AUTOCAD

Civil Engineering Drawing & Graphics
(BSc Civil Engineering 2010)

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Drawing Commands

The drawing commands are divided into:

- Straight lines and objects composed of straight lines
- Curves
- Points

The Straight and Narrow: Lines, Polylines, and Polygons

- **LINE (L): Draws a series of straight line segments; each segment is a separate object.**
- **PLINE (PL): Draws a *polyline — a series of straight and/or curved line segments; all the segments remain connected to each other as a single object.***
- **RECTANG (REC): Draws a polyline in the shape of a rectangle.**
- **POLYGON (POL): Draws a polyline in the shape of a regular polygon** (that is, a closed shape with all sides equal and all angles equal).

Drawing Commands

- **LINE:**
- Follow these steps to draw a series of line segments by using the LINE command:
- **Set the desired layer current, and set other object properties that you want applied to the line segments that you'll draw.**
- **Click the Line button on the Draw toolbar.**
- **Specify the starting point by clicking a point or typing coordinates. (**Remember to use one of the precision techniques. For the first point, object snap, snap, tracking, and typing coordinates all work well.)
- **Specify additional points by clicking or typing.**

Drawing Commands

- **<u>LINE: (CONTINUED)</u>**
- **When you're finished drawing segments, end with one of these steps:**

1. Press Enter, or right-click anywhere in the drawing area, and choose Enter to leave the figure open.

2. Type C and press Enter, or press the down arrow on your keyboard and choose Close from the menu

Drawing Commands

- **POLYINE :**
- The LINE command draws a series of single line segment objects. Even though they appear on the screen to be linked, each segment is a separate object. If you move one line segment, the other segments that you drew at the same time don't move with it. The PLINE command, on the other hand, draws a single, connected, multi-segment object. If you select any segment for editing, your changes affect the entire polyline.
- The PLINE command can draw curved segments as well as straight ones.
- You can add width to each segment of a polyline. Polyline segment width is visually similar to lineweight, except that polyline segment width can be uniform or tapered. The ability to create polyline segments with line widths was more important in the old days before AutoCAD had lineweight as an object property.

Drawing Commands
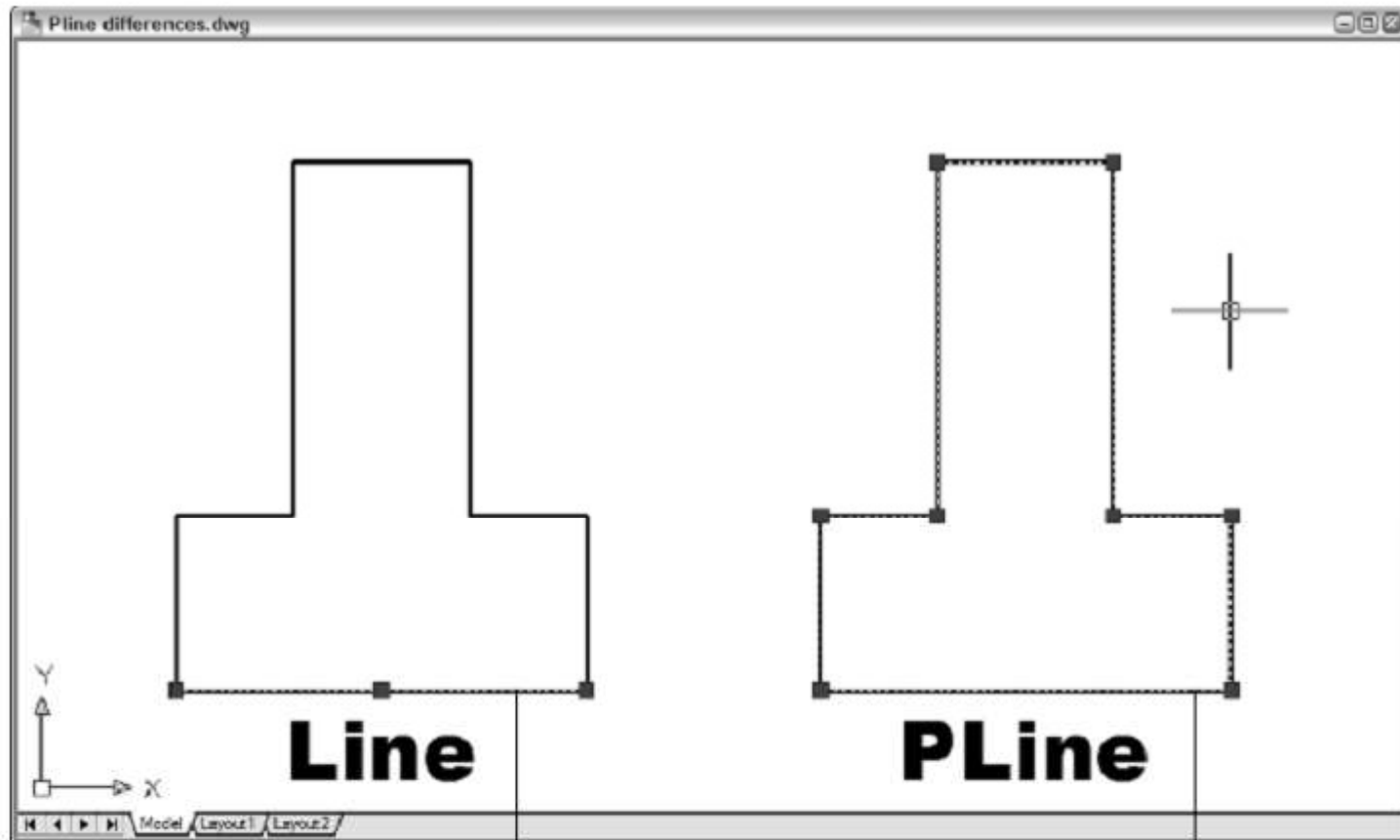
Line
(each segment is
a separate object)

