CHAPTER 12

Pattering

PROJECT EXERCISE

This project exercise provides step-by-step instructions for creating the design shown in Figure P12–1. The intent is to guide you in placing patterns.

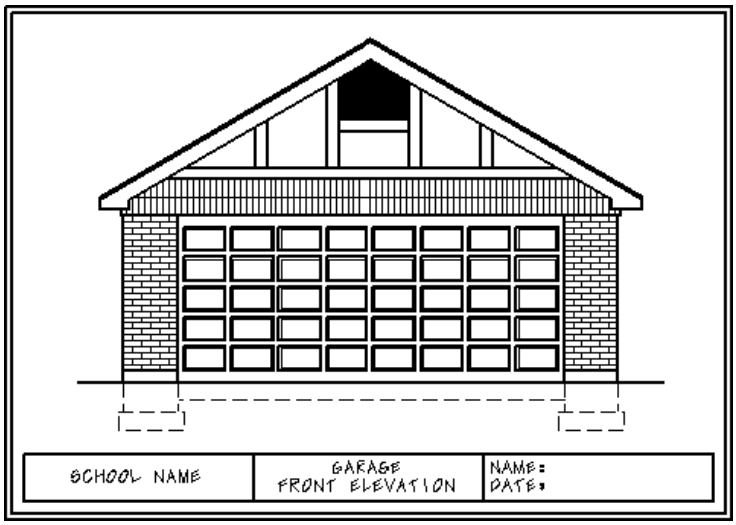


Figure P12–1 Completed project design

Note: As you complete each step in the project procedures, place a check mark by the step to help you keep up with where you are in the project.

PREPARE THE DESIGN FILE

This procedure starts MicroStation, creates a design file, and enters the initial settings.

STEP 1: Invoke MicroStation using the normal technique for the operating system on your workstation.

STEP 2: Create a new design file named CH12.DGN using the 2dEnglishGeneral.dgn seed file.

In the Design File dialog box:

- Set the **Working Units Master Unit** to "Feet" and the **Sub Units** to "Inches."
- Set the **Grid Master** to 0.25, **Grid Reference** to 4, and the **Grid Lock** to ON.

STEP 3: Set up the following levels and attributes:

- Level=Border, Color=White (0), Style=0, Weight=1
- Level=Border Text, Color=White (0), Style=0, Weight=0
- Level=Garage Door Panels=White (0), Style=0, Weight=1
- Level=Running Bond Brick, Color=Red(3), Style=0, Weight=0
- Level= Garage Front Elevation, Color=White (0), Style=0, Weight=1

STEP 4: In the Attributes tool box, select the **By Level** option for the **Active Color**, **Active Style**, and **Active Weight**.

STEP 5: Select **File > Save Settings**.

DRAW THE BORDER AND TITLE BLOCK

This procedure draws the border and fills in the title block.

STEP 1: In the Attributes tool box, set the **Active Level** to **Border**.

STEP 2: Draw the border and title block (the outer border block is 30′, 6″ wide by 21′, 6″ high).

STEP 3: Set the **Active Level** to **Border Text**.

STEP 4: Fill in the title block:

- Replace "SCHOOL NAME" with your school or company name, or make up a name.
- Place your name to the right of "NAME."
- Place today's date to the right of "DATE."

CREATE CELLS

This procedure creates the garage door panel cell shown in Figure P12–2 and the brick pattern cell shown in Figure P12–3.

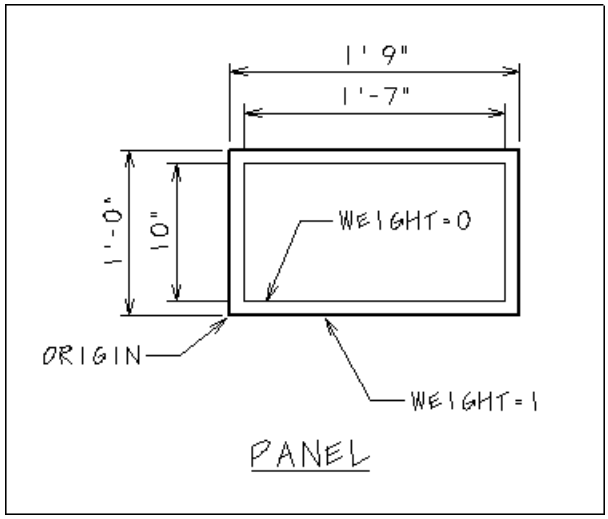


Figure P12–2 Garage door panel cell construction

STEP 1: Set the **Active Level** to **Garage Door Panels**.

