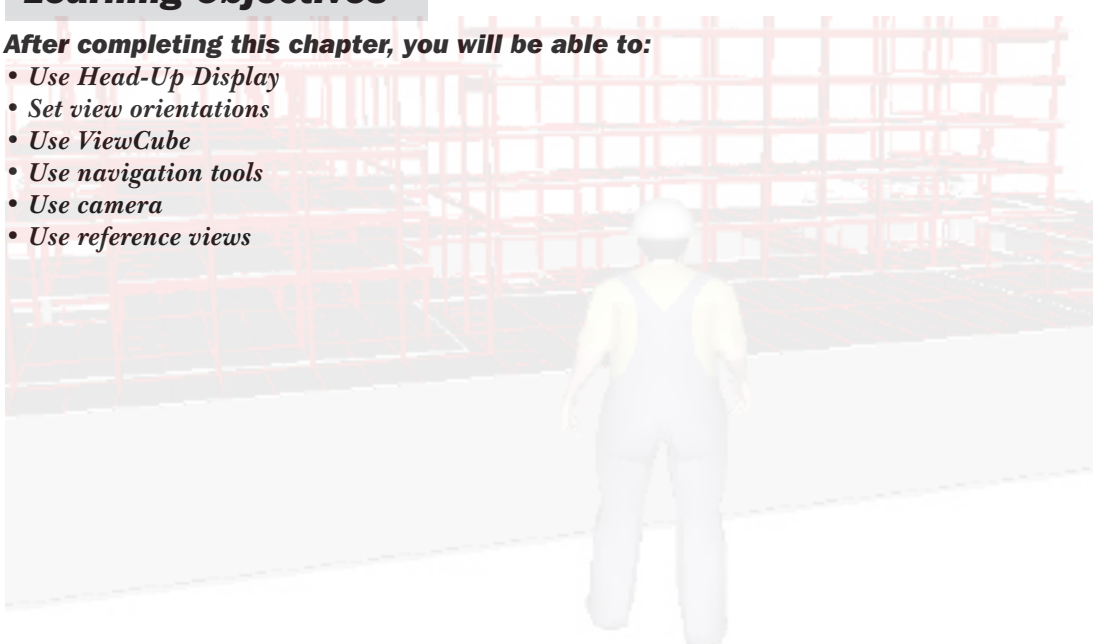
Chapter 2

Exploring the Navigation Tools in Navisworks

Learning Objectives

After completing this chapter, you will be able to:

- *Use Head-Up Display*
- *Set view orientations*
- *Use ViewCube*
- *Use navigation tools*
- *Use camera*
- *Use reference views*



INTRODUCTION

In Navisworks, you can explore an integrated project model using navigation tools. These tools provide a real-time navigation experience in a project. Using these navigation tools, you will be able to move around and explore the model in the Scene View. In this chapter, you will learn how to use various navigation tools and features in Navisworks.

USING THE Head-Up Display FEATURE

The **Head-Up Display** (**HUD**) feature in Navisworks helps in displaying information about the camera location and model orientation in 3D workspace. It consists of three display elements: XYZ triad, position readout, and grid position. You can display the XYZ triad by selecting the **XYZ Axes** option from the **HUD** drop-down list in the **Navigation Aids** panel of the **View** tab. On selecting this option, the information about the orientation of the model will be displayed, as shown in Figure 2-1.

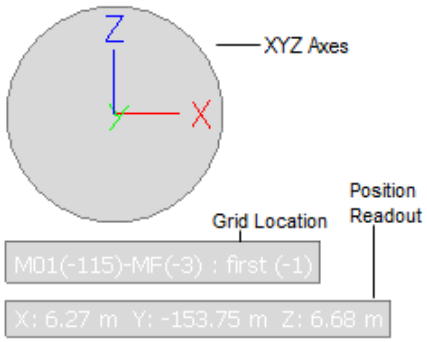


Figure 2-1 *Displaying the camera location, position, and grid location using the Head-Up Display*

Select the **Position Readout** option from the **HUD** drop-down list to view the absolute camera position, x refer to Figure 2-1. Select the **Grid Location** option to view the grid and the location of the camera relative to the grid system currently used in the model.

SETTING VIEW ORIENTATIONS

In a project, you can set the view orientations by using various options. Although, Navisworks uses the cartesian coordinate system (X, Y, Z), the pointing direction of these axes is not fixed. By default, the Z axis points upward and the Y axis points toward north. However, you can change the up and north directions as per your requirement. To change the up direction, right-click in the Scene View; a shortcut menu will be displayed. Next, choose **Viewpoint > Set Viewpoint Up > Set Up** from the shortcut menu, refer to Figure 2-2.

For example, to set the view orientation of X axis upward, choose the **Set Up + X** option from the shortcut menu, as shown in Figure 2-2. On doing so, you will notice that the XYZ axis triad in the Scene View displays the X axis pointing upward. Also, the view of the model is changed accordingly. For example, if you are using the **Orbit** tool and you have selected the **Set Up+ Y** option from the shortcut menu, the axis of rotation will be Y axis.

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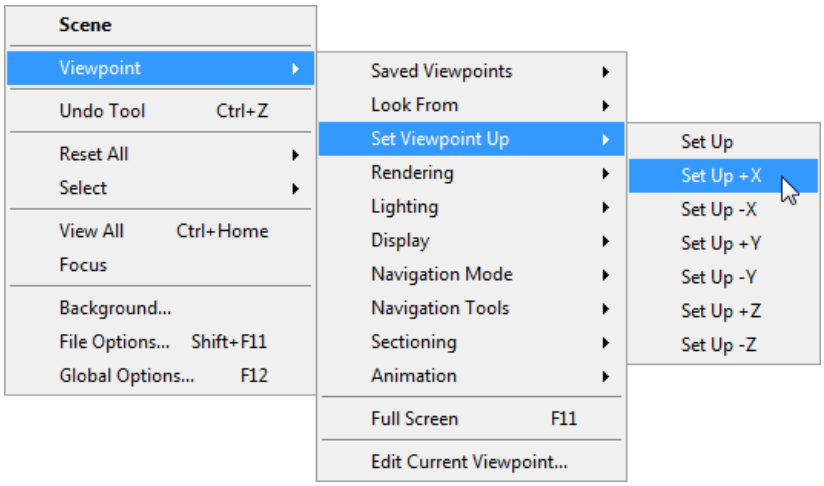


Figure 2-2 *The options to change the* ***Up*** *vectors*

You can also change the overall orientation of a view. To do so, choose the **File Options** option from the **Project** panel in the **Home** tab; the **File Options** dialog box will be displayed. Next, choose the **Orientation** tab in the dialog box; the options in this tab will be displayed, as shown in Figure 2-3. The options in the **Up** area are used to change the up direction for the view. For example, to orient the view with Z axis in the upward direction, specify **1** in the **Z** edit box and **0** in the **X** and **Y** edit boxes in the **Up** area. Similarly, in the **North** area, you can change the north direction for the view. For example, to orient the view with Y axis in north direction, specify **1** in the **Y** edit box and **0** in both the **X** and **Z** edit boxes in the **North** area. On doing so, the view will be oriented with Z axis upward and Y axis in north. You can notice the changes will be reflected in the ViewCube.

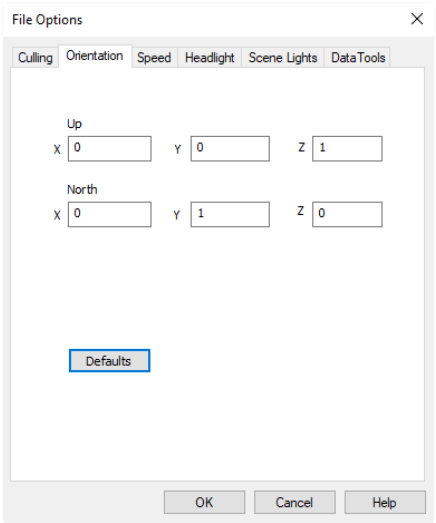


Figure 2-3 *The options displayed under the* ***Orientation*** *tab*

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THE VIEWCUBE

Navisworks provides you with a navigation control called the ViewCube that can be used to set the viewpoint of the model. You can also use the ViewCube to visually assess the current orientation of the model. The ViewCube comprises a cube, a compass ring at the base with various directions marked on it, and a home icon that helps to set the default view, as shown in Figure 2-4. By default, it is always displayed at the top right corner in the Scene View. If it is not visible, choose the **ViewCube** button from the **Navigation Aids** panel in the **View** tab; the ViewCube will be displayed in the Scene View. Using ViewCube, you can rotate the model around a pivot point. To do so, place the cursor on the ViewCube, press and hold the left mouse button, and then drag the cursor in the required direction. Alternatively, click on any face of the ViewCube to get the corresponding view of the model. The compass below the ViewCube indicates the north direction of the model. To rotate the model using compass, place the cursor on the compass; it will be highlighted. Press and hold the left mouse button and drag the cursor in the required direction. Alternatively, if you want to display any particular view of the model, such as the east view, click on the key letter **E** on the compass; the model will rotate in that direction.

