



2026

BRICS SKILLS COMPETITION

(BRICS+ FUTURE SKILLS & TECH CHALLENGE)

Building Information Modelling BIM

BRICS-FS-06

Test Project

(International Final)

June, 2026



Module A: Structural Modeling

Task Overview:

1. Use the ALLPLAN 2023 software to create a project file named "Comprehensive Building_Structure", and complete the structural BIM model and its design output based on the structural construction drawings and the examination requirements. In case of conflicts between the drawing specifications and the examination requirements, the examination requirements shall prevail; if there are discrepancies between the drawing annotations and the actual dimensions, drawing annotations shall take precedence. Where not specified, software commands may be used at your discretion. All structural components must be assigned to corresponding drawing files for each floor.(40 points)

Detailed Steps:

1. Create elevations and floor plans (2 points): Participants must draw elevations and floor plans for the basement level and second floor based on the drawings.

2. Create a structural model (19 points): Participants must draw professional structural models for the basement level and second floor based on the drawings, including the following components:

- (1) Foundation Bed (3 points)
- (2) Structural Column (3 points)
- (3) Structural top beam (5 points)
- (4) Structural Wall – RWQ1 (WQ1) (1 point)

(5) Structural roof panel and openings (2 points)

(6) Staircase – including stair beams, columns, and planks (5 points)

Note: Civil defense components do not need to be considered.

3. Fill attribute details for the model (1 point): Participants must assign attribute information to the structural model they created (the one from Question 1). The required attributes are listed in the table below:

structure type	Animation Material (Surface (Animation))	Material
structural wall	Exp_Concrete_Detail_01.surf	Cast-in-place concrete – C40
Structural Beam	Exp_Concrete_Detail_01.surf	Cast-in-place concrete – C35
structural slab	Exp_Concrete_Detail_01.surf	Cast-in-place concrete – C35
Structural Column	Exp_Concrete_Detail_01.surf	Cast-in-place concrete – C40
Other Components	Custom, Transparency 50%	user-defined

4. Reinforcement detailing (11 points): Participants must develop reinforcement models for basement structural components based on provided professional construction drawings, including the following elements:

(1) CT2-1 and CT4-3 (3 points)

(2) Structural columns KZ2 and KZ3 (2 points)

(3) Structural Staircase – No.5 Staircase (including only the stair tread panels)
(3 points)

(4) D-G~H Sectional Structural Wall – WQ1 (3 points)

5. Drawing Preparation (5 points): Participants must create wall and column positioning drawings for the basement level based on structural construction drawings and exam requirements. The drawing specifications are as follows:

(1) The output drawings must include: an axis net (with dimension annotations and reference details), wall and column floor plans, annotations for each section

(elevation, name, dimensions, etc.), and drawing labels (with detailed dimensions specified).

(2) Save the output content in the layout and name the page layout "Underground Level 1 Wall Column Positioning Diagram".

(3) The output content must not have overlaps, intersections, unclear fonts, or exceed the layout boundaries.

(4) The output range covers construction drawings with annotations and reference structures.

6. Result Output: (2 points)

(1) The components must be assigned to different drawing files on the corresponding floors.

(2) The mapping file naming convention is "floor + component name", e.g., "B1 Structural Column" or "B2 Structural Stair Reinforcement".

(3) All names and attributes must be filled in strictly according to the question requirements.

(4) As required by the question, rename the NativeFormat files (those with extensions.inf and.zip) to "Comprehensive Building_Structure," upload them directly via the "Upload Folder" without creating a new folder, and copy them to the designated USB drive for the competition. Contestants must ensure only the backup-processed NativeFormat files are stored on the USB drive; failure to follow these requirements will result in a zero score for this section.

Module B: Architectural Modeling

Task Overview:

1. Use the ALLPLAN 2023 software to create a project file named "Comprehensive Building_Architecture", and complete the architectural BIM model and design outputs based on the architectural construction drawings and the examination requirements. **In case of conflicts between the drawing specifications and the examination requirements, the examination requirements shall prevail; if there are discrepancies between the drawing annotations and the actual dimensions, drawing annotations shall take precedence. Where not specified, software commands may be used at the user's discretion. All designated components must be assigned to corresponding drawing files for respective floors. (35 points)**

Detailed Steps:

1. Create the architectural model (18 points): Participants must draw professional models of the first and second floors based on the drawings. Before drawing, they must first link to the provided structural model. The architectural model includes the following components:

- (1) Building Wall (1 point)
- (2) Door – includes fire-resistant doors (2 points)
- (3) Windows – including combined windows, fixed windows, and blinds (3 points)
- (4) Stair building surface finish (1 point)
- (5) Interior decoration (2 points)

(6) Construction of exterior wall coating finishes (3 points)

(7) Railing, handrail (5 points)

2. Fill attribute properties for the model (6 points): Participants must fill material property information for the architectural model created in Question 1 according to the design specifications, excluding doors and windows; additionally, name attributes must be added to doors and windows.

3. Creating the Construction Site (2 points): Participants must name their drawing file "Construction Site" and complete the depiction of the terrain surrounding the comprehensive building, confined within the perimeter wall boundaries. During drafting, clearly delineate distinct areas such as roads and green spaces; freely select appropriate site features and trees from the provided examples, and strictly adhere to the drawings for layout. For areas not explicitly marked on the drawings, participants may propose reasonable arrangements without considering slope or elevation.

4. Create the wall (2 points): Participants must name their drawing file "Wall" and complete the construction of new wall units for sections B–C–D of the comprehensive building according to the drawings, with the creation area extending above ground level.

5. Drawing Preparation (5 points): Participants must create a second-floor floor plan based on the construction drawings and task requirements. The drawing specifications are as follows:

(1) The output drawings must include a second-floor plan, an axis net, and drawing labels (see the dimension diagram for details).

(2) Save the output content in the plan layout and name the page layout

"Second-Level Plan".

(3) Mark doors, windows, axis grids, and rooms; specify the names and areas of room models.

(4) Different indoor areas require different color blocks for filling.

(5) The output content must not have overlaps, intersections, unclear fonts, or exceed the layout boundaries.

6. Result Output (2 points):

(2) Building walls, interior finishes, exterior wall coating finishes, construction sites, and railings must be assigned to separate drawing files corresponding to each floor.

(3) The naming convention for drawing files is "floor number + component name", e.g., "F1 Building Wall".

(4) All names and attributes must be filled in strictly according to the question requirements.

(5) As required by the competition guidelines, rename the NativeFormat files (those with extensions.inf and.zip) to "**Comprehensive Building_Architecture**" upload them directly via the "Upload Folder" without creating a new folder, and copy them to the designated USB drive. Contestants must ensure only the backup-processed NativeFormat files are stored on the USB drive; failure to comply with these requirements will result in a zero score for this section.

Module C: Construction Organization Design

1. Based on the provided drawings, models, and test requirements, complete the construction organization design model and corresponding outputs (15 points).

1. Construction Schedule: Based on the provided existing construction schedule that requires further refinement, participants must carefully verify all data and optimize it for creating subsequent progress simulation animations.

Note: The result will be rounded to the nearest whole number.

2. Site layout design for the main structure phase: According to site layout specifications and provided drawings, arrange the project's main structures on-site, including construction entrances and exits, construction barriers, material storage areas, equipment placement, temporary facilities, access roads and pathways, as well as power and fire safety measures. Finally, save the designed construction site layout plan as a DWG file named "Main Structure Construction Site Layout Plan".

3. Site Layout: Based on the designed construction site layout plan for the main phase, configure the site model in BIMPOP software.

4.4D Progress Simulation: Create a 4D progress simulation animation in BIMPOP software, which must include all construction nodes and site models for the project's main phases. Associate components and site models according to the construction schedule.

4. Roaming Video: Add camera animations to visually demonstrate the effects in the 4D progress simulation.

5. Output Result: Save the project source files without exporting videos, and name the model file [Construction Organization Design] in the.bop5 format.

2、 Construction Process Simulation (10 points)

1、 Open the BIMPOP software, click Offline Version Login, and use the Open File feature to open the competition-provided BOP5 model file: [Basement Waterproof Construction – External Prevention, Internal Lining – Construction Process Simulation]. Complete the construction process simulation task according to the following requirements within two minutes.

2、 For process simulation, select [Section Animation] for basement waterproofing simulation; other animations may be used as needed. (If an animation conflict pop-up appears, choose [Yes]).

3、 Construction Process Requirements

(1) Selection and Application of Personnel and Machinery: During construction process simulation, appropriately integrate the following personnel and machinery tools into the workflow (available via search ID).

name	ID	name	ID	name	ID
Surveyor	1816	Measurer – Pole installer	1999	Strong laborers – digging soil	1951
Watering	17966	Hydraulic	17794	broom	1209

worker		compactor			
Excavator digging soil	15196	White lime coating	1483		

(2) Basement waterproofing construction – external protection and internal lining process: Surveying and layout → Excavation of the foundation pit → Compaction of bare soil → Site cleaning → Construction of retaining walls → Pouring of concrete subgrade → Installation of brick formwork membranes → Leveling of wall surfaces and floors with 20 mm thick cement mortar → Application of waterproof reinforcement layers at base edge joints → Installation of waterproof membranes → Application of isolation layer → Timely pouring of concrete protective layer → Pouring of waterproof concrete floor slabs and walls → Water curing

(3) Do not modify the component list of the given source file.

(4) Each step of the construction process must be accompanied by corresponding procedure nodes, whose text corresponds to the construction flow outlined in (2).

(5) Add camera animation to the timeline and set the camera perspective appropriately.

4、Result Output

Save the project source file without exporting the video, and name it [Basement Waterproof Construction-External Protection & Internal Lining_Construction Process Simulation] in.bop5 format.

Note: Please upload the following engineering source files—"Main

Construction Site Layout Diagram", "Basement Waterproof Structure: External Prevention and Internal Lining Construction Process Simulation," and "Construction Organization Design"—directly to the "Upload Folder" without creating any new folders, then copy them to the designated USB drive for the competition. Failure to comply with these requirements will result in a zero score for this module.

BRICS Skills Competition (BRICS Future Skills Challenge)