BMTPC PACS
PERFORMANCE APPRAISAL CERTIFICATION

Agrocrete Blocks and Bricks

User should check the validity of the Certificate by contacting Member Secretary, BMBA at BMTPC or the Holder of this Certificate

Name and Address of Certificate Holder:	Performance Appraisal Certificate
M/s Greenjams Buildtech Private Limited 401, 10-5-14/C, Mantis, Factor Layout, Ramnagar, Vishakapatnam, Andhra Pradesh, India-530002 Website: www.greenjams.org	PAC No.: **1075-P/2026** Issue No.: **01** Date of Issue: **05/09/2026**

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bmtpc

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Govt. of India
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Performance Appraisal Certificate

FOR

AGROCRETE BLOCKS & BRICKS

Issued to

M/S GREENJAMS BUILDTECH PRIVATE LIMITED

STATUS OF PAC No.1075-P/2026

S. No.	Issue No.	Date of Issue	Date of Renewal	Amendment		Valid upto (Date)	Remarks	Signature of Authorized Signatory
				No.	Date			
1	01	05.09.2026	04.09.2028			04.09.2028		

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PART 1: CERTIFICATION

1.1 Certificate Holder: **M/s Greenjams Buildtech Private Limited**
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Ramnagar, Vishakapatnam,
Andhra Pradesh, India-530002,
Email:tarun@greenjams.org
/hello@greenjams.org
Website: www.greenjams.org
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1.2 Description of the Product

1.2.1 Name of the Product- Agrocrete Blocks and Bricks

1.2.2 Brand Name- Agrocrete

1.2.3 Brief Description:

The Agrocrete Solid bricks and Hollow Blocks are masonry units manufactured using crop residues, industrial by-products such as fly ash and alkali-activated-slag-based binders, reclaimed excavation soil, and stone crushing residue. These blocks are durable, thermally insulating, and are suitable for both load-bearing and non-load-bearing construction applications. The solid Agrocrete bricks are in regular red clay brick sizes (230mm x 100mm x 75 mm) while the hollow blocks have 400mm x 150 mm (length x height) with the block thickness/ width varying from 100mm to 200 mm in 50 mm intervals.

Salient features of the product include;

a) Manufactured using agricultural residues and industrial by-products.
b) Provides thermal comfort and energy efficient.
c) Suitable for both internal and external wall applications, subject to design requirements
d) Available as Solid bricks and Hollow blocks for application in buildings.

1.2.4 Types of Products

The Agrocrete product comprises of following two types;

a) Hollow Blocks

The hollow blocks comprise of three standard sizes, namely 400 mm x 100 mm x 150 mm, 400 mm x 150mm x 150 mm, and 400mm x 200mm x 150 mm. The standard sizes and dimensional details of the hollow blocks, including the dimensions, tolerance, shape, percentage of openings (voids), and the thickness of face shells and webs, are given in Table 1. A schematic representation of the hollow block is shown in **Fig 1–3**.

Table 1: Dimensional Details of Agrocrete Hollow Blocks

S. No.	Agrocrete Hollow block (length × breadth × height), mm	Volume of block (m^3)	Volume of voids (m^3)	Percentage voids (%)	Web Thickness (mm)	Face Shell Thickness (mm)
1	400 x 100 x 150	0.0060	0.0010	16.67	30	38
2	400 x 150 x 150	0.0090	0.0018	20.00	30	38
3	400 x 200 x150	0.0120	0.0038	31.67	30	38

i) Block Size (400 mm x 100 mm x 150 mm)

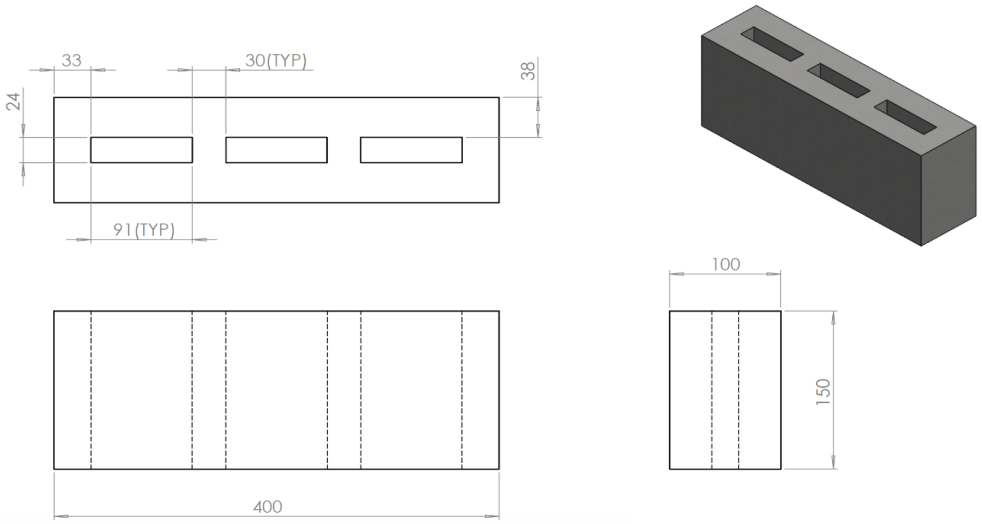

Fig 1: Schematic of Hollow Block (400 mm x 100 mm x 150 mm)

ii) Block Size (400 mm x 150 mm x 150 mm)

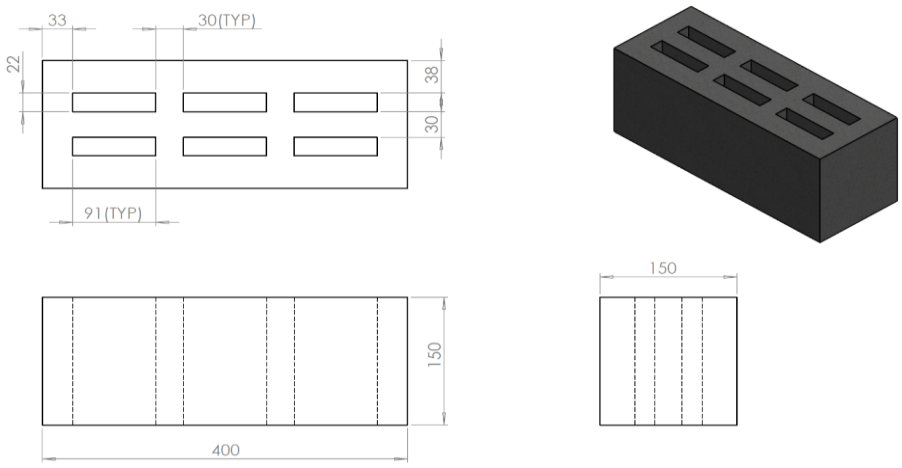

Fig 2: Schematic of Hollow Block (400 mmx 150 mm x 150 mm)

iii) Block Size (400 mm x 200 mm x 150 mm)

