

780 CMR: MASSACHUSETTS AMENDMENTS TO THE *INTERNATIONAL BUILDING CODE 2021*

**780 CMR 51.00: MASSACHUSETTS RESIDENTIAL CODE  
(Amendments to the 2021 International Residential Code)**

**APPENDIX AA - SIZING AND CAPACITIES OF GAS PIPING**

**RESERVED**

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**APPENDIX AB - SIZING OF VENTING SYSTEMS SERVING APPLIANCES  
EQUIPPED WITH DRAFT HOODS, CATEGORY I APPLIANCES AND  
APPLIANCES LISTED FOR USE WITH TYPE B VENTS**

**RESERVED**

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**APPENDIX AC - EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT  
VENTING SYSTEMS**

**RESERVED**

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**APPENDIX AD - RECOMMENDED PROCEDURE FOR SAFETY INSPECTION OF AN  
EXISTING APPLIANCE INSTALLATION**

**RESERVED**

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**APPENDIX AE - MANUFACTURED HOUSING USED AS DWELLINGS**

**ADOPTED AS REVISED**

**Delete all of section AE102.2 Additions, alterations, or repairs and replace as follows:**

**AE102.2 Additions, alterations, or repairs.** *Additions*, alterations, and repairs made to a *manufactured home* shall conform to 780 CMR 51.00 and the specialized codes.

**SECTION AE103 DEFINITIONS**

**Add the following sentence to the end of AE103.1 General - MANUFACTURED HOME:**

**“A manufactured home (mobile home) is not a manufactured building. For manufactured buildings, see 780 CMR 110.R3.”**

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## **APPENDIX AF – RADON CONTROL METHODS**

### **ADOPTED AS REVISED**

#### **Revise and replace section AF101.1 General as follows:**

**AF101.1 General.** This appendix contains minimum requirements for new construction in the high radon potential counties as listed in Table AF101(1) regardless of the radon levels at the site. These requirements are intended to provide a passive means of resisting radon gas entry and prepare the dwelling for post-construction radon mitigation, if necessary. See Figure AF102. Active construction techniques, rather than passive techniques, shall be permitted to be used where approved.

Alternatively, the passive system requirements of ANSI/AARST Standard Designation #CCAH: *Reducing Radon in New Construction of One & Two Family Dwellings and Townhouses*, 2013 may be used for new construction in Zone 1, or approved equal system.

Irrespective of which approach is used, no testing is required as follows:

1. for the radon levels at the site prior to construction;
2. for the radon control system when completed; or
3. in the building after completion of the project.

Therefore, such testing shall not be a condition of issuing a certificate of occupancy.

### **SECTION AF102 - DEFINITIONS**

#### **Add the following definition to section AF102.1 General.**

**GAS-PERMEABLE LAYER.** A gas-permeable layer shall consist of one of the following:

1. A uniform layer of clean aggregate that is not less than four inches (102 mm) thick. The aggregate shall consist of material that will pass through a two-inch (51-mm) sieve and be retained by a 1/4-inch (6.4-mm) sieve.
2. A uniform layer of sand (native or fill) that is not less than four inches (102 mm) thick and that is overlain by a soil gas collection mat or soil gas matting installed in accordance with the manufacturer's instructions. The soil gas mat or matting shall be designed for this purpose and condition, and have the capacity to freely transport soil gases to the collection point from the most remote area.

#### **Revise and replace section AF103.3 Soil-gas-retarder as follows:**

**AF103.3 Soil-gas-retarder.** The soil in basements and enclosed crawl spaces shall be covered with a soil-gas-retarder. The soil-gas-retarder shall be lapped not less than 12 inches (305 mm) at joints and shall extend to foundation walls enclosing the basement or crawl space. The soil gas-retarder shall fit closely around any pipe, wire or other penetrations of the material. Punctures or tears in the material shall be sealed or covered with additional sheeting. The membrane shall extend upward six inches be sealed to the perimeter footing or wall with an ASTM C290 class 25 or higher sealant or equal.

