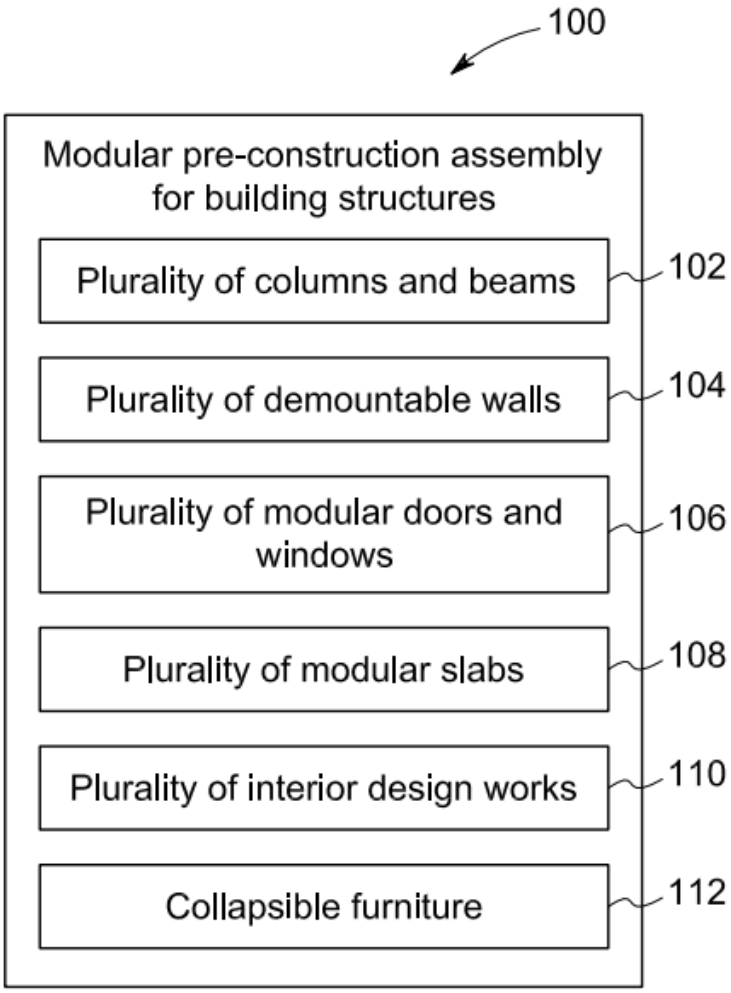

FIG. 1

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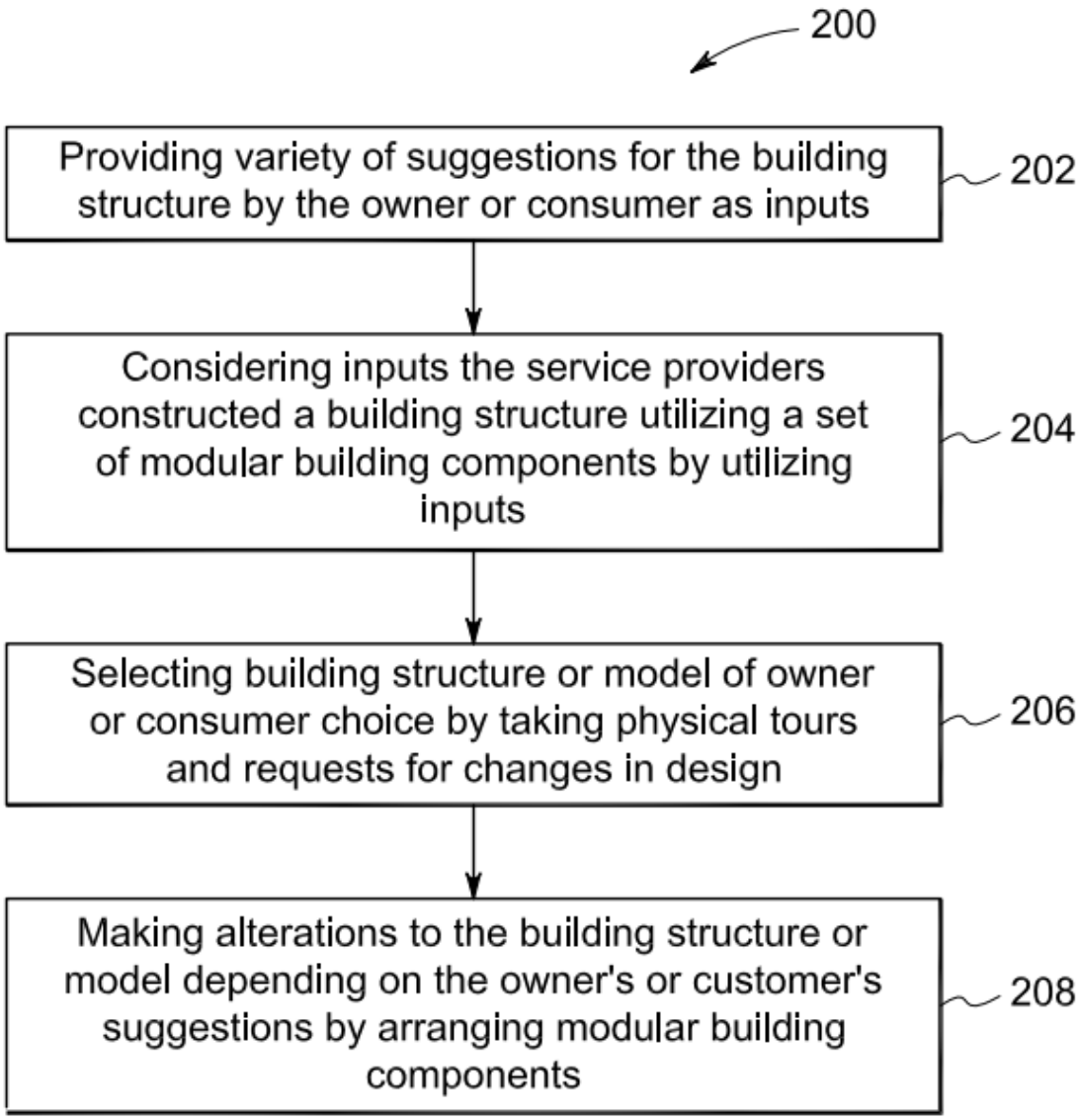