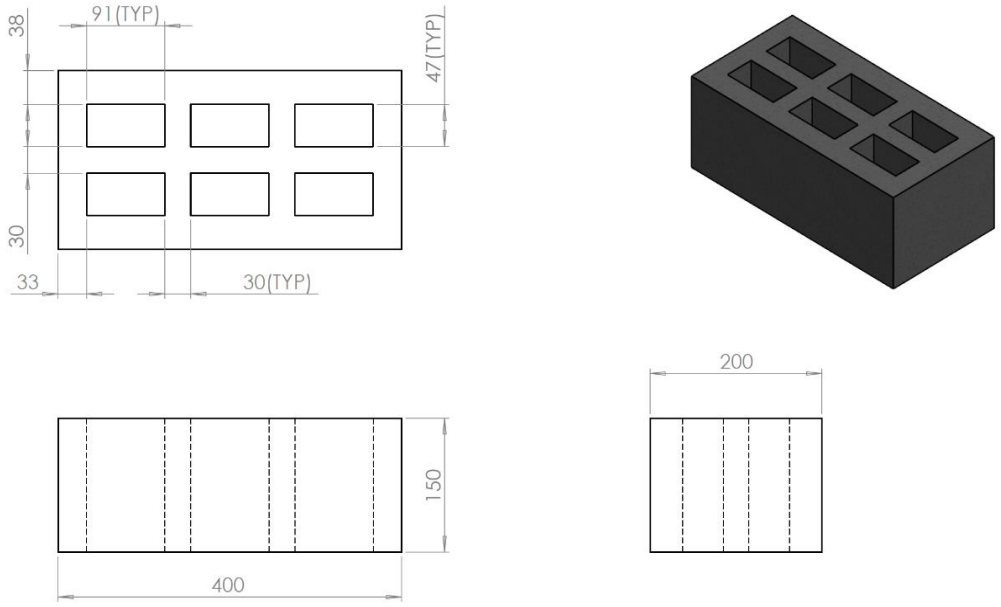

Fig 3: Schematic of Hollow Block (400 mm x 200 mm x 150 mm)

b) Solid Blocks

The solid blocks shall comprise standard sizes of 230 mm x 100 mm X 75 mm .The dimensional details of the solid blocks are in size of 230 mm × 100 mm× 75 mm and a schematic representation is shown in **Fig- 4**.

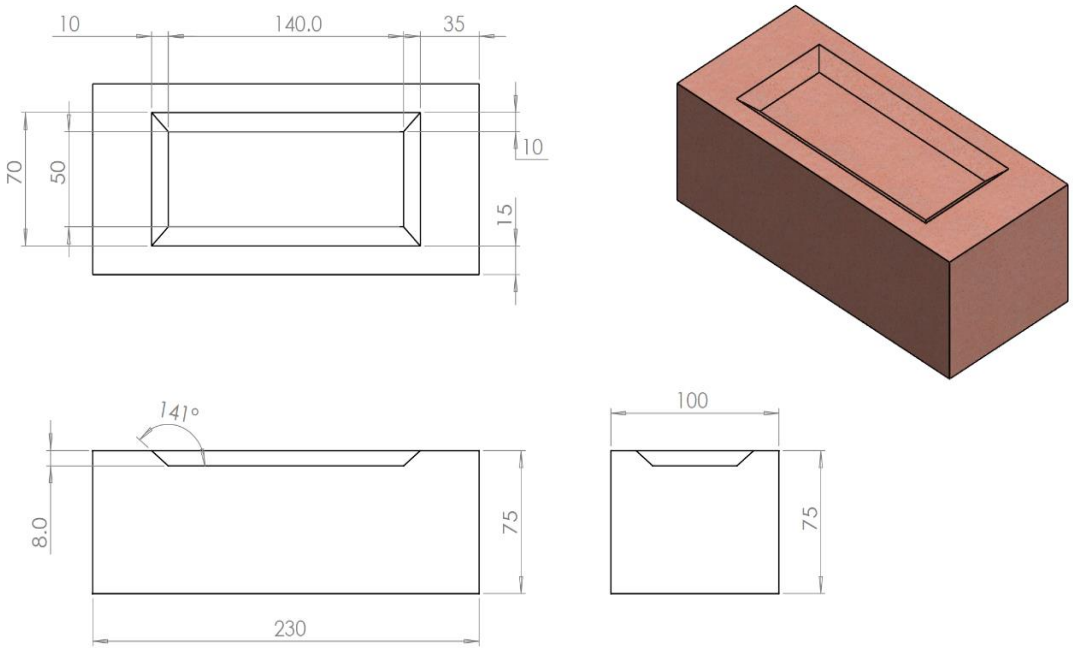

Fig 4: Schematic of Solid Block (230 mm x 100 mmx 75 mm)

1.2.5 Dimensional Tolerance

The dimensional tolerance shall be ± 2 mm in length and width for both solid and hollow blocks, ± 3 mm in height for solid blocks, and ± 4 mm in height for hollow blocks.

1.3 Assessment

1.3.1 Scope of Assessment

The scope of the assessment included the suitability of Agrocrete Hollow Blocks & Solid Blocks for use in load-bearing and low-rise building construction applications as an alternative to conventional Clay/Fly Ash bricks and AAC blocks.

1.3.2 Basis of Assessment

a) Test report for Physico-Mechanical Properties of Agrocrete Hollow Blocks & solid blocks conducted by CSIR – Central Building Research Institute covering Compressive Strength, Density and Dimensional Tolerance, Water Absorption, Drying Shrinkage, and Thermal Conductivity.
b) Fire resistance test on Agrocrete® hollow block masonry by National Institute of Engineering, Building Fire Research Centre (BFRC), Mysore.
c) An Environmental Product Declaration (EPD) for Agrocrete Blocks by Monk Spaces Architectures, New Delhi, in accordance with ISO 14025 and EN 15804+A2.
d) Physical Inspection & assessment of manufacturing facility at Ramnagar, Vishakapatnam and completed project sites at Shankarpalle, Hyderabad and Thanam village, Parwada Manadl, Vishakhapatnam.

1.4 Uses

1.4.1 Uses of the Product

Agrocrete blocks are carbon-negative bio-concrete masonry units designed for use in various types of construction. The Agrocrete block is suitable for the following applications:

a) Load-bearing walls (single- or multi-storey structures, depending on structural design)
b) Non-load-bearing partition walls
c) External and internal walling systems
d) Foundations and plinth walls
e) Exposed masonry and fair-faced finishes
f) Boundary walls and compound walls
g) Infill walls in reinforced concrete frames

h) Sustainable construction projects such as green buildings, eco-resorts, climate-responsive structures, and passive houses; and
i) Pre-fabricated or modular construction, where block-based assemblies are used.