STEP 2: Align a view window to display an area about 3′ × 3′.

STEP 3: Create a new cell library file named CH12.CEL.

STEP 4: Use Figure P12–2 as a guide to draw the two rectangles making up the garage door panel. Do not draw any of the dimensions or text.

Note: The Active Level has the line weight set to 1. Before you draw the inner line, set the Active Weight to 0 in the Attributes tool box to override the level setting.

STEP 5: Create a **Graphic** cell from the two rectangles named "Garage Panel" with the origin defined at the lower left corner of the outer rectangle.

STEP 6: Delete the two rectangles.

STEP 7: Set the **Active Level** to **Running Bond Brick**.

STEP 8: Use Figure P12–3 as a guide to draw the brick pattern.

Note: The brick pattern lines are wider than weight zero in Figure P12–3 to make them easier to distinguish from the dimensions. Do *not* draw any of the dimensions or text.

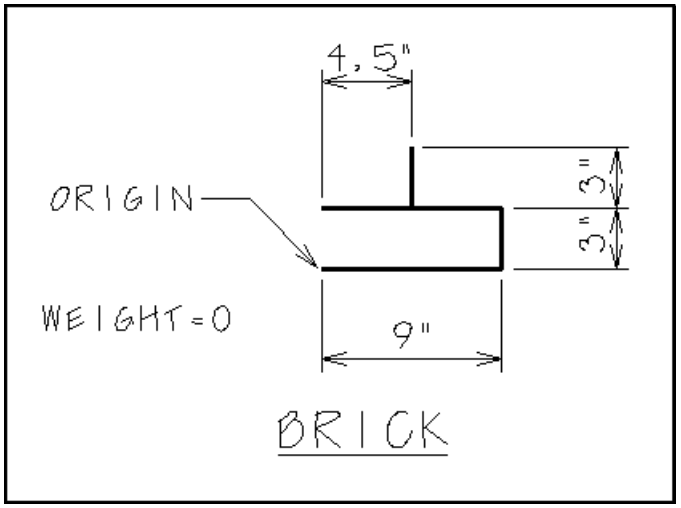


Figure P12–3 Brick pattern cell construction

STEP 9: Create a **Graphic** cell from the brick elements named "Running Bond Brick," with the origin defined at the lower left corner.

STEP 10: Delete the brick elements.

STEP 11: Fit the view and save the design settings.

DRAW THE GARAGE

This procedure creates the garage front elevation, as shown in Figure P12–4.

Note: If a dimension is missing, estimate the proper placement.

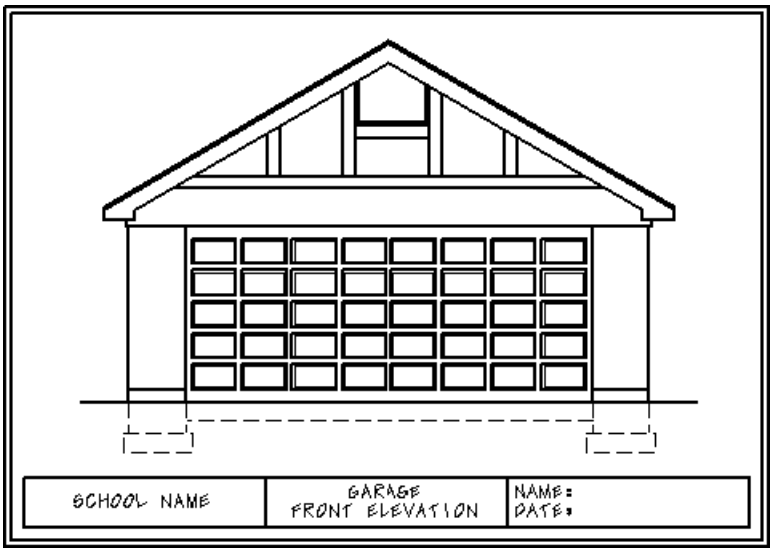


Figure P12–4 Garage front elevation

STEP 1: Set the **Active Level** to **Garage Front Elevation**.

