

In-class Tutorial 5: Navisworks Animation, 4D clash Detection

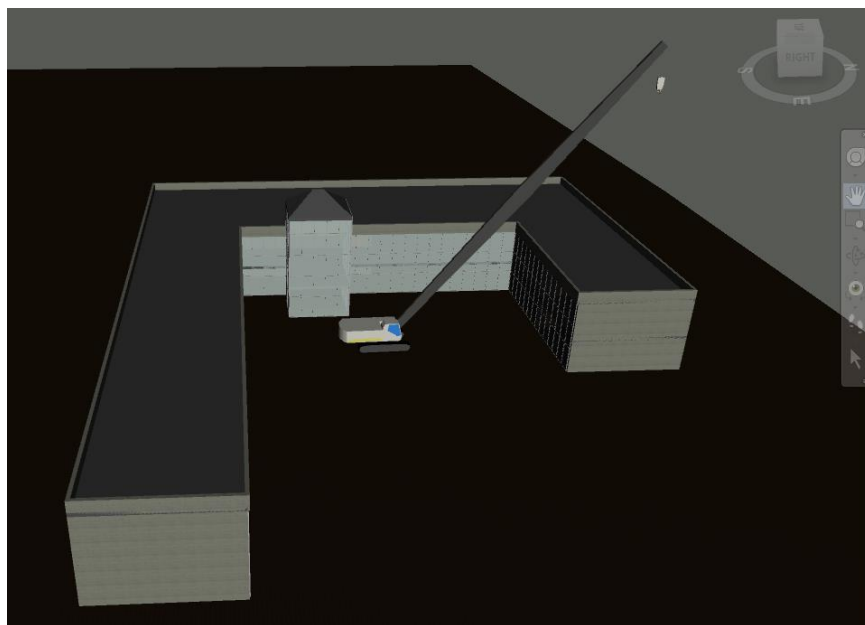
By Hoda Homayouni

Animating Objects

Step 1. Before starting to make your animations, check out your schedule and determine for which activities you would like to use a crane and how the crane needs to move in each activity. For this example, we assume that we need to use the crane for installation of the second floor and the roof slab.

Step2. Append the crane (crane.rvt) into your model.

Step 3. Select the appended crane and use the Move tool from Item Tools tab to place the crane in the middle of the courtyard. Then use the Rotate tool to rotate the crane so that it faces north, as shown in the picture.



Step 4. Open the Animator palette (from the home tab or view tab>windows) and pin it to the screen.

Step 5. From the Animator palette, click on the green + sign on the bottom left hand side to create a new scene. Double click on the created scene and rename it “rotatingCrane”.

Step 6. Select the crane and in the Animator right-click on the rotatingCrane scene to open the context menu. Select Add Animation Set > From Current Selection.

Step 7. Capture the current frame and then drag the timescale slider 0:5 forward, or enter the new value in the Time Position field. Use Rotate Animation Set Tool to rotate the crane (less than 180 degrees).

Step 8. Repeat step 6 until you capture all the movements required for your animation (You can also use Translate Animation Set Tool to move the crane).

Step 9. Toggle off the Translate Object or Rotate Animation Set and click the Stop icon. Always disable the animation options at the end of the animation session; otherwise, the gizmo will remain in view during playback and even when you're exporting to a movie.

Step 10. Click on the play button to watch your animation. To modify the playback time, simply drag the keyframe to the left or right to extend or shorten the animation playback.

Step 11. From the Timeliner palette, within the Tasks tab, click on Columns> Choose Columns and check the box next to the animation.

Step 12. Click on the second level floor and click on Insert Task, Name the new task “Crane-second floor slab” and give it the same start and end date as the Second Level Floor. Repeat the same process for the roof slab.

Step 13. Select the crane and drag and drop the crane into the selection set associated with Crane-second floor slab task, as well as the Crane- roof slab. Define the task type for the two items as temporary.

Step 14. Watch your simulation and make adjustments accordingly.

Animating Camera

Step 15. Before starting to make a camera animation, take a look at your schedule and/or 4D model and plan on how you would like to animate your camera to help you with the 4D visualization of the story you want to tell.

Step 16. From the Animator palette, Add a new scene and name it flyAround. Right-click on flyAround scene and select Add Camera > Blank Camera from the context menu.

Step 17. Select the Camera object you have just created and navigate to the desired view in your model. Click the Capture Key Frame icon to capture your starting position. Adjust the timescale by dragging it to the right to set the next time slot. Repeat this step until you capture all the views required for your animation.

Step 18. From Timeliner palette, Simulate tab, click on Settings. From the drop-down menu within the Animation box, select flyAround-> Camera.

Step 19. Watch your simulation, which is now combined with object animation and camera animation. Make adjustments to your camera animation as needed.

Step 20. From Timeliner>Simulate> Export Animation export your simulation as .avi (Adjust the size, FTP, and Antialiasing for better visualization).

Clash Detection with Animating Objects

Step 21. Move the crane in a position that clashes with the building while moving.

Step 22. Open Clash Detective and create a new test between campus model-4D and the crane. Within the settings box, from the drop down menu under links, choose crane-second level.

Step 23. Run the test and note that all objects clashing with the moving crane are reported in the results. Group them all and name the group “crane-building clash”.

Step 24. Submit your .nwd and .avi files at the end.