1.4.2 Special Aspects of Use/ Limitations

Agrocrete blocks are engineered to perform competitively with conventional masonry units, the following use /limitations are;

a) *Seismic Zones*: Agrocrete blocks may be used in seismic zones II and III with conventional design and construction practices. In zones IV and V, their use in structural walls shall be supported by appropriate seismic detailing, structural engineering validation, and incorporation of horizontal and vertical reinforcement as per IS 4326 and IS 13828.
b) *Water Saturation/ High Rainfall Regions*: In coastal and high-rainfall geographies, Agrocrete blocks shall be protected using suitable plastering or waterproof finishes. The material is resistant to capillary action and does not disintegrate under moisture, but surface treatment is required for long-term exposure.
c) *High-Temperature Exposure*: Agrocrete is non-combustible and fire-resistant. However, direct exposure to prolonged temperatures above 300°C may result in microstructural degradation. Fire-rated assemblies must be used where required.
d) *High Salinity/Acidic Soils*: For use in subgrade/foundation applications in chemically aggressive environments, additional protective coatings/damp-proof courses are advised, subject to site-specific soil testing.

1.5 Conditions of Certification

1.5.1 General Condition

A number of Load bearing structures have been constructed using Agrocrete blocks and bricks at different locations successfully. However, to facilitate a designer, the prism strength test on Agrocrete block masonry for evaluation of its structural behaviour and load-bearing performance has been recommended and is being arranged. Based on the findings of the tests, the PAC will be reviewed for any modifications, as required.

As reported about 40 buildings constructed for last 2 to 5 years using Agrocrete blocks/bricks are plastered. However, considering as a new material from durability point of view, the agency has been advised to conduct Pull-off tests to establish the bond strength between the Agrocrete block surface and the plaster. The test results shall be submitted for review and for necessary modification in PAC as required.

1.5.2 Technical Conditions

a) The blocks shall be machine-made and manufactured using sustainable/agro-based materials. They shall be properly cured, dimensionally accurate, and free from visible defect.
b) Manufacturer's Test Certificates (MTC) and technical datasheets shall be made available to the stakeholder prior to use at site.
c) The supplier/manufacturer shall provide relevant test certificates for each batch supplied.
d) Blocks exposed to rain, moisture, or physical deterioration during storage shall not be supplied and permitted for use in works.
e) For external wall applications in regions experiencing heavy rainfall, a suitable protective sealant or external protective coating is recommended.

1.5.3 Handling of User Complaints

The Certificate holder shall provide quick redressal to Consumer/user complaints which proved reasonable & genuine and within the conditions of warranty provided by it to customer/purchaser.

As part of PACS Certification, it shall maintain data on such complaints with a view to assess the complaint satisfaction and suitable preventive measures taken.

1.5.4 Quality Assurance

The Certificate Holder shall implement & maintain a quality assurance system in accordance with the Scheme of Quality Assurance Plan (QAP) as per **Annex-1.**

1.6 Certification

On the basis of assessment given in Part 3 of this Certificate & subject to the conditions of Certification, use & limitations set out in this Certificate and if selected, installed & maintained as set out in Part 1 & 2 of this Certificate, the Agrocrete Blocks & Bricks covered by this Certificate are fit for use set out in the Scope of Assessment.

PART 2: CERTIFICATE HOLDER'S TECHNICAL SPECIFICATIONS

2.1 General

The PAC holder shall manufacture Agrocrete Blocks and Bricks in accordance with the requirements specified in the relevant Standards (*See* Part 5). In addition it shall follow the Company standards specifying requirements of these sections for various materials used in the manufacturing of the product.

2.2 Specifications for the Product

The manufacturer shall only use the raw materials supplied with the relevant documents/ prescribed in Quality Assurance Plan. The raw materials shall be subjected to agreed controls and tests by the manufacturer before acceptance.

2.2.1 Technical specification for Raw materials

Table 2: Technical Specification for Raw Materials

S. No	Raw material/ component	Source	Specification	Standard
1.	Paddy straw	Agricultural fields	Dry density 130 – 150 kg/m^3	NA
2.	Fly ash	NTPC-Simhadri	Grade II, Class F	IS 3812 : 2013
3.	Grounded Slags	Third-party grinding units	Fineness: 367 – 369 m^2/kg Glass content: 95.8%	NA
4.	Reclaimed excavation soil	Construction sites	Soil types: Alluvial, Laterite, Red soil, Sandy loams and Illitic. Clay content: 10 % - 40%.	IS 2720
5.	Stone crushing residue	Stone crushing units	<6.3mm particle size	IS 383 : 2016
6.	Alkali salts	Commercial manufacturers	Confidential, not specified	NA

Note: NA: Not applicable; IS: Indian Standard

2.2.2 Performance requirements of the product

Table 3: Performance Requirements of the Product

S. No.	Performance Characteristics	Test Method	Limit/ Unit
1.	Compressive Strength (Solid Blocks)	IS 2185 (Part 1): 2005	≥ 10 MPa
2.	Compressive Strength (Hollow Blocks)		≥ 5 MPa
3.	Density (Solid Blocks)		1400 kg/m³ –1500 kg/m³
4.	Density (Hollow Blocks)		800 kg/m³ –1000 kg/m³
5.	Water Absorption	IS 3495 (Part 2)	10–12% (solid); 10–15% (hollow)
6.	Drying Shrinkage	IS 2185 (Part 1): 2005	0.045%
7.	Thermal Conductivity	IS/ISO 6946 / ASTM C177	≤ 0.42 W/m·K (typical 0.4185 at 26°C)
8.	Embodied Carbon	ISO 14067 / LCA methods	-0.14 kg CO_2/kg (carbon-negative)

2.3 Manufacturing Process (Production Line) & Machinery

1) Manufacturing Process

a) Agrocrete shall be manufactured through a batch production process, where the raw materials are measured, mixed, and formed in discrete lots. The flowchart and machinery layout for manufacturing of Agrocrete blocks are shown in **Fig-5**

b) Each batch is independently loaded, mixed, and cast, ensuring consistency in quality and traceability. The details of the batch size and per day production capacity are as follows;

c) Mix ratio
   i) Paddy straw -3 parts
   ii) Reclaimed excavation soil- 2 parts
   iii) Stone residue -1 part
   iv) fly ash -1 part
   v) Binder 1 part

d) Capacity
   i) Batch size: 600 kg
   ii) Blocks per batch: 44 blocks
   iii) Batch cycle time: 25 min

iv) Production capacity: 1,200 blocks per day (based on 8 h shift)

The manufacturing process per batch in five steps, are given below;

a. *Raw material preparation*: Crop residues (e.g., straw, bagasse, sawdust) are shredded using a straw chopper. Moisture conditioning shall be carried out in retention tanks, followed by dewatering using a screw press**.**
b. *Batch mixing*: The pre-processed biomass, fillers, and binder get weighed and added into a pan mixer, forming a uniform mix.
c. *Material transfer*: The homogeneous mix shall be transferred via conveyor belts to a main hopper, from where a feeder system loads it into the mould cavity.
d. *Compaction and Moulding*: A hydraulic block making machine compresses the mix in the mould under high pressure, shaping the Agrocrete blocks.
e. *Block extraction*: The formed blocks shall be ejected onto a roller table for collection and air curing.

