paste_29_1.tiff ¬paste_2_1.tiff ¬

The tools are located in a vertical palette attached to the left side of the OrthoDraw document window.   Located on the palette are fourteen tool buttons, a *re-select* button, perpendicular and parallel line buttons, and a toggle hidden (dashed) button.   This document describes the purpose of each button.

The tools palette tracks with the current document window if the "Stick" option in the tools menu is on.   This means that if you move the document window, the tools palette will move as well, taking its place along the upper left side of the document window.   This "Stick" option defaults to on, but it can be toggled by selecting the "Stick" option in the **Tools** menu.

The mouse pointer changes to one of the following four shapes when it is moved across a drawing page.   The particular shape is determined by the type of drawing tool that is currently being used.   The Selector tool uses the Selector shape, the Text tool uses the NX_IBeam shape, and the Scribble tool uses the Pencil shape.   All other tools use the Crosshair for a cursor.

paste_0_4.tiff ¬Selector   paste_1_2.tiff ¬ Crosshair

2 ¬paste_1_5.tiff ¬Pencil   paste_3_4.tiff ¬ NX_IBeam

paste_2_2.tiff ¬Knobs are small gray squares that the you may use to change the appearance of an object.   For example, you can move a line's endpoint by grabbing one of its knobs and dragging it to a new location.

paste_1_3.tiff ¬Selector
The selector is used to select drawing objects in the drawing by clicking on them.   When an object is selected, it becomes highlighted (knobs are drawn (see below)).   The selector can resize an object by clicking on a knob and dragging it.
If several objects lie on top of each other where the selector is clicked to select an object, only one object will be selected.   Subsequent clicks at the same position will select different objects.
When this tool is highlighted, OrthoDraw is in *selection mode*.   You

may also enter selection mode temporarily by holding down the CONTROL key.   Note, however, that using the CONTROL key will not change the cursor to the selector cursor.

1 ¬paste_9_2.tiff ¬Reselect

If this option is turned on, OrthoDraw will continue to behave as if you had continually selected the last tool that you had used.   For example, if you had just drawn a *feature line*, and re-select is on, then OrthoDraw would expect you to draw another *feature line* until re-select is turned off, or until you select another tool.   However, if this option is turned off, then after using any tool, OrthoDraw will switch to *selection mode*.

If you want to switch to selection mode temporarily without clicking on the selector tool, you can hold down the CONTROL key (see Selector above.)

paste_4_2.tiff ¬ Lines are created by moving the mouse to the
first endpoint and *pressing and holding* the left mouse button.   The mouse
is then *dragged* to the second endpoint and the button is released.   After a
line is drawn, it becomes highlighted (*knobs* appear at its endpoints.)

· If a line is not constrained in any way, you may resize it by
dragging either of the two knobs to a new location.

· However, some lines may be constrained along their *line of action*.
Imagine that such a line is extended indefinitely in both directions.   Any
resizing or moving must take place along this line:

paste_7_2.tiff ¬

· Other lines may be constrained to a *fixed length*.   You may move such lines to a new location, and even change its orientation, but its length remains fixed.

· All constraints can be changed using the Line Inspector which is located under the **Tools** menu.

· *ALT-dragging* a line will constrict its orientation to 15˚ increments. This is useful when you want to draw horizontal or vertical lines:

paste_5_2.tiff ¬

· You can change a line's type by highlighting it and selecting a new line type from the tool palette.   For example, you wish to change a feature line into a folding line.   (1) Start with the feature line.   (2) Select it with the

selector tool.   (3) Select the folding line tool from the tool palette.   The feature line now becomes a folding line:

paste_8_2.tiff ¬

paste_2.tiff ¬   Feature Lines are not restricted in any way.   They appear in the drawing as thin, black lines.

paste_3.tiff ¬   Folding Lines are constrained along their line of action.   They appear in the drawing as thick, black lines.

paste_4.tiff ¬ Auxiliary Lines are also constrained along their line of action and appear in the drawing as thin, gray lines.

paste_5.tiff ¬ Hidden Lines are not restricted in any way.   They appear in the drawing as thin, broken, black lines.

