

Exercise 2: Explore a story of GIS and BIM integration

Technical note

1. You will make full use of web mapping services throughout this course. You will need a robust web connection to complete this exercise and the exercises that follow.
2. Use the latest version of Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge. Other web browsers may not display your maps and apps correctly.

Note: For information on supported web browsers for ArcGIS Online, go to ArcGIS Online Help:

Supported browsers
(<https://esriurl.com/browsers>).

Note: For information on supported web browsers for ArcGIS StoryMaps, go to ArcGIS StoryMaps Help: ArcGIS StoryMaps system requirements
(<https://esriurl.com/storybrowsers>).

Software requirements

- An updated internet browser

Introduction

As you previously learned, Esri Story Maps provides you with an easy way to combine multiple elements for your AEC projects. A story allows you to combine location and geographical context with traditional AEC project elements, including design files and building models. No longer are these technologies or datasets siloed into separate components or workflows. Architects, contractors, engineers, GIS analysts, stakeholders, and other decision makers now have access to all the same information. In this exercise, you will examine a real-world office building project that has been documented using Esri Story Maps.

When you finish this exercise, you will be able to recognize the benefits of integrating elements of GIS and BIM technology and data into various phases of your project.

Note: The exercises in this course include View Result links. Click these links to confirm that your results match what is expected.

Scenario

In this exercise, imagine that you are a stakeholder for a new building project on the Esri campus. The project team has created a digital story about the design and development of the new building, named Building E. Using different apps in this story, you will explore the Esri campus; the city of Redlands, California, and its environs; and the new Building E itself.

Estimated completion time: 40 minutes

[Expand all steps](#) ▾

[Collapse all steps](#) ▲

- Step 1: Explore the Esri campus

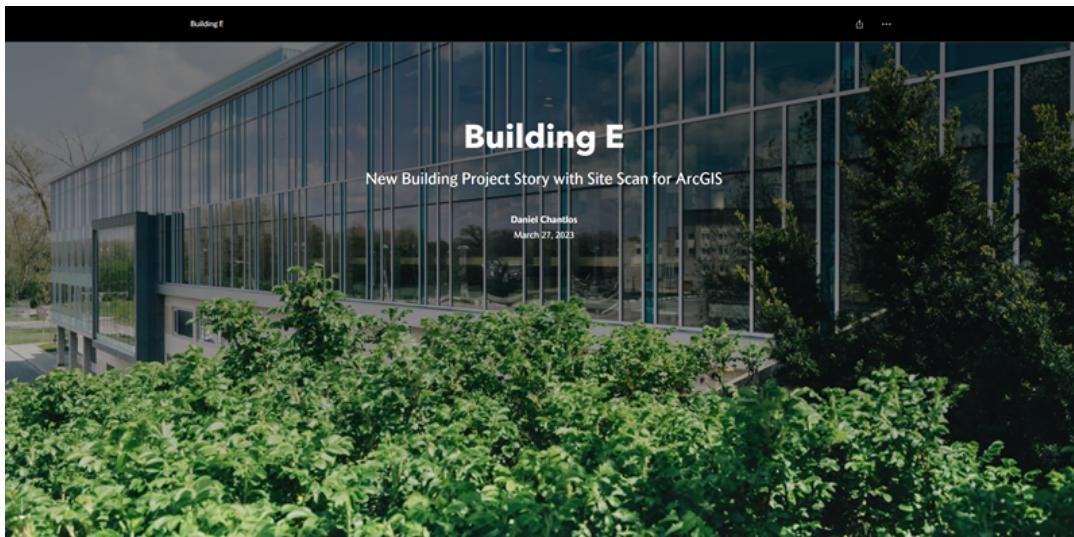
In this step, you will explore a story about the design and development of Esri's newest addition to the Redlands Campus, Building E, in Redlands, California. As part of this examination, you will use several embedded apps to explore the natural and built environment.

- a If necessary, open a web browser.

- Hint

If you closed your web browser at the end of the previous exercise, open a new web browser in private or incognito mode, and then sign in using your course ArcGIS username and password.

- b Go to Building E: New Building Project Story with Site Scan for ArcGIS to open the story in your web browser.



*Step 1b***: Explore the Esri campus.*

In a story like this one, you can combine authoritative maps, narrative text, images, various types of multimedia content, scene views, as well as embedded apps to organize and provide a holistic presentation of an end-to-end engineering project.

A story is able to convey and present different aspects of a project's life cycle throughout the entirety of that project. Instead of updates limited to the planning phase or to the design phase, information can now be included and updated dynamically and interactively into a story; as different phases of a project progress, new elements can be added to the story. So, when construction begins at a site, information related to it can quickly and easily be added to the story. When a project is complete, a record of the entire project life cycle can be kept and maintained to help with future planning efforts.

The Building E story begins with a description of the new office building and how it will integrate into the business campus.

- c In your web browser, scroll down and read the Experience Extraordinary section.

 How large will the new Building E be?

- Answer

Building E will be approximately 110,000 square feet (10,219 square meters).

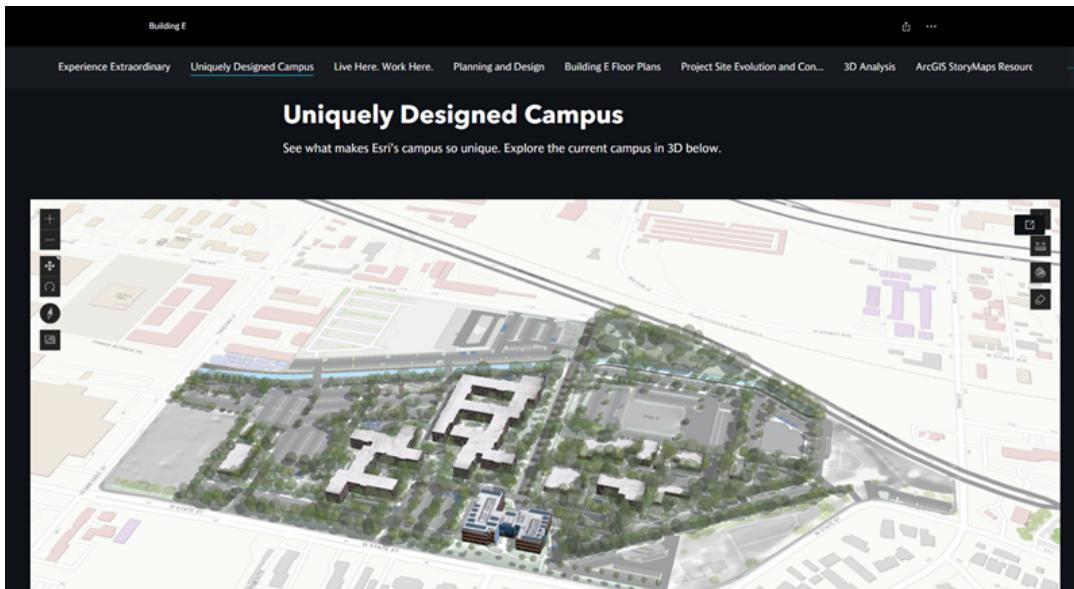
 What are some unique features on the Esri campus that help to integrate both the natural and built-up environments?

- Answer

Answers may vary slightly but can include each building and floor has conductivity to the outdoor environment; there are multiple balconies, pocket doors, and exterior stairwells; there is an organic bistro, boutique coffee roaster, an event lawn, various walking paths, and an amphitheater; and there are indoor and outdoor fitness locations.

Next, you will explore the Esri campus where the new building will be added.

- d In your web browser, scroll down to the Uniquely Designed Campus section.



*Step 1d***: Explore the Esri campus.*

- Hint

You can also click Uniquely Designed Campus in the story banner to jump directly to this section.

You can explore the Esri Campus in this scene view of the story. In this first app of the story, the Esri campus is represented in Scene Viewer. This 3D scene contains both the natural and built environment. Most buildings on the campus are represented with generic models at their correct location. One building, however, is rendered differently than the others; this building shows a more realistic facade, roof details, and even large glass panels near the central atrium.

- e Move your cursor into the app and click to interact with the scene content, as shown in the following graphic.