**Revise and replace section AF103.4.4 Sumps as follows:**

**AF103.4.4 Sumps.** Sumps open to soil or serving as the termination point for sub-slab drain tile loops shall be covered with a gasketed or sealed lid. Sumps used as the suction point in a sub slab depressurization system shall have a lid designed to accommodate the vent pipe. Sumps used as a floor drain shall have a lid equipped with a trapped inlet. Drainage systems that lead outside the foundation walls shall be isolated or trapped so as not to short-circuit the depressurization system.

**Revise and replace section AF103.5.2 Soil-gas-retarder as follows:**

**AF103.5.2 Soil-gas-retarder.** A soil-gas-retarder shall be placed on top of the gas-permeable layer prior to casting the slab or placing the floor assembly. The soil-gas retarder shall cover the entire floor area with separate sections lapped not less than 12 inches (305 mm) and shall extend upward six inches and be sealed to the wall with an ASTM C290 class 25 or higher sealant or equal. The soil-gas-retarder shall fit closely around any pipe, wire, or other penetrations of the material. Punctures or tears in the material shall be sealed or covered. Under-slab insulation, if used, shall be placed on top of the sheeting.

**Add a new section AF103.6.1 “T” Fitting and Vent Pipe as follows:**

**AF103.6.1 “T” Fitting and Vent Pipe.** A “T” fitting shall be inserted beneath the soil-gas-retarder and be connected to a three-inch minimum vertical vent pipe. The vent pipe shall extend through the conditioned space of the dwelling and terminate not less than 12 inches (305 mm) above the roof in a location not less than ten feet (3,048 mm) away from any window or other opening into the conditioned spaces of the building that is less than two feet (610 mm) below the exhaust point. The horizontal legs of the “T” fitting shall connect to two five-foot long pieces of four-inch diameter perforated pipe laid horizontally in a 50 in<sup>2</sup> bed of gravel, filled with the same gravel as used in the gas-permeable layer.

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**APPENDIX AG - PIPING STANDARDS FOR VARIOUS APPLICATIONS**

**RESERVED**

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**APPENDIX AH - PATIO COVERS**

**ADOPT IN FULL**

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**APPENDIX AI – PRIVATE SEWAGE DISPOSAL**

**ADOPTED AS REVISED**

**Revise and replace section AI101.1 Scope as follows:**

**AI101.1 Scope.** Private sewage disposal systems shall conform to the requirements of *310 CMR 15.00: The State Environmental Code, Title 5: Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-Site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage, and any additional legal restrictions imposed by the municipal health department.*

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**APPENDIX AJ – EXISTING BUILDINGS AND STRUCTURES**

**ADOPTED AS REVISED**

**Revise and replace section AJ101.1 General as follows:**

**AJ101.1 General.** The purpose of APPENDIX J is to encourage the continued use or reuse of legally existing buildings and structures. The provisions of APPENDIX J are intended to permit work in existing buildings that is consistent with the purpose of 780 CMR 51.00: *Massachusetts Residential Code*. Compliance with these provisions shall be deemed to meet the requirements of 780 CMR 51.00: *Massachusetts Residential Code*.

Features of existing construction which do not meet the requirements of 780 CMR 51.00: *Massachusetts Residential Code* for new construction shall be presumed to have met the regulations, codes or laws in effect at the time of construction or alteration and, if so, shall be deemed to be existing nonconforming. Unless stated otherwise, nothing in APPENDIX J shall require the upgrading or replacement of any existing nonconforming feature or component of an existing building, provided the feature, component or system is in serviceable condition. Components or features of an existing building which, in the opinion of the building official, are dangerous, unsafe, damaged, significantly deteriorated or which otherwise present a threat to occupants or to public safety shall be remediated in accordance with 780 CMR 51.00: *Massachusetts Residential Code*.