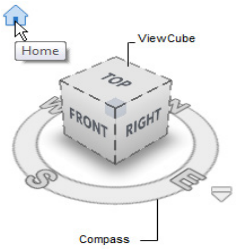


Figure 2-4 *The ViewCube*

You can configure various settings of the ViewCube such as its opacity level, size, display of ViewCube, and the compass. To do so, invoke the **Options Editor** dialog box by choosing the **Options** button from the **Application Menu**. In the left pane of the dialog box, expand the **Interface** node and then select the **ViewCube** option displayed under this node; several options will be displayed in the right pane of the **Options Editor** dialog box, as shown in Figure 2-5.

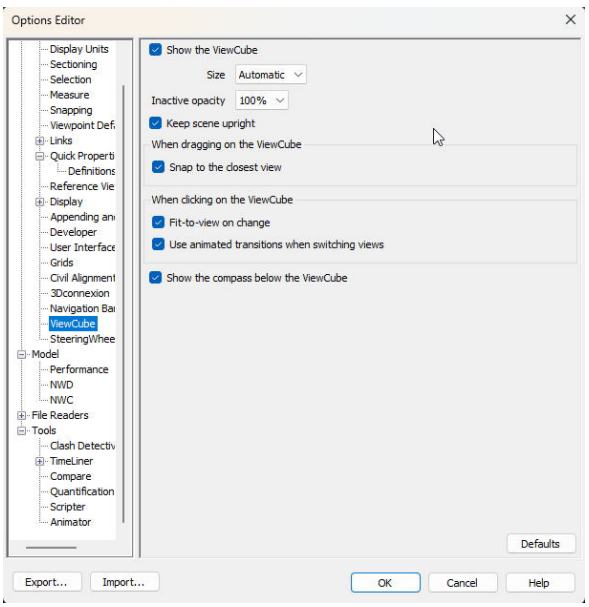


Figure 2-5 *The options displayed on selecting the* ***ViewCube*** *option*

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You can toggle the display of the ViewCube by selecting or clearing the **Show the ViewCube** check box. Select the option from the **Size** drop-down list to configure the size of the ViewCube. By default, the **Automatic** option is selected in the **Size** drop-down list. To control the opacity level when the ViewCube is inactive, select the required value from the **Inactive opacity** drop-down list. Select the **Keep scene upright** check box to produce inverted orientations while dragging the ViewCube. In the **When dragging on the ViewCube** area, select the **Snap to the closest view** check box to snap the ViewCube snaps to one of the fixed views. Select the **Fit-to-view on change** check box in the **When clicking on the ViewCube** area to zoom in and out the Scene View while rotating the ViewCube. Select the **Use animated transitions when switching views** check box to display animated transitions. Select the **Show the compass below the ViewCube** check box to display the compass below the ViewCube.

In Navisworks, you can save a particular view of the model as the **Home** view. You can switch to this view by choosing the **Home** button in the ViewCube, refer to Figure 2-4. Alternatively, right-click on the ViewCube; a shortcut menu will be displayed, as shown in Figure 2-6. Now, choose the **Set Current View as Home** option from the menu; the current view will be saved as home view. You can also switch between the perspective and orthographic view projection modes of the model. To do so, choose the **Perspective** or **Orthographic** option from the shortcut menu, refer to Figure 2-6. You can also access the **ViewCube Options** page and the **Home** view using this shortcut menu.

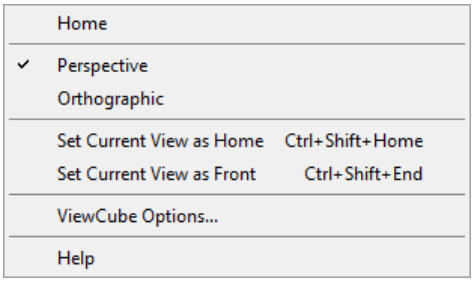


Figure 2-6 *The shortcut menu displayed on right-clicking on ViewCube*

THE NAVIGATION BAR

The Navigation Bar contains various tools such as **Pan**, **Orbit**, **Zoom**, **Look**, **Walk**, and **Fly**, refer to Figure 2-7. These navigation tools make it much comfortable and easier to navigate in the model. The Navigation Bar can be docked at the desired location in the Scene View. Also, the tools in Navigation Bar can be customized as per the requirement.

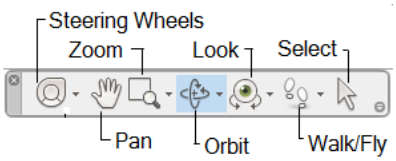


Figure 2-7 *The Navigation Bar*

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By default, the Navigation Bar is displayed at the right corner of the Scene View. If it is not displayed, then choose the **Navigation Bar** button from the **Navigation Aids** panel in the **View** tab; the Navigation Bar will be displayed in the Scene View. If you want to hide this bar, click on the same button again. By default, the docking position of the Navigation Bar is linked with the ViewCube. To unlink them, click on the **Customize** arrow in the Navigation Bar; a shortcut menu will be displayed, as shown in Figure 2-8. Choose the **Docking Positions** option from the shortcut menu; a cascading menu will be displayed. Choose the **Link To ViewCube** option from the cascading menu; the ViewCube will be unlinked with the Navigation Bar. Now, you can move the Navigation Bar at any desired location in the Scene View without affecting the location of the ViewCube.

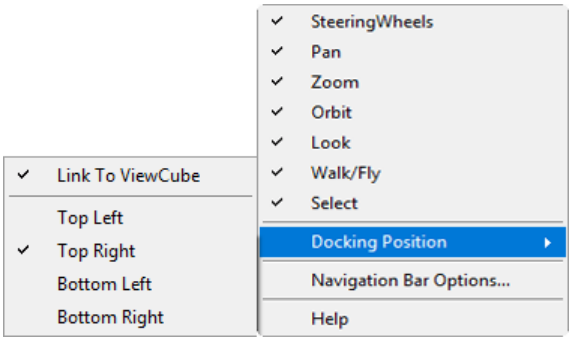


Figure 2-8 *The shortcut menu displayed*

You can also control the display of navigation tools in the Navigation Bar. To do so, choose the navigation tools that you want to display in the Navigation Bar from the shortcut menu, refer to Figure 2-8. In the next section, you will learn about various tools in the Navigation Bar.

Pan Tool



The **Pan** tool is used to move the model in the Scene View. During panning, the model moves along the direction of movement of the mouse. For example, if you drag the cursor in the upward direction, the model will move up; and if you drag the cursor in the downward direction, the model will move down. When you invoke this tool, a four sided arrow will be displayed in the Scene View. You can access this tool from the Ribbon as well. To do so, choose the **Pan** tool from the **Navigate** panel in the **Viewpoint** tab. You can also use the middle mouse button for panning while using the other tools such as **Orbit** and **Look**.

Zoom Tools



The Zoom tools are used to increase or decrease the view size of a model. You can increase or decrease the view size of any particular item or point in a model. To do so, place the zoom cursor on that particular point; a pivot point will be displayed. The pivot point can be changed by changing the location of the cursor. When you click on the **Zoom** drop-down in the Navigation Bar; a list of tools will be displayed. You can access these tools from the Ribbon as well. To do so, click on the **Zoom** drop-down in the **Navigate** panel of the **Viewpoint** tab; a list of tools will be displayed, as shown in Figure 2-9. The tools in the **Zoom** drop-down are discussed next.

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The **Zoom Window** tool is used to zoom the specified area. To zoom an area using this tool, choose this tool and then draw a window around the area to be enlarged; the area within the rectangle window will be enlarged. The **Zoom** tool is used to zoom the view by clicking or dragging the cursor. When you choose this tool; a magnifying-glass shaped cursor is displayed. Press and hold the left mouse button and drag the cursor in upward or downward direction to zoom the selected area. Choose the **Zoom Selected** tool from the drop-down to zoom the selected object or group of selected objects to get an enlarged view of the respective region. If no object is selected in the model, then the **Zoom Selected** tool will work as the **Zoom All** tool and will zoom the model to the maximum possible magnification.

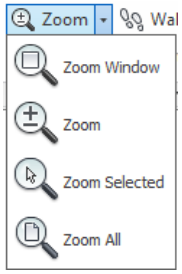


***Figure 2-9** The **Zoom** drop-down*

Orbit Tools

The Orbit tools allow you to visually maneuver around the 3D objects to obtain different views. While orbiting, the camera location changes whereas the view remains fixed. To orbit around an object, click on the **Orbit** drop-down in the Navigation bar; a list of tools will be displayed. You can use the desired tool from the list. You can access these tools from the Ribbon as well. To do so, click on the **Orbit** drop-down in the **Navigate** panel of the **Viewpoint** tab; a list of tools will be displayed, as shown in Figure 2-10. The tools in the **Orbit** drop-down are discussed next.

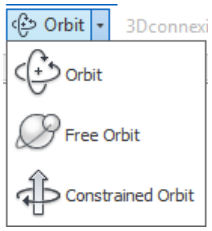


***Figure 2-10** The **Orbit** tool drop-down*

The **Orbit** tool is used to move the camera around the pivot point of the model. Choose the **Free Orbit** tool to rotate the model freely around the central point about any direction. Choose the **Constrained Orbit** tool to rotate the model around the central point. On choosing this tool, the model will rotate in the left and right directions but its upward and downward movement will be constrained. On invoking this tool, the model will rotate around a fixed axis.

You can also use the **Pan**, **Zoom**, and **Orbit** tools together. For example, if you are rotating a model by using the **Orbit** tool and you need to zoom in/out for a better view, you can roll the middle mouse button forward/backward.

