are listed in the Data Connect window.



## 3.6 Symbolizing Data

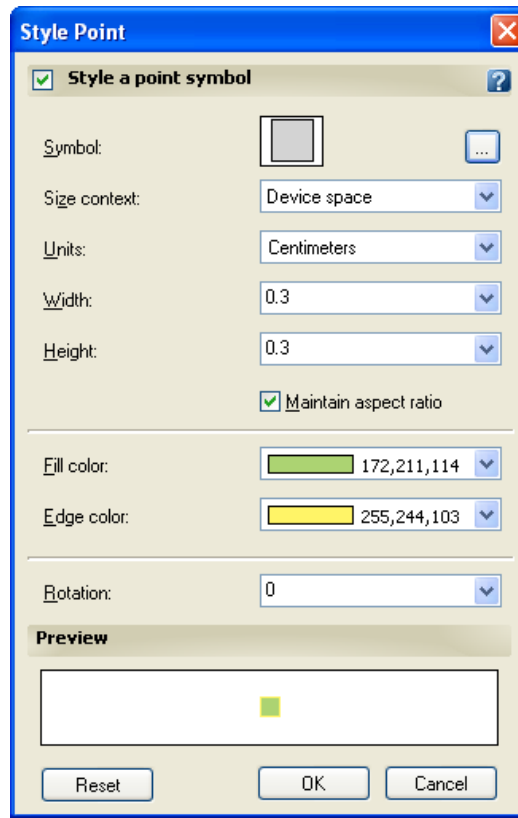
You can control the appearance of data by *symbolizing* it using the Map 3D Style Editor Window.





## 3.6.1 Point Style

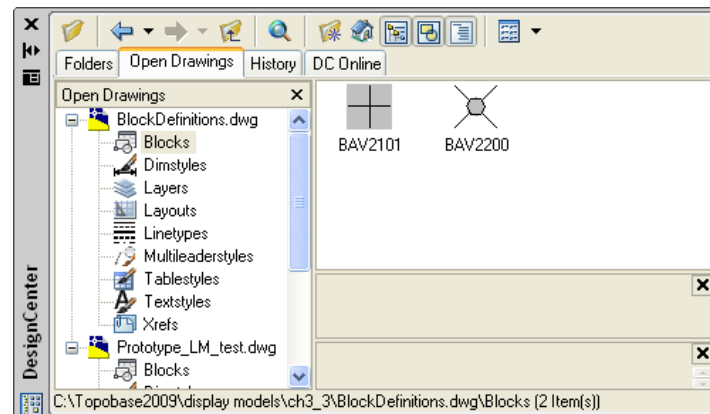
- Use the Style Point window to symbolize a point feature class



## 3.6.2 Symbol Style

- Reference to existing template.dwg
  - Clicking the **Browse** icon to select symbols is quick
  - Disadvantage: administrative changes are difficult when you have dozens of layer files
- Copying definitions to *BlockDefinitions.dwg*
  - All connections to the new BlockDefinitions.dwg files are in one file, the \*.tbddmmap file.

Name	Size	Type
Map1.tbddmmap	1 KB	TBDDMMAP File
LM_PARCEL_CENTROID.layer	5 KB	LAYER File
CH3_3.tbddm	1 KB	TBDDM File
BlockDefinitions.dwl2	1 KB	DWL2 File
BlockDefinitions.dwl	1 KB	DWL File
BlockDefinitions.dwg	27 KB	AutoCAD Drawing