FIG. 2

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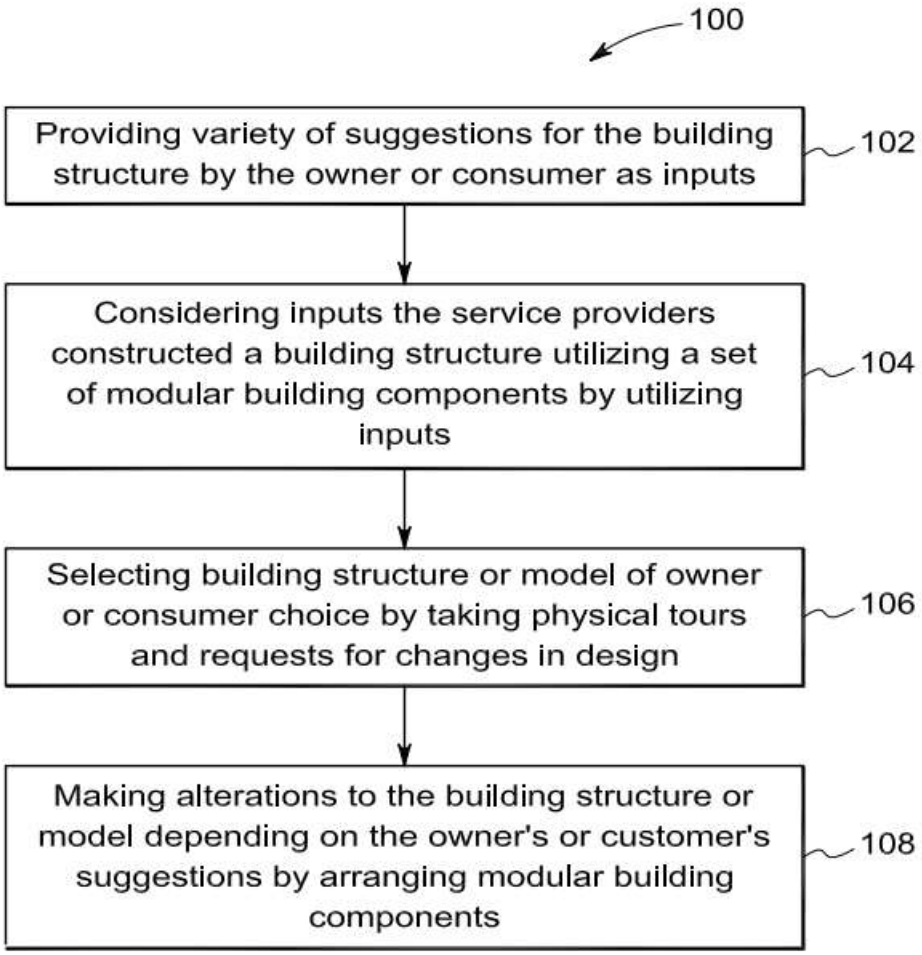