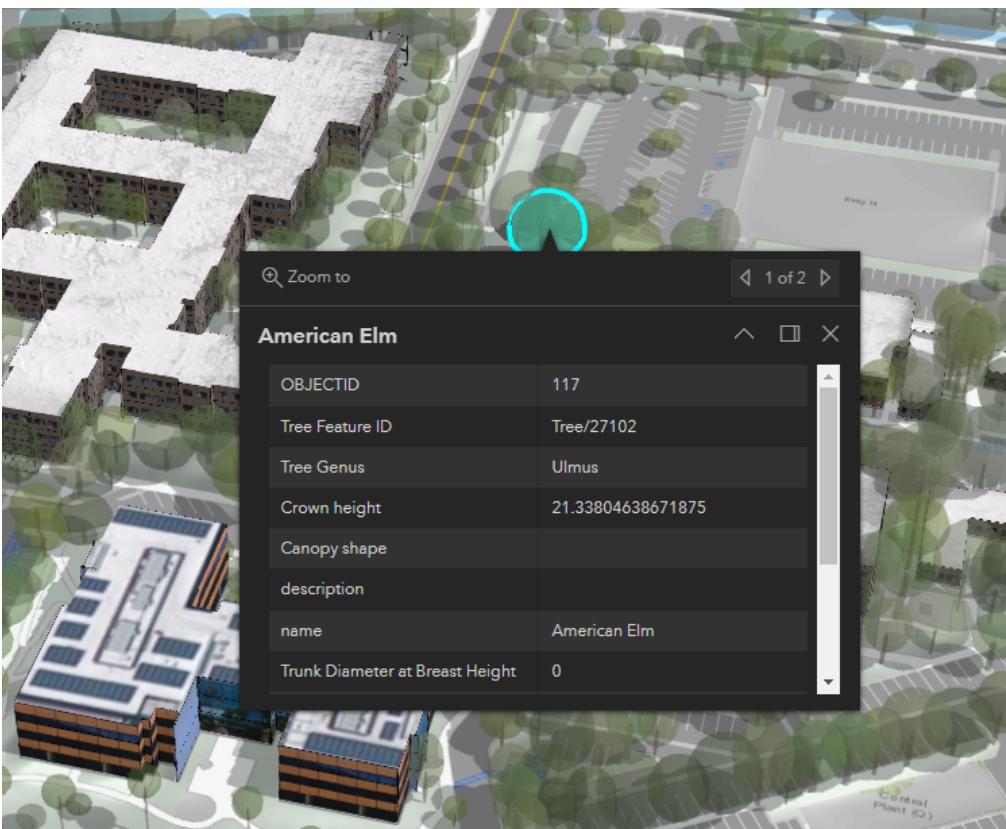


- f In the app, near the upper right, click the Open Slides button and select Home.

In this app, there are two slides set for default navigation views. The Home slide will navigate you to a standard starting location based on the designers' area of interest and focus.

You can also interact with the features in this scene.

- g Click the Open Slides button again to collapse the slides.
- h In the app, click one of the tree models.



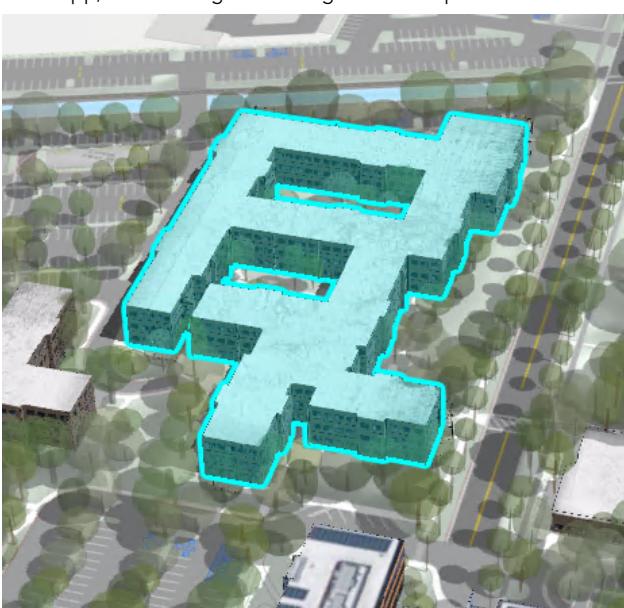
*Step 1h***: Explore the Esri campus.*

Note: The information in your pop-up may differ from the preceding graphic, depending on the tree that you selected.

In the pop-up, there is GIS attribute information about the selected feature, including the type of tree (name), crown height and diameter, and even the genus and species of the selected tree. Each tree in this scene, while representing a notional tree on the campus, can also be rendered as realistically as the data will support. In this manner, you can model your planned location with as much detail as necessary. Depending on the type of information or detail that a builder, architect, project designer, or planning director requires, you can create apps and include that information as part of your story.

Buildings also have attribute information included with them.

- i In the pop-up, click the Close button .
- j In the app, click the largest building on the campus.



*Step 1j***: Explore the Esri campus.*

You will use the GIS attribute information in the pop-up to answer the following questions.

 What is the name of this building?

- Answer

This building is named Building M (or Bldg M).



How many floors does this building have?

- Answer

There are three floors in this building.

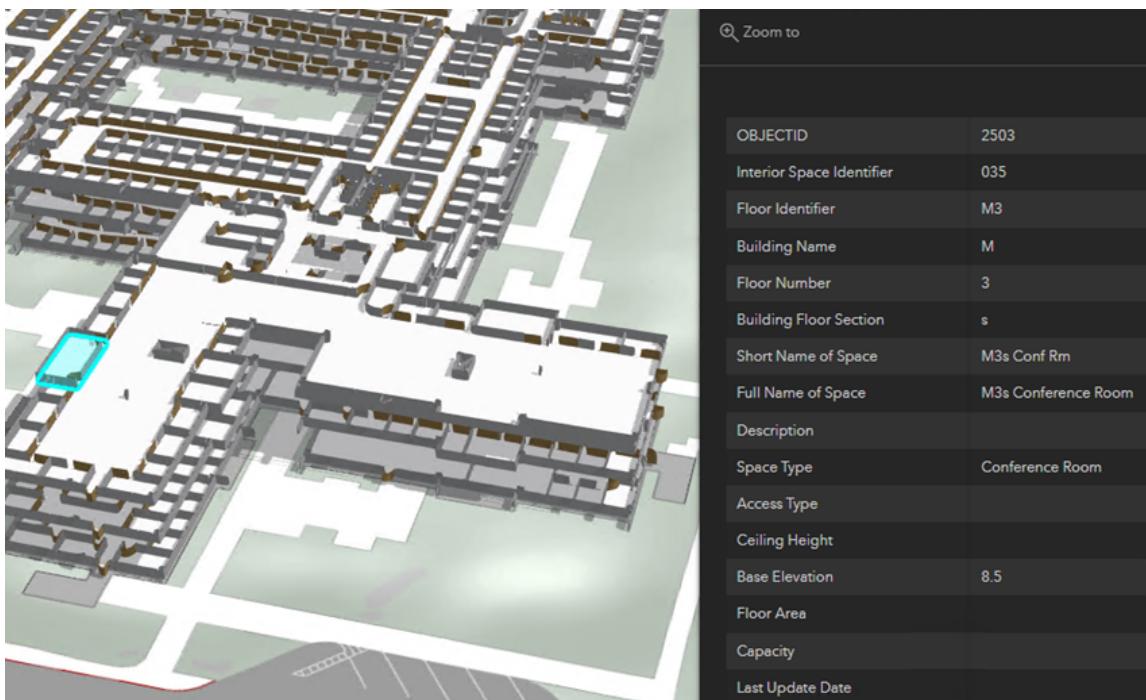
There are other fields available as attributes for this building model, but many fields are left blank. GIS attribute information can contain as much or as little information as necessary for a project. The apps that you can add and configure using stories will retain attributes and can be explored and, if configured, queried and edited for ease of use by engineers, contractors, stakeholders, and others associated with your project.

k Close the pop-up.

l In the app, click the Open Slides button and select Interior to view the inside of the building.

m Click the Open Slides button again to collapse the slides.

n On your own, select a few of the features in Building M to explore the available attributes.



*Step 1n***: Explore the Esri campus.*

Note: In the pop-up, you can click the Dock button to dock the attribute pop-up.

This layer has more attribute information as part of the data. This combination of GIS and BIM elements gives you a powerful and interactive tool to investigate a site's simple infrastructure and potentially how well that infrastructure is integrated into its natural environment.

In this step, you started to explore the story of Building E. The first app included in this story allows you to survey some of the built facilities as well as the natural environment of the Redlands campus. In the next step, you will move beyond the Redlands campus to explore the Redlands region.

- Step 2: Explore the geographical context or project

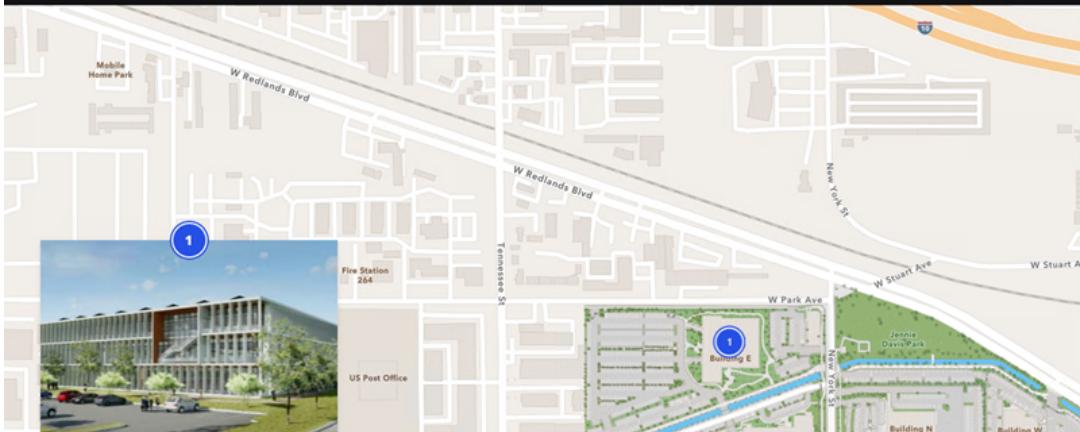
In this step, you will see the location of the planned Building E and its relation to several facilities in the Redlands area.

