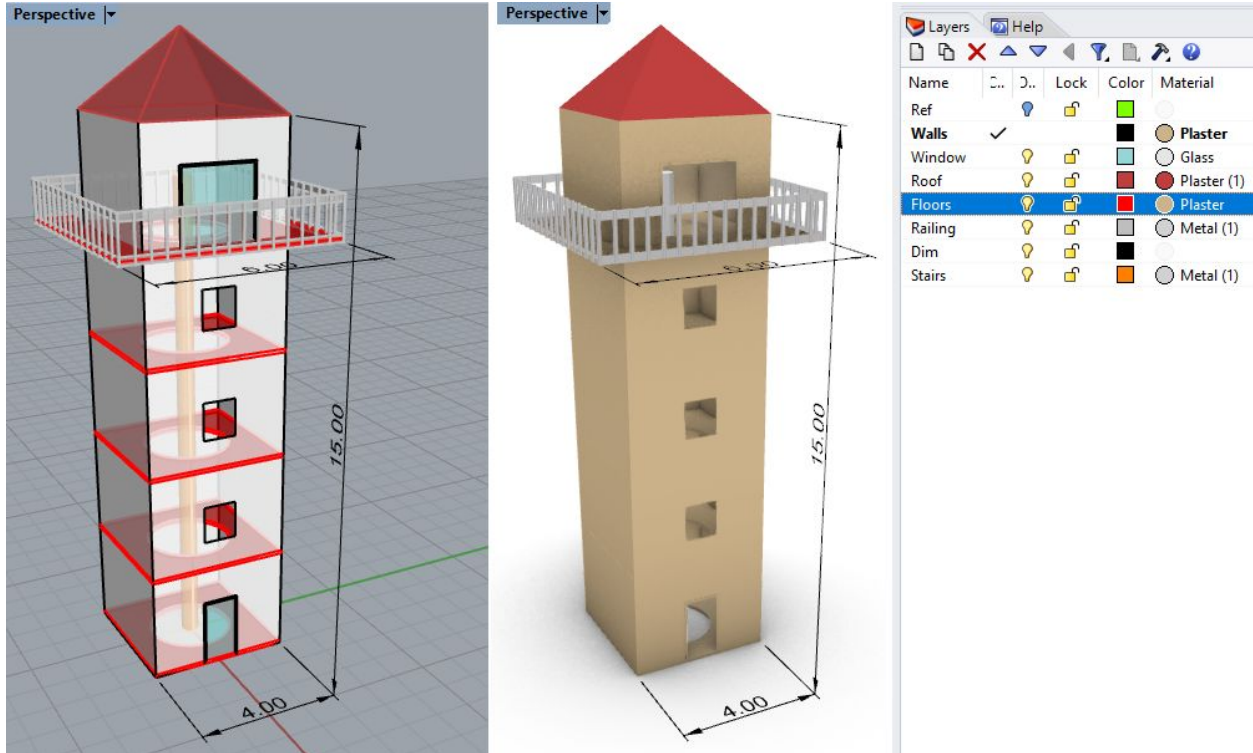# 1.11 Lighthouse Tutorial

Model the following lighthouse using Rhino


Modeling steps:

|	
Create new layers (using the marked new layer icon) for different parts of the lighthouse and assign different colors and appropriate material. The *Ref* layer is for reference geometry to help modeling.*Ref* and *Dim* layers do not need material assignment. To place a geometry inside designated layers, you can either make the layer current before creating the geometry, or select the geometry after creating and in the properties panel, change the layer to the desired one.	
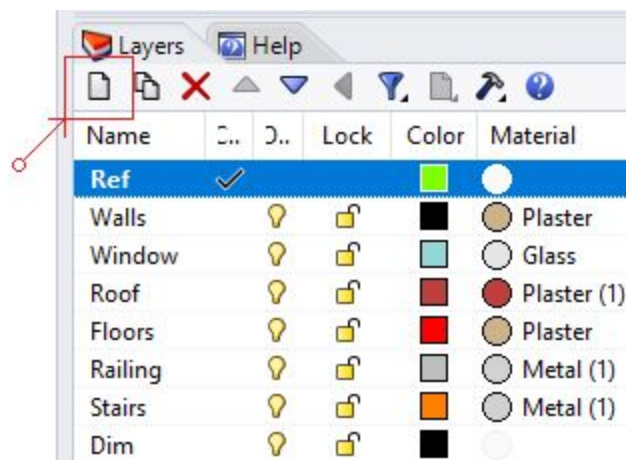
Draw a rectangle centered around the origin that is 4x4 meters in the *Ref* layer. Use *ExtrudeCrv* the base curve to create the wall.