To adjust the orbit pivot using the **Orbit** tool, hold down the CTRL key and left mouse button and drag the mouse to the desired location. Release the mouse button to set the pivot point, around which the model will revolve for viewing.

Look Tools

The Look tools are used to adjust the view of a model. To use these tools, click on the **Look** drop-down in the Navigation Bar; a list of tools will be displayed. You can access these tools from the Ribbon as well. To do so, click on the **Look** drop-down in the **Navigate** panel of the **Viewpoint** tab; a list of tools will be displayed, as shown in Figure 2-11. The tools in the **Look** drop-down are discussed next.

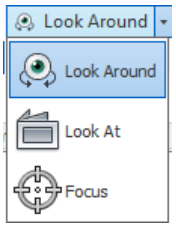


***Figure 2-11** The **Look** drop-down*

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Choose the **Look Around** tool to look around the model from the current position. In this process, you can look around the scene without changing your location. Choose the **Look At** tool to look at a particular point or object in the model. When you choose this tool, the shape of the cursor is changed in the Scene View. Click on the specific object to analyze it. On doing so, the view will be adjusted. Note that in this case, only the camera position will be adjusted not the zoom factor. Choose the **Focus** tool to look at a particular point in the scene without changing the position of the camera. When you choose this tool, a cursor will be displayed in the Scene View. Place the cursor on the object you need to look at and click; the view will be adjusted according to the selected object.

Walk and Fly Tools

The **Walk** and **Fly** tools are used to walk/fly around the model to have a real-time experience during navigation. The **Walk** tool is used to walk through a model. Invoke the **Walk** tool from the Navigation Bar; a feet cursor will be displayed on the screen. You can also invoke this tool from the **Walk** drop-down in the **Navigate** panel of the **Viewpoint** tab. To start navigating in the model, press and hold the left mouse button, and drag in the desired direction. Move the mouse forward to go forward. Similarly, to take left and right turns, move the mouse accordingly. Instead of using mouse, you can also use the arrow keys (left, right, up, and down) on the keyboard to navigate inside the model. The **Fly** tool is used to take a birds-eye view of a model or project. This tool is used for large sites so that you can easily navigate around the outside area of your model. When you invoke the **Fly** tool, an aeroplane cursor will be displayed in the Scene View. You can also invoke this tool from the **Walk** drop-down in the **Navigate** panel of the **Viewpoint** tab. To fly around the model, invoke the **Fly** tool from the **Walk** drop-down in the Navigation Bar. Next, press and hold the left mouse button and click to fly straight. To change the elevation, move up and down. To zoom in and out, use the up and down arrow keys, and to revolve the camera, use the left and right arrow keys.

There are some additional options which will make the navigation easier and will give you a real experience. These options are available from the **Realism** drop-down list in the **Navigate** panel of the **Viewpoint** tab, as shown in Figure 2-12. These options are discussed next.

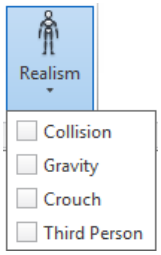


Figure 2-12 *The* ***Realism*** *drop-down list*

The **Collision** option is used to turn on collision detection. Turning this option on will prevent you from passing through the doors and columns while navigating. The **Collision** option can be used with the **Walk and Fly** tools. The **Gravity** option is used to follow the surface while walking and will prevent you from falling. This option is used with **Collision**. You can use **Collision** without **Gravity**, but **Gravity** cannot be used without **Collision**. This option works only with the **Walk** tool, and not with the **Fly** tool. The **Crouch** option is used to bend under the objects that are too low to walk under such as table. This option works only when **Collision** is activated.

In Navisworks, the **Third Person** option allows you to navigate the scene or model from the third person's point of view. You can consider yourself as the third person and this third person is known as Avatar, refer to Figure 2-13. When you select the **Third Person** option from the **Walk** drop-down in the **Navigation Bar**; an avatar will be displayed in the Scene View. You can also display the avatar by selecting the **Third Person** option from the **Realism** drop-down in the **Navigate** panel of the **Viewpoint** tab.

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You can use the **Collision**, **Gravity** and **Crouch** options while working with the **Third Person** option. Using these options during the navigating, you can easily visualize how you will interact

with the proposed model and can view the things inside the model in detail. There are several predefined avatars available in Navisworks and you can also create them.

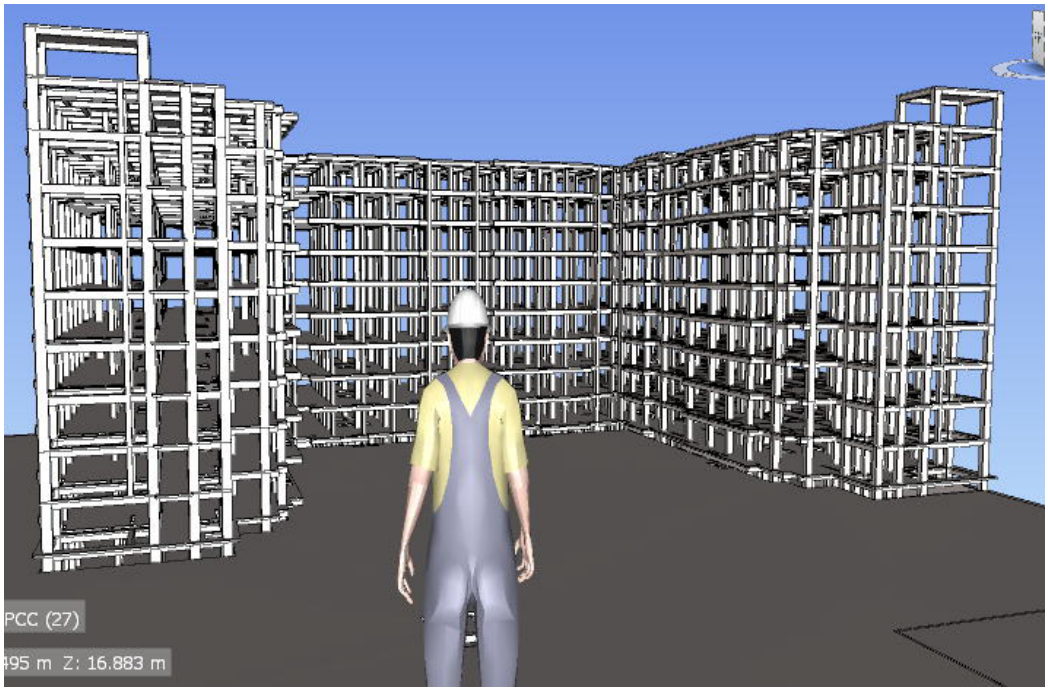


Figure 2-13 *The third person view during the navigation in the model*

Customizing Navigation Parameters

In Navisworks, you are provided with the options which help you for controlling the walk speed during navigation. You can change the overall walk speed for navigation by using the **Edit Viewpoint** dialog box. To invoke this dialog box, choose the **Edit Current Viewpoint** button from the **Save**, **Load & Playback** panel in the **Viewpoint** tab; the **Edit Viewpoint - Current View** dialog box will be displayed, as shown in Figure 2-14.

You can change the linear speed by specifying the value in the **Linear Speed** edit box in the **Motion** area of this dialog box. To set the angular speed, specify the value in the **Angular Speed** edit box in the **Motion** area of the dialog box. You can also change the linear speed from the **Navigate** panel in the **Viewpoint** tab. For specifying speed, expand the **Navigate** panel; the options for setting speed will be displayed. Now you can specify values in the **Linear Speed** and **Angular Speed** edit boxes.

You can also customize various options to change the behavior of the **Walk** tool using the **Options Editor** dialog box. You can invoke this dialog box from the **Application Menu**. Next, expand the **Interface** node available in the left pane of the dialog box; several options will be displayed under this node.

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Select **Navigation Bar** from the left pane; various options for the **Orbit** and **Walk** tools will be displayed in the right pane of the dialog box, as shown in Figure 2-15.

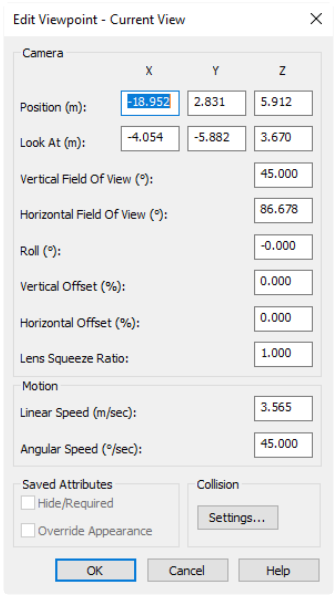


*Figure 2-14 The **Edit Viewpoint-Current View** dialog box*

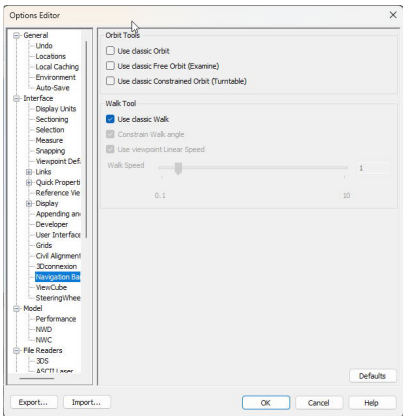


*Figure 2-15 The **Navigation Bar** options in the **Options Editor** dialog box*

Select the **Use classic Walk** check box in the **Walk Tool** area to switch to the classic Navisworks walk mode. Select the **Constrain Walk angle** check box to keep the camera vertical while navigating. Select the **Use viewpoint Linear Speed** check box to apply the viewpoint linear speed setting to the **Walk** tool. You can set the walking speed either by adjusting the **Walk Speed** slider or by entering the desired value in the corresponding edit box. This value ranges from 0.1 to 10.