Even though Building E is a commercial facility, planners will often want to highlight regional amenities or attractions when presenting their plans for stakeholders and decision makers. Using a story, you could include not only the information but also a map to provide spatial context and awareness for where a particular site or building falls within a community.

a In the story banner, click Live Here. Work Here.

Live Here. Work Here.

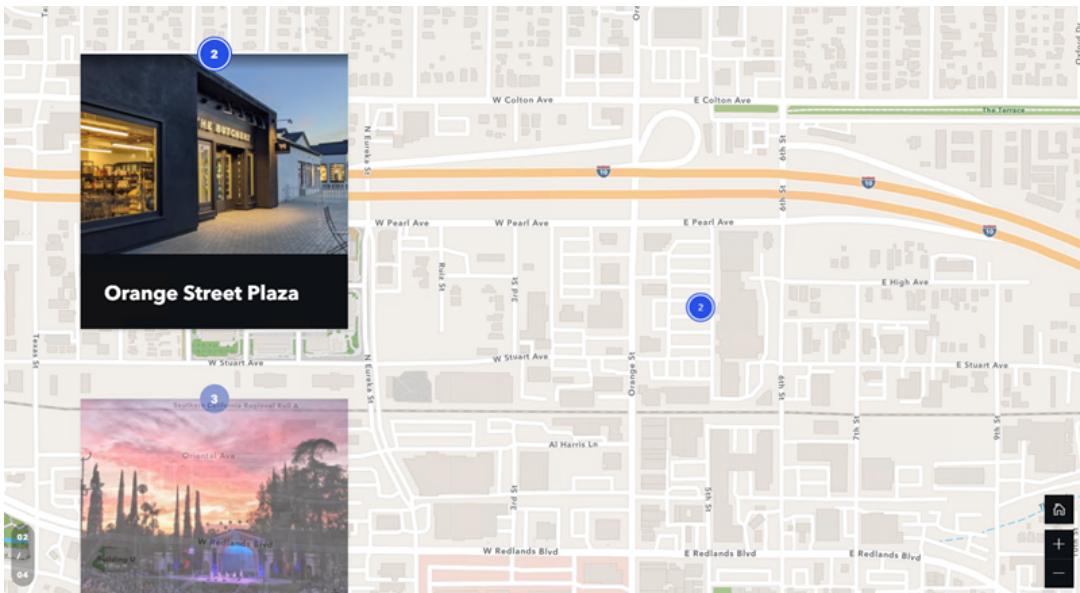
Explore the many exquisite shops, retail services and open nature we have to offer. Of all the school districts in California, Redlands Unified School District is one of the best school districts in the entire state. There are over 12 top-rated schools from this district near the Esri campus. Surrounded by a large residential population with strong demographics and located within a densely populated area, Building E is situated for visibility and access.



*Step 2a***: Explore the geographical context or project.*

This section of the story gives planners and decision makers information about not just the Esri Campus but also the city of Redlands, California.

- b In your web browser, scroll down through this map's content.



*Step 2b***: Explore the geographical context or project.*

As you continue to scroll through this app in the story, you will find information about the Orange Street Plaza, the Redlands Bowl, and the Redlands Country Club. In this example, there are only four sites shown. The information included is minimal for each site, consisting of an image and its location on a map. You can click the image to see a full-screen view of the image. You can also navigate through the web map to see where the sites are located.

- c On your own, use the navigation tools to zoom in and out and explore the Redlands area.

Because this information is included as part of a map, the designers, architects, and even those people who will eventually be working in Building E can see these amenities in their spatial relationship to the new project and building site. Now that you have explored the Redlands campus and its surrounding area, in the next step, you will see some of the initial planning and design elements that went into Building E specifically.

- Step 3: Investigate planning and design of Building E

This story includes information related to planning and design of Building E. The app in this section provides imagery of the project site, along with data about electric, gas, and water utilities; storm drains, water mains, and hydrants; and other infrastructure components. This

information can help ensure better decisions for efficiency and sustainability. In this step, you will continue to explore the story, with a focus on Planning and Design.

- a In the story banner, click Planning And Design.



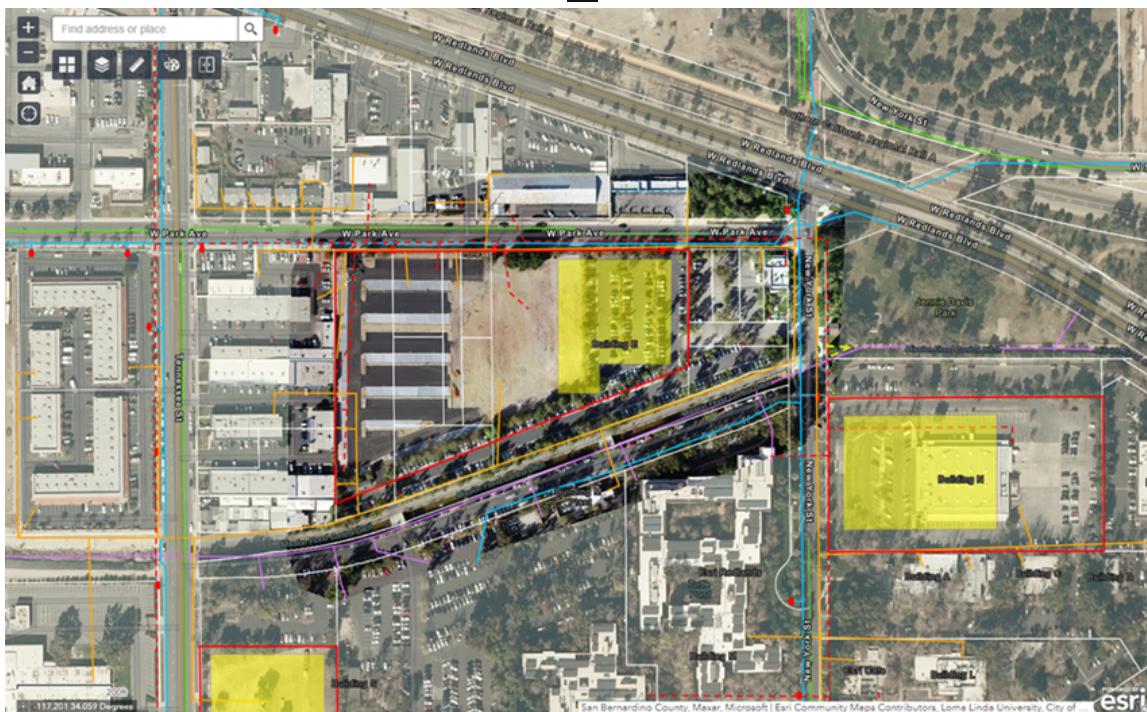
*Step 3a***: Investigate planning and design of Building E.*

- b Move your cursor into the app and click to interact with the map content.

When you create a story, the information and apps are experienced interactively within the story as a continuous presentation. In this manner, you can present the project information, plans, and relevant data in a way that you think is best suited for your audience, which is how you encountered and explored the previous sections.

In some instances, it might be easier to view an app, a map, or a scene in a separate web browser tab.

- c In the app, click the Open Live Content In A New Tab button .



*Step 3c***: Investigate planning and design of Building E.*

A new web browser tab opens with the app loaded as the only element.

- d Near the upper left, in the tools, click the Layer List button .

The Layer List window provides you with information on all the GIS layers available in this map. You can turn layers on and off, and you can click an individual layer to see its symbology. By clicking the More Options button  for a layer, you can set properties like transparencies, a layer's position in the map, and so on.

- e On your own, in the Layer List window, check and uncheck the boxes for several of the layers to turn them on and off.

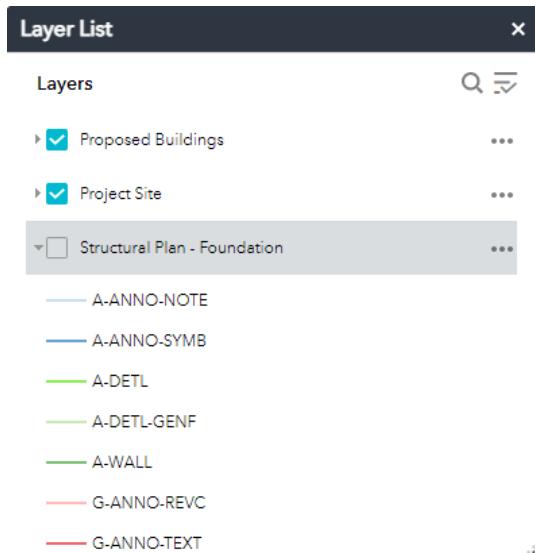


What are some of the layers available?

- Answer

Answers may vary slightly, but a full list of all layers includes Proposed Buildings, Project Site, Structural Plan - Foundation, Electric (URD), Gas (URD), Hydrants, Water Mains, Sewer Mains, Storm Manholes, Storm Drains, Easements, Building Footprints, Schools, Parks, Planned Land Use, Zoning, Parcels, FEMA Flood Zones, and multiple Site Scan Orthomosaic collections.

- f In the Layer List window, click Structural Plan - Foundation to expand the layer, and then notice the different elements that are available.