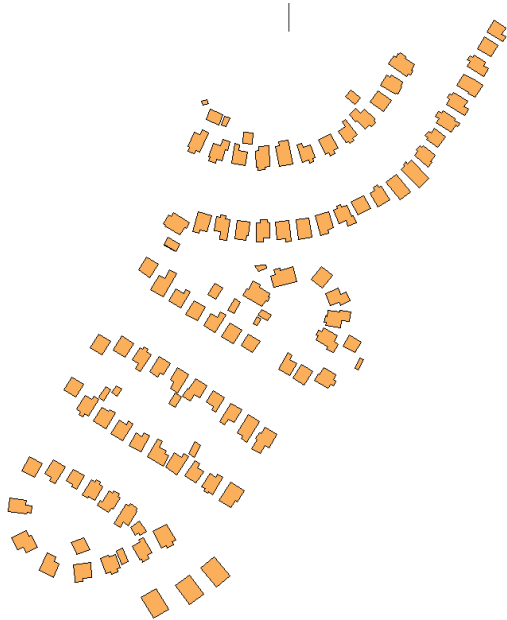
## 3.6.2 Symbol Style +

### Size context

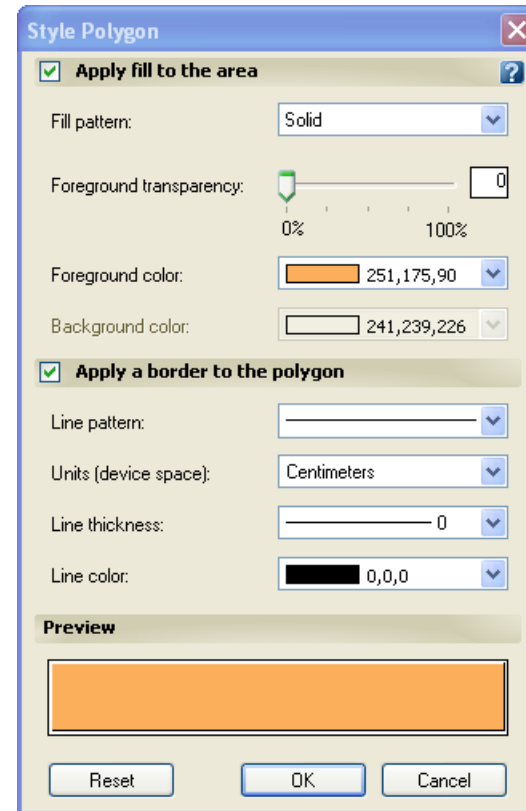
- Device space
  - Device space units are absolute screen units.
  - This ensures that the size of a symbol or text display is always the same size on the screen.
- Map space
  - Map space units are proportional to map units
  - This ensures that the size of the symbol bears a fixed relationship to the map it is in.

## 3.6.3 Area Style

- Use the Style Area to symbolize a polygon feature class.