Customizing Avatar Settings

The avatar settings such as avatar selection, dimensions, and positioning can be customized by using the options in the **Options Editor** dialog box. To do so, expand the **Interface** node in the left pane of the **Options Editor** dialog box; various options will be displayed under this node. Select the **Viewpoint Defaults** option; several options will be displayed in the right pane of the dialog box. Choose the **Settings** button in the **Collision** area of the dialog box; the **Default Collision** dialog box will be displayed, as shown in Figure 2-16. In this dialog box, select the **Enable** check box in the **Third Person** area; the options related to avatar position will be enabled. Select the desired option from the **Avatar** drop-down list and choose the **OK** button. You can also change the height of the avatar by specifying the value in the **Height** edit box in the **Viewer** area. Similarly, in the **Viewer** area, you can change the size of the avatar by specifying a value in the **Radius** edit box. You can change the location of the camera with respect to the top of the avatar by specifying a value in the **Eye Offset** edit box, refer to Figure 2-16.

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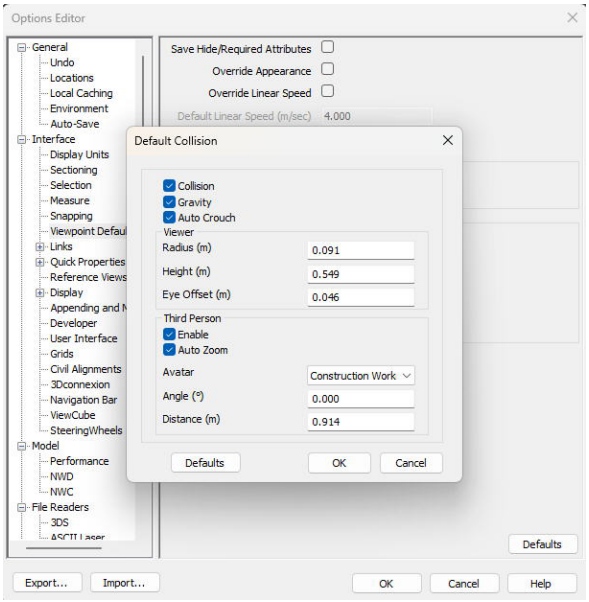


Figure 2-16 *The* ***Default Collision*** *dialog box*

You can also change the avatar for the current view by using the **Edit Viewpoint - Current View** dialog box. To do so, choose the **Edit Current Viewpoint** button from the **Save, Load & Playback** panel in the **Viewpoint** tab; the **Edit Viewpoint - Current View** dialog box will be displayed, as shown in Figure 2-17. Choose the **Settings** button in the **Collision** area; the **Collision** dialog box will be displayed, refer to Figure 2-16. You can now select a new avatar from the **Avatar** drop-down list. Next, choose the **OK** button to return to the **Edit Viewpoint - Current View** dialog box, and then choose the **OK** button to close the dialog box. The selected avatar will be displayed in the Scene View.

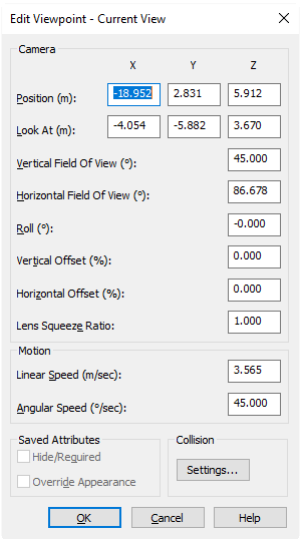


Figure 2-17 *The* ***Edit Viewpoint - Current View*** *dialog box*

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SteeringWheels

The SteeringWheels are tracking menus that comprise multiple navigation tools in a single interface. These navigation tools are **Pan**, **Zoom**, **Walk**, **Look**, **Orbit**, **Rewind**, and **Up/Down**. A Steering Wheel is divided into different sections known as wedges. Each wedge contains a unique navigation tool. When you click on the **SteeringWheels** drop-down in the Navigation Bar; a list of tools will be displayed. You can access these tools from the ribbon as well. To do so, click on the **SteeringWheels** drop-down in the **Navigate** panel of the **Viewpoint** tab; a list of tools will be displayed, as shown in Figure 2-18. Select the wheel that you want to display. While using the SteeringWheels, you can activate a navigation tool available in it by pressing and holding the left mouse button over the corresponding wedge. Next, drag the tool over the drawing area, you can use the selected navigation tool for reorienting your view. To exit the selected navigation tool, release the left mouse button. The SteeringWheels are categorized into two types and they are discussed next.

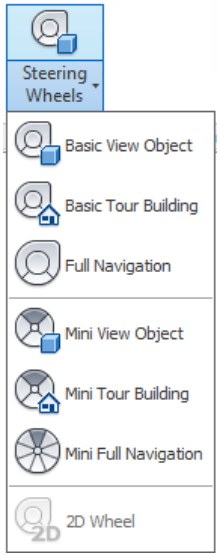


***Figure 2-18** The **SteeringWheels** drop-down*

2D SteeringWheel

The **2D Wheel** SteeringWheel tool is used to work in the 2D view. Figure 2-19 shows a **2D Wheel**. The 2D navigation wheel has three navigation tools: **Zoom**, **Pan**, and **Rewind**. The **Zoom** tool is a common navigation tool used for enlarging or reducing the viewing scale of the model. You can use the **Pan** tool for traversing across the model view. The **Rewind** tool can be used to display the views of the previous zooming states which are saved temporarily.



Figure 2-19** The **2D Wheel

3D SteeringWheels

The 3D SteeringWheels navigation tools help you navigate through 3D views. Based on the size and appearance, the 3D SteeringWheels tools are categorized into two groups: Mini Steering Wheels and Big SteeringWheels. The Mini SteeringWheels are further classified into three types: **Mini View Object** Wheel, **Mini Tour Building** Wheel, and **Mini Full Navigation** Wheel, as shown in Figure 2-20. The **Mini View Object** Wheel has four distinct navigation tools, **Pan**, **Zoom**,

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Rewind, and **Orbit**. Similarly, the **Mini Tour Building** Wheel comprises four unique navigation tools: **Up/Down**, **Look**, **Walk**, and **Rewind**. The **Mini Full Navigation** Wheel comprises eight wedges with each wedge representing a unique navigation function. The **Mini Full Navigation** Wheel combines all the functions of the **Mini View Object** Wheel and **Mini Tour Building** Wheel.

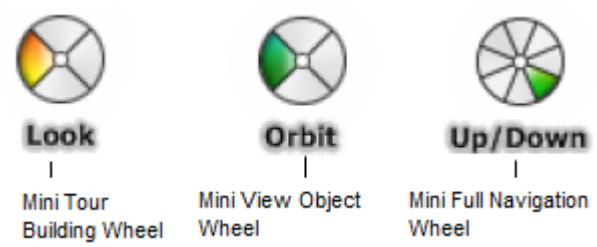


Figure 2-20 *Different types of Mini SteeringWheels for 3D Views*

The Big SteeringWheels contain same types of navigation tools as of the Mini SteeringWheels, it is clear from Figure 2-21. However, the appearance of these tools on screen is very different from the Mini SteeringWheels.

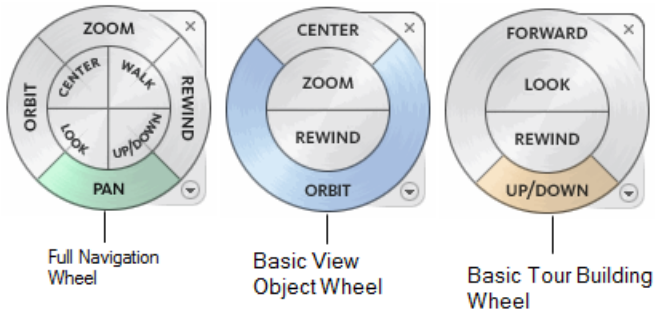


Figure 2-21 *The big SteeringWheels*

When you put the cursor over any of the navigation tools, the tooltips and messages are displayed, as shown in Figure 2-22. These tooltips give information about the tool on which the cursor is placed.

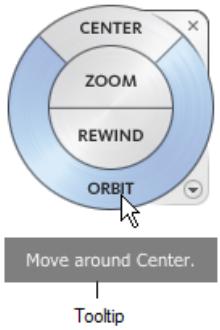


Figure 2-22 *The tooltip displayed on placing the cursor on the* ***Orbit*** *tool*

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CAMERA

In Navisworks, you can specify various camera options such as camera projection, position and orientation during navigation. There are two types of cameras available in Navisworks: perspective and orthographic. In 3D workspace, you can use both the perspective and the orthographic cameras, but in 2D workspace, only orthographic camera can be used. To use any of the two cameras, select an option from the **Perspective** drop-down list in the **Camera** panel of the **Viewpoint** tab; the view will be adjusted according to the selected mode. The field of view is the area of scene that can be viewed through a camera. You can adjust the field of view by specifying a value in the **F.O.V** edit box in the **Camera** panel of the **Viewpoint** tab, as shown in Figure 2-23. You can also use the **F.O.V** slider to adjust the viewing angle.