*Step 3f***: Investigate planning and design of Building E.*

- g In the Layer List window, click the Check Layer button and choose Turn All Layers Off.



*Step 3g***: Investigate planning and design of Building E.*

When all the GIS layers are turned off, the only thing visible in the map is a basemap. Basemaps can provide geographical context for your AEC projects. This basemap is the Imagery Hybrid basemap—imagery with some labels. You will notice that there are still some labels present in your map. You can see Building E, Building N, and others labeled. This type of basemap, as well as many others, is available in ArcGIS Online.

- h In the Layer List window, check the boxes for the Proposed Buildings, Project Site, Structural Plan - Foundation, and Site Scan Orthomosaic – Oct 2018 layers to turn them on.



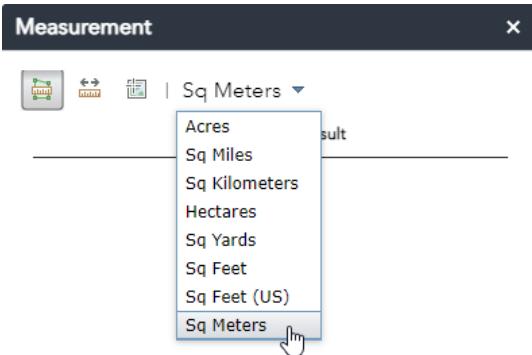
*Step 3h***: Investigate planning and design of Building E.*

The Site Scan Orthomosaic - Oct 2018 layer provides a high-resolution set of images of the project site; these images were collected using a drone and processed using Site Scan for ArcGIS.

- i Close the Layer List window.

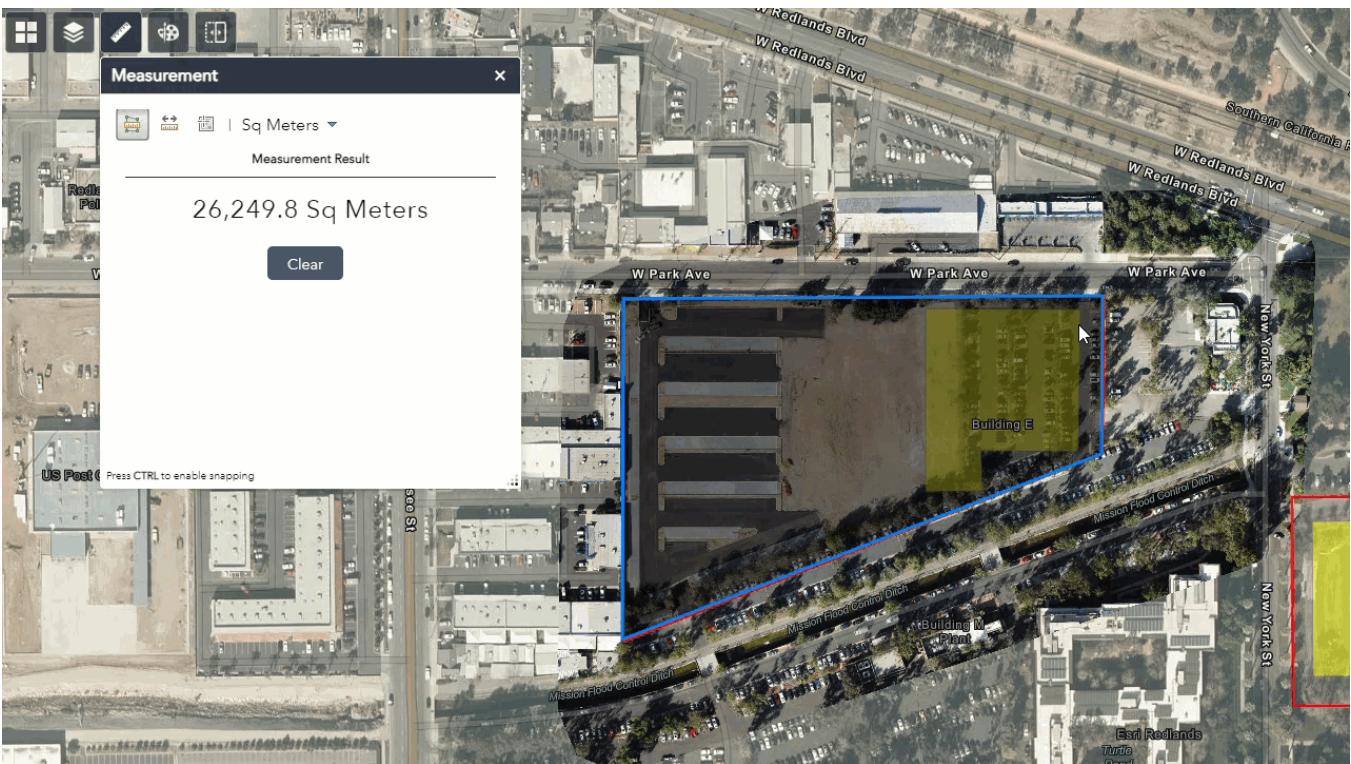
This app has several tools configured to help you understand the initial construction site. You will use one of these to get a better understanding of how you can use integrated GIS tools in the planning phase of an AEC project. You will measure the area of the project site and then the outline of the proposed building footprint using the tools embedded in the app.

- j In the tools, click the Measurement button .
- k In the Measurement window, click the Area button .
- l Next to Acres, click the down arrow and choose Sq Meters, as shown in the following graphic.



First, you will measure the area of the project site.

- m In the map, click the upper-left corner of the project site to start your measurement.
- n Click the next two corners, and then double-click the last point to complete the polygon.



Clicking the preceding graphic displays an animation that demonstrates how to use the measurement tool.

? What is the area of the project site?

- Answer

The area of the project site is approximately 26,249.8 Sq Meters; however, answers may vary slightly depending on your click precision in relation to each project site corner.

- o Repeat this process to measure the area of the Building E proposed footprint.



*Step 3o***: Investigate planning and design of Building E.*

? What is the planned area of Building E?

- Answer

The planned area of Building E is approximately 5,126.6 Sq Meters.

Note: While measuring, you can press Ctrl to snap the measurement along the feature for a more accurate and precise measurement.

- p On your own, measure the area of the project site again using this snapping method.

? Was there a difference in your measurement using this new workflow? Why or why not?

- Answer

Answers will vary, but the new measurement using snapping will result in an area measurement of 26,377.6 Sq Meters; most users will notice a difference.

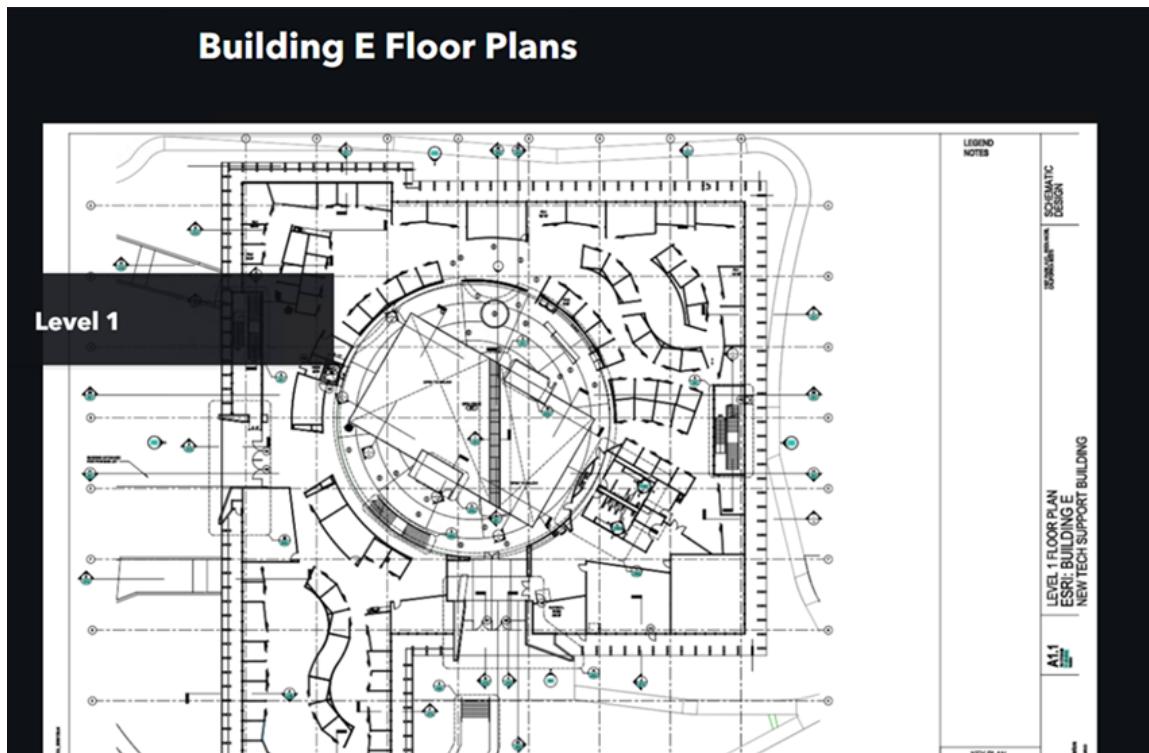
- q Close the Measurement window.

Now you will return to the project story and continue exploring.

