

Drawing a Ramp or Spillway into a Pond

The following instructions will guide you through the process of creating a ramp or spillway into a pond. Volumes for cut and fill will also be determined for your proposed surfaces. These instructions assume that the proposed surface 3D grid file for the site has been created and that your proposed pond with contours has been drawn. Carlson modules are displayed as {**Civil - Design**}, main menus are displayed as [**Grading**], and submenus and menu commands are displayed as <**Design Bench Pond**>.

- 1) Draw 3D polyline: {**Any Module**} \implies [**Draw**] \implies < **3D Polyline**>
- 2) Draw the centerline of the proposed ramp. Make sure that the ramp is in the desired location.
- 3) Offset 3D polyline: {**Any Module**} \implies [**Edit**] \implies <**3D Polyline Utilities**>
 \implies **Offset 3D Polyline**
- 4) The command line prompts the user to enter an **Offset Method**, type “I” for interval.
- 5) Now enter the horizontal offset for the ramp edges. (i.e., for a 10’ ramp offset 5’ on both sides of the centerline)
- 6) The command line now asks for a slope of the ramp. Type “0”. The slope will be determined later in the instructions.
- 7) Select the centerline of your ramp. Select the side of the line that you want to offset. Select the centerline again, this pick the other side that has not been offset. Hit the “**Enter**” button to complete the offset command.
- 8) The ramp edges are now drawn. The centerline may now be deleted.
- 9) The ramp edges now need to be trimmed. The ramp edges should not extend past the contour of the planned starting elevation of the ramp or beyond the bottom of the pond. Therefore the edged need to be trimmed based on the planned starting elevation determined by the user.
- 10) Use the trim command to trim the ramp edges.
- 11) Assign Elevations to the ramp: {**Civil - Design**} \implies [**3D Data**] \implies < **2D to 3D Polyline**> \implies **By Start End Elv**
- 12) Select one of the edges, then the command line asks to “**enter the starting elevation**”. Make sure that the correct elevation is entered for each end of the line. An arrow will appear at the end of the line where the elevation is being entered.
- 13) Now repeat step 12 for the other edge. Once completed hit the “**Enter Button**” to end the command.

- 14) Join 3D Polylines: {**Any Module**} \Longrightarrow [**Edit**] \Longrightarrow <**Join Nearest**>
- 15) The **Join Nearest Options** dialog box opens.
- 16) The Max separation to join should be set to a value greater than that of the width of the ramp. The connection method should be set to Directly Connect Endpoints. Once these options have been selected, click "**OK**".
- 17) Select the 2 ramp edges. Once selected hit "**Enter**"
- 18) Now the ramp is a closed 3D polyline with the specified elevations.
- 19) Design Pad Template: {**Civil - Design**} \Longrightarrow [**Grading**] \Longrightarrow <**Design Pad Template**>
- 20) The Design Pad Template dialog box opens on the screen. The surface model that will be used for this step will be the 3D grid file that contains the berm, therefore select the "**Surface File**" Option.
 - a. The Slope Direction from Closed Plines: Select "**Outside**"
 - b. The Design Slope Format: Select "**Ratio**" (refers to the side slopes)
 - c. Select Round Exterior Corners
 - d. Select Draw Side Slope Polyines
- 21) In the command line it asks the user to **select the pad polyline**. Select the ramp.
- 22) The **Select Slope Target Surface** dialog box opens on the screen. Pick the 3D grid that contains the proposed berm surface, then click "**Open**"
- 23) Enter your side slopes for any **fill** and **cut**. (i.e., for 4:1 enter 4)
- 24) The user has the option of calculating any earthwork that was done. Type "**Y**" for yes.
- 25) A text window appears with the pad information and the earthwork quantities. Save this information in the job folder and print out.
- 26) The user has the option to redesign and adjust parameters of the pad. If happy type "**N**" for no.
- 27) Write final surface to grid file? Type "**Y**" for yes.
- 28) The **Output Grid File to Write** dialog box opens. Navigate to the job folder and save the new grid file.
- 29) Trim existing contours inside pad perimeter? Type "**Y**" for yes.
- 30) Retain trimmed polyline segments? Type "**Y**" for yes.
- 31) Specify layer name for trimmed segments? Type "**N**" for yes.
- 32) Enter layer name for trimmed segments:
- 33) Contour the pad? Type "**Y**" for yes. Now the contour options dialog box opens on the screen. These options are up to the user. The contour interval will be determined by the type of relief of the site.
- 34) Join the final contours with existing? Type "**N**" for no.
- 35) The pond and ramp are now drawn on the plan view along with the proposed contours.