Note

*When you move the **F.O.V** slider to the right, a wider field of the view will be displayed and when you move it to the left, a narrower field of the view will be displayed.*

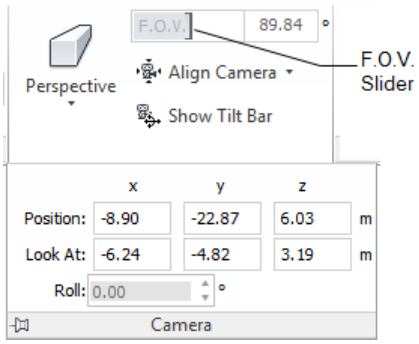


Figure 2-23 *Various options in the **Camera** panel*

The position of camera can be adjusted. To do so, slide the **Camera** panel in the **Viewpoint** tab. Next, specify the values in the **Position** edit boxes, refer to Figure 2-23. To change the focal point of the **Camera**, specify the values in the **Look At** edit boxes, refer to Figure 2-23. In the **Camera** panel, you can also adjust the rotation of the camera toward left or right by specifying the values in the **Roll** edit box. The **Roll** option is used to rotate the camera toward left or right. To rotate the **Camera** up or down, choose the **Show Tilt Bar** button in the **Camera** panel in the **Viewpoint** tab; the **Tilt Bar** will be displayed in the window. Drag the **Tilt bar** slider up or down to roll the camera.

You can align a camera to one of the axes which will change according to the camera's position and orientation in the Scene View. To do so, click on the **Align Camera** option; a drop-down list will be displayed. For example, if you select **Align X** from the list; camera position will align along the X axis and the model position and orientation will change accordingly.

REFERENCE VIEWS

Reference views are used to acquire an overall view of your position in the whole scene. It also helps you to quickly move the camera to a different location in a model. There are two types of reference views which can be used to view the model: **Section View** and **Plan View**. To access these options, chose the **Reference Views** option in the **Navigation Aids** panel of the **View**

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tab; a drop-down list will be displayed. Select the **Section View** option from the drop-down list to display the front view of the model; the view will be displayed in the **Section View** dockable window, as shown in Figure 2-24. You can also select the **Plan View** option from the drop-down list to display the top view of the model; the view will be displayed in the **Plan View** dockable window, as shown in Figure 2-25. In the **Section View** and **Plan View** window, a triangular marker will be displayed on invoking the **Walk** tool. This marker will represent the camera location and it will move in the window as you walk in the Scene View. You can also move the marker in the window by dragging it, the camera location will change accordingly in the Scene View.

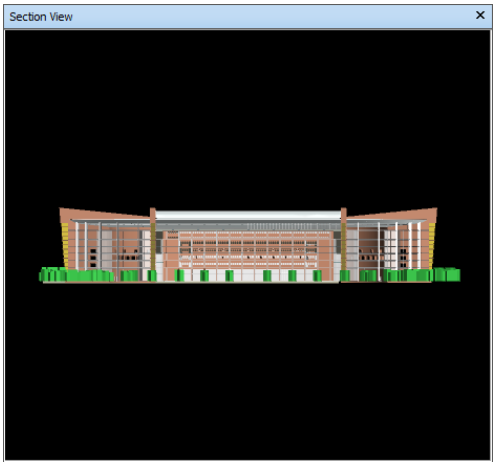


Figure 2-24 *The front view of the model in the* ***Section View*** *window*

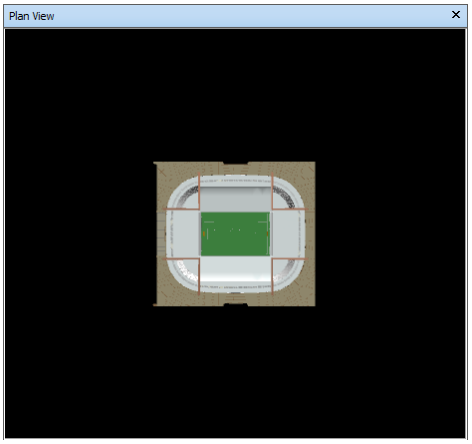


Figure 2-25 *The top view of the model in the* ***Plan View*** *window*

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TUTORIALS

General instructions for downloading tutorial files:

1. Download the *c02_nws_2025_tut* zip file from *https://www.cadcim.com*. The path of the file is as follows: *Textbooks > Civil/BIM/GIS > Autodesk Navisworks > Exploring Autodesk Navisworks 2025*.

2. Now, save and extract the downloaded folder at the following location: *C:\ nws_2025*

Note

The default unit system used in the tutorials is metric. To change the units to imperial, select the required units from ***Options Editor > Interface > Display Units****.*

The tutorials of this chapter are available in video format.

Tutorial 1 Navigating Inside the Model

In this tutorial, you will open the *c02_navisworks_2025_tutorial.nwf* file and move around the model using the **Walk**, **Collision**, **Gravity**, **Third Person**, and other navigation tools.

(Expected time: 45 min)

The following steps are required to complete this tutorial:

a. Start the Navisworks Manage session.
b. Open the *c02_navisworks_2025_tut1.nwf* file.
c. Orient the model in the Scene View using the **Orbit** and **Zoom** tools.
d. Adjust the walk speed.
e. Select Avatar and configure its dimension and position for the current viewpoint.
f. Move around in the model.
g. Move to the other floors of the building.
h. Save the project.

Video

You can view the video of this tutorial by using the following link: https://www.cadcim.com/navisworks-2025-ch-2-tutorial1.

Starting Autodesk Navisworks 2025

1. Start **Navisworks Manage** by choosing **Start > All Apps > Autodesk Navisworks Manage 2025 > Navisworks Manage 2025** from the taskbar; the program is loaded and the user interface screen is displayed.

Opening the Existing Model

In this section, you will open the model created in Revit software.

1. Choose the **Open** button from the **Quick Access** Toolbar; the **Open** dialog box is displayed.

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Note
*You can also display the **Open** dialog box by choosing **Open > Open** from the **Application Menu**.*

2. In this dialog box, browse to the following location:
C:\nws_2025\c02_nws_2025_tut

3. Select the **Navisworks File Set (*.nwf)** option from the **Files of type** drop-down list.

4. Next, select the *c02_navisworks_2025_tut1.nwf* file; the file name is displayed in the **File name** edit box.

5. Choose the **Open** button on the right of the **File name** edit box; the model is displayed in the Scene view, as shown in Figure 2-26.

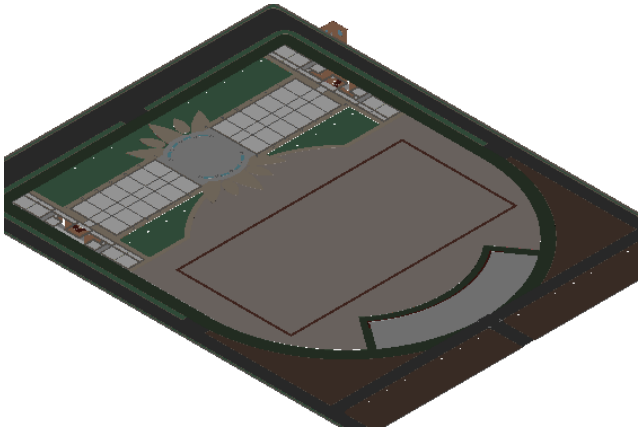


Figure 2-26 *The model opened in Navisworks*

Orienting the Model in the Scene View

In this section, you will adjust the model in the Scene View so that it fits properly in the workspace.

1. Invoke the **Orbit** tool from the **Orbit** drop-down in the **Navigate** panel of the **Viewpoint** tab; the Orbit cursor appears on the screen.

2. Press and hold the left mouse button, drag the mouse in the left direction, and then release it when the model looks similar to the one shown in Figure 2-27.



Figure 2-27 *The model after using the **Orbit** tool*

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3. Next, to enlarge the viewing scale of the model, invoke the **Zoom** tool from the **Zoom** drop-down in the **Navigate** panel of the **Viewpoint** tab; the zoom cursor appears on the screen.

Note
*The **Orbit** and **Zoom** tools can also be invoked from the Navigation Bar.*

4. Place the zoom cursor in the model, as shown in Figure 2-28.

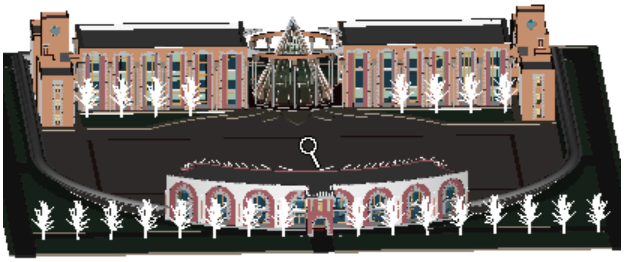


Figure 2-28 *Placing the **Zoom** cursor on the model*

5. Press and hold the left mouse button, drag the mouse in the forward direction, and release it when the model zooms in, as shown in Figure 2-29.

