Overview: The Roading Stakeout tools inside Trimble Access Software on the TSC3/TSC3 can be used to stakeout an auxiliary spillway that has a curved or straight inlet section, a straight control section, and a straight outlet section which can include a curve at the end of it. Control points can be directly entered into the project or uploaded to Trimble Access as a text file (e.g. Stakeout.txt)

Items needed for Horizontal Alignment:
- Coordinates of starting point of inlet curve
- Radius and angular dimension of inlet curve
- Azimuth and length of straight section
- Radius and angular dimension outlet curve

Items needed for Vertical Alignment
- Starting elevation at beginning of inlet curve
- Grade & Distances between changes in grade

Items needed for Template Positioning
- Bottom width and side slopes of Spillway

Trimble Access Data Entry

Start a New Job
1. When you open Trimble Access Click Roads
2. Click on Jobs... New Job
3. Input the new Job name, Units = International Feet, {Optional: Linked Files = Stakeout.txt} & Cogo = Ground. Note that the settings from the most recent job are used in the new job.
4. Tab down to type in the operator name & any other notes
5. Click Accept.

Create the “Template” that represents the Auxiliary Spillway bottom width
6. From the main Trimble Access Menu, Click Roads...Define
7. Click New on the bottom of the screen and give your new Spillway a name, Click Enter
8. Click Template
9. Input the new Template name (e.g. 20bw)
10. Click Enter.
11. Click New.
13. Input the Delta Elevation (e.g. 0) and the Offset (½ of the BW e.g. 10) for the edge of the bottom width.
14. Input the Code (e.g. AS)
15. Click Store to store this segment of the template cross section.
16. Click New.
17. Pulldown Element = Side slope.
18. Click Options
19. Pulldown Grade = Ratio – Run:Rise.
20. Click [Accept].
21. Input the Cut Slope (e.g. 3) and the Fill slope (e.g. 3).
22. Input the Code (e.g. Toe). Leave Cut Ditch Width = 0
23. Click [Enter] to store this segment of the template cross section.
24. Click [Store] to store this template cross section.
25. Click [Accept]
26. Click [Accept]

Create the Horizontal Alignment
27. Click Horizontal Alignment
28. Click New.
29. Input the Start Stationing of the alignment (e.g. 0)
30. Input the Start north (e.g. -520.42) and the Start east (e.g. -157.84) of the beginning point of the auxiliary spillway inlet.
31. Input the Station Interval that you want to have available for staking (e.g. 10)
32. Click [Store] to store the first element of the alignment.
33. Click New.
34. Entry Method: Length/Coordinates
35. Click OK
36. Pulldown Element = Arc.
38. Input the Start azimuth of the arc. Calculate this by subtracting the angle of the inlet curve from the azimuth of the CL of the control section. (e.g. 352°20'13" - 63°00'00" = 289°20'13") (Enter this using Units… from the flyout)
39. Pulldown Direction to Right or Left.
40. Input the Angle of the inlet curve (e.g. 63 00 00), and the Radius (e.g. 50)
41. Tab down to review the End north & End east coordinates of the inlet curve.
42. Click [Store] to store this element of the alignment.
43. Click New.
44. Pulldown Element = Line. The Amizuth will be based on the tangent to the end of the arc. Verify that it matches the alignment of the CL of the control section.
45. Input the Length of the level section plus the straight outlet section. (e.g. 70)
46. Review the End north & End east coordinates of the straight outlet section.
47. Click [Store] to store this element of the alignment.
48. Click New.
49. Pulldown Element = Arc.
50. Pulldown Method = Delta Angle and radius.
51. Pulldown Direction to Right or Left.
52. Input the Angle of the outlet curve (e.g. 90 00 00), and the Radius (e.g. 50)
53. Tab down to review the End north & End east of the outlet curve.
54. Click [Store] to store this element of the alignment.
55. Verify the End Station of each item
56. Click [Accept] to store the alignment.
Create the Vertical Alignment
57. Click Vertical Alignment
58. Click New.
59. Input the Station (VPI) of the beginning point of the auxiliary spillway inlet curve. (e.g. 0)
60. Input the Elevation (VPI) of the profile (e.g. 46.9)
61. Click Store to store the first element of the profile.
62. Click New.
63. Pulldown Element = Point.
64. Input the Station (VPI) of the beginning point of the upstream edge of the level section. (e.g. 55.0)
65. Input the Elevation (VPI) of the profile (e.g. 48.0)
66. Verify that the Slope In appears to be as planned. (e.g. 2.0%)
67. Click Store to store this element of the profile.
68. Click New.
69. Pulldown Element = Point.
70. Input the Station (VPI) of the beginning point of the downstream edge of the level section.
   (e.g. 85.0)
71. Input the Elevation (VPI) of the profile (e.g. 48.0)
72. Verify that the Slope In appears to be as planned. (e.g. 0%)
73. Click Store to store this element of the profile.
74. Click New.
75. Pulldown Element = Point.
76. Input the Station (VPI) of the beginning point of the downstream edge of the straight outlet section.
   (e.g. 125.0)
77. Input the Elevation (VPI) of the profile (e.g. 46.4)
78. Verify that the Slope In appears to be as planned. (e.g. -4.0%)
79. Click Store to store this element of the profile.
80. Click New.
81. Pulldown Element = Point.
82. Input the Station (VPI) of the end point of the auxiliary spillway outlet curve. (e.g. 203.5)
83. Input the Elevation (VPI) of the profile (e.g. 43.26)
84. Verify that the Slope In appears to be as planned. (e.g. -4.0%)
85. Click Store to store this element of the profile.
86. Click Accept to store the Vertical alignment profile data.