Use *OffsetSrf* command to create wall thickness. Set Solid=Yes. Use *MergeAllFaces* to clean top coplanar faces and turn into one face.

Change *CPlane* to align with elevation. Draw rectangles for the openings, then use *MakeHole* to create the holes.

Use *PlanarSrf* command to create windows from the rectangles.
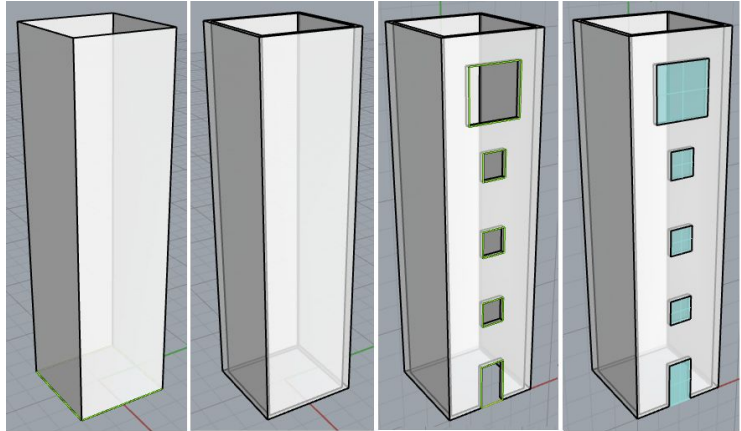
Draw a vertical *Line* that is 15m in length and *Divide* into 5 segments to mark the floors.

Create a *Plane* in for the base floor. Draw a *Circle* that is 1.2m in radius. *Trim* the plane with the circle. *ExtrudeSrf* the trimmed surface by 0.2m and set *Solid=Yes* option..

Copy the base floor to create the 3 other floors.

Repeat the Rectangle, Plane, Circle, Trim and ExtrudeSrf to create the observation deck.
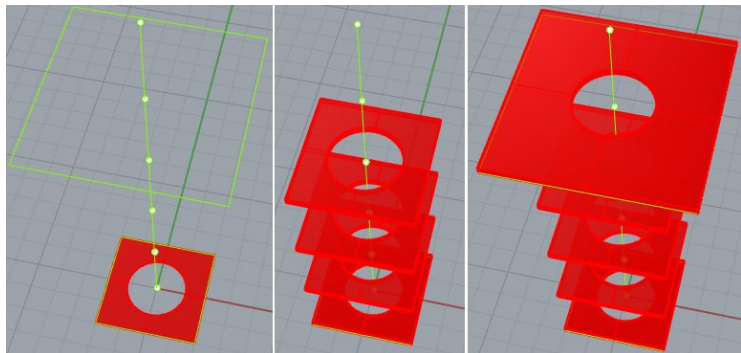
Run *Pyramid* command to create the roof. Run *Cylinder* command to create the stairs pole.