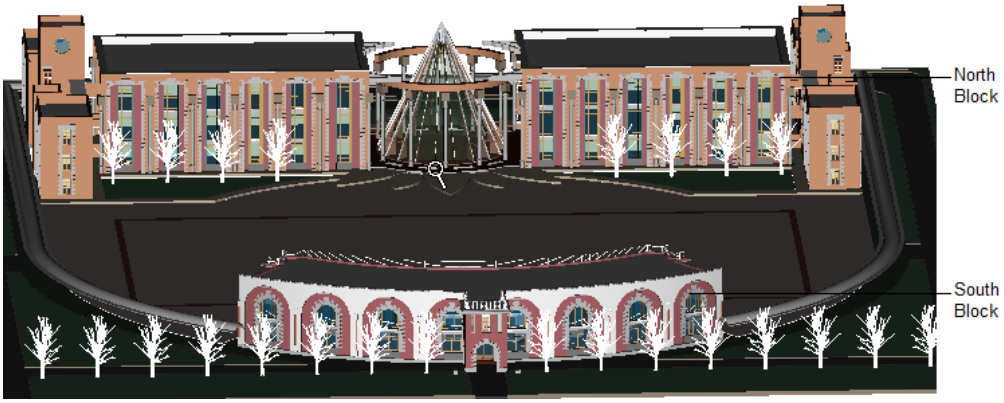


Figure 2-29 *The model after using the **Zoom** tool*

Specifying the Navigation Speed

In this section, you will adjust the walk speed while navigating inside a model.

1. Choose the **Viewpoint** tab and then expand the **Navigate** panel by clicking on the down arrow next to it.

2. Specify the walking speed **6.00** (**19ft 8.22**) in the **Linear Speed** edit box of this panel, as shown in Figure 2-30.

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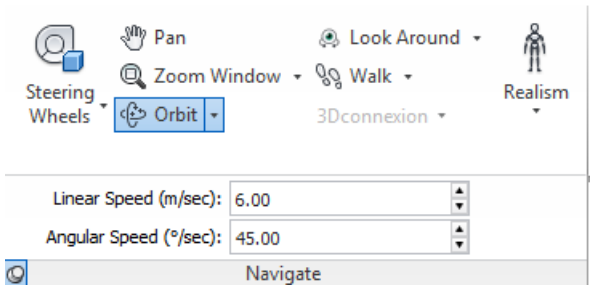


Figure 2-30 *Specifying the walk speed in the* ***Navigate*** *panel*

Note

You can also specify the walk speed value in the ***Linear Speed*** *edit box of the* ***Edit Current Viewpoint*** *dialog box.*

Selecting Avatars and Configuring its Parameters

In this section, you will select avatar and configure its parameters.

1. Choose the **Edit Current Viewpoint** button from the **Save**, **Load & Playback** panel in the **Viewpoint** tab; the **Edit Viewpoint-Current View** dialog box is displayed.

2. Choose the **Settings** button in the **Collision** area; the **Collision** dialog box is displayed, as shown in Figure 2-31.

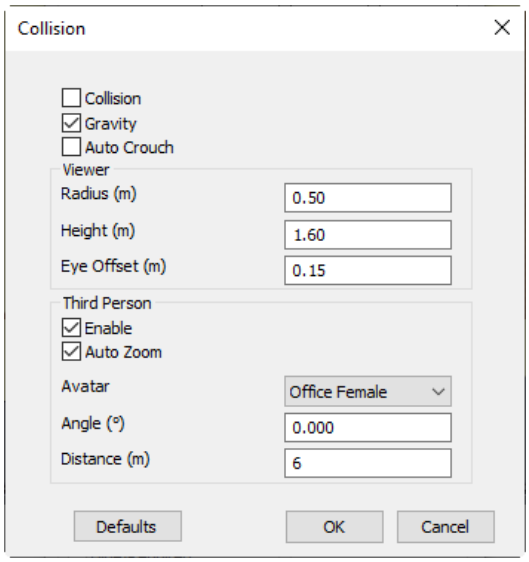


Figure 2-31 *The* ***Collision*** *dialog box*

3. In the **Collision** dialog box, select the **Enable** check box in the **Third Person** area. Ensure that the **Office Female** option is selected in the **Avatar** drop-down list.

4. Make sure that 0.00 degree is specified in the **Angle** edit box.

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Note that on specifying 0.00 degree value in the **Angle** edit box, the camera will be placed directly behind the avatar.

5. In the **Third Person** area, specify **6.00** (**19 ft 8.16**) in the **Distance** edit box.

6. In the **Viewer** area, enter **0.50** (**1ft 7.68**) in the **Radius** edit box.

7. Enter **1.60** (**5 ft 3.00**) in the **Height** edit box.

8. Enter **0.15** (**0 ft 6.00**) in the **Eye Offset** edit box.

The **Eye Offset** value specifies the location of camera with respect to the top of the avatar.

9. Next, choose the **OK** button; the **Collision** dialog box closes. Again choose **OK** to close the **Edit Viewpoint-Current View** dialog box.

10. Choose the **Walk** tool from the **Walk/Fly** drop-down in the **Navigate** panel of the **Viewpoint** tab; the **Walk** tool appears on the screen.

11. Press the left mouse button and click in the Scene View. Now, you can view the avatar, as shown in Figure 2-32.



Figure 2-32 *Avatar near the model*

Note

*Make sure that the **Use classic Walk** check box is cleared to disable the classic walk tool icon. This check box is available in **Options Editor > Interface > Navigation Bar**. Also, if the avatar is displayed near the roof of the South block then drag it and place it near the North block.*

12. Select the **Gravity** check box from the **Realism** drop-down in the **Navigate** panel of the **Viewpoint** tab.

13. Next, press and hold the left mouse button, drag the cursor in the forward direction, and then release it when the avatar is placed on the ground, as shown in Figure 2-33. Here, avatar faces the North block.

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Note

The position of avatar is not fixed, you can navigate in and around the model as per your choice.



Figure 2-33 *Avatar standing on the ground*

Moving Around in the Model

In this section, you will walk around the model. Use the following steps to move around the model.

1. Press and hold the left mouse button, drag the mouse in the right direction until the arrow appears, refer to Figure 2-34.



Figure 2-34 *The cursor displayed in the model*

2. Drag the cursor in the left direction and release it when the avatar faces the South block, as shown in Figure 2-35.

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Figure 2-35 *The avatar facing the south block*

3. Drag the avatar in the forward direction and place it near the model, refer to Figure 2-36.



Figure 2-36 *Avatar moving around inside the model*

4. Drag the avatar in the left direction and place it near the fourth door from left in the model, refer to Figure 2-37.

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Figure 2-37 *Avatar moving in the left direction*

5. Clear the **Collision** check box from the **Realism** drop-down in the **Navigate** panel of the **Viewpoint** tab.

6. Drag the avatar in the forward direction and release it when it passes through the doors, refer to Figure 2-38.

7. Drag avatar in the left direction and release it, refer to Figure 2-39.



Figure 2-38 *Avatar passing through the door*



Figure 2-39 *Avatar moved in the left direction*

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8. Select the **Gravity** check box from the **Realism** drop-down in the **Navigate** panel of the **Viewpoint** tab.

9. Move the avatar toward the stairs, as shown in Figure 2-40.

10. Drag the avatar upward to climb up the stairs, as shown in Figure 2-41.

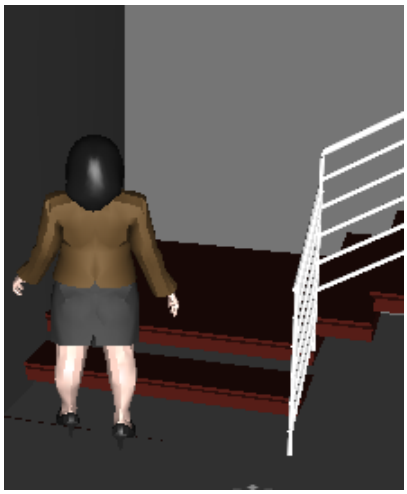


Figure 2-40 *Avatar standing near the stairs*

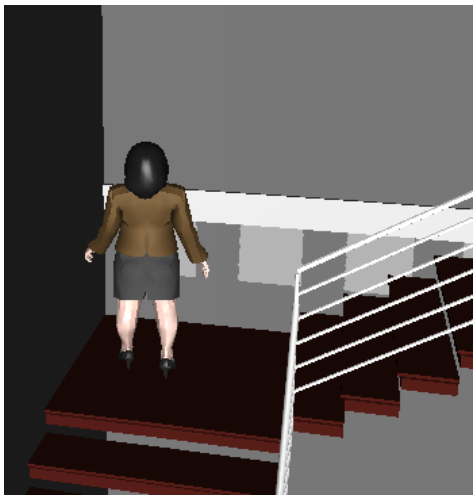


Figure 2-41 *Avatar walking up the stairs*

11. Drag the avatar to move up the stairs and place the avatar near the balcony door, as shown in Figure 2-42.



Figure 2-42 *Avatar standing near the balcony*

12. Clear the **Collision** check box from the **Realism** drop-down in the **Navigate** panel of the **Viewpoint** tab.

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13. Next, drag the avatar to pass through the door and place it in the balcony area, as shown in Figure 2-43.