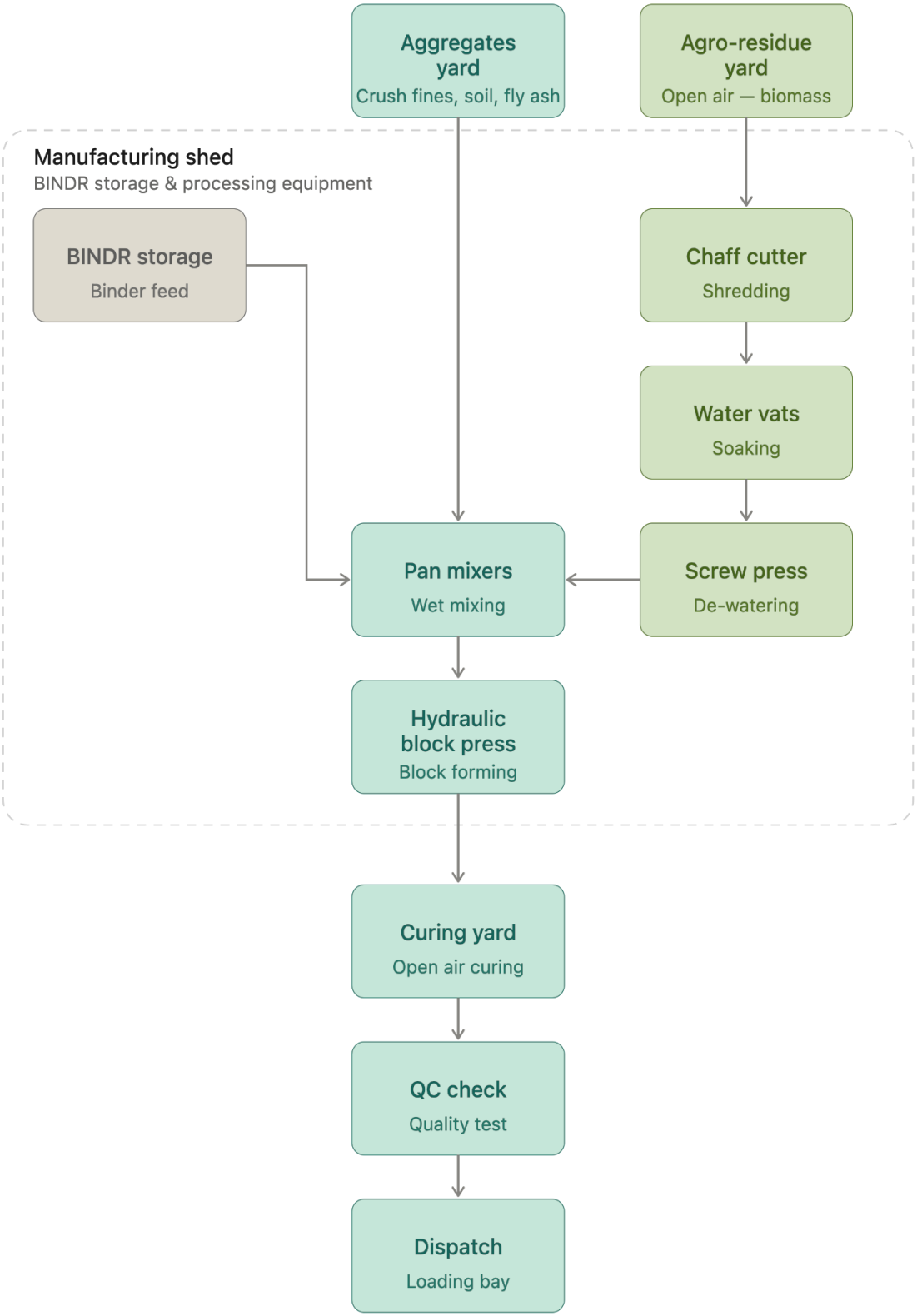
Aggregates yard
Crush fines, soil, fly ash
Agro-residue yard
Open air — biomass
Manufacturing shed
BINDR storage & processing equipment
BINDR storage
Binder feed
Chaff cutter
Shredding
Water vats
Soaking
Pan mixers
Wet mixing
Screw press
De-watering
Hydraulic block press
Block forming
Curing yard
Open air curing
QC check
Quality test
Dispatch
Loading bay

Fig 5: Manufacturing Process Flow Chart

2) Machinery and Equipment

The details of the machinery and equipment utilized are given below;

Table 4: Details of Machinery and Equipment

S. No.	Machine and ID no.	Capacity	No. of machines
1	Pan mixer	600 kg	03
2	Hydraulic block making machine	2000 blocks per shift	01
3	Conveyor belt	3000 kg per hour	01
4	Automatic Pallet Conveyor & Pallets	NA	01
5	De-watering Screw Press	100 kg per hour	01