STEP 2: Use Figure P12–5 as a guide to draw the garage wall and door. Use the Place Block tool to create the outline of the brick wall on each side of the garage door.

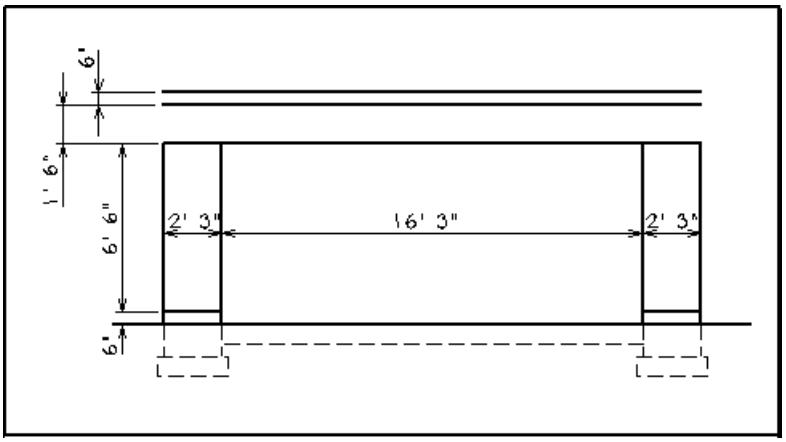


Figure P12–5 Garage wall and door detail

STEP 3: Use Figure P12–6 as a guide to draw the garage roof.

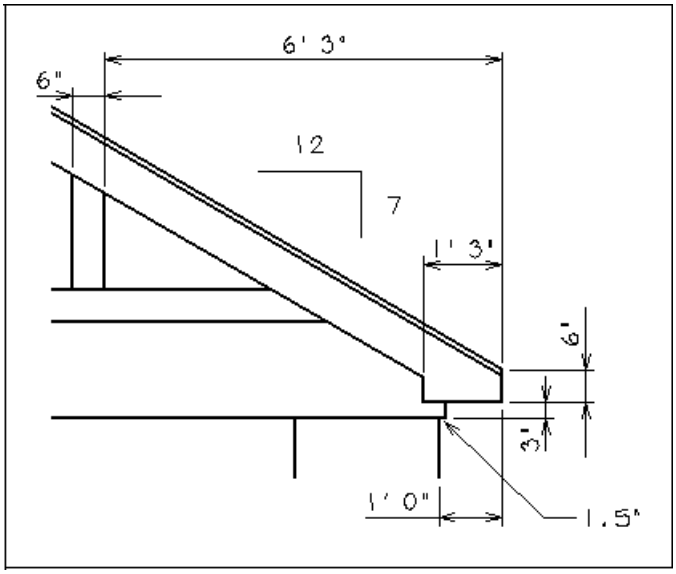


Figure P12–6 Garage roof detail

STEP 4: Use Figure P12–7 as a guide to draw the garage attic vent.