Information included in the story is not limited to maps or apps. For instance, this section includes graphics of the schematic design and floor plans for each level of Building E. Depending on the phase of your project, you can include preliminary design sketches such as these, sketches combined with site photos, or comparisons of the initial design against As-Built and delivery.

This type of information inclusion helps provide a full picture, not just with the design team and construction team but also to stakeholders and decision makers.

- r Return to the Building E story web browser tab and continue to scroll down to the Building E Floor Plans section.



*Step 3r***: Investigate planning and design of Building E.*

Note: You can also click Building E Floor Plans in the story banner to navigate directly to that section.

- s On your own, click the Image Advance button to review all four of the schematic design drawings.

Depending on your audience, you could even include an app showing individual CAD files. But in this instance—and for this audience—these lightweight graphics provide enough information and context necessary for familiarization of the site and design plan.

Now that you have explored some of the apps embedded in the story by showing the planning and design phase, you will next examine some elements that can be used during construction.

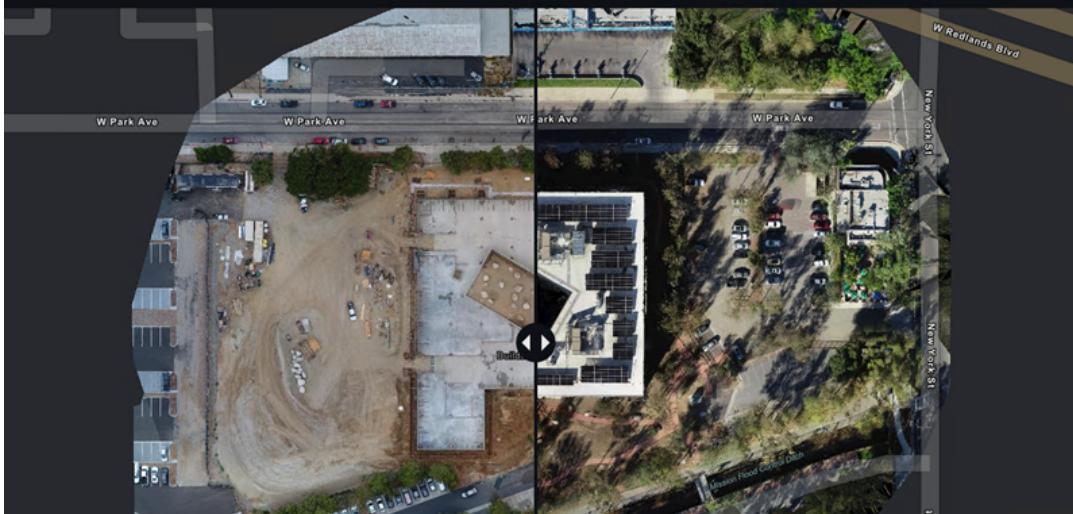
- Step 4: Use imagery to see project site evolution

The next few apps included in the story can be used during the construction phase of a project to help monitor progress. In this step, you will explore an app that includes imagery collected during the early phases of construction and also imagery collected near completion of the project. While this app only includes two dates, multiple dates or dates associated with key milestones can be included to show progress and development.

- a In the story banner, click Project Site Evolution And Construction.

Project Site Evolution and Construction

From beginning to end, our teams are constantly monitoring job site progress. Use the slider below to see for yourself how the project site has evolved.



*Step 4a***: Use imagery to see project site evolution.*

This app provides an interactive image swipe tool, allowing you to swipe the map view from left to right to view two layers: one showing an early construction image and the other showing a completed construction image.

- b In the app, point to the Image Swipe tool (two arrows) in the center of the image, and then swipe the image back and forth to compare the two images.
- c In the app, click the Zoom In button to zoom in to an area of interest.



*Step 4c***: Use imagery to see project site evolution.*

- Hint

If necessary, drag your cursor in the app to pan through the image.

- d On your own, repeat this process to explore the project site.



What are some observations that you can make about the project site and construction elements that the two imagery dates reveal?

- Answer

Answers will vary but can include the relatively small footprint of the construction site; boulders in the early image have been placed in the later image (some can even be individually identified); and rampways into the basement area of the building can easily be identified in the early image and thus reveals which building layer, or floor, is visible. You can share your observations in the MOOC forum.

- e In the app, click the Default Map View button .

This particular app allows you to compare two images of different dates. In the next step, you will see how incorporating BIM data and GIS into different apps allows you to examine, explore, and even analyze built assets in the surrounding environment.

- Step 5: Examine the new building

Next, you will explore three additional examples of web apps showing different phases of the job site during a construction project.

- a In the story banner, click 3D Analysis.



*Step 5a***: Examine the new building.*

This app shows a 3D scene view that contains a 3D mesh of the new building generated from drone imagery. A 3D mesh is created by an automated process for constructing 3D objects out of large sets of overlapping imagery. In this case, the resulting view of the new building is useful for inspecting the project status in 3D. You will learn more about how to create building meshes such as this later in the MOOC.

- b Using skills previously learned, navigate in this 3D scene view to explore the different sides of Building E.
c In your web browser, scroll down to the Explore Building E With 3D Analysis subheading and read the description.

A screenshot of a web-based 3D scene viewer for Building E. At the top, a header reads "Explore Building E with 3D Analysis". Below the header, there is descriptive text about the 3D scene viewer and its tools. A list of tools includes: Line of Sight Analysis tool, Daylight Analysis tool, Slicing tool, Measuring tool, and Snapshot tool. The main view shows a 3D rendering of the building's exterior and surrounding infrastructure. A legend on the right side lists layers: Building E, Utilities, Electric (URD), Gas (URD), Hydrants, and Miscellaneous. The interface includes standard web browser controls like back, forward, and search.

*Step 5c***: Examine the new building.*

Note: The web browser may automatically scroll to the next subheading (Job Site Status With Site Scan), so, if necessary, scroll up until you see the proper subheading of Explore Building E With 3D Analysis.

- d In the app, click the Open Live Content In A New Tab button .

Note: When the app opens in a new web browser tab, it may take a moment for all the elements to draw.

- e If necessary, from the thumbnails at the bottom of the scene, select the Campus Overview slide, as indicated in the following graphic.



- Hint

You can point to a slide to view its name.

f Use your navigation tools to explore the 3D scene view environment.

In this app, different slides, or views, are included to help stakeholders understand the project site, but each of these views can be rendered differently. New GIS layers, new features, as well as new viewing angles can be included to provide you with different or unique views based on how you wish to present your project information.

g From the thumbnails at the bottom of the scene, select the slide named Building E (Context).



*Step 5g***: Examine the new building.*

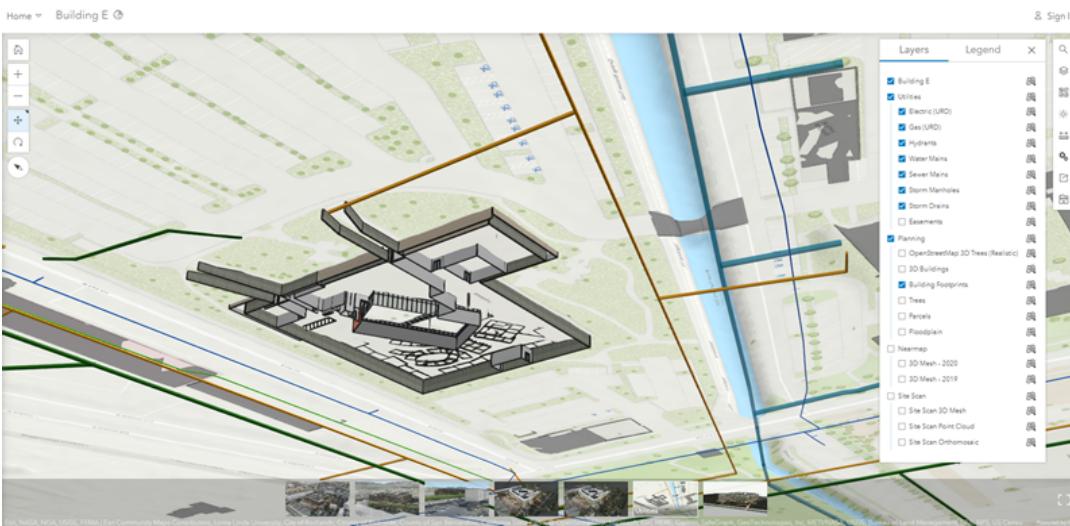
In this view, 3D elements of the natural environment are added, along with the BIM, to provide larger context and a better understanding of the project site; 3D multipatch features such as sidewalks, lights in the parking lot, and trees have also been added for additional realism.

Note: A Layers pane appears on the right in this scene by default, allowing you to see which layers are enabled and disabled as you explore different slides. If you prefer, you can close the Layers pane on the right; however, the graphics in this step will show the scene with the Layers pane open.

To reopen the Layers pane, on the toolbar, click the Layers button .

h Use your navigation tools to explore the 3D scene view environment.

i From the thumbnails at the bottom of the scene, select the Utilities slide.



*Step 5i***: Examine the new building.*

The web scene is a true 3D environment. In the Utilities slide view, you have an underground look at some of the infrastructure near and around Building E. Navigation underground is the same as above ground. Similarly, you can click the infrastructure features that are visible to get information about each one.