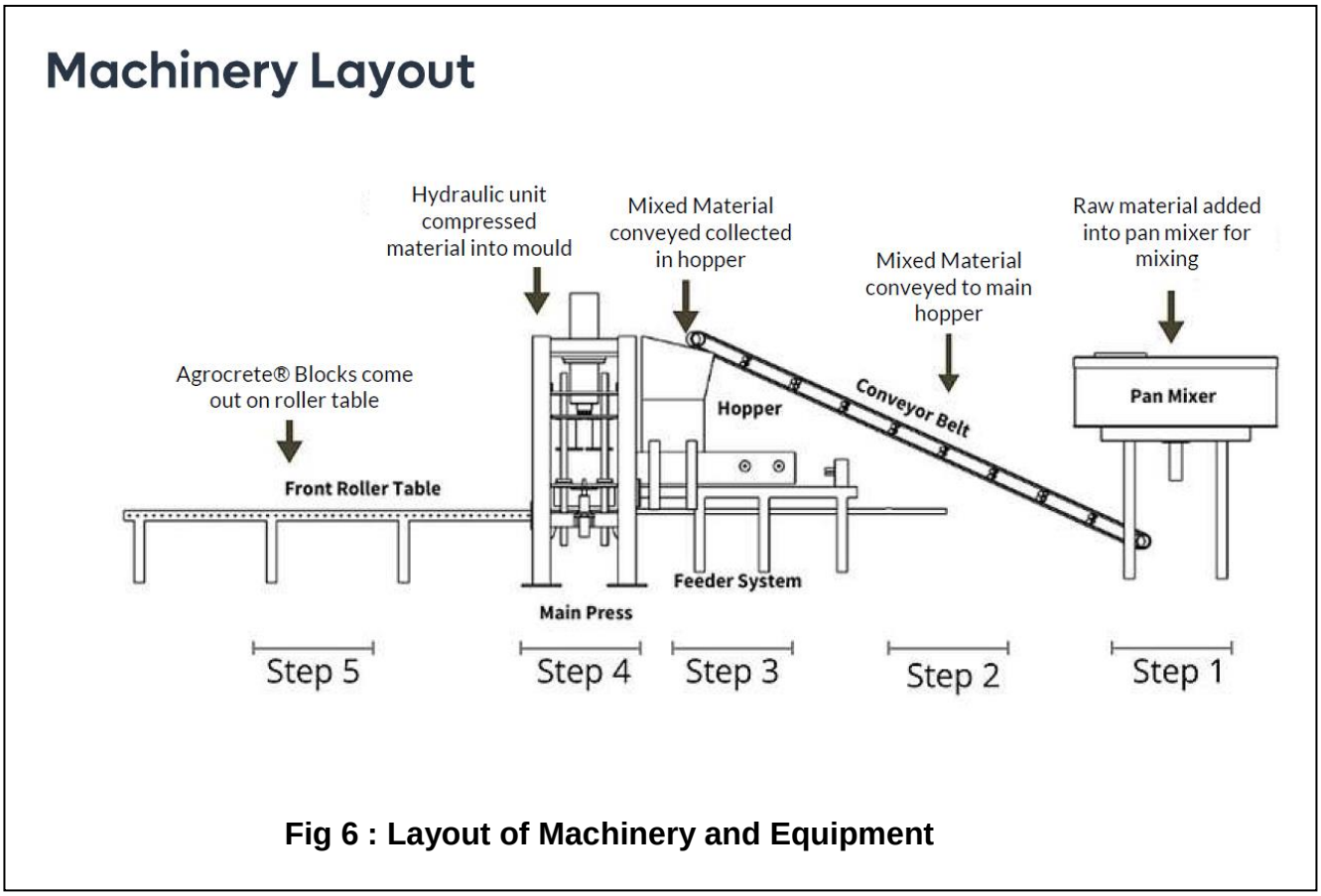

Fig 6 : Layout of Machinery and Equipment

2.4 Inspections & Testing

Inspections & testing shall be done at appropriate stages of manufacturing process. The inspected products shall be stored & packed to ensure that no damage occurs during transportation, as per the industrial norms. As part of quality assurance, regular in-process inspections shall be carried out by the trained personnel of the PAC holder.

2.5 Storage & Handling at the user end before installation

Handling

a) *Transportation*: Handle Agrocrete hollow blocks with care during transportation to avoid chipping or breaking.
b) *Lifting*: Use appropriate living equipments for large quantities. When handled manually, lift blocks from the middle to distribute weight evenly.
c) *Unloading*: Unload blocks gently to prevent damage. Avoid dropping from heights.

Storage

a) *Location*: Store blocks in a dry, shaded area to protect them from direct sunlight and rain.
b) *Stacking*: Stack blocks no more than 1.5 m high on a level surface. Ensure that stacks are stable and secure.
c) *Covering*: Use tarps or plastic sheeting to cover the blocks if they are stored outdoors for extended periods.

2.6 Maintenance

The recommended maintenance procedures shall include the following;

a) *Routine Maintenance*: Visual inspection of wall finishes once every 12 months for any cracks, water seepage, or fungal growth. Prompt repair of any surface deterioration is recommended using compatible mortars or repair compounds, such as epoxy mortars, silicone/ siloxane water repellents, polymer modified cement and soil mortars.
b) *Surface Finish Maintenance*: In plastered or painted applications, reapplication of surface finishes may be required every 5-7 years depending on climatic exposure and type of coating used.
c) *Moisture Management*: Ensure water is directed away from wall bases and coping is intact in exposed masonry. Recheck sealants around embedded services periodically.

2.7 Skills /Training needed for installation

The masonry workers shall be familiar with conventional block masonry practices and shall be adequately trained in the handling, storage, cutting, and

laying of Agrocrete Blocks. The blocks shall be laid using approved mortar/adhesive in accordance with the manufacturer's recommendations and good construction practices. Necessary guidance on workmanship, jointing, curing, and safety measures shall be provided by the manufacturer/supplier prior to commencement of work. The Installation process details in the form of various Steps are attached at **Annex-2**.

2.8 Guarantee/Warrantee provided by the PAC Holder

The agency shall provide warranty of 10 yr for the product, subject to the terms and conditions specified by the manufacturer. A brochure giving relevant details of the product shall be made available to the client.

2.9 Services provided by the PAC holder to the customer

The PAC holder shall provide pre-sale advisory regarding the product. Customer/user may obtain from the PAC holder details of the advice that may be provided to him.

The PAC Holder shall provide after-sales support to the client, including technical guidance on handling, storage, installation, maintenance, and repair of Agrocrete Blocks as mutually agreed between the buyer and the PAC Holder. The PAC Holder shall address technical queries within a reasonable timeframe and shall furnish the applicable warranty, guarantee, and after-sales service terms to the client.

2.10 Responsibility

a) The PAC Holder shall be responsible for supplying Agrocrete Blocks conforming to the approved specifications and quality requirements.
b) Quality of masonry work, including handling, storage, laying, curing, and workmanship at site, shall be the responsibility of the client.
c) Maintenance and upkeep of the completed masonry work shall be the responsibility of the client in accordance with the manufacturer's recommendations and good engineering practices.

PART 3: BASIS OF ASSESSMENT AND BRIEF DESCRIPTION OF ASSESSMENT PROCEDURE

3.1 Assessment

3.1.1 Technical Assessment

The technical assessment has been done as per provisions of the Standards listed in Part 5 of this Certificate.