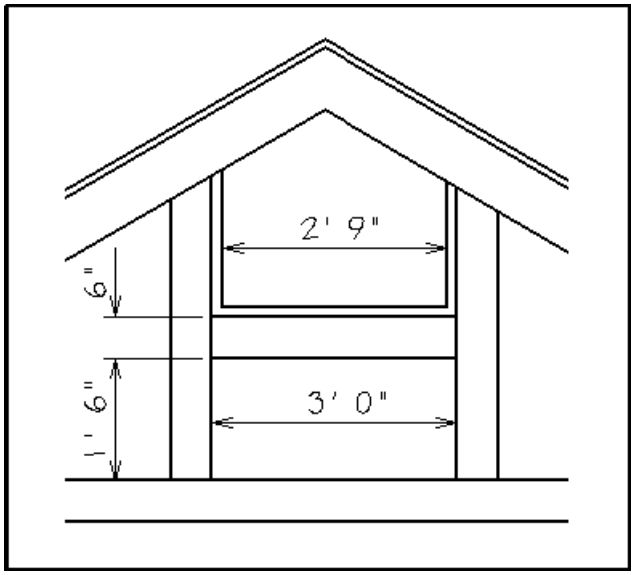


Figure P12–7 Garage vent detail

STEP 5: Use Figure P12–8 as a guide and invoke the Place Active Cell Matrix tool to place a rectangular array of the **Garage Panel** cell in the garage door. Figure P12–9 shows the required tool settings for the array.

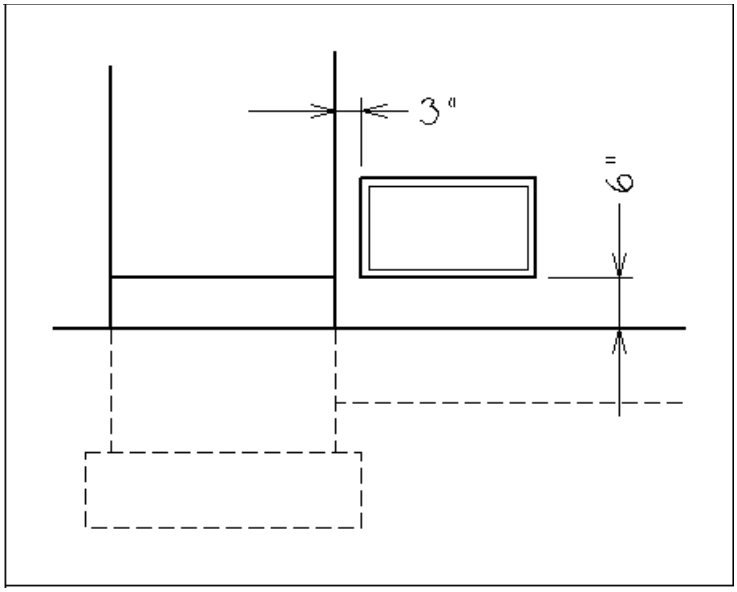


Figure P12–8 Garage door detail

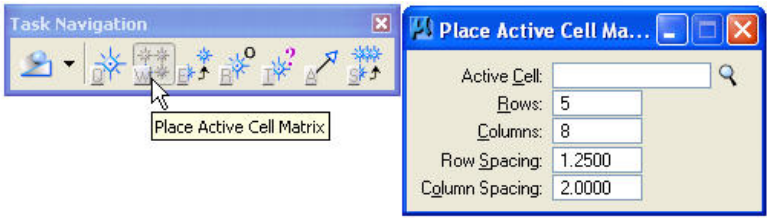


Figure P12–9 Place Active Cell Matrix tool settings

PLACE THE BRICK PATTERNS

This procedure uses the Pattern Area tool to place the brick pattern on each side of the garage door, the Crosshatch Area tool to place the brick pattern above the garage door, and the Hatch Area tool to place the louvers in the attic vent.

STEP 1: Use the Window Area tool to fill the view with the rectangle on the right side of the garage door with copies of the Running Bond Brick pattern.

STEP 2: Invoke the Pattern Area tool from the Task Navigator (active task set to Patterns) and in the tool settings box, adjust the tool settings as shown in Figure P12–10.

Note: If you did not use a closed element for the brick walls, set the patterning Method to Flood.

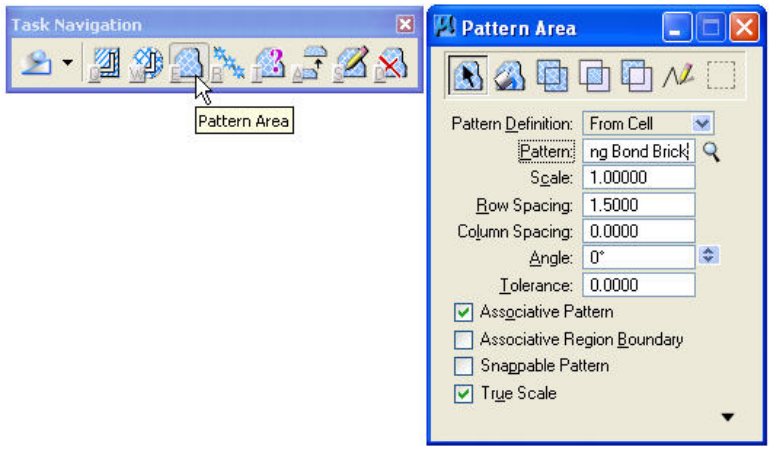


Figure P12–10 Pattern Area tool settings

MicroStation prompts:

Pattern Area > Identify element

Select the block element to be patterned on the right side of the garage door.

Pattern Area > Accept @pattern intersection point

Keypoint snap to the lower left corner of the block element to be patterned and place a data point to initiate patterning.

STEP 3: Arrange the view window to display the block element on the left side of the garage door and use the Pattern Area tool to place a brick pattern in it.

STEP 4: Arrange the view window to display all of the area above the garage door that is to be filled with two vertical brick rows.

STEP 5: Invoke the Crosshatch Area tool from the Patterns tool box, and, in the Tool Settings window, make the tool settings shown in Figure P12–11.

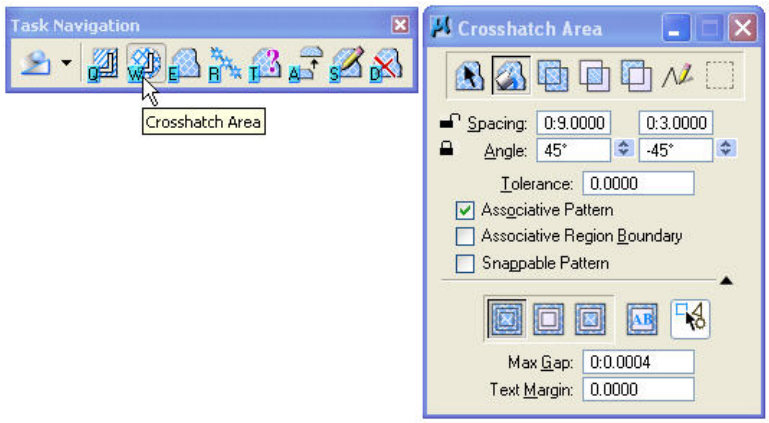


Figure P12–11 Required Crosshatch Area tool settings

MicroStation prompts:

> Crosshatch Area Enclosing Point > Enter data point inside area

Click inside the brick area above the garage door.

> Crosshatch Area Enclosing Point > Accept @pattern intersection point

Keypoint snap to the lower left corner of the area to be crosshatched, as shown in Figure P12–12, and then place a data point to initiate crosshatching.

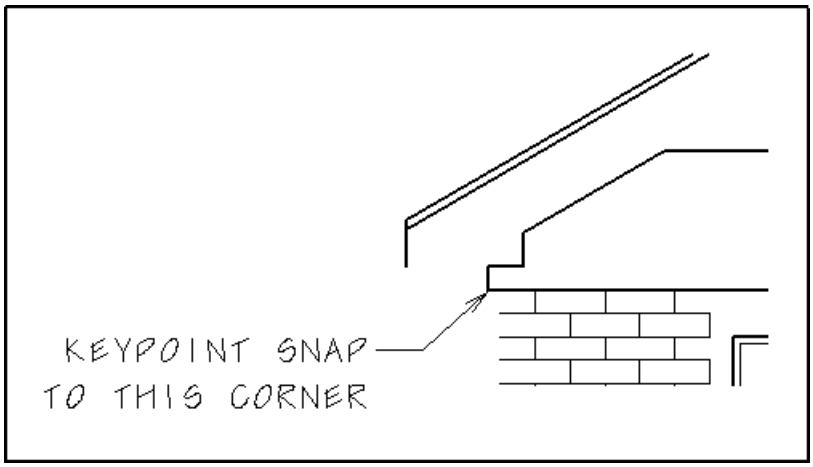


Figure P12–12 Acceptance point for crosshatching the area above the garage door

STEP 6: Arrange the view window to fill the view with the attic vent area.

STEP 7: Invoke the Hatch Area tool and in the tool settings box, make the tool settings shown in Figure P12–13.

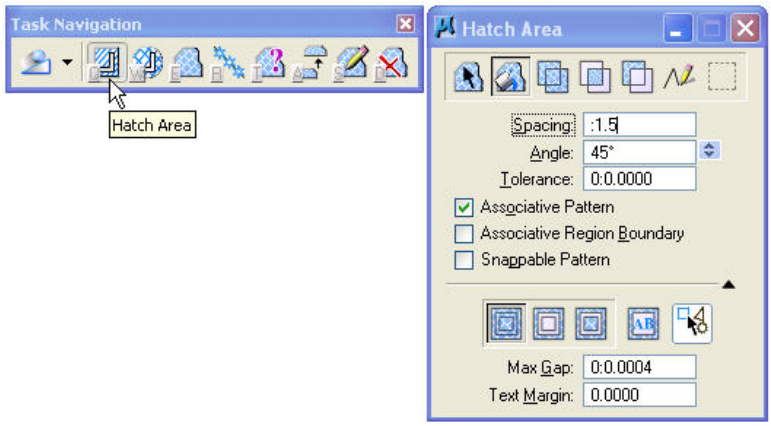


Figure P12–13 Required Hatch Area tool settings

MicroStation prompts:

Hatch Area Enclosing Point > Enter data point inside area

Click inside the vent area.

Hatch Area Enclosing Point > Accept @pattern intersection point

Keypoint snap to the lower left corner of the area to be hatched, and then place a data point to initiate hatching.

STEP 8: Invoke the Fit View tool to fit the view.

STEP 9: Select **File > Save Settings**.

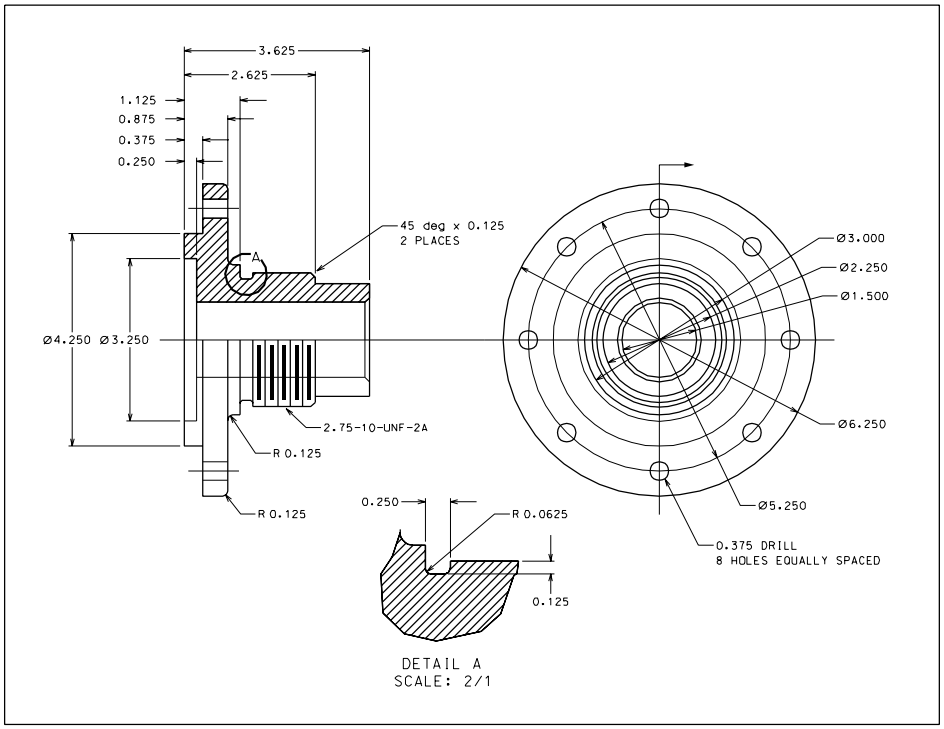
DRAWING EXERCISES 12–1 THROUGH 12–5

Use the following table to set up the design files for Exercises 12–1 through 12–3.

SETTING	VALUE
Seed File	seed2d.dgn
Working Units	Master Unit=Inches, Sub Unit=Inches
Grid	Grid Master = 0.1, Grid Reference = 10, Grid Lock ON

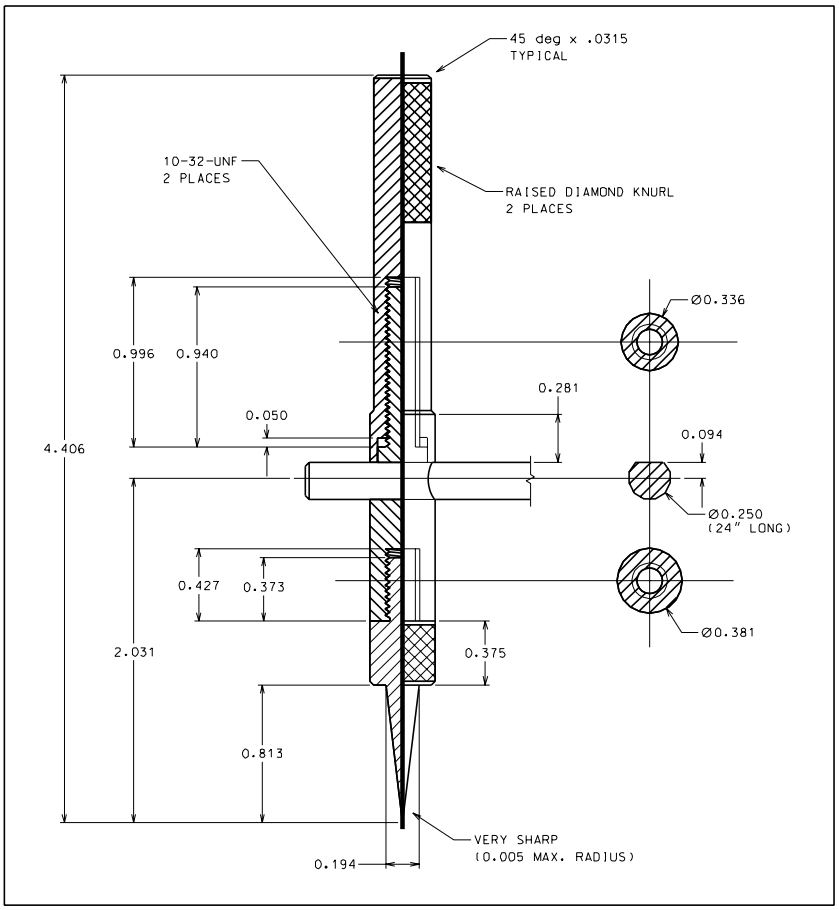
Exercise 12–1

NOZZLE



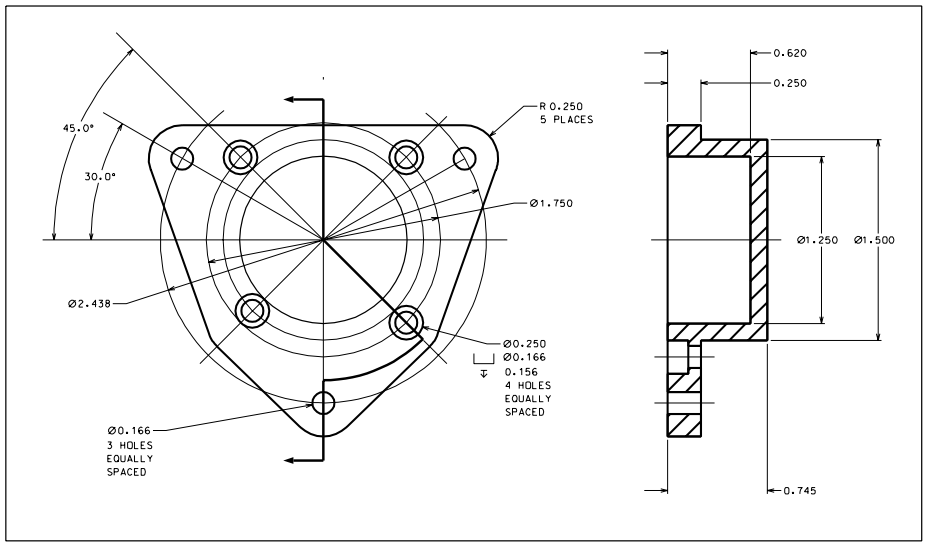
Exercise 12–2

BEAM COMPASS POINTER



Exercise 12–3

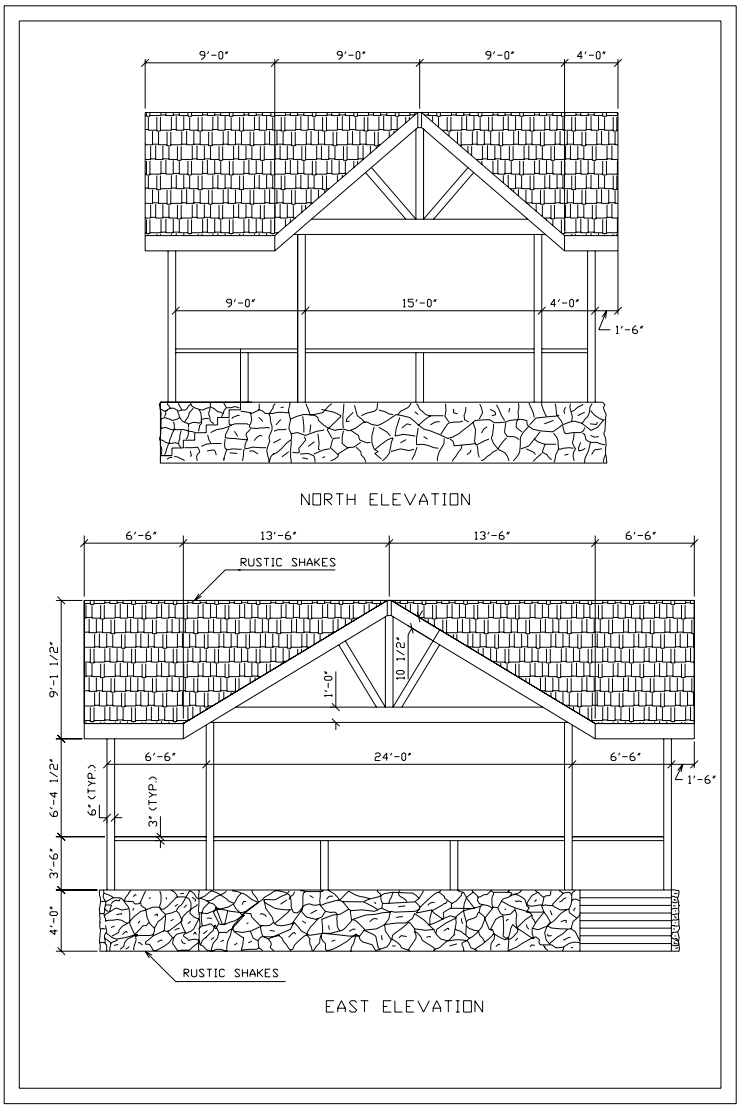
BACKPLATE CAST ALUMINUM



Use the following table to set up the design files for Exercises 12–4 and 12–5

SETTING	VALUE
Seed File	seed2d.dgn
Working Units	Master Unit=Feet, Sub Unit=Inches
Grid	Grid Master = 0.5, Grid Reference = 24, Grid Lock ON

Exercise 12–4
PARADE STAND



Exercise 12–5

ARCHITECTURAL DETAIL