FIG. 1

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FORM 2

THE PATENT ACT, 1970

(39 of 1970)

&

The Patent Rules, 2003

COMPLETE SPECIFICATION

(See section 10 and rule 13)

1. TITLE OF THE INVENTION:

MODULAR PRE-CONSTRUCTION ASSEMBLY FOR PHYSICAL DEMONSTRATION OF BUILDING STRUCTURES AND ASSOCIATED INTERIORS

2. APPLICANT:

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Rangareddy District - 500089, Telangana, India,

3. PREAMBLE TO THE DESCRIPTION:

The following specification particularly describes the invention and the manner in which it is to be performed:

4. DESCRIPTION:

Field of the invention:

[0001] The present disclosure generally relates to the technical field of building design and in specific relates to a modular assembly of built forms that will be used for a physical demonstration of building interiors that provide physical experience to the user with interior designs and enables easy customization of designs based on the requirement.

Background of the invention:

[0002] A design process can vary significantly depending on the scope and complexity of the project. For example, interior design can be of a residential, industrial, commercial, recreational, civil, public, private, or other nature thereof. The construction process can involve distinct or overlapping processes, phases, or stages, such as designing, planning, scheduling, building, operation, and maintenance. These processes can occur in pre-construction, post-construction, and/or during construction phases.

[0003] Interiors design, like construction design, is typically performed manually. They have been limited to critical path method processes where the building form, materials, resources, and other constraints for individual tasks are modelled. However, the assignment of these tasks to locations within a construction project and coordination of the tasks are often performed manually. As a result, whenever changes are made to the design, an extensive amount of manual work must be done, which prevents changes from being readily modelled and tested.

[0004] Conventional home and industrial interior designs are commonly done from plans manually drawn by architects and designers. Conventional construction drawings are 2D, flat abstractions of things. Conventional construction documentation drawings assist design professionals in explicitly defining the limits of liability of the design professionals who draw them. However, during construction lack of knowledge on 2D drawings, one might make a mistake which leads to material wastage and wastage of time and effort.

[0005] In the last few decades, computer-aided drafting ("CAD") techniques started serve to make design and detailing of construction projects. These computer-aided drafting techniques are time-consuming processes that require a high level of interdisciplinary communication and management between architects, designers, and contractors. However, computer-aided design and construction processes lack of its physical nature, and real time experience.

[0006] Therefore, there is a need of a modular assembly of model houses and structures for the physical demonstration of interior designs. The building structures or models are physically seen and experienced in real time. Modular reconfigurable structures are required for pre-construction assembly that allows users to readily change the arrangement of walls or other structural components and systems of building structures prior to construction and updating in real-time. Owners must be able to take a physical walkthrough into the building structure or model or see how adjustments can be incorporated into the building's structural design. There is a need to enhance the perceptions and interactions of the consumer with the real world modular building structures or models.

Objectives of the invention:

[0007] The primary objective of the invention is to provide a modular pre-construction assembly for a demonstration of building structures that provide a physical experience to the user with construction designs and enable easy customization of designs based on the requirement.

[0008] Another objective of the invention is to provide real time physical experience of prototypes of a plan or design of a building and its interiors to the customers.

[0009] The other object of the invention is to provide modular construction models for houses or offices or other buildings that can be designed based on customer's or owner's requirements before the actual construction.

[0010] Yet another objective of the invention is to enhance perceptions and interactions of the consumer with the real world modular building structures.

[0011] Further objective of the invention is to provide potential problems with early plans that are discovered and changed before the structure is built.