3.2 Tests Performed

Assessment of the suitability of the product is based on the various tests carried out by Hollow Blocks conducted by CSIR – Central Building Research Institute, Roorkee

3.2.1 Assessment carried out:

a) *Physical & Mechanical Properties of Hollow & Solid Brick*
Sample details : 400 mm x150 mm x 200 mm
Test performed : CSIR –CBRI, Roorkee
Date of Test : June, 2022

Table 5: Physical & Mechanical Properties of Hollow & Solid Blocks

S. No	Parameter	Standard	Unit	Result	
				Solid	Hollow
1.	Dry Density	IS 2185 Part 1	kg/m^3	1489.0	808.19
2.	Water Absorption	IS 3495 (Part 2)	%	13.0	13.6
3.	Drying Shrinkage	IS 2185 part 1	%	0.045	
4.	Compressive Strength		MPa	14.04	5.14
5.	Thermal Conductivity (@26 deg.cel)	ISO 6946	W/m/K	0.4185	

b) Fire Resistance Test for Agrocrete Hollow Block

Sample Description

Block Dimensions : 400mm × 200mm × 150mm and 200 mm x 200 mm x150 mm
Block Type : Hollow Bio-Concrete Blocks
Specimen Type : Free-standing wall element
Wall Dimensions : 200 mm
Test Performed : National Institute of Engineering, Building Fire Research Centre (BFRC), Mysore
Date of Test : Feb 02, 2026

Table 6: Fire Resistance Test – Performance Criteria

S.No.	Performance Criteria	Result
1.	Integrity (E)	240 min
2.	Insulation (I)	240 min

3.3 EPD (Environmental Product Declaration) Certifications by the Agency

As per the Environmental Product Declaration (EPD) for Agrocrete Blocks, manufactured by Green Jams Buildtech Pvt. Ltd., Visakhapatnam, Andhra Pradesh, prepared by Monk Spaces, New Delhi, the embodied carbon (Global Warming Potential - GWP) is reported as -0.14 kg CO_2e per kg of product.

3.4 Inspection of Manufacturing Unit of the Agency

The manufacturing unit located at Ramnagar, Vishakhapatnam was inspected. The manufacturing unit has all the necessary infrastructure and space to produce the Agrocrete hollow blocks and bricks as per the procedure and specifications mentioned in this PAC.

3.5 Project list for supply/usage of Agrocrete Hollow Block & Solid Bricks

The manufacturer has supplied blocks /bricks for different projects across the country as per the details given below;

Table7: Major Project List for Supply/Usage of Agrocrete Hollow Block & Solid Bricks

S. No.	Project Location	Quantity (Nos.)	Building Type	Completion Date
1.	Ahmedabad, Gujarat	180	RCC Frame	Aug-2021
2.	Faridabad, Haryana	500		Oct-2021
3.	Dehradun, Uttarakhand	500		Mar-2022
4.	NCR, Delhi	1650		Mar-2022
5.	Kapurthala, Punjab	25917		Aug-2022
6.	Sandila, Uttar Pradesh	41583		Jul-2023
7.	Rishikesh, Uttarakhand	11250		Mar-2023
8.	Manpura Macheri, Rajasthan	1200		Aug-2022
9.	Vizianagaram, Andhra Pradesh	5904		Jan-2023
10.	Bobbili, Andhra Pradesh	5900		Apr-2023
11.	Nachinola, Goa	35152	Load bearing Masonry	May-2025
12.	Howrah, West Bengal	1200	RCC Frame	Jan-2024
13.	Rajahmundry, Andhra Pradesh	1800		Feb-2024

S. No.	Project Location	Quantity (Nos.)	Building Type	Completion Date
14.	Bangalore, Karnataka	2300		Apr-2024
15.	Hyderabad, Telangana	9600		May-2024
16.	Visakhapatnam, Andhra Pradesh	2120	Load bearing Masonry	Jan-2025
17.	Vizianagaram, Andhra Pradesh	2468	Steel frame	Jan-2025
18.	Eluru, Andhra Pradesh	23341	RCC Frame	Apr-2026
19.	Bangalore, Karnataka	8139		Oct-2025
20.	Chennai, Tamil Nadu	3910		Nov-2025
21.	Satpura, Madhya Pradesh	56492	Load bearing Masonry	Mar-2026
22.	Sangareddy, Telangana	2000	Steel frame	Feb-2026
23.	Berhampur, Odisha	1000	Load bearing Masonry	Mar-2026
24.	Bangalore, Karnataka	7100	RCC Frame	Apr-2026
25.	Mysore, Karnataka	6655	Confined Masonry	May-2026
26.	Hyderabad, Telangana	19500	Load bearing Masonry	Jul-2026

PART 4: STANDARD CONDITIONS

This certificate holder shall satisfy the following conditions:

1 The certificate holder shall continue to have the product reviewed by BMBA.

2 The product shall be continued to be manufactured according to and in compliance with the manufacturing specifications and quality assurance measures which applied at the time of issue or revalidation of this certificate. The Scheme of Quality Assurance separately approved shall be followed.

3 The quality of the product shall be maintained by the certificate holder.

4 The product user should install, use and maintain the product in accordance with the provisions in this Certificate.

5 This certificate does not cover uses of the product outside the scope of this appraisal.

6 The product is appraised against performance provisions contained in the standards listed in Part-V. Provisions of any subsequent revisions or provisions introduced after the date of the certificate do not apply.

7 Where reference is made in this Certificate to any Act of Parliament of India, Rules and Regulations made there under, statutes, specifications, codes of practice, standards etc. of the Bureau of Indian Standards or any other national standards body and the International Organization for Standardization (ISO), manufacturer's company standards, instruction/manual etc., it shall be construed as reference to such publications in the form in which they were in force on the date of grant of this Certificate (and indicated in Part V to this Certificate)

8 The certificate holder agrees to inform BMBA of their distributors / licensees whenever appointed by him and agrees to provide to BMBA a six monthly updated list thereof.

9 The certificate holder agrees to provide to BMBA feedback on the complaints received, the redressal provided, and the time taken to provide redressal on complaint to complaint basis as soon as redressal is provided. BMBA agrees to provide the certificate holder the user feedback received by it, if any.

10 If at any time during the validity period, PACH is unable to fulfil the conditions in his PAC, he should on his own initiative suspend using the PAC and notify Chairman, TAC the date from which he has suspended its use, the reason for suspension and the period by which he will be able to resume. He shall not resume without the prior permission of BMBA. He shall also inform, simultaneously, his agents, licensees, distributors, institutional, government, public sector buyers, other buyers and all those whom he has informed about his holding the PAC. He shall also inform all those who buy his product(s) during the period of suspension. He shall provide to BMBA at the earliest the list of who have been so informed by him.

11 In granting this Certificate, BMBA takes no position as to:

(a) The presence or absence of patent or similar rights relating to the product;

(b) The legal right of the Certificate holder to market install or maintain the product;

(c) The nature of individual installations of the product, including methods of workmanship.

12 BMTPC and the Board of Agreement of BMTPC (BMBA) take no position relating to the holder of the Performance Appraisal Certificate (PACH) and the users of the Performance Appraisal Certificate (PAC) respecting the patent rights / copy rights asserted relating to the product / system / design / method of installation etc. covered by this PAC. Considerations relating to patent / copy rights are beyond the scope of the Performance Appraisal Certification Scheme (PACS) under which this PAC has been issued. PACH and users of this PAC are expressly advised that determination of the Claim / validity of any such patent rights / copy rights and the risk of infringement of such rights are entirely the responsibility of PACH on the one hand and that of the users on the other.