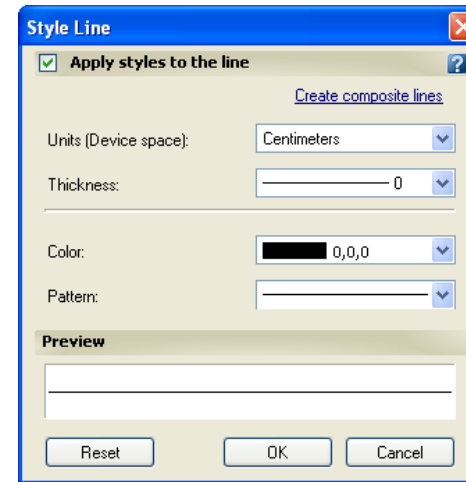


Buildings in the LM\_BUILDING polygon feature class



## 3.6.4 Line Style

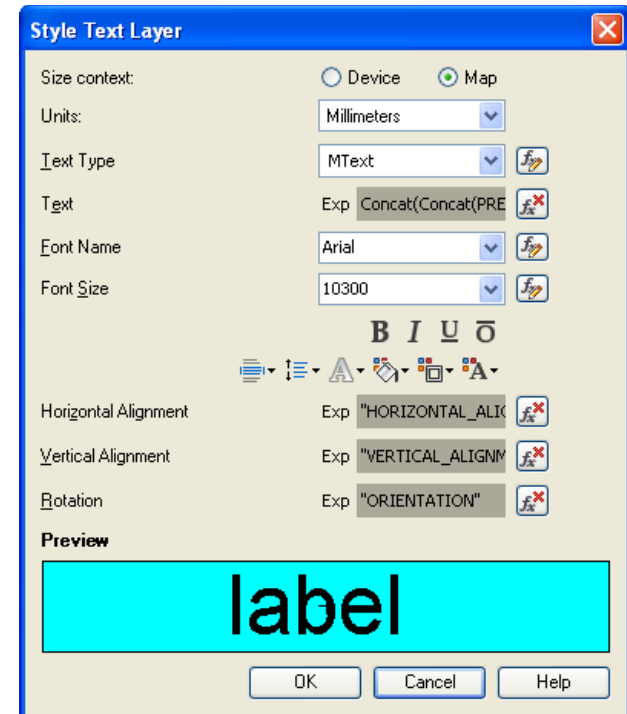
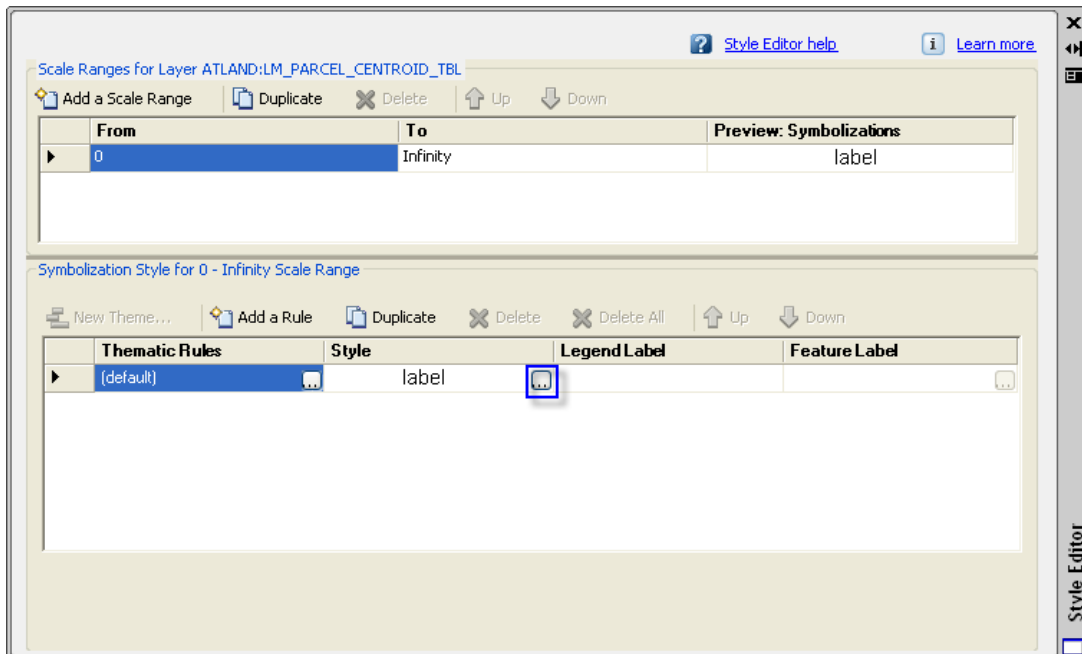
- Use Style Line to symbolize a line feature class.



Parcel lines and polygon features over aerial photo

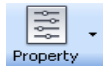
## 3.6.5 Label Style

- Autodesk Topobase 2009 stores labels as special point feature classes
- Text to be displayed is stored, as is its orientation and offset relative to the feature being labeled.

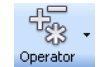


## 3.6.5 Label Style +

### ■ Create/Modify Expressions window functions:



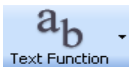
Select numeric, text and geometric properties



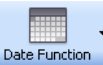
Offers the mathematical operators + - / \* and parentheses



Offers mathematical functions like sin, exp, ...



Offers text and text numerical functions, also Topobase functions TB\_SQL, TB\_VARIABLE and TO\_CHAR



Offers date functions like months between, ...