Any new building system or portion thereof shall conform to 780 CMR 51.00: *Massachusetts Residential Code* for new construction to the fullest extent practicable. However, individual components of an existing building system may be repaired or replaced without requiring that system to comply fully with 780 CMR 51.00: *Massachusetts Residential Code* unless specifically required by APPENDIX J.

For compliance of work governed by other codes, including the specialized codes, see section R101.4.

**Revise and replace section AJ101.2 Classification of work as follows:**

**AJ101.2 Classification of work.** For purposes of this appendix, work in existing buildings shall be classified into the categories of *repair*, renovation, *alteration*, *addition*, and reconstruction. Specific requirements are established for each category of work in these provisions.

**Add new section AJ101.4 Newly constructed elements as follows:**

**AJ101.4 Newly constructed elements.** Newly constructed elements, components and systems shall comply with the requirements of this code.

**Delete and replace section AJ102.3 Smoke, Carbon Monoxide and Heat Protection as follows:**

**AJ102.3 Smoke, Carbon Monoxide and Heat Protection.** Smoke, carbon monoxide and heat protection shall be provided when required by this section and designed, located and installed in accordance with the provisions for new construction. See sections R314, R314.5, and R315.

**Add the following new sections - AJ102.3.1 Adding or Creating One or More Sleeping Rooms, AJ102.3.2 Complete Reconstruction, AJ102.3.3 Adding an Attached Garage, and AJ102.3.4 Energy Storage Systems as follows:**

**AJ102.3.1 Adding or Creating One or More Sleeping Rooms.**

**Single-family Dwelling.** When one or more sleeping rooms are added or created to an existing dwelling, the entire dwelling shall be provided with smoke, heat and carbon monoxide protection.

2. **Two-family Dwelling.** When one or more sleeping rooms are added or created to one dwelling unit that unit shall be provided with smoke, heat and carbon monoxide protection. When sleeping rooms are added or created to both units the entire building shall be provided with smoke, heat and carbon monoxide protection.
3. **Townhouses Dwelling Unit.** When one or more sleeping rooms are added or created to an existing dwelling unit, the entire unit shall be provided with smoke, heat, and carbon monoxide protection.

**AJ102.3.2 Complete Reconstruction.** If a dwelling or townhouse building undergoes reconstruction such that more than 50% of walls and ceilings are open to framing, then the entire existing building shall be provided with smoke, heat and carbon monoxide protection.

**AJ102.3.3 Adding an Attached Garage.** If a garage is created under or attached to an existing dwelling unit, heat detection shall be provided in the garage in accordance with R314.8 and carbon monoxide protection shall be provided throughout the building in accordance with R315.

***Add New Section to AJ102.3:***

***AJ102.3.4 Energy Storage Systems.*** *When an energy storage system (ESS) is installed in a building, the building shall be provided with smoke, carbon monoxide, and heat protection in accordance with R314 and R315.*

**AJ102.3.4.1 Energy Storage Systems.** When an energy storage system is installed, smoke, heat, and carbon monoxide detection shall be provided in accordance with the following:

Installation of an energy storage system within an attached garage or dwelling unit shall require a hard-wired powered smoke or heat detection device within the immediate vicinity of the energy storage system in accordance with R314.

**Add new section AJ102.7.1 Documentation of Compliance Alternatives as follows:**

**AJ102.7.1 Documentation of Compliance Alternatives.** The *building official* shall ensure that the BBRS is provided with information regarding any and all compliance alternatives accepted by the building official within two weeks of acceptance.

**Revise and replace section AJ102.9 Features exceeding code requirements as follows:**

**AJ102.9 Features exceeding code requirements.** Elements, components and systems of existing buildings with features that exceed the requirements of this code for new construction, and are not otherwise required as part of

*approved* alternative arrangements or deemed by the *building official* to be required to balance other building elements not complying with this code for new construction, shall not be prevented by these provisions from being modified as long as they remain in compliance with the applicable requirements for new construction and M.G.L. c.148 s.27A.