For the railing, *Divide* the top floor rectangle, select divide points and extrude vertically by the railing height. Use *Pipe* command with *Multiple* and *Cap=Flat* options to create the railing. Extrude the base curve then *Move* vertically to create the handle.
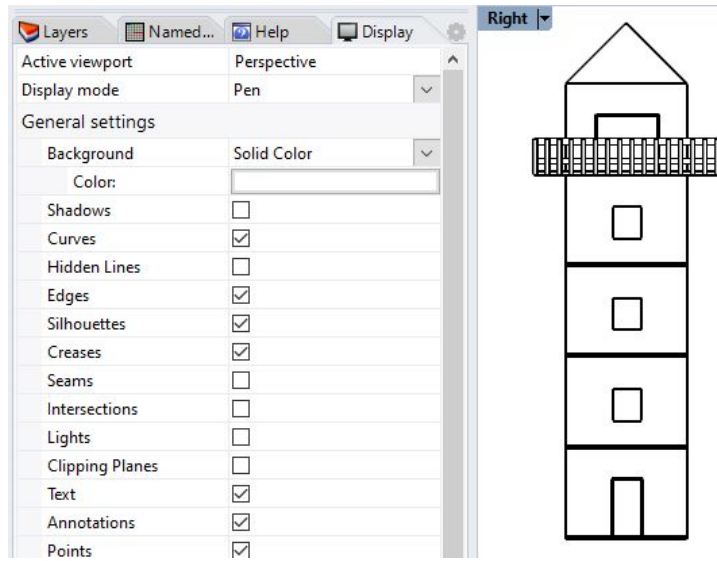
Use the *Dim* command to create the dimensions on the floor. Change *CPlane* to align with the elevation to be able to create the vertical dimension. Note the dimensions are always measured and created parallel to the active CPlane.
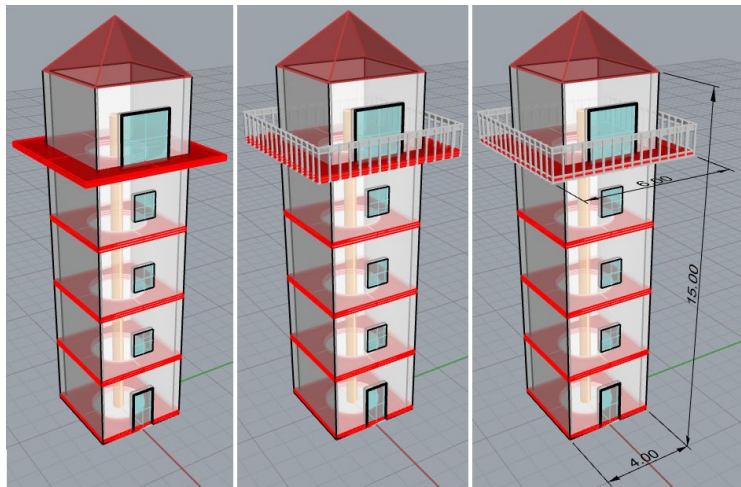
Use the *Pen* or *Technical* display mode to get raster images of different views.

You can set the *Pen* view to have a solid color background. In the *Display* panel, change background to *Solid Color* and set to the color you like

| Layers	Named...	Help	Display		Right
Active viewport			Perspective		
Display mode			Pen		
General settings					
Background			Solid Color		
Color:					
Shadows			☐		
Curves			☑		
Hidden Lines			☐		
Edges			☑		
Silhouettes			☑		
Creases			☑		
Seams			☐		
Intersections			☐		
Lights			☐		
Clipping Planes			☐		
Text			☑		
Annotations			☑		
Points			☑		

Extract parallel and perspective views.

Use *ClippingPlane* to cut out part of the model in display and create sections and section perspectives.

To extract vector drawing (curves), use *Make2D* and *Section* commands. Make2D supports ClippingPlanes and calculates hidden lines and other features.

When extract sections using *Section* Command, you can orient to xy-plane using *Orient*, *Rotate* or *Flow* commands
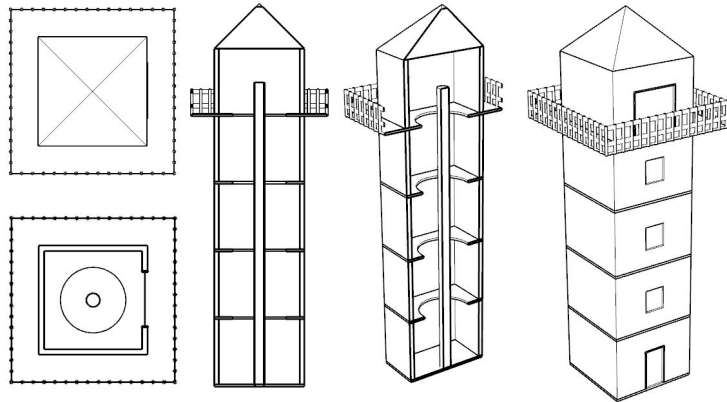
Here is a quick reference of the commands that are commonly used in rectilinear modeling:
Geometry creation: Point, Line, Rectangle, Polyline, Circle, Divide, ExtrudeCrv, Offset, Plane, ExtrudeSrf, DupBorder, Pyramid, Cylinder, Box, PlanarSrf, Pipe, ArrayCrv, Dim.
Geometry editing: Split, Trim, MakeHole, MergeAllFaces, BooleanDifference,
Workflow control: Move, Copy, CPlane, Explode, Select, Invert, Show, Hide, Lock & Unlock, Delete, Zoom.