Offers length and area of features



Offers conversion functions like todate and some special Topobase functions for enhanced stylization:

If('Condition', TrueValue, FalseValue)

Lookup(Expression, DefaultValue, Key1, Value1, ... KeyN, ValueN)

Range(Expression, DefaultValue, Min1, Max1, Value1, ... MinN, MaxN, ValueN)

Undo/redo



Validates the expression and shows error messages




Clears the edit window



Load and save expressions, toggle for show startup page and tooltips



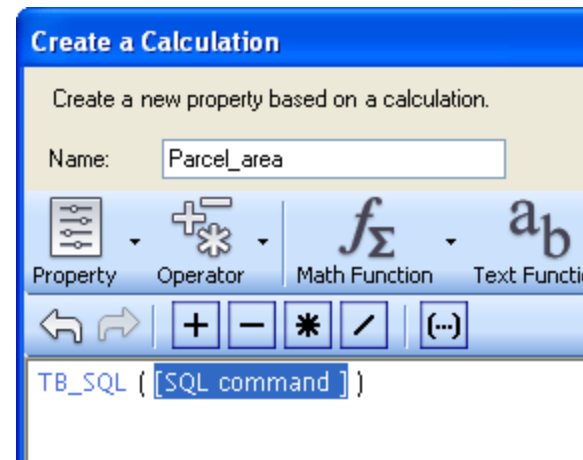
## 3.6.6 Topobase Enhanced Style

- This stylization enables you to build a collection of styles laid one on top of the other for points, lines, polygons.
- Choose  in the Display Manager.
- Point Style Example
  - Use enhanced stylization for the feature class LM\_PARCEL\_CENTROID
  - The colors of the cross should vary:
    - Valid parcel numbers are below 20,000 ★+
    - Invalid values 20,000 or higher ★+

## 3.6.7 Topobase Dynamic Stylization

- Dynamic stylization consists of queries to obtain information from related tables.
- For example, the centroid of the parcel does not store area. Area is a property of the polygon.

1. Use the TB\_SQL feature to get this information into the layer data.
2. Right-click the **Parcel Centroid** in the Display Manager.
3. Select **Create a Calculation**.
4. Enter a valid SQL command.



## 3.6.7 Topobase Dynamic Stylization +

- TB\_SQL statement syntax

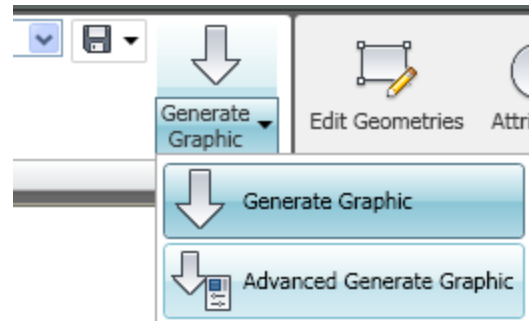
```
SELECT g.fid, (SQL command)
FROM <feature class name> g
```

Therefore the query to select the area of the polygons would be:

```
SELECT g.fid,
(SELECT TO_CHAR(NVL(s.area,0))
FROM LM_PARCEL_TOPOLOGY_TCEN m,
     LM_PARCEL_TOPOLOGY_TSUR s
WHERE m.fid_tsur = s.fid (+)
      AND m.fid_centroid (+) = g.fid
)
FROM LM_PARCEL_CENTROID g
```

## 3.7.1 Generating Graphics with a Viewport

- A viewport limits the geographic extent of the data that will be drawn.
- To access the viewport window, select **Generate Graphic > Advanced Generate Graphic**.