**Add new sections AJ102.10 Unlined Chimneys, AJ102.11 Latent Conditions, AJ102.12 Energy Efficiency, AJ102.13 Roofing and Reroofing, and AJ102.14 Accessibility for Persons with Disabilities as follows:**

**AJ102.10 Unlined Chimneys.** Where new HVAC appliances are connected to an unlined chimney, the chimney lining requirements of 248 CMR: *Board of State Examiners of Plumbers and Gas Fitters* or 527 CMR: *Board of Fire Prevention Regulations*, as applicable, and those of the appliance manufacturer, shall be satisfied. If the appliance is a solid fuel-burning appliance, the chimney shall be relined to satisfy requirements both of the code for new construction and those of the manufacturer, as applicable.

**AJ102.11 Latent Conditions.** When latent conditions are observed and which are determined by the licensed construction supervisor, the owner or the *building official* to be dangerous or unsafe, or when a component or system is determined to be unserviceable, said conditions shall be corrected in accordance with applicable provisions of 780 CMR 51.00: *Massachusetts Residential Code*. A building permit shall be obtained or the building permit shall be amended in accordance with the provisions of section R105 in order to reflect the necessary required work and the approval shall be obtained from the building official prior to commencement of the corrections.

**EXCEPTION:** If the public safety so warrants, corrective actions are permitted to be made prior to amending the building permit application, providing that the *building official* is notified in writing within 24 hours of actions taken pursuant to this exception. This exception shall not be construed as to authorize constructive approval nor set aside the requirements to amend the permit application, nor shall the authority of the *building official* to enforce 780 CMR 51.00: *Massachusetts Residential Code* be abridged. Such corrective actions shall be documented by the construction supervisor or the owner and submitted to the *building official* within 48 hours of the completion of the action under this exception. Such corrective work shall not be concealed until the *building official* has inspected and approved the work.

**AJ102.12 Energy Efficiency.** See section N1100.

**AJ102.13 Roofing and Reroofing.** See Chapter 9 of 780 CMR 51.00: *Massachusetts Residential Code* generally and section R907.

**AJ102.14 Accessibility for Persons with Disabilities.** Accessibility requirements shall be in accordance with 521 CMR.

**Revise and replace section AJ103.1 General as follows:**

**AJ103.1 General.** If a building permit is required at the request of the prospective permit applicant, the building official or his or her legal designee may meet with the prospective applicant to discuss plans for any proposed work under these provisions prior to the application for the permit. The purpose of this preliminary meeting is for the building official to gain an understanding of the prospective applicant's intentions for the proposed work, and to determine, together with the prospective applicant, the specific applicability of these provisions.

**Delete sections AJ107.1.2 Plumbing materials and supplies and AJ107.2 Water closets.**

**Revise and replace section AJ107.3 Electrical as follows:**

**AJ107.3 Electrical.** Repair or replacement of existing electrical wiring and *equipment* undergoing repair with like material shall be in accordance with 527 CMR 12.00.

**Delete section AJ107.3 Electrical - Exceptions #1, #2, and #3.**

**Add an Exception to AJ108.2 Door and window dimensions - as follows:**

**Exception:** Emergency escape and rescue openings shall comply with R310.

**Revise and replace section AJ102.4.3 Emergency Escape and Rescue Windows - as follows:**

**AJ102.4.3 Emergency Escape and Rescue Windows.** For one- and two-family dwellings and townhouses of no more than three stories in height, all emergency escape windows from sleeping rooms shall have a net clear opening of 3.3 ft<sup>2</sup> (0.307 m<sup>2</sup>). The minimum net clear opening shall be 20 inches by 24 inches (508 mm by 610 mm) in either direction except that windows in sleeping rooms of existing dwellings which do not conform to these requirements may be replaced without conforming to these dimensional requirements, provided that the windows do not significantly reduce the existing opening size.