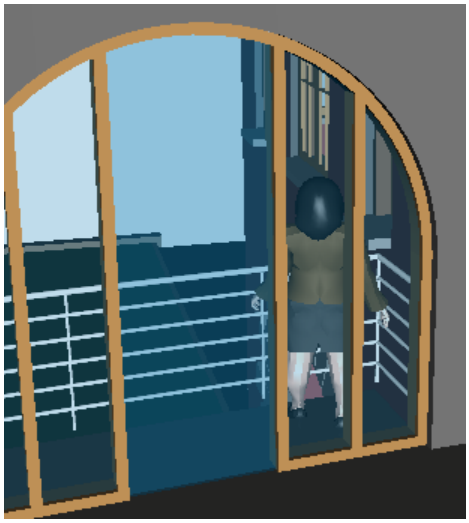


Figure 2-43 *Avatar standing in the balcony*

Navigating to the Other Levels of the Building

In this section, you will change the levels in the building using **Section View**.

1. Invoke the **Section View** window from the **Reference Views** drop-down list in the **Navigation Aids** panel of the **View** tab. The **Section View** of the building is displayed, as shown in Figure 2-44.

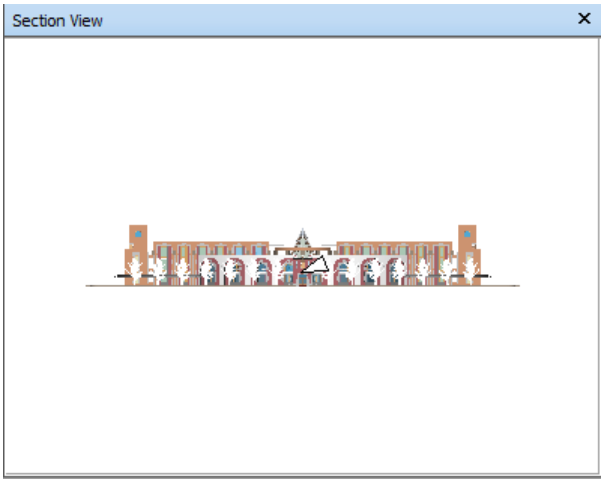


Figure 2-44 *The section view of the building in the* ***Section View*** *window*

2. In the **Section View** window, drag the triangular marker in such a way that the avatar moves to the roof of the building, as shown in Figure 2-45. Figure 2-46 shows the avatar standing on the roof. Next, close the **Section View** window.

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Notice that as you move the triangular marker in the **Section View** window, the avatar moves to the roof in the Scene View.

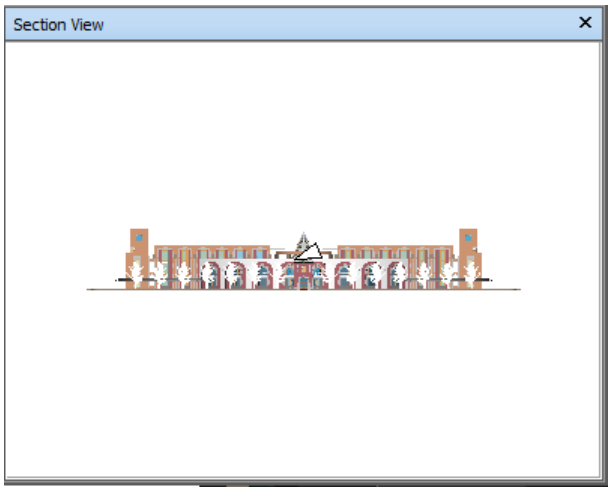


Figure 2-45 *Moving the triangular marker to the first floor of the building*

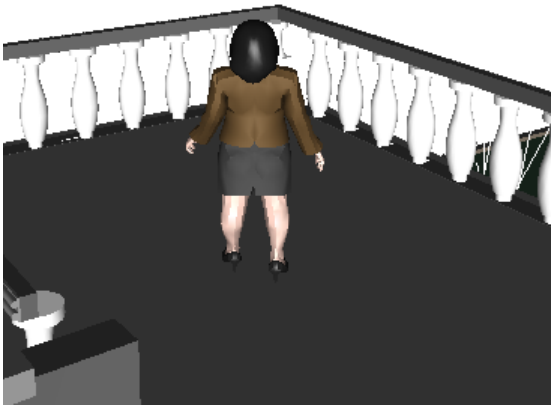


Figure 2-46 *Avatar standing on the roof of the building*

Saving the Project

In this section, you will save the project.

1. Choose **Save As** from the Application Menu; the **Save As** dialog box is displayed.

2. Browse to *nws_2025\c02_nws_2025_tut* folder and enter **c02_navisworks_2025_tut01** in the **File name** edit box. Next, choose the **Navisworks File Set** (***.nwf**) file format from the **Save as type** drop-down list, and then choose the **Save** button.

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Tutorial 2 Flying Around the Model

In this tutorial, you will open the *c02_navisworks_2025_tut2.nwf* file and fly around the model using the **Fly** tool. **(Expected time: 20 min)**

The following steps are required to complete this tutorial:

a. Start the Navisworks Manage session.
b. Open the *c02_navisworks_2025_tutorial* file.
c. Adjust the model in window using the **Orbit** and **Zoom** tools.
d. Fly around the model.
e. Save the project.



Video

You can view the video of this tutorial by using the following link: https://www.cadcim.com/navisworks-2025-ch-2-tutorial2.

Starting Autodesk Navisworks 2025

1. Start **Navisworks Manage** by choosing **Start > All Apps > Autodesk Navisworks Manage 2025 > Navisworks Manage 2025** from the taskbar. The program is loaded and the user interface screen is displayed.

Opening the Existing File

In this section, you will open a file which is created in Revit.

1. Choose the **Open** button from the Quick Access Toolbar. Alternatively, choose **Open > Open** from the Application Menu; the **Open** file dialog box is displayed.

2. In this dialog box, browse to the following location:
C:\nws_2025\c02_nws_2025_tut2

3. Select the **Navisworks File Set (*.nwf)** file from the **Files of type** drop-down list.

4. Next, select the *c02_navisworks_2025_tut2.nwf* file; the file name is displayed in the **File name** edit box.

5. Choose the **Open** button on the right of the **File name** edit box; the model is displayed in the Scene View, as shown in Figure 2-47.

Orienting the Model in the Scene View

In this section, you will adjust the model in the Scene View so that it fits into the Navisworks Scene View.

1. Invoke the **Orbit** tool from the **Orbit** drop-down in the **Navigate** panel of the **Viewpoint** tab; the Orbit tool cursor appears on the screen.

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2. Place the cursor at the corner of the model, as shown in Figure 2-48.

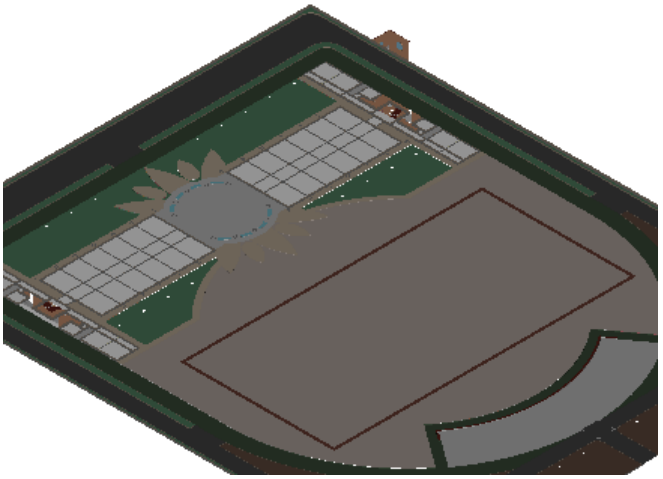


Figure 2-47 *The model displayed in the Scene View*

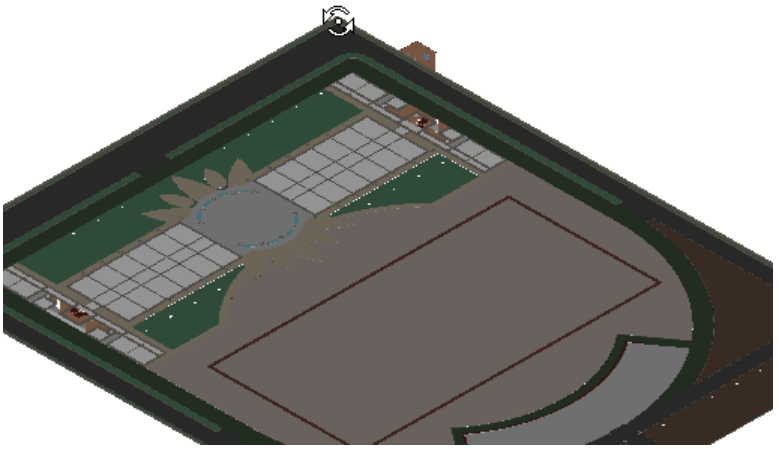


Figure 2-48 *Placing the cursor on the model*

3. Press and hold the left mouse button, drag the mouse in the downward direction, and then release it when the model is rotated, as shown in Figure 2-49.