## 3.7.1 Generating Graphics with a Viewport

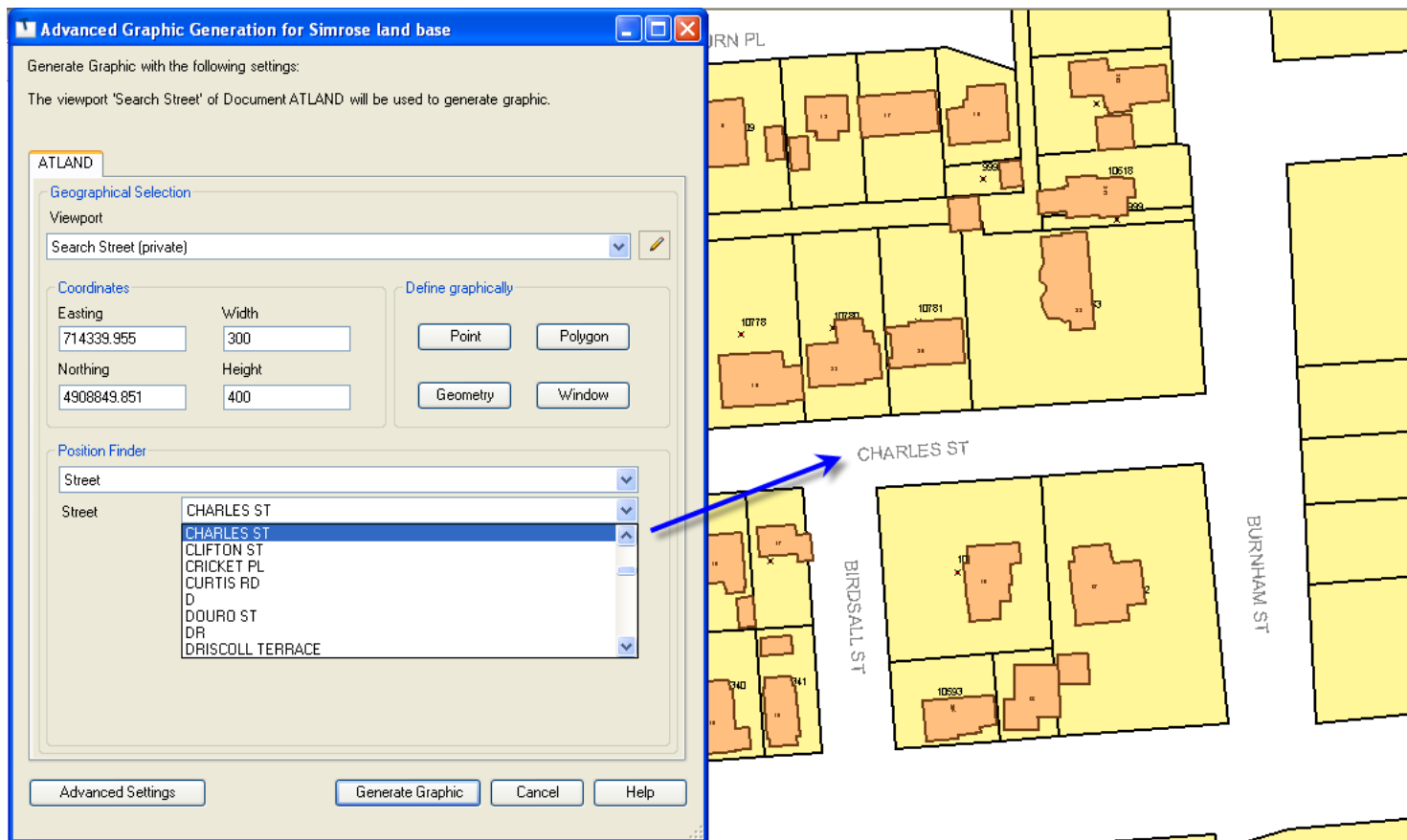
### *Creating a Viewport with a Window, Point, or Polygon*

In the Generate Graphic form, if you click...	You are prompted to...
Window	Draw a rectangle in the map window to define the extent of the viewport.
Point	Click a point in the map window.
Geometry	Click any feature in the map window.
Polygon	Draw a polygon in the map window.

# 3.7.1 Generating Graphics with a Viewport

## *Creating a Viewport with the Position Finder*

- The Position Finder enables you to generate graphics for specific features contained in a workspace.