- j Use your navigation tools to explore the 3D scene view environment.
- k From the thumbnails at the bottom of the scene, select the Building E (Isolated) slide.



*Step 5k***: Examine the new building.*

- l Use your navigation tools to position your view slightly above the BIM.



*Step 5l***: Examine the new building.*

In the next step, you will use some of the preconfigured tools included as part of this app to look inside this building model.

- Step 6: View the inside of a building model

One of the tools that you can use to examine a BIM is the slice tool. The slice tool can be used to reveal occluded content in a scene. It hides any layers or terrain slice intersects. For instance, you can use the slice tool to display inside layers of a building—represented as a BIM—such as interior walls and furniture. In this step, you will work with the slice tool to view vertical, horizontal, and oblique slices of Building E at Esri's Redlands Campus.

- a Click the Analyze button .
- b Click the Slice Objects button .
- c Move your cursor into the scene and place it over the BIM.



*Step 6c***: View the inside of a building model.*

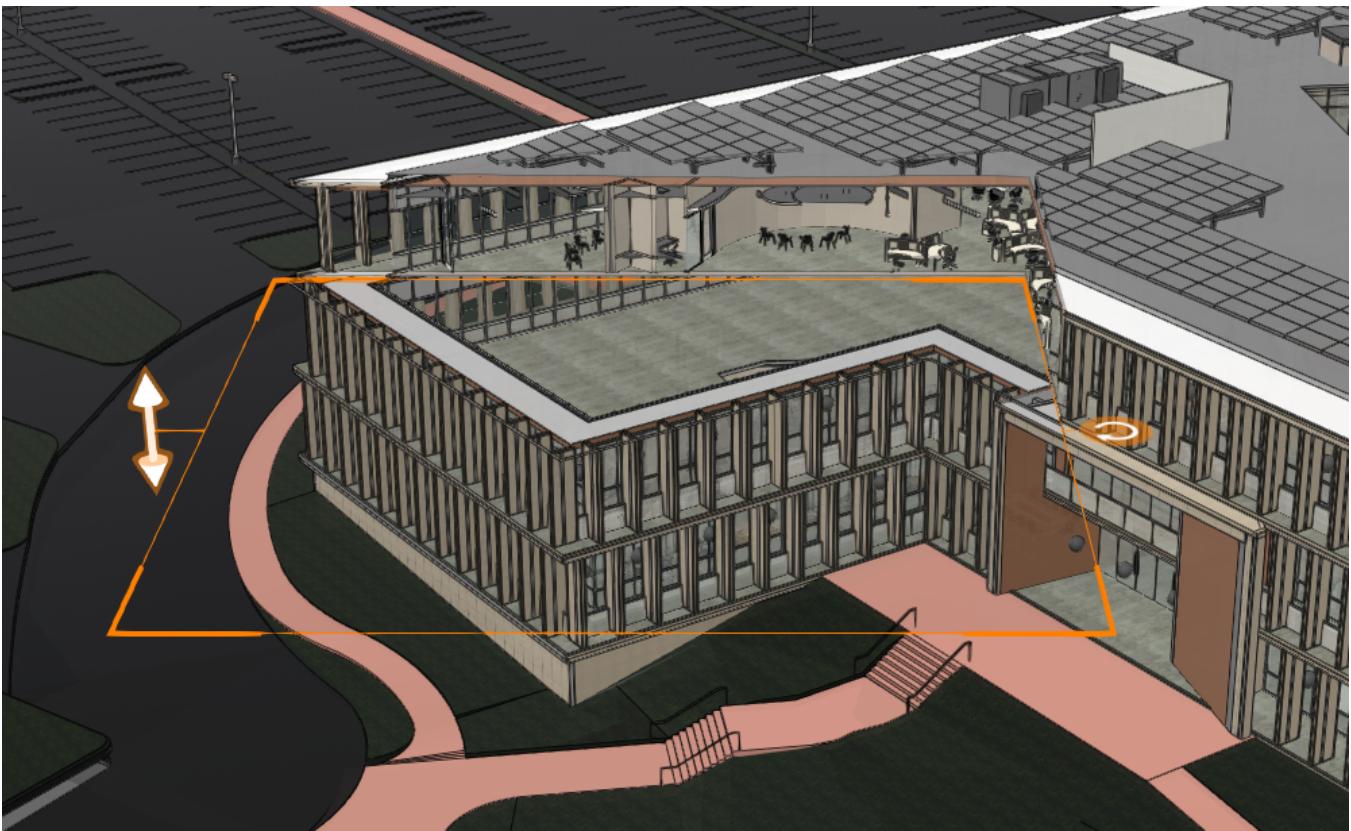
A rectangle will appear in your scene, representing the plane of intersection for your slice.

Tip: Adjusting the plane to intersect the building along the axis that you desire takes practice and a steady hand. For this exercise, you want to intersect the building along a horizontal plane. Depending on where you place your cursor, a horizontal or vertical plane will appear. Take a moment to practice and observe how the slice tool adjusts to your cursor's placement and movement.

- d If desired, pan and zoom your view to an area of the building of your choosing.

Note: The southeast wing of Building E is shown in the graphics throughout the rest of this step.

- e When you are satisfied with the slice placement, click to lock it in place.

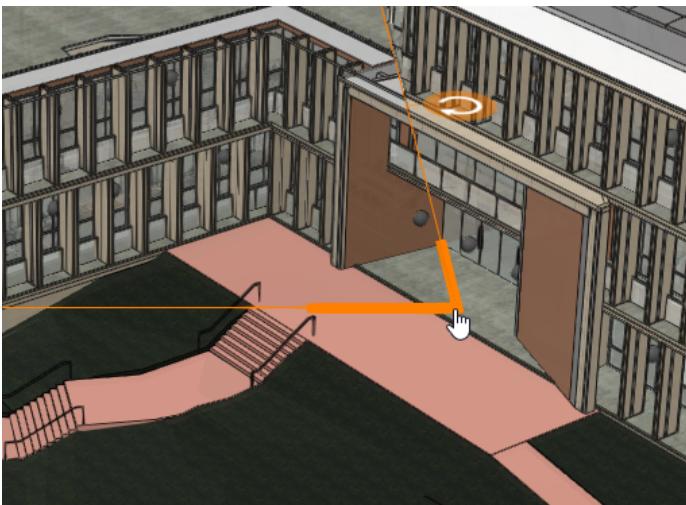


*Step 6e***: View the inside of a building model.*

The slice plane changes, and now you have control handles as part of the plane. These handles allow you to control the rotation, tilt, and level of the slice.

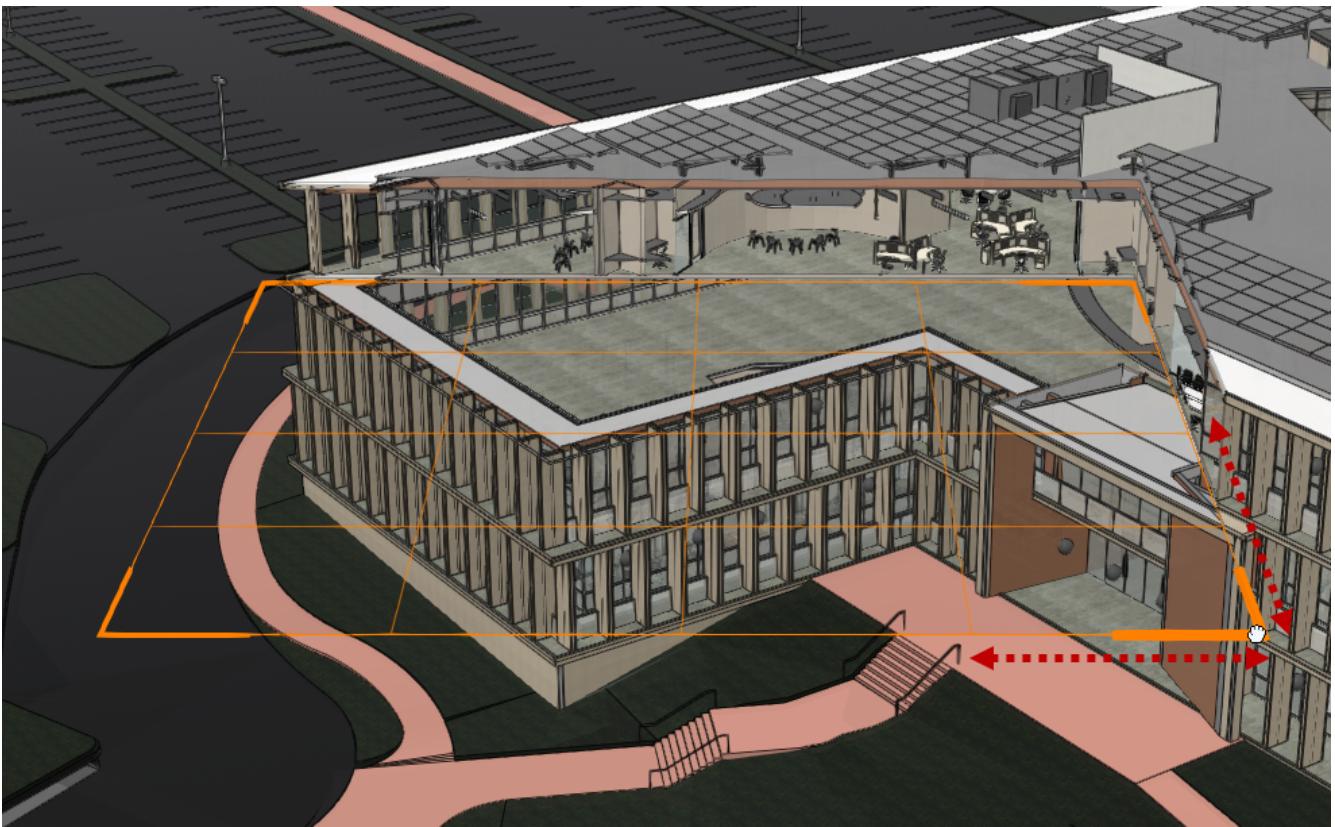
You also can resize the slice by the corner handles. If desired, or necessary, you can move the slice over the BIM if you want to modify its location to help improve your visualization.

- f Move your cursor over the lower-right corner of the slice and click to activate it, as indicated in the following graphic.



When you click the corner, you are able to resize the rectangle.

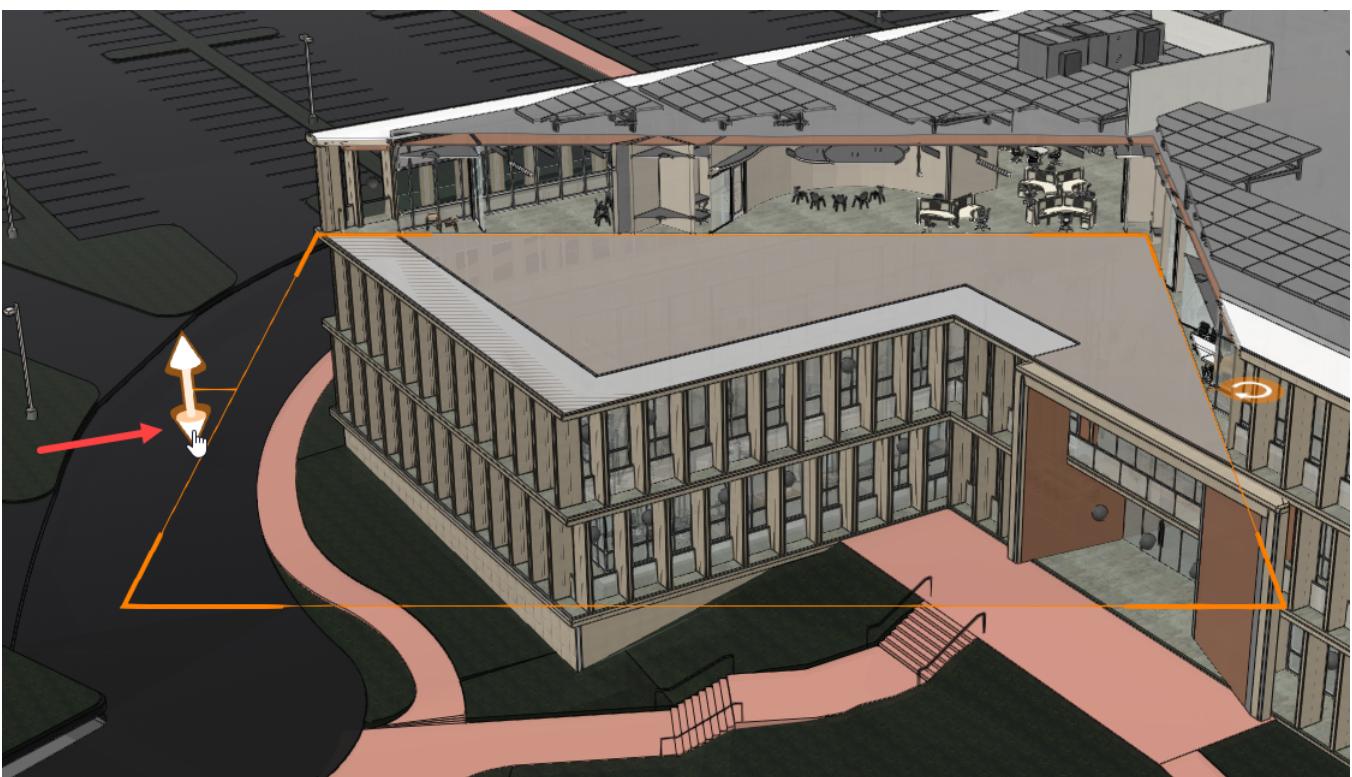
- g Adjust the size of the slice plane so portions of the BIM will still be visible when you activate the slice, as indicated in the following graphic.



Clicking the preceding graphic displays an animation that demonstrates how to resize the horizontal slice.

Note: Your slice plane may be represented differently than the preceding graphic.

- h** On your own, click the slice handle  and move it up and down to see inside the BIM, as indicated in the following graphic.



Clicking the preceding graphic displays an animation that demonstrates how to move the slice handle up and down.

This BIM includes interior details, interior structure, and even furniture, in addition to the exterior architectural structure. Even with the slice activated, you still have navigational control of the scene view.

- i** Use your navigation tools to zoom in, pan, and rotate around the BIM.
- j** If desired, in the Slice tool menu, click New Slice to place, size, and explore the interior floors and details at a new location.



*Step 6j***: View the inside of a building model.*

Examining a building along this horizontal plane can be useful to understanding its interior structure, but you can also perform a slice along a vertical axis and see a building's interior floors all at once.

k Using your navigation tools, rotate and pan to view one of the four building facades.

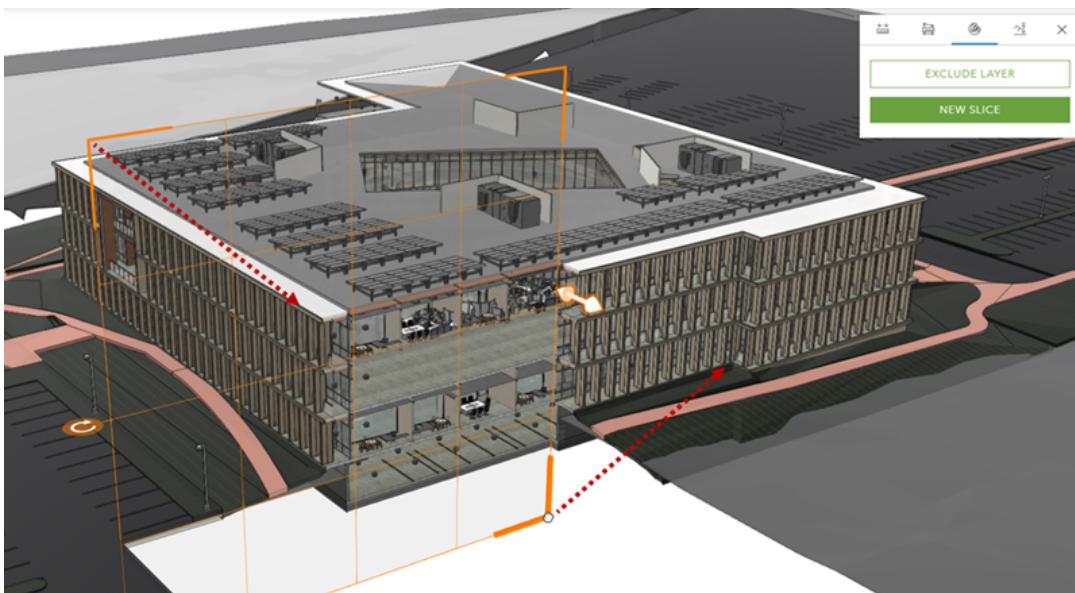
l In the Slice tool menu, click New Slice.

m Using skills previously learned, place a vertical slice plane along one of the building facades.

- Hint

If you see a horizontal slice where you are trying to place a vertical slice, you can press and hold the Shift key to force a vertical slice.

n Using your cursor, click and drag the bottom-right and top-left corners of the slice plane to adjust the size so that it only intersects the building and not the terrain, as indicated in the following graphic.



o Grab the slice handle and move it in and out of Building E to examine its different floors, as indicated in the following graphic.



Clicking the preceding graphic displays an animation that demonstrates how to move the slice handle in and out.

Tip: A slice plane will hide both the building and terrain features that it intersects. For ease of visualization when examining buildings, you should adjust the slice plane so that only the building is intersected. If your scene includes utilities infrastructure, such as underground plumbing, electric, and so on, you can intersect both the BIM and the terrain to get a better understanding of the planned or As-Built connections.

Note: Your view may be different than the preceding graphic.

You can use the rotate tool on your slice plane to modify the rotation of the slice plane. This feature may provide additional details or insights on your particular BIM.

- p Click and drag the rotate handle  to rotate the slice plane, as indicated in the following graphic.



Using this method, you can adjust the slice plane to any rotational aspect you desire. In this example, the view rendered is a rotated slice of the northeast corner of Building E.

- q Use the slice tool to examine this view, as indicated in the following graphic.



Clicking the preceding graphic displays an animation that demonstrates how to resize, rotate, and use a vertical slice.

- r On your own, experiment with different rotations, orientations, and sizes of the slice plane to observe internal elements of the Building E BIM.
- s Close the Slice tool menu.

To learn more about using slice in a 3D scene, go to ArcGIS Online Help: Slice scene content.

There are other analysis tools that can be included as part of a web app to perform analysis on BIM and GIS layers. For example, you can use the Sunlight slider to adjust the amount of sunlight and to add shadows to your project based on time of day; you can visualize weather in your scene; you can generate an elevation profile; or you can grab measurements using measurement tools. You will learn more about some of these tools and their applications for AEC projects later in the MOOC.

- Step 7: Browse through site imagery over time

The cost of purchasing and operating drones has been reduced drastically in recent history. Drone imagery can be collected through all phases of a project, but it is specifically useful and timely during the construction phase. Site collection for project progress, high-accuracy 3D mesh creation, or even just a record of a project when it is complete is now very easy with this type of collection technology. The web app included in this story contains a full series of images collected during the Building E construction project. You will learn more about drone imagery collection and how it can be incorporated into your AEC project later in this MOOC.

In this step, you will review some of these images.

- a Return to the Building E story web browser tab, and then scroll down to the Job Site Status With Site Scan subheading of the 3D Analysis section.

Job Site Status with Site Scan

This application allows users to dynamically inspect the status of a job site over various construction phases and times using orthorectified images, integrated meshes, and building scene layers.

JobSite Status - Esri Building E

Flight Collection Dates 83 of 83

Filters Sort View

Date	Drone	Flight	View
2/25/2021	Matrice	Crosshatch	Oblique
2/25/2021	Matrice	Orbit	Oblique
11/16/2020	Matrice	Crosshatch	Nadir
11/11/2020	Matrice	Orbit	Oblique
7/28/2020	Matrice	Orbit	Oblique
7/23/2020			

Animate Spin Measure Slice Building 2D 3D

*Step 7a***: Browse through site imagery over time.*

- b Click anywhere in the web app to interact with it.
- c If necessary, in the JobSite Status - Esri Building E window, click OK.

In this app, the Flight Collection Dates pane contains information about the various drone flights, the type of drone used for collection, the type of flight performed, as well as how the imagery was collected—whether an oblique or nadir collection.

- d In the Flight Collection Dates pane, scroll down and select the image collection dated 7/1/2018.

The screenshot shows the 'Flight Collection Dates' pane on the left and a 3D perspective view of a construction site on the right. The 3D view shows a large rectangular area with a complex network of roads and buildings under construction. The 'Flight Collection Dates' pane lists the following data:

Date	Drone	Flight	View
2/28/2019	Matrice	Crosshatch	Oblique
2/28/2019	Matrice	Survey	Nadir
12/21/2018	Matrice	Survey	Nadir
11/27/2018	Mavic	Survey	Nadir
10/30/2018	Matrice	Survey	Nadir
10/1/2018	Matrice	Survey	Nadir
7/1/2018	Phantom	Crosshatch	Nadir

At the bottom of the pane, there is a note: "Erl, NASA, NOAA, USGS, FEMA | Esri Community Maps Contributors, Loma Linda University, City of Redlands, County of Riverside, County of San Bernardino, California State Parks, © OpenStreetMap, Microsoft, ...".

*Step 7d***: Browse through site imagery over time.*

The set of images collected to create this 3D mesh were collected at the beginning of the construction project.

- e Use your navigation tools to explore the construction site.
- f In the Flight Collection Dates pane, locate and select the image collection dated 12/21/2018.

The screenshot shows the 'Flight Collection Dates' pane on the left and a 3D perspective view of a construction site on the right. The 3D view shows a large rectangular area with a complex network of roads and buildings under construction. The 'Flight Collection Dates' pane lists the following data:

Date	Drone	Flight	View
2/28/2019	Matrice	Crosshatch	Oblique
2/28/2019	Matrice	Survey	Nadir
12/21/2018	Matrice	Survey	Nadir
11/27/2018	Mavic	Survey	Nadir
10/30/2018	Matrice	Survey	Nadir
10/1/2018	Matrice	Survey	Nadir
7/1/2018	Phantom	Crosshatch	Nadir

At the bottom of the pane, there is a note: "Erl, NASA, NOAA, USGS, FEMA | Esri Community Maps Contributors, Loma Linda University, City of Redlands, County of Riverside, County of San Bernardino, California State Parks, © OpenStreetMap, Microsoft, ...".

*Step 7f***: Browse through site imagery over time.*

In just five months, the construction project has created the parking lot and cleared the site for the new building and job site. Additionally, there are three other collection dates between July and December. Because of the efficiency, accuracy, and timeliness of drone collections, construction updates as well as real-time, on-site information of the project site can be shared in an app such as this one so stakeholders or decision makers can follow the progress of a project.

- g On your own, select several other dates during the construction project and inspect the status of the job site on that date.

When a project is complete, you can establish a timeline—like you see here—or even include BIMs of the construction site for a retrospective view during the project.

- h In the Flight Collection Dates pane, select the Yuneec drone image collection from 5/2/2019.

JobSite Status - Esri Building E

Flight Collection Dates 83 of 83

> Filters Sort 1a ↗

Drone	Flight	View
Matrice	Crosshatch	Oblique
Matrice	Survey	Nadir
Matrice	Crosshatch	Oblique
Yuneec	Survey	Nadir
Matrice	Survey	Nadir
Matrice	Survey	Nadir
Yuneec	Survey	Nadir
Matrice	Survey	Nadir

2D 3D

*Step 7h***: Browse through site imagery over time.*

- i Near the top of the app, in the JobSite Status - Esri Building E banner menu, click the Building Explorer button  , as shown in the following graphic.

JobSite Status - Esri Building E

Flight Collection Dates 83 of 83

> Filters Sort 1a ↗

Drone	Flight	View
Matrice	Crosshatch	Oblique
Matrice	Survey	Nadir
Matrice	Crosshatch	Oblique
Yuneec	Survey	Nadir
Matrice	Survey	Nadir
Matrice	Survey	Nadir
Yuneec	Survey	Nadir
Matrice	Survey	Nadir

2D 3D

Note: You may need to scroll up in your web browser to see the JobSite Status - Esri Building E banner menu.

Building Explorer allows you to explore building scene layers that contain the fine details of structures, including building walls, bridge abutments, lighting fixtures, and mechanical systems. Building scene layers contain complex digital models in multiple layers. They often contain an overview layer that serves as an exterior shell and helps you view the model as a single feature.

- j Use your navigation tools to zoom in to the construction site.

JobSite Status - Esri Building E

Flight Collection Dates 83 of 83

> Filters Sort 1a ▾

Drone	Flight	View
Matrice	Crosshatch	Oblique
Matrice	Survey	Nadir
Matrice	Crosshatch	Oblique
Yuneec	Survey	Nadir
Matrice	Survey	Nadir
Matrice	Survey	Nadir
Yuneec	Survey	Nadir
4/18/2019		

2D 3D

Select Level

Construction phase

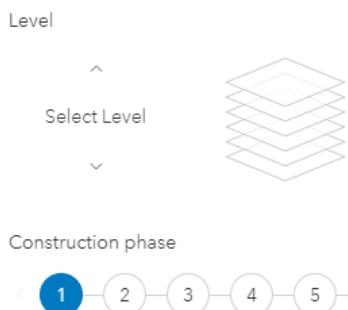
3 4 5 6 7

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*Step 7j***: Browse through site imagery over time.*

If included as part of the building scene layers, the construction phase allows you to see different parts of the BIM during different portions of your project.

- k In the pop-up, under Construction Phase, click the left arrow to select Phase 1.



*Step 7k***: Browse through site imagery over time.*

- l On your own, click each of the construction phases to explore how these building scene layers represent the BIM.

There are several tools in the JobSite Status - Esri Building E banner menu with which you are already familiar, such as the slice tool; however, in this app, the slice plane is linked directly to the BIM.

- m On your own, use the slice tool during different construction phases to see how the project progressed.

JobSite Status - Esri Building E

Flight Collection Dates 83 of 83

> Filters Sort 1a ▾

Drone	Flight	View
Matrice	Crosshatch	Oblique
Matrice	Survey	Nadir
Matrice	Crosshatch	Oblique
Yuneec	Survey	Nadir
Matrice	Survey	Nadir
Matrice	Survey	Nadir
Yuneec	Survey	Nadir
4/18/2019		

2D 3D

Select Level

Construction phase

2 3 4 5 6 >

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*Step 7m***: Browse through site imagery over time.*

n When you have completed your explorations, near the top of the page, click Building E to return to the beginning of the story.

o Close your web browser.

In this exercise, you explored several unique apps embedded in a story to show how GIS and BIM can be integrated into several of the phases of an AEC project. While examining these different apps, you have also been able to use several tools to help visualize and understand a project site, the surrounding area, and even the natural environment. A story such as this example can be authored before, during, or after a project's completion. These tools and apps can help decision makers, architects, construction personnel, GIS analysts, and stakeholders to understand all elements of a project.

To learn more about how building explorer layers are created and used, go to ArcGIS Online Help: Explore building scene layers, and to learn more about how you can use the measure tool in 3D scenes, go to ArcGIS Online Help: Measure scenes.