4. Now drag the model in the left direction and release it when the model looks like, as shown in Figure 2-50.

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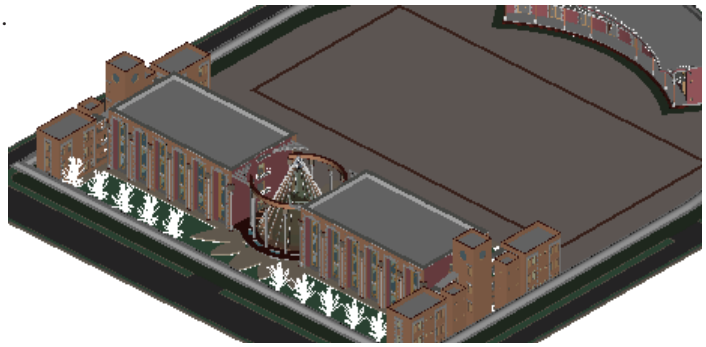


Figure 2-49 *Model after rotating*

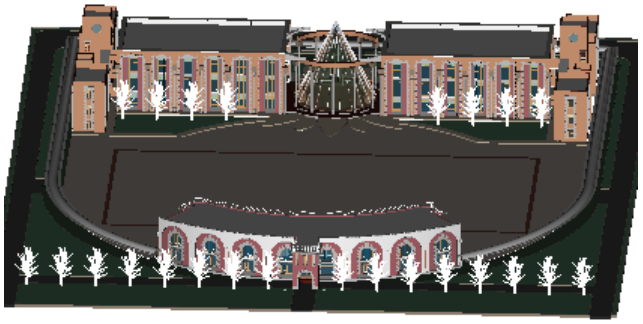


Figure 2-50 *The model after using the* ***Orbit*** *tool*

5. Invoke the **Zoom** tool from the **Zoom** drop-down in the **Navigate** panel of the **Viewpoint** tab; the **Zoom** tool cursor appears on the screen.

6. Press and hold the left mouse button, drag the mouse in the forward direction, and then release it when the model is zoomed, as shown in Figure 2-51.

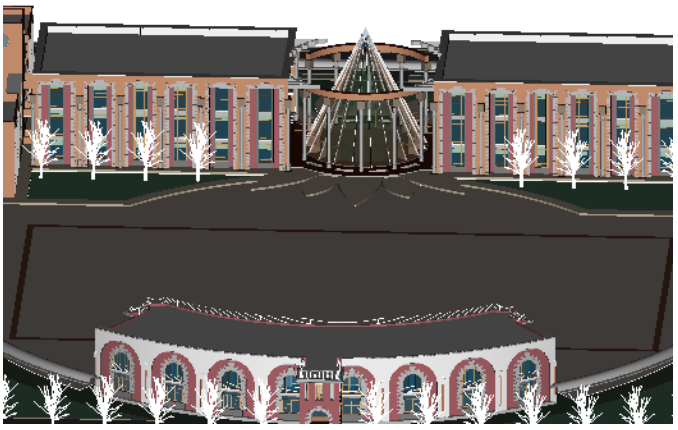


Figure 2-51 *The model after using the* ***Zoom*** *tool*

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Flying Around the Model

In this section, you will fly around the model using the **Fly** tool.

1. Invoke the **Fly** tool from the **Walk/Fly** drop-down list in the **Navigate** panel of the **Viewpoint** tab; the flight cursor appears on your screen.

2. Hold the left mouse button and drag the mouse in the right direction to fly around the model. Figure 2-52 shows a view in the fly mode.



Note

*Use the **Pan**, **Orbit**, and **Zoom** tools while flying around the model to adjust the model in such a way that you can clearly view the model and it becomes easier to fly around the model.*

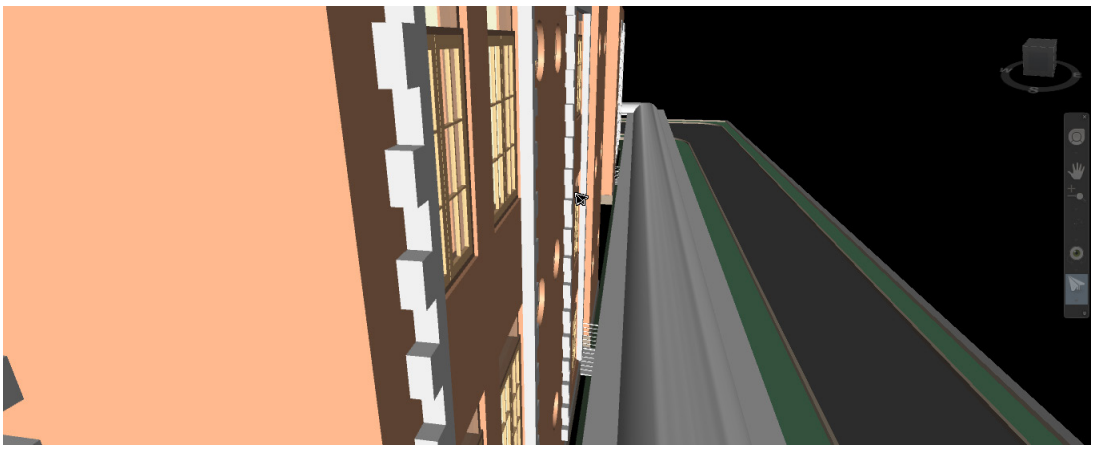


Figure 2-52 *Flying around the corner of the School building*

Saving the Project

In this section, you will save the project.

1. Choose the **Save As** from the Application Menu; the **Save As** dialog box is displayed.

2. Browse to *nws_2025\c02_nws_2025_tut* folder and enter **c02_navisworks_2025_tut02** in the **File name** edit box. Next, choose the **Navisworks File Set** (***.nwf**) file format from the **Save as type** drop-down list, and then choose the **Save** button.

SELF-EVALUATION TEST

Answer the following questions and then compare them to those given at the end of this chapter:

1. The _____ tool is used to zoom a specified area.

2. You can link the position of Navigation Bar with the _____ .

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3. The _____ tool is used to rotate the model freely around the pivot point in any direction.

4. The **Edit Viewpoint - Current View** dialog box can be displayed by choosing the _____ button.

5. The Section View can be displayed by selecting an option from the _____ drop-down list.

6. The docking position of the **Navigation** Bar cannot be changed. (T/F)

7. The **Orbit** tool is used to move the given model in the Scene View. (T/F)

8. The **Look At** tool is used to look around the model. (T/F)

9. In Navisworks, the walk speed cannot be changed while navigating inside a model. (T/F)

10. In Navisworks, the **Gravity** option can be used while flying around a model. (T/F)

REVIEW QUESTIONS

Answer the following questions:

1. Which of the following options is used to pass the avatar through those objects that are too low to walk under?

   a) **Gravity** b) **Crouch**
   c) **Collision** d) **Fly**

2. Which of the following options is used for invoking the third person view?

   a) **Camera** b) **Orbit**
   c) **Avatar** d) **Zoom**

3. Which of the following tools is used to change the viewing scale of the model?

   a) **Orbit** b) **Pan**
   c) **Fly** d) **Zoom**

4. Which of the following options is used to display the absolute X, Y, Z position of the camera?

   a) **XYZ Axes** b) **Grid Location**
   c) **Position Readout** d) **Section View**

5. You can specify the radius of an avatar by entering values in the **Eye Offset** boxes. (T/F)

6. Clearing the **Collision** check box will enable the avatar to pass through the doors and columns. (T/F)

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7. You cannot change the height of the avatar. (T/F)

8. Section View is used to display the top view of a model. (T/F)

9. In Navisworks, the **Walk** and **Fly** tools can be used simultaneously. (T/F)

10. The **Pan** tool is used to rotate a model. (T/F)

EXERCISE

Exercise 1 Navigating Inside the Residence Building

Download and open the *c02_navisworks_2025_ex1.nwf* file from *https://www.cadcim.com*. Navigate inside the Residence Building model, shown in Figure 2-53, by using various navigation tools.

(Expected time: 30 min)

The steps required to complete this exercise are given next:

1. Open the *c02_navisworks_2025_ex1* file.
2. Orient the model using the **Orbit** and **Zoom** tool.
3. Adjust the walking speed.
4. Select avatar and configure its dimension and position for the current viewpoint.
5. Navigate inside the model and on the other floors of the building.
6. Save the file with the name *c02_navisworks_2025_ex01*.

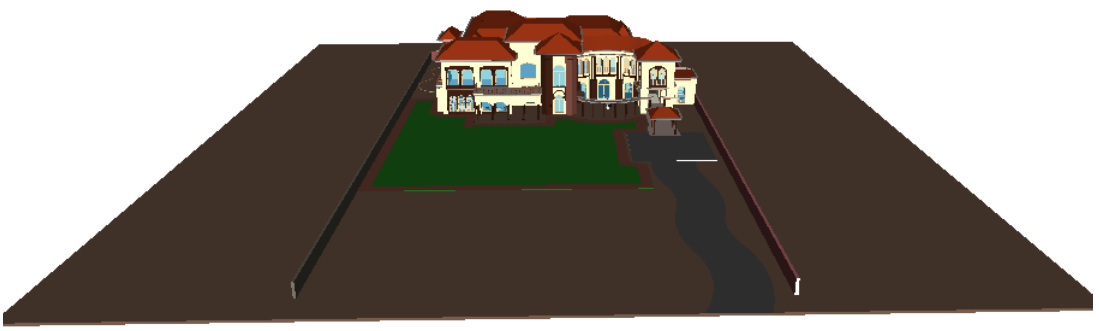


Figure 2-53 *The Residence Building*

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Answers to Self-Evaluation Test

1. Zoom Window, **2. ViewCube**, **3. Free Orbit**, **4. Edit Current Viewpoint**, **5. Reference Views**, **6.** F, **7.** F, **8.** F, **9.** F, **10.** F