[0012] Another objective of the invention is to provide the owners to take virtual walkthroughs in prototype buildings or see how changes will be incorporated into the design without throwing the job off track.

[0013] The other objective of the invention is to provide an easy way to change the layout of walls or other essential structural components and systems before construction and update them in real-time.

[0014] Yet another objective of the invention is to avoid unwanted budget or material wastage and to lower the chance for major rework once the construction of the building is underway.

Summary of the invention:

[0015] The present disclosure proposes a modular pre-construction assembly for the physical demonstration of building structures and its associated interiors. The following presents a simplified summary in order to provide a basic understanding of some aspects of the claimed subject matter. This summary is not an extensive overview. It is not intended to identify key/critical elements or to delineate the scope of the claimed subject matter. Its sole purpose is to present some concepts in a simplified form as a prelude to the more detailed description that is presented later.

[0016] In order to overcome the above deficiencies of the prior art, the present disclosure is to solve the technical problem to provide a modular pre-construction assembly for a physical demonstration of building structures that provide physical experience to the user with construction designs and enables easy customization of designs based on the requirement.

[0017] According to an aspect, the invention provides a pre-construction model with modular building components. The modular building components provide reconfigurable three

dimensional models to be generated with user-defined components and features. The user also selects the components and features from pre-defined templates or model structures to create a model of the final building structure of his/her choice. The modular components utilized for the assembly easily change the layout of walls or other essential structural components and systems before construction by accepting changes and update in real-time.

[0018] According to another aspect, the invention provides a pre-construction model with modular building components. The modular building components comprise plurality of modular construction elements such as telescopic columns and beams, plurality of demountable walls, plurality of modular doors and windows, and plurality of modular slabs and other plurality of modular components for a basic layout to create a reconfigurable and rearrangeable model of the final building structure such as houses or model flats. The assembly provides the user with a physical experience of the building structure which enables the user to choose and modify the arrangement of the building structure based on the requirement.

[0019] According to another aspect, the invention provides a method for utilizing pre-construction models for the selection of building structure designs with modular building components. First, the owner or consumer offers a variety of suggestions for the building structure as inputs. The inputs comprise structural plans or designs, dimensions of building structures, and other related information required for the construction of the building structure. Based on the input parameters, the service provider constructs a set of structures or models using a set of modular building components. The owner or consumer selects structures or models of his/her choice by taking physical tours of prototype buildings and requests changes in design whenever necessary. Finally, the service provider makes alterations to the prototype building structure depending on the owner's or customer's suggestions using the modular building components by arranging them accordingly.

[0020] Further, objects and advantages of the present invention will be apparent from a study of the following portion of the specification, the claims, and the attached drawings.

Detailed description of drawings:

[0021] The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate an embodiment of the invention, and, together with the description, explain the principles of the invention.

[0022] FIG. 1 illustrates an exemplary method for utilizing pre-construction models for the selection of building structure designs in accordance to an exemplary embodiment of the invention.

Detailed invention disclosure:

[0023] Various embodiments of the present invention will be described in reference to the accompanying drawings. Wherever possible, same or similar reference numerals are used in the drawings and the description to refer to the same or like parts or steps.

[0024] The present disclosure has been made with a view towards solving the problem with the prior art described above, and it is an object of the present invention to provide a modular pre-construction assembly for a physical demonstration of building structures that provide physical experience to the user with construction designs and enable easy customization of designs based on the requirement.

[0025] According to an exemplary embodiment of the invention provides a pre-construction model with modular building components. The modular building components provide reconfigurable three dimensional models to be generated with user-defined components and features. The user also selects the components and features from pre-defined templates or model structures to create a model of the final building structure of his/her choice. The modular components utilized for the assembly easily change the layout of walls or other essential structural components and systems before construction by accepting changes and update in real-time.

[0026] According to another exemplary embodiment of the invention, the modular building (100) components comprise plurality of telescopic columns and beams (102), plurality of

demountable walls (104), plurality of modular doors and windows (106), and plurality of modular slabs (108), plurality of interior design works (110), and collapsible furniture (112) other similar components. The plurality of telescopic columns and beams (102) are configured to support the building structure up to the required height and width. The telescopic columns and beams are extensible as per the required length.