## 3.7.2 Using Advanced Settings

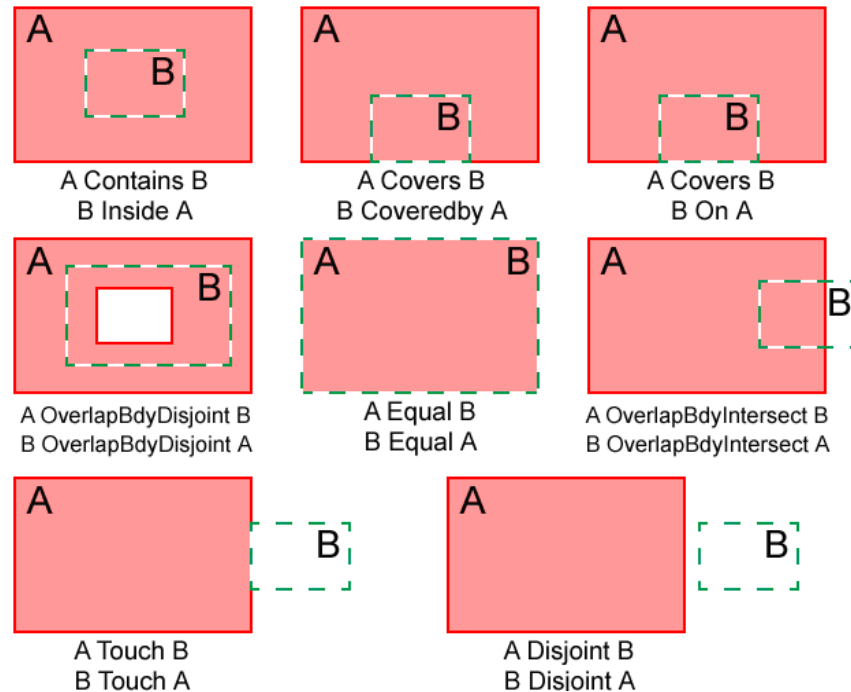
- Click **Advanced Settings** in the Generate Graphic form to define geographic selections for a graphic you want to generate with topology queries or spatial operators.
- The SDO\_RELATE Oracle operator performs both primary and secondary filter operations
- The mask parameters specify topological relations of interest.

The screenshot shows the 'Advanced Settings' dialog box with a blue title bar. Inside, the 'Spatial settings' section has two radio buttons: 'Default from each FeatureClass' (selected) and 'Global for all FeatureClasses'. Below this is a 'Global Spatial Mask' section with a list of radio buttons: 'anyInteract' (selected), 'inside', 'coveredBy', 'touch', 'overlapByDisjoint', 'overlapByIntersect', 'equal', 'contains', 'covers', and 'on'. At the bottom, there are two radio buttons: 'SDO\_Relate' (selected) and 'SDO\_Filter'. At the very bottom are 'Close' and 'Help' buttons.



## 3.7.2 Using Advanced Settings +

- **SDO\_Relate** is a spatial operator for the evaluation of topological relations between spatial objects.



## 3.7.2 Using Advanced Settings ++

- Definitions of the topological relations in spatial intersection patterns:

Name	Topological Relationship
DISJOINT	The boundaries and interiors do not intersect.
TOUCH	The boundaries intersect but the interiors do not.
OVERLAPBDYDISJOINT	The interior of one object intersects the boundary and interior of another object, but the two boundaries do not intersect.
OVERLAPBDYINTERSECT	The boundaries and interiors of the two objects intersect.
EQUAL	The two objects have the same boundary and interior.
CONTAINS	The boundary and interior of one object are completely contained within the interior of another object.
COVERS	The interior of one object is completely contained within the interior of another object and the boundaries intersect.
INSIDE	The opposite of CONTAINS. That is, B INSIDE A is equivalent to A CONTAINS B.
COVERDBY	The opposite of COVERS. That is, B COVEREDBY A is equivalent to A COVERS B.
ON	The opposite of COVERS. That is, B ON A is equivalent to A COVERS B.
ANYINTERACT	The objects are non-disjoint. They interact in any of the ways described above, except for DISJOINT.

## 3.9 Chapter Summary

- You should now be able to:
  - Explain how to load and save a display model.
  - Handle display models with one or more views at the same time.
  - Create a default stylization.
  - Generate a stylization with the Topobase Feature Data Object (FDO) provider.
  - Symbolize data.
  - Load specific areas and save them as viewports.

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