13 It should be noted that any recommendations relating to the safe use of the product which are contained or referred to in this Certificate are the minimum standards required to be met with when the product is installed, used and maintained. They do not purport in any way to restate or cover all the requirements of related Acts such as the Factory Act, or of any other statutory or Common Law duties of care, or of any duty of care which exist at the date of this Certificate or in the future, nor is conformity with the provisions of this Certificate to be taken as satisfying the requirements of related Acts.

14 In granting this Certificate, BMTPC and BMBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the use of this product.

15 The certificate holder indemnifies BMBA, its officers and officials involved in this assessment against any consequences of actions taken in good faith including contents of this certificate. The responsibility fully rests with the certificate holder and user of the product.

16 The responsibility for conformity to conditions specified in this PAC lies with the manufacturer who is granted this PAC. The Board (BMBA) will only consider requests for modification or withdrawal of the PAC.

17 The PAC holder shall not use this certificate for legal defence in cases against him or for legal claims he may make from others.

Place: New Delhi
Date of issue:05/09/2026

Chairman TAC & for and on behalf of Member Secretary, BMBA

PART 5: LIST OF APPLICABLE STANDARDS & CODE

Table 8: List of Applicable Standards & Codes

IS 2185 (Part 1):2005	Concrete Masonry Units - Specification (Part 1- Hollow And Solid Concrete Blocks)
IS 1725: 1982 (Reaff. 2002)	Specification For Soil Based Blocks Used In General Building Construction
IS 2720 (Part 1): 1983 (Reaff. 2006)	Methods Of Test For Soils (Part 1 Preparation Of Dry Soil Samples For Various Tests)
IS 383 : 2016	Coarse and Fine Aggregate for Concrete
IS 3495 (Parts 1–4): 1992 (Reaff. 2002)	Methods Of Tests Of Burnt Clay Building Bricks, (Part 1- Determination of Compressive Strength, Part 2- Determination of Water Absorption, Part 3- Determination of Efflorescence, Part 4- Determination of Warpage)
IS 5454:1978 (Reaff. 2010)	Indian Standard Methods For Sampling Of Clay Building Bricks
IS 1077:1992 (Reaff. 2007)	Common Burnt Clay Building Bricks - Specification
IS 1124:1974) (Reaff. 2003)	Method Of Test For Determination Of Water Absorption, Apparent Specific Gravity And Porosity Of Natural Building Stones
IS 3812 (Parts 1-2):2013	Pulverized Fuel Ash – Specification (Part 1- For Use As Pozzolana In Cement, Cement Mortar And Concrete, Part 2 For Use As Admixture In Cement Mortar And Concrete)
ASTM C62	Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale)
ASTM C140/C140M	Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
ASTM C90	Standard Specification for Loadbearing Concrete Masonry Units
AS/NZS 4456 (Parts 1–16)	Masonry units, segmental pavers and flags - Methods of test
EN 771-3:2011+A1	Specification for masonry units - Aggregate concrete masonry units (Dense and lightweight aggregates)

CERTIFICATION

In the opinion of Building Materials & Technology Promotion Council's Board of Agreement (BMBA), **Agrocrete Blocks & Bricks** is satisfactory if used as set out above in the text of the Certificate. This Certificate **PAC No. 1075-P/2026** is awarded to **M/s Greenjams Buildtech Private Limited, Vishakapatnam, Andhra Pradesh.**

The period of validity of this Certificate is for a period of two year i.e. from 05/09/2026 to 04/09/2028 as shown on Page 1 of this PAC. This Certificate consists of pages 1 to 31.

Chairman, TAC
& Member Secretary, BMBA
Building Materials and Technology Promotion Council
Ministry of Housing and Urban Affairs, Govt. of India
Core 5A, 1st Floor, India Habitat Centre
Lodhi Road, New Delhi-110003

Embossing Seal Of BMBA

On behalf of BMTPC Board of Agreement Chairman, Technical Assessment Committee (TAC) of BMBA & Member Secretary, BMTPC Board of Agreement (BMBA) Under Ministry of Housing and Urban Affairs, Government of India

Place: New Delhi, India

Date: 05/09/2026

PART 6: LIST OF ABBREVIATIONS

BMBA	Board of Agreement of BMTPC
BMTPC	Building Materials and Technology Promotion Council
CPWD	Central Public Works Department
ED	Executive Director of BMTPC
IO	Inspecting Officer
MS	Member Secretary of BMBA
PAC	Performance Appraisal Certificate
PACH	PAC Holder
PACS	Performance Appraisal Certification Scheme
SQA	Scheme of Quality Assurance
TAC	Technical Assessment Committee (of BMBA)

PERFORMANCE APPRAISAL CERTIFICATION SCHEME - A BRIEF

Building Materials & Technology Promotion Council (BMTPC) was set up by the Government of India as a body under the Ministry of Housing & Urban Poverty Alleviation to serve as an apex body to provide inter-disciplinary platform to promote development and use of innovative building materials and technologies laying special emphasis on sustainable growth, environmental friendliness and protection, use of industrial, agricultural, mining and mineral wastes, cost saving, energy saving etc. without diminishing needs of safety, durability and comfort to the occupants of buildings using newly developed materials and technologies.

During the year's government, public and private sector organizations independently or under the aegis of BMTPC have developed several new materials and technologies. With liberalization of the economy several such materials and technologies are being imported.

However, benefits of such developments have not been realized in full measure as understandably the ultimate users are reluctant to put them to full use for want of information and data to enable them to make informed choice.

In order to help the user in this regard and derive the envisaged social and economic benefits the Ministry of Housing &Urban Poverty Alleviation has instituted a scheme called Performance Appraisal Certification Scheme (PACS) under which a Performance Appraisal Certificate (PAC) is issued covering new materials and technologies. PAC provides after due investigation, tests and assessments, amongst other things information to the user to make informed choice.

To make the PACS transparent and authentic it is administered through a Technical Assessment Committee (TAC) and the BMTPC Board of Agreement (BMBA) in which scientific, technological, academic, professional organizations and industry interests are represented.

The Government of India has vested the authority for the operation of the Scheme with BMTPC through Gazette Notification No. 1-16011/5/99 H-II in the Gazette of India No.49 dated 4th December, 1999.

Builders and construction agencies in the Government, public and private sectors can help serve the economic, development and environmental causes for which the people and Government stand committed by giving preference to materials and technologies which have earned Performance Appraisal Certificates.

Further information on PACS can be obtained from the website: www.bmtpc.org.

Annex-1
(Refer Cl.1.5.4)

Quality Assurance/Quality Control

A-1 Quality Assurance/Quality Control In Manufacture

A-1.1 Quality Control / Quality Assurance Procedures

GreenJams maintains a structured Quality Control (QC) and Quality Assurance (QA) system throughout the manufacturing process of Agrocrete blocks to ensure consistency, performance, and compliance with applicable standards. The following points indicate/ show the sampling strategies and control points, quality parameters monitored, strategic methods and tools used and production management.