[0027] The plurality of demountable walls (104) are configured to support roofs, floors, and ceilings of the required dimensions for the building structure. The demountable walls (104) are a supporting construction consisting of studs or joists, including linings and optional insulation. These walls are movable walls for architectural products used to construct enclosed environments.

[0028] The plurality of modular doors and windows (106) are configured to apt for the design of the demountable walls and comprises plurality of supporting hooks for easy installation. The modular doors and windows (106) are comprising plurality of flexible frames, wherein the frames are easily attachable or detachable by an attachment means as per requirement.

[0029] The plurality of modular slabs (108) are prefabricated to create flat surfaces in building structures. The modular slabs (108) are utilized for easy fitting to the plurality of telescopic columns and beams for roof and floor design. The flat surfaces comprise floors, roof decks, and ceilings.

[0030] Further, a plurality of interior design works (110) is attached to the plurality of modular slabs and the plurality of modular doors and windows. The plurality of interior design works are configured to enhance aesthetically view of the building structures. A wide variety of collapsible furniture (112) positioned in said building structures configured to decorate the interior space of said building structures. The collapsible furniture is positioned in the desired location based on the owner’s requirement.

[0031] According to another exemplary embodiment of the invention, FIG. 2 refers to an exemplary method (200) for utilizing pre-construction models for the selection of building structure designs. In step (202), the owner or consumer offers a variety of suggestions for the

building structure as inputs. The inputs comprise structural plans or designs, dimensions of building structures, and other related information required for the construction of the building structure. Based on the input parameters, the service provider constructs a set of structures or models using a set of modular building components at this step (204). In the next step (206), the owner or consumer selects structures or models of his/her choice by taking physical tours of prototype buildings and requests changes in design where ever necessary. Finally, in step (208), the service provider makes alterations to the prototype building structure depending on the owner's or customer's suggestions using the modular building components by arranging them accordingly.

[0032] According to another exemplary embodiment of the invention, the modular building components further comprise a plurality of interior design works and collapsible furniture to position in the prototype building for interior furnishing. The plurality of interior design works and collapsible furniture is being modified based on suggestions from the owner or the customer after the virtual walkthrough. The collapsible furniture comprises plurality of panels, plurality of braces, and other modular frames configured to construct and demolish the furniture based on the owner’s requirement. The plurality of interior design works and collapsible furniture can be modified as per requirement and position in the prototype building based on suggestions from the owner or the customer after the virtual walkthrough.

[0033] Numerous advantages of the present disclosure may be apparent from the discussion above. In accordance with the present disclosure, the modular pre-construction assembly for a physical demonstration of building structures provides a physical experience to the user with construction designs and enables easy customization of designs based on the requirement. The modular components are utilized as an easy way to change the layout of walls or other essential structural components and systems before construction and update in real-time.

[0034] The prototype models build utilizing modular components provide real time experienced models of a plan or design of a building to the customers. The modular construction models for houses or offices or other buildings can be designed based on the customer’s or owner‘s requirements before the actual construction. The pre-construction

models utilize to enhance perceptions and interactions with the real world modular building structures.

[0035] The customer or the owners take a physical walkthrough in prototype buildings or see how changes will be incorporated into the design without throwing the job off track. These prototype buildings avoid unwanted budget or material wastage and lower the chance for major rework once the construction of the building is underway.

[0036] According to another exemplary embodiment of the invention, a modular pre-construction assembly for a physical demonstration of building structures such as houses, offices and other similar building structures. The building structures comprise portable prefabricated interconnectable modular building units for easy installation for an onsite demonstration. The semi-finished modular units are transported from the factory site to the job site, where they are craned into place and secured to form the structure.

[0037] The materials utilized for demountable walls comprise either plastic or PVC or fiber or any lightweight materials to achieve easy installation and transport. The materials utilized for plurality of modular doors and windows comprise either uPVC or plastic or fiber or any lightweight materials.

[0038] It will readily be apparent that numerous modifications and alterations can be made to the processes described in the foregoing examples without departing from the principles underlying the invention, and all such modifications and alterations are intended to be embraced by this application.