**EXCEPTION:** Replacement windows utilized as emergency escape and rescue windows, other than double-hung windows, shall generally conform to the requirements of this section without conforming to the cited dimensional requirements, provided that such replacement windows do not significantly reduce the existing opening size.

**Add a new section AJ104.2 Structural - as follows:**

**AJ104.2 Structural.** Unreinforced masonry townhouse buildings shall have parapet bracing and wall anchors installed at the roofline whenever a reroofing permit is issued if required by 780 CMR 34.00: *Existing Structures*. Such parapet bracing and wall anchors shall be of an approved design. Where renovations may decrease the structural performance of the existing building, such proposed activities shall be evaluated by a registered design professional for adequacy, prior to such actual structural renovation.

**Revise and replace section AJ109.1 Newly Constructed Elements as follows:**

**AJ109.1 Newly Constructed Elements.** Additions, newly constructed elements, components and systems shall comply with the requirements of 780 CMR 51.00: *Massachusetts Residential Code*.

**EXCEPTIONS:**

1. Operable windows may be added without requiring compliance with the light and ventilation requirements of section R303.
2. Newly installed electrical equipment shall comply with the requirements of section AJ501.5.

**Revise and replace section AJ109.4 Structural as follows**

**AJ109.4 Structural.** The minimum design loads for the structure shall be the loads applicable at the time the building was constructed, provided that a dangerous condition is not created. Structural elements that are uncovered during the course of the alteration and that are found to be unsound or dangerous shall be made to comply with the applicable requirements of 780 CMR 51.00: *Massachusetts Residential Code*. Where alterations may decrease the structural performance of the existing building, such proposed activities shall be evaluated by a registered design professional for adequacy, prior to such actual structural alterations.

**Revise and replace section AJ109.5 as follows:**

**AJ109.5 Electrical equipment and wiring.** See 527 CMR 12.00.

**Delete subsections AJ109.5.1 through AJ109.5.3.5**

**Add a new section AJ110.5 Structural as follows:**

**AJ110.5 Structural.** Where reconstruction may decrease the structural performance of the existing building, such proposed activities shall be evaluated by a registered design professional for adequacy, prior to such actual structural reconstruction.

**Add a new section - SECTION AJ112 ADDITIONS and the following sub sections:**

**AJ112.1 Additions.** An *addition* to a building or structure shall comply with 780 CMR as adopted for new construction without requiring the *existing building* or structure to comply with any requirements of those codes or of these provisions, except as required by this code. Where an *addition* impacts the *existing building* or structure, that portion shall comply with this code.

**AJ112.2 Creation or extension of nonconformity.** An *addition* shall not create or extend any nonconformity in the *existing building* to which the *addition* is being made with regard to accessibility, structural strength, fire safety, means of egress or the capacity of mechanical, plumbing or electrical systems.

**AJ112.3 Other work.** Any *repair* or *alteration* work within an *existing building* to which an *addition* is being made shall comply with the applicable requirements for the work as classified.

**AJ112.4 Fire Protection.** Fire protection features shall comply with the code for new construction throughout the addition.

**AJ112.4.1 Smoke, Carbon Monoxide and Heat Protection.** Where the addition requires smoke, carbon monoxide, and/or heat detection in Sections R314, R314.5 or R315, the addition shall comply with the provisions for new construction.

**AJ112.4.1.1** Where the addition requires smoke, carbon monoxide, and/or heat detection in accordance with AJ102.3, the provisions shall apply throughout the building.

**AJ112.4.2 Automatic fire sprinkler system.** Where the addition creates a condition that would require the installation of a fire sprinkler system per Section R313, an automatic fire sprinkler system shall be installed throughout the addition.