paste_9.tiff ¬ Points may be placed anywhere in the drawing, but, because of their nature, they may not be resized.   They appear in the drawing as small, black dots.

paste_6.tiff ¬ Text objects are created by clicking on a drawing with the text tool.   Subsequent keyboard input writes to the screen at the cursor.   The font and style of selected characters may be modified by using the Font Panel (COMMAND-t) and the options in the **Font** menu found under **Format** in the main menu.   Existing text objects may be edited by clicking with this tool at the point where editing should take place.   A text object's margins and position may be changed like any other object by using the selector tool.

paste_7.tiff ¬ Dividers are tools used to transfer distances. A divider is constrained to a fixed length.   The divider is created in the same manner as a line.   This is how the divider appears in a drawing:

paste_6_1.tiff ¬

paste_8.tiff ¬   Protractors are used to measure angles.
A protractor consists of a reference line, an angle line, and the angle arc.
The reference line appears as a black line, the angle line is gray, and the
angle arc is a black semi-circle.   This is how the protractor appears in the
drawing:

paste_20_1.tiff ¬

        The protractor is created by dragging out the reference line.   The
angle line defaults to 0˚ (or straight up.)   Once this is done, you may
change either the reference or angle lines by using the selector tool.   You
may determine the measurement of the angle by selecting the protractor
and then bringing up the Protractor Inspector, which is located in the **Tools**

menu.

paste_3_3.tiff ¬Arcs are drawn just like Protractors, but the radius of the arc and the length of the angle line both change to match the length of the reference line.   When arcs are not selected, only the arc portion is visible (below at left.)   When selected, the arc's knobs, reference line, and angle line appear (below at right.)

paste_25_1.tiff ¬   paste_26_1.tiff ¬

paste_6_3.tiff ¬Circles are drawn by clicking and dragging.   This tool will actually produce ovals by default, but if the ALTERNATE key is held down during the initial click with the mouse, a true circle will be formed. Any ovals formed with this tool are restricted in that the major and minor radii can only be horizontal or vertical.   To form ovals of different orientations, use the bezier tool.

paste_7_3.tiff ¬Rectangles are drawn by clicking to anchor one corner and dragging to where the opposite corner should lie and then releasing the mouse button. If the ALTERNATE key is held down during the initial click with the mouse, the rectangle will be constrained to a square aspect ratio.

paste_2_4.tiff ¬Scribbles are formed by clicking on the drawing and moving the cursor around without releasing the mouse button. As the cursor is dragged, a connected trail is left behind. Releasing the mouse button ends the creation of a scribble. Scribbles are drawn best with gravity off.

paste_8_3.tiff ¬Beziers are very flexible graphics that can be resized to form many shapes.   They have four critical points by which they can be resized.   An initial click anchors the first point if the mouse button remains down until a drag and then release of the mouse button anchors the second point.   Two more clicks anchor the third and fourth critical points and ends the creation process.   Two beziers together can be used to form an oval who's major and minor radii are not horizontal or vertical.

paste_4_3.tiff ¬Polygons are created by clicking and dragging as if one were creating a line to form the first segment.   Each subsequent click adds a new line segment.   Double clicking or clicking anywhere outside the page will finish the polygon by adding a segment extending to the first segment (below at left.)   This last segment will not be added if the polygon is created with the ALTERNATE key held down (below at right.)

paste_23_1.tiff ¬

paste_24_1.tiff ¬

paste_10.tiff ¬   Construct Parallel Lines creates lines parallel to any lines that are currently selected.   The new lines inherit the selected lines' types.

paste_11.tiff ¬   Construct Perpendicular Lines creates lines perpendicular to any lines that are currently selected.   The new lines inherit the selected lines' types.

paste_4_4.tiff ¬ Toggle Hidden changes each graphic that is selected.   If a graphic is dashed, the graphic becomes non-dashed.   If the graphic is not dashed, it becomes dashed.   This ability is included to allow hidden objects -- which are typically dashed in orthographic drawing -- to be easily depicted.