

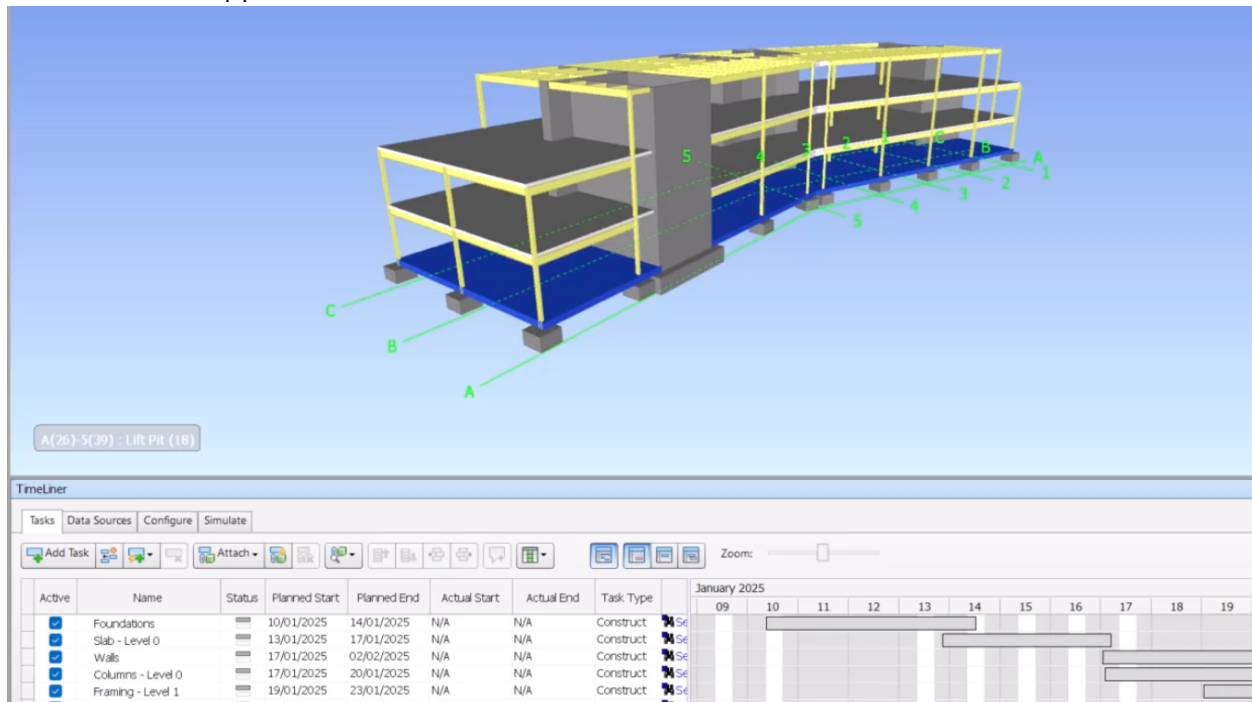
Project challenge exercise – grading rubric

Create a construction simulation for an architectural model

Using the provided Revit model, **ADSK-ARC-XX-ZZ-C1-A-4000.rvt**, use your skills to complete this project challenge.

Scenario:

As the construction contractor, you'll create a simulation in Navisworks that accurately represents the step-by-step construction of the Revit architectural model. Your simulation should demonstrate the logical sequence of construction activities, ensuring that elements appear in a realistic order.



Complete the required activities:

- Identify three logical zones in the model based on construction sequencing. These zones should align with how the project would be built in phases, ensuring a structured workflow for simulation.
- Add a custom project parameter in Revit to categorize elements by zone. Assign each building component to its corresponding zone to enable better filtering and organization.

- Use the Create Parts tool in Revit to break down larger model elements (e.g., walls, floors, and roofs) into smaller, more manageable components. This allows for a more detailed construction schedule and better alignment with real-world sequencing.
- Use the Navisworks plug-in in Revit to export the model in .NWC format. Ensure all necessary elements, parameters, and geometry are included for a smooth transition into Navisworks.
- Develop a timeline using the TimeLiner tool to establish construction sequencing. Input realistic start and end dates for each phase, ensuring a logical progression of activities.
- Use Search Sets in Navisworks to filter and group elements based on the assigned project parameter (zones) and construction tasks. This will allow for efficient linking between the schedule and the model components.
- Set up an animated camera path to provide dynamic views of the construction sequence. Ensure the simulation is viewable from different perspectives to enhance clarity and presentation.

Success Criteria:

- **Accurate model organization:** The Revit model is correctly divided into three zones, with elements assigned to the appropriate project parameter for effective filtering and scheduling.
- **Effective integration with Navisworks:** The model is successfully exported as an NWC file, and search sets are correctly created for model categories by zones, ensuring that elements can be filtered and linked to a well-structured construction schedule.
- **Clear and dynamic simulation:** A well-executed animation is applied in Navisworks, effectively visualizing the construction sequence from multiple angles, enhancing understanding of project phasing and execution.

What to Submit:

- **Revit model file (.RVT)** – The fully developed model with parts created, divided into three zones using project parameters.
- **Navisworks cache file (.NWC)** – The exported model file with all necessary elements and parameters intact for use in Navisworks.
- **Navisworks simulation file (.NWF or .NWD)** – A completed Navisworks file containing:
 - A schedule linked to model elements
 - Search sets organized by model categories and zones
 - A timeliner animation showing the construction sequence from multiple angles.

Grading Rubric

	Advanced	Proficient	Basic	Emerging
Creating parts in Revit	Parts are created accurately and consistently for all relevant model elements, ensuring proper breakdown for scheduling.	Most parts are created correctly, with minor inconsistencies in the breakdown.	Some parts are created, but the breakdown lacks consistency or clarity.	Few or no parts are created, making scheduling difficult or incomplete.
Assigning a project parameter for model categories by zones	A project parameter is created and correctly assigned to all elements, allowing precise filtering of categories within zones.	A project parameter is assigned to most elements, but some assignments are missing or incorrect.	The parameter is created but not consistently applied, making filtering difficult.	No parameter is created, or assignments are incorrect/incomplete.
Exporting the model to Navisworks	Model is exported as NWC with all necessary data, including parameters, model categories, and structure intact.	Model is exported successfully, but minor elements or parameters may be missing.	Export is incomplete or has missing elements that affect the simulation.	Model is not exported correctly, or the NWC file lacks essential components.
Creating a schedule in Navisworks	A well-structured schedule is created with logical start and end dates, properly linked to model categories by zones.	Schedule includes most tasks with appropriate sequencing, but some refinements are needed.	Schedule is incomplete or has errors in sequencing that affect realism.	Little or no effort is made to create an effective schedule.
Creating search sets for model categories by zones and tasks	Search sets are properly created for different model categories within each zone, allowing for precise task filtering and scheduling.	Most search sets are created and function correctly, but some refinements are needed.	Search sets are incomplete or not well-structured, making filtering difficult.	Search sets are missing or ineffective, causing confusion in task management.
Creating an animation for the simulation	A clear and dynamic animation is applied, showing the construction sequence from multiple angles with smooth transitions.	Animation is applied and mostly effective, but some angles or transitions may need improvement.	Animation is basic or limited, making it hard to fully visualize the construction process.	No animation is applied, or it does not contribute to the understanding of the simulation.