**Add a new section AJ113 Historic Buildings as follows:**

**AJ113.1 Historic Buildings.** For historic building requirements, see 780 CMR 34.00: *Existing Building Code*.

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**APPENDIX AK - SOUND TRANSMISSION**

**ADOPTED IN FULL**

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**APPENDIX AL – PERMIT FEES**

**RESERVED**

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**APPENDIX AM - HOME DAY CARE—R-3 OCCUPANCY**

**RESERVED**

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**APPENDIX AN – VENTING METHODS**

**RESERVED**

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**APPENDIX AO - AUTOMATIC VEHICULAR GATES**

**ADOPT IN FULL**

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**APPENDIX AP - SIZING OF WATER PIPING SYSTEM**

**RESERVED**

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**APPENDIX AQ – TINY HOUSES**

**ADOPT AS REVISED**

**Add a new section AQ 107 MEANS OF EGRESS and subsection 107.1 Number of Means of Egress as follows:**

**SECTION AQ 107 MEANS OF EGRESS**

**107.1 Number of Means of Egress.** Only one egress door is required from Tiny Houses meeting the requirements of this Appendix. The egress door shall be side-hinged and shall provide a clear width of not less than 32 inches (813 mm) where measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). The clear height of the door opening shall be not less than 78 inches (1981 mm) in height measured from the top of the threshold to the bottom of the top stop.

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**APPENDIX AR - LIGHT STRAW-CLAY CONSTRUCTION**

**RESERVED**

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**APPENDIX AS - STRAWBALE CONSTRUCTION**

**ADOPT IN FULL**

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**APPENDIX AT - [RE] SOLAR-READY PROVISIONS—DETACHED ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES**

**ADOPT AS REVISED**

**Revise and replace AT101.1 (RB101.1) General section as follows:**

**AT101.1 (RB101.1) General.** These provisions shall be applicable for new construction, except additions.

**Revise and replace section AT103.1 (RB103.1) General as follows:**

**AT103.1 (RB103.1) General.** New detached one- and two-family dwellings, and multiple single-family dwellings (townhouses) with not less than 600 ft<sup>2</sup> (55.74 m<sup>2</sup>) of roof area oriented between 110° and 270° of true north shall comply with sections AU103.2 through AU103.8 (RB103.2 through RB103.8).

**EXCEPTIONS:**

1. New residential buildings with a permanently installed on-site renewable energy system.
2. A building with a solar-ready zone that is shaded for more than 70% of daylight hours annually.
3. Buildings and structures as designed and shown in construction documents that do not meet the conditions for a solar-ready zone area.

**Revise and replace section AT103.3 (RB103.3) Solar-Ready Zone Area as follows:**

**AT103.3 (RB103.3) Solar-Ready Zone Area.** The total solar-ready zone area shall consist of an area not less than 300 ft<sup>2</sup> (27.87 m<sup>2</sup>) exclusive of mandatory access or set back areas as required by 527 CMR. New multiple single-family dwellings (townhouses) three stories or less in height above grade plane and with a total floor area less than or equal to 2,000 ft<sup>2</sup> (185.8 m<sup>2</sup>) per dwelling shall have a solar-ready zone area of not less than 150 ft<sup>2</sup> (13.94 m<sup>2</sup>). The solar-ready zone shall be composed of areas not less than five feet (1,524 mm) in width and not less than 80 ft<sup>2</sup> (7.44 m<sup>2</sup>) exclusive of access or set back areas as required by 527 CMR.

**Revise and replace section AT103.4 as follows:**

**AT103.4 (RB103.4) Obstructions.** Solar-ready zones shall consist of an area free from obstructions, including but not limited to vents, chimneys, and roof-mounted equipment.

**NOTE:** Nothing in AT103.4 (RB103.4) shall require any construction documents to be redesigned or reconfigured so as to create a solar-ready zone area.

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**APPENDIX AU - COB CONSTRUCTION (MONOLITHIC ADOBE)**

**ADOPT IN FULL**

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**APPENDIX AV – BOARD OF APPEALS**

**RESERVED**

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**APPENDIX AW - 3D-PRINTED BUILDING CONSTRUCTION**

**ADOPT IN FULL**