Assign the Template to the Spillway
87. Click Template positioning
88. Click New.
89. Input the Start Stationing of the template (e.g. 0)
90. Right Arrow Click on the Left Template to select the Template name in the list.
91. Right Arrow Click on the Right Template to select the Template name in the list.
92. Click Store to store this.
93. Click Accept to store the Template positioning data.
94. Click Store to save the data for the entire “Road” definition
95. Click ESC
Setting up & Stakeout

Set up Instrument
1. Set up total station or GPS for surveying as normal.

Open the Job (From Roads Program)
2. Click on Files… Open Job
3. Highlight the job
4. Click Select.

Backsight for Orientation of Survey (From Roads Program)
5. Click on Survey…
   a. For total station click VX & S Series…
   b. For GPS click IaRTN…
6. Continue with normal setup of survey.

Stakeout Auxiliary Spillway Road
7. Click the Spillway you’ve created.
8. Pulldown Stake = Station & offset. (This option directs you to specific offsets and stations on the road template.)
9. Right Arrow Click on the Station to select stationing that you are wanting to stake from the List option.
10. Set the Target height or Antenna Height
11. Click the icon to proceed to the second page.
12. Right Arrow Click on the Offset to select the position across the cross section that you want to stake.
13. Click Start Move the target to the correct staking location
14. Once Target is at acceptable location click accept.
15. Input As-staked Name E.g {SO1004 } for StakeOut and a Code ( e.g. AS).
16. Click Enter
17. Click Store
18. Select next station or offset from list and repeat. You can use the Sta-, Sta+, or Offs> screen keys as well.
19. Additional Options
   a. Stakeout = Position on Road (Provides cut/fill at any location on the road)
   b. Stakeout = Nearest Offset (Directs you to the nearest template point or catchpoint without setting a specific stationing)
20. When done with Stakeout Press ESC

Quit out of Survey
21. Take another topo shot on a known benchmark or turning point as a final check.
22. When survey is completed. Escape to main menu, & click Survey… End Survey
23. Click Yes to Powerdown Instrument. Click Ok & Disconnect the power.
24. Click Exit Click Yes to Power Off.
Information needed to input Horizontal Alignment for Auxiliary Spillway

\[ N = -520.10 \]
\[ E = -157.84 \]