A-1.1.1 Sampling strategy and control points

Table 9: Sampling Strategy and Control Points

S.No.	Stage	Sampling Point	Parameters Checked	Frequency
1)	Raw Material Procurement	On delivery at site	Moisture content, particle size, impurities	Each batch
2)	Pre-processing	After chopping / drying	Uniformity of particle size and dryness	Every 500 kg
3)	Mixing	Post-batching in pan mixer	Workability, homogeneity of mix	Every batch
4)	Moulding	During pressing	Weight, shape, compaction level	Random 1 in 100 blocks
5)	Curing / Drying	After 24–72 hours	Cracks, efflorescence, visual defects	Daily inspection
6)	Final Product	Post-drying	Compressive strength, dimensions, density, water absorption	3 samples per 1000 blocks

A-1.1.2 Key Quality Parameters Monitored;

a) Compressive Strength, as per Indian Standard 3495 – Part 1.
b) Water absorption capacity, as per Indian Standard 3495 – Part 2.

c) Dimensions & Tolerances, following Indian Standard 2185 – Part 1.
d) Density and Dry Weight
e) Surface Finish and Visual Appearance

A-1.1.3 Statistical Methods and Tools

a) Control charts to monitor process stability for compressive strength and dimensional accuracy.
b) Trend analysis on monthly QC reports to identify deviations and initiate corrective actions.
c) Batch-wise traceability using batch numbers stamped or recorded on pallets.

A-1.1.4 Non-conforming Product Management

a) Identification: Non-conforming blocks are segregated during visual or physical inspection.
b) Disposition:
    i. Minor defects: Recycled in sub-grade applications or internal non-structural works.
    ii. Major defects: Crushed and reused as filler material in subsequent mixes or disposed of as inert, non-hazardous waste.
c) Records of rejected batches and reasons are maintained for root-cause analysis.

A-1.1.5 List of Quality Assurance Documents Maintained

a) Raw Material Inspection Logbook
b) Batch Mix Design and Production Register
c) In-process Quality Control Checklists
d) Final Product Test Report Formats
e) Compressive Strength Test Records
f) Water Absorption and Dimension Test Records
g) Daily Production and Quality Summary Report
h) Non-Conformity Reports and Corrective Action Logs
i) Internal Audit Reports
j) Customer Feedback / Site Performance Logs

A-1.1.6 List of Indian Standards (IS) and International/ Industry Standards Used

a) IS 2185 (Part 1): 2005 – Concrete masonry units – Hollow and solid blocks
b) IS 3495 (Parts 1 to 4): 1992 – Methods of testing burnt clay building bricks (adapted for block testing)
c) IS 3809:1979 – Fire resistance test for structures
d) IS 1077:1992 – Dimensions and tolerances (used for reference)

e) IS 1725:1982 – Specification for soil-based blocks (used for comparative benchmarking)
f) IS 2386 – Methods of test for aggregates (for filler materials)
g) ISO 6946 – Building components and elements – Thermal resistance and transmittance
h) ASTM C90 – Standard specification for load bearing concrete masonry units (for benchmarking)

A-1.2 Quality Assurance in Installation / Erection

a) Agrocrete blocks are sold as construction material and GreenJams does not undertake or supervise the installation or masonry work directly. The construction and erection of walls using Agrocrete blocks are executed by independent contractors or client-appointed masons.
b) As such, formal quality assurance procedures during installation are outside the operational scope of GreenJams. However, in selected projects, especially pilot or institutional collaborations, GreenJams may offer
c) General guidelines for good masonry practices, including recommendations for joint thickness, reinforcement detailing, and mortar compatibility.
d) Training sessions or technical briefings for project teams upon request.

Note: The long-term performance of Agrocrete is dependent on the correct implementation of these practices. Responsibility for quality assurance during installation rests with the executing contractor and supervising civil engineers on site.

Annex -2
(Refer Cl.2.8)

A-2 DESIGN, INSTALLATION PROCEDURES AND RELATED DRAWINGS

A-2.1 Key Data Design Parameters for Agrocrete

a) Load-bearing requirements: Depending on whether Agrocrete is used for walls, partitions, or insulation, design parameters for strength and stiffness vary.
b) Climatic adaptability: Agrocrete's performance under local climatic conditions (humidity, temperature fluctuations) must be considered.
c) Compatibility with other building materials: Interaction with mortar, plaster, or reinforcement materials should be evaluated.

A-2.2 Codes/guides for Installation including Special Precautions

a) Handling and Storage
   i. Always handle Agrocrete hollow blocks carefully during transportation to prevent chipping or breaking.
   ii. Store blocks in a dry, shaded area, away from excess moisture and direct sunlight to maintain integrity.
   iii. Cover blocks stored outdoors with tarps or plastic sheets.
b) Site Preparation
   i. Prepare and level the site properly before starting block installation.
   ii. Ensure the area is clear of debris and suitable for laying blocks.
   iii. Clean floor surface thoroughly, free of debris, formwork pieces, and tapes.
   iv. Mark lines accurately following architectural drawings; verify with 3-4-5 diagonal check.
   v. Ensure embedded electrical conduits in RCC members are clean using GI wire passage.
   vi. Hack RCC members at masonry joints for good bonding.
c) Installation Process – chiseling for services
   i. Use an angle grinder or hand tools to chisel the surface of blockwork, creating niches for electrical and plumbing conduits or sleeves.
   ii. This step shall be done accurately to avoid damaging the blocks.
d) Installing Conduits
   i. Place pipes and sleeves securely into the niches created by chiselling.
   ii. All conduits should be properly aligned per the latest MEP (Mechanical, Electrical, and Plumbing) plans.
e) Reinforcement (when needed, for additional strengthening or long spans)
   i. Position vertical reinforcement bars within block cavities.
   ii. Fill cavities with M10 concrete mixed with 10mm coarse aggregates.

iii. For additional strength, introduce horizontal reinforcement at specified intervals within the mortar joints.

f) Curing
   i. After 24 hours, cover the installed surface with damp burlap.
   ii. Keep the surface moist and protected from direct sunlight for 7 days to ensure proper curing and to prevent rapid drying and cracking.

g) Special Precautions
   i. For walls that will be exposed to moisture, apply a waterproofing sealer to prevent water penetration.
   ii. Use gypsum plaster for a smooth finish on internal walls.
   iii. Regularly check alignment during installation to avoid misalignment issues.

h) Troubleshooting and Maintenance
   i. Address common issues such as cracking, misalignment, and water penetration promptly.
   ii. Schedule regular maintenance to ensure long-term wall integrity.

i) Mortar and Block Laying
   i. Use specified mortar mixes: 1:4 cement