Polyline
(all segments
form one object)

Drawing Commands

- **PLINE COMMAND:**

To draw a polyline composed of straight segments, follow these steps:

1. Set the desired layer current, and set other object properties that you want applied to the polyline object that you'll draw..

2. Click the Polyline button — the one that looks like a fishhook — on the Draw toolbar

3. Specify the starting point by clicking a point or typing coordinates.

4. If the current line width isn't zero, change it to zero

5. Specify additional points by clicking or typing. After you finish drawing segments, either press Enter (to leave the figure open) or type C and press Enter (to close it).
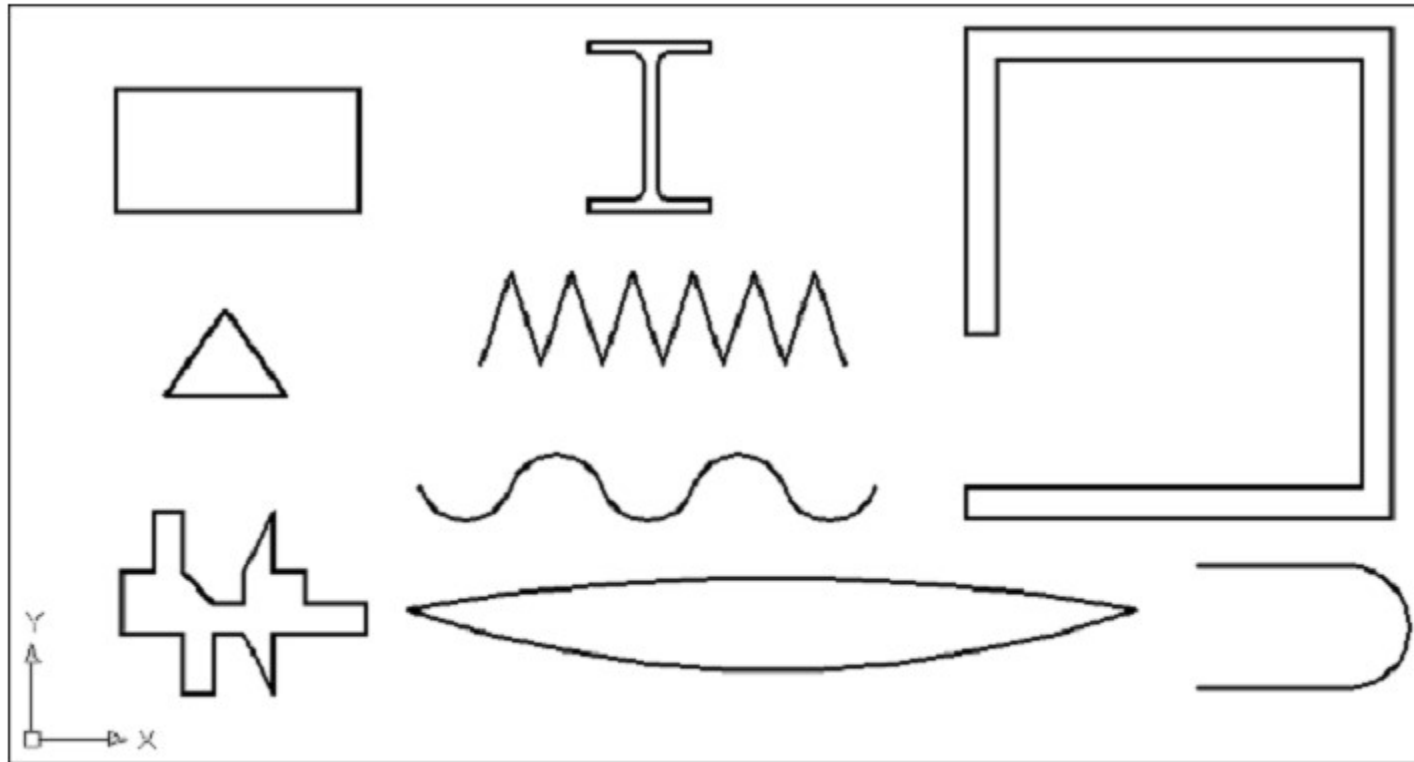
Drawing Commands

FIGURE: <u>VARIOUS KINDS OF SHAPES THAT CAN BE MADE WITH PLINE COMMAND</u>

Drawing Commands

- **PLINE COMMAND:**

To draw a polyline that includes curved segments, follow these steps:

1.Repeat Steps 1 though 5 of the previous procedure.

2.When you're ready to add one or more arc segments, type A and press Enter to select the Arc option.

3.Specify the endpoint of the arc by clicking a point or typing coordinates.

4.Specify additional points by clicking or typing.

5.After you're finished drawing segments, either press Enter or type C and press Enter.

Drawing Commands

- **RECTANGLE :**

You can use the PLINE or LINE command to draw a rectangle segment by segment. In most cases, though, you'll find it easier to use the special-purpose RECTANG command. The following procedure demonstrates how:

1. Set the desired layer current, and set other object properties that you want applied to the rectangle that you'll draw.

2. Click the Rectangle button on the Draw toolbar.

3. Specify the first corner by clicking a point or typing coordinates.

4. Specify the other corner by clicking a point or typing coordinates. (If you know the size of the rectangle that you want to draw (for example, 100 units long by 75 units high), type relative coordinates to specify the dimensions (for example, **@100,75).**

Drawing Commands

• **POLYGON :**

Rectangles and other closed polylines are types of *polygons, or closed figures with three or more sides.*

The following procedure demonstrates the POLYGON command:

1. Set the desired layer current, and set other object properties that you want applied to the polygon that you'll draw.

2. Click the Polygon button on the Draw toolbar.

3. Type the number of sides for the polygon that you want to draw and press Enter.

4. Specify the center point by clicking a point or typing coordinates.

5. Type I or C and press Enter.

6. Specify the radius by typing a distance or clicking a point.
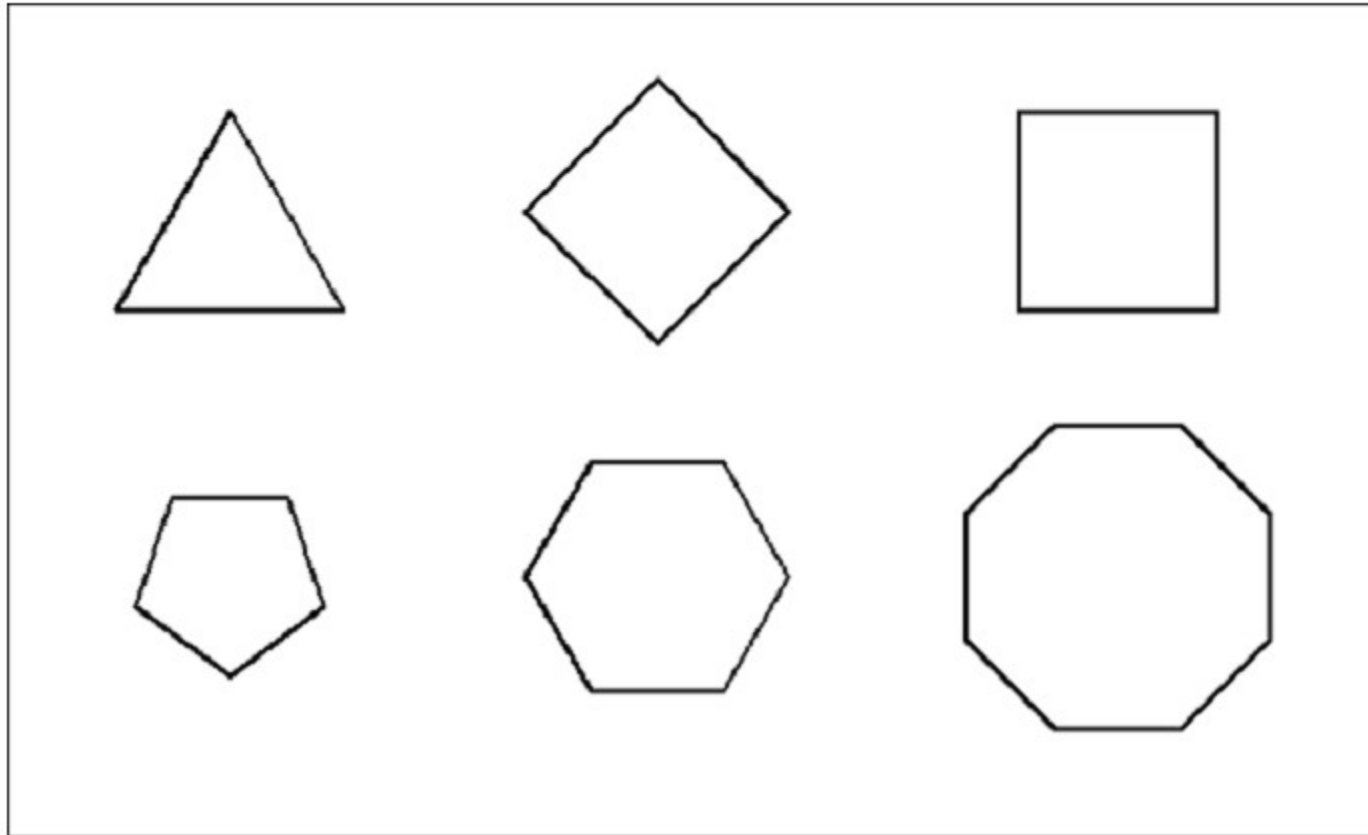
Drawing Commands

FIGURE: VARIOUS KINDS OF POLYGONS

Drawing Commands

- **<u>CIRCLE:</u>**

We can define a circle by entering one of the following options of the command

1. **3P (3-Point): Specify any three points on the circumference.**
2. **2P (2-Point): Specify the endpoints of a diameter of the circle.**
3. **Ttr (Tangent-Tangent-Radius): Specify two lines or other objects that** are tangent to the circle and then specify its radius.

Now the procedure to draw circle is:

1. **Set the desired layer current, and set other object properties that you want applied to the circle that you'll draw.**
2. **Click the Circle button on the Draw toolbar.**
3. **Specify the center point by clicking a point or typing coordinates.**
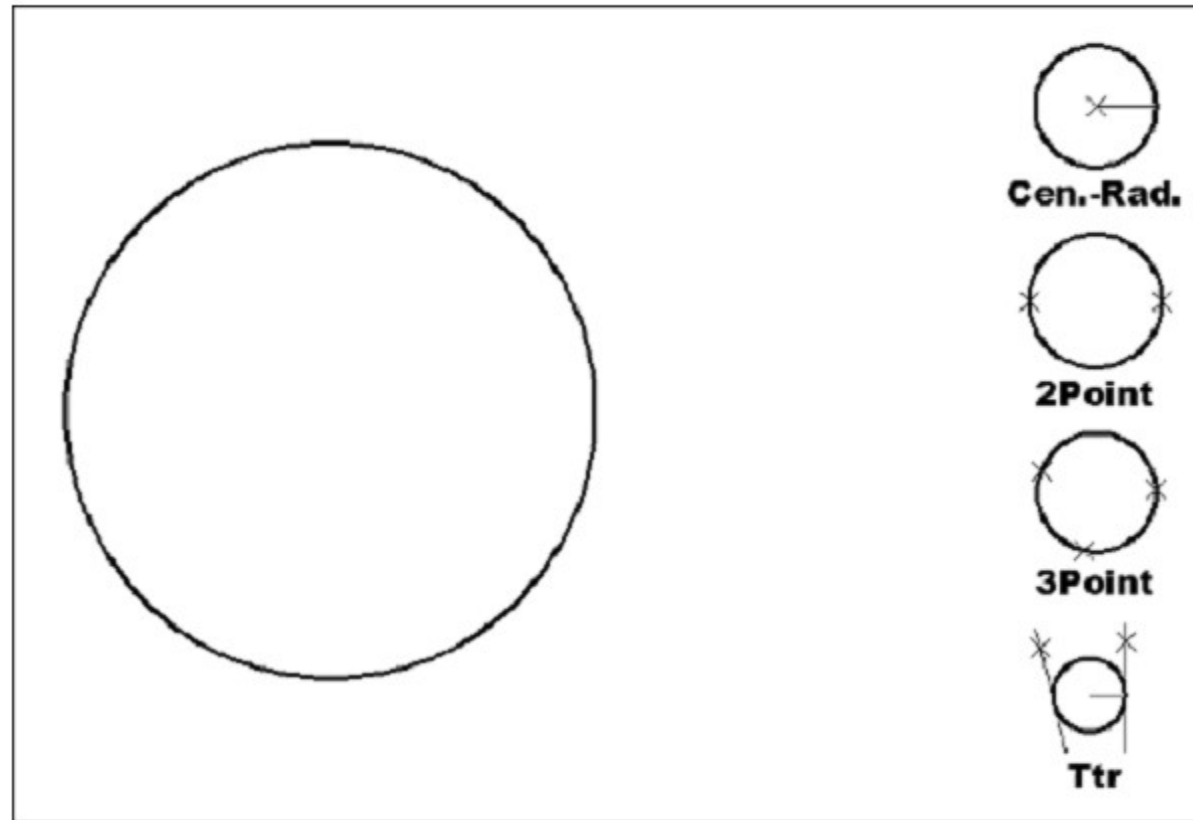4. **Specify the radius by typing a distance or clicking a point.**

Drawing Commands

FIGURE: VARIOUS TYPES OF CIRCLES

Drawing Commands

- **ARCS:**

Arcs in AutoCAD are, quite simply, pieces of circles. Just specify three points on-screen to define the arc, easy as one-two-three. These points tell AutoCAD where to start the arc, how much to curve it, and where to end it.

The procedure to draw an arc is:

1. **Set the desired layer current, and set other object properties that you want applied to the arc that you'll draw.**
2. **Click the Arc button on the Draw toolbar.**
3. **Specify the start point by clicking a point or typing coordinates.**
4. **Specify a second point on the arc by clicking a point or typing coordinates.**
5. **Specify the other endpoint of the arc by clicking a point or typing coordinates.**

Drawing Commands

- **DONUT:**

❑ Creating a *donut is a simple way to define a single object that consist Of two concentric circles with the space between them filled.*

❑ When you start the DONUT command, AutoCAD prompts you for the inside diameter and the outside diameter — the size of the hole and the size of the donut, as measured across their widest points. After you've entered these values, AutoCAD prompts you for the center point of the donut. But one donut is rarely enough, so AutoCAD keeps prompting you for additional center points until you press Enter

❑ You can use the DONUT command to create a filled circle — also known as a jelly-filled donut. Just specify an inside diameter of 0.