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5. CLAIMS:

I / We Claim:

1. A modular pre-construction assembly for a physical demonstration of building structures and interiors, comprising:

plurality of columns and beams configured to support a building structure up to required height and width;

plurality of demountable walls coupled to said plurality of columns and beams and configured to support said building structures for enclosed environments;

plurality of modular doors and windows coupled to said plurality of demountable walls and configured to fit for design of said demountable walls and comprises plurality of supporting hooks for easy installation;

plurality of modular slabs prefabricated to create flat surfaces in said building structures configured to support as a roof, floor, and ceiling of required dimensions for said building structure;

plurality of interior design works attached to said plurality of modular slabs and said plurality of modular doors and windows and configured to enhance aesthetically view of said building structures; and

variety of collapsible furniture positioned in said building structures configured to decorate the interior space of said building structures wherein said collapsible furniture is positioned in desired location based on owners requirement,

whereby said aforementioned modular pre-construction assembly facilitates customers or owners to take a physical walkthrough in prototype buildings for a physical demonstration.

2. The modular pre-construction assembly for a physical demonstration of building structures as claimed in claim 1, wherein said plurality of columns and beams are configured with telescopic structures to enable said plurality of columns and beams to extend as per required length.

3. The modular pre-construction assembly for a physical demonstration of building structures as claimed in claim 1, wherein said plurality of demountable walls comprises plurality of studs or joists, including linings and optional insulation utilized to support said building structures for enclosed environments.

4. The modular pre-construction assembly for a physical demonstration of building structures as claimed in claim 1, wherein said plurality of modular doors and windows comprising plurality of flexible frames, wherein said plurality of flexible frames are easily attachable or detachable by an attachment means as per requirement to said demountable walls.

5. The modular pre-construction assembly for a physical demonstration of building structures as claimed in claim 1, wherein material of said plurality of demountable walls and plurality of modular doors and windows are selected from lightweight materials such as plastic or PVC or fiber and thereof to achieve easy installation.

6. A method for construction of modular building components, comprising:

providing plurality of inputs about a building plan and design by an owner or a customer to build a prototype building;

building said prototype building with modular building components based on said inputs from said owner or said customer;

allowing said owner or said customer to take a virtual walkthrough into said prototype building; and

modifying said prototype building based on suggestions from said owner or said customer after said virtual walkthrough,

7. The method for construction of modular building components as claimed in claim 6, wherein said input data comprises dimensions of said proposed or modified building plan and design, layout and thereof.

8. The method for construction of modular building components as claimed in claim 6, wherein said modular building components comprises plurality of columns and beams,

plurality of demountable walls, plurality of modular doors and windows, plurality of modular slabs and thereof.

9. The method for construction of modular building components as claimed in claim 6, wherein said modular building components comprises plurality of interior design works and collapsible furniture to position in said prototype building for interior furnishing.

10. The method for construction of modular building components as claimed in claim 9, wherein said plurality of interior design works and collapsible furniture is being modified as per requirement and position in said prototype building based on suggestions from said owner or said customer after said virtual walkthrough.

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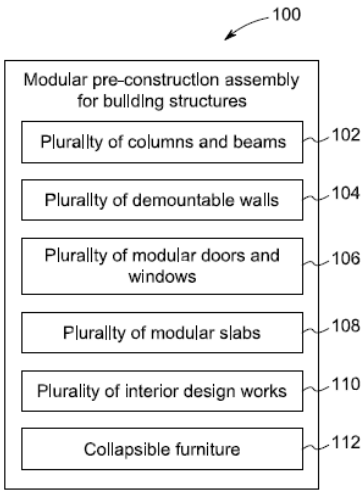
6. DATE AND SIGNATURE:

Dated this 10th day of September, 2022

7. ABSTRACT:

Title: Modular Pre-Construction Assembly for Physical Demonstration of Building Structures and Associated Interiors

The present disclosure proposes a modular pre-construction assembly (100) for a physical demonstration of building structures and associated Interiors. The modular building (100) components comprise plurality of columns and beams (102), plurality of demountable walls 104, plurality of modular doors and windows (106), plurality of modular slabs (108), plurality of interior design works (110), and collapsible furniture (112) other similar components. The modular pre-construction assembly (100) for a physical demonstration of building structures provides physical experience to the user with construction designs and enables easy customization of designs based on the requirement plurality of modular components for a basic layout to create a reconfigurable and rearrangeable model of the final building structure. The owner or customer takes virtual walkthroughs of prototype building models and changes the layout of walls or other essential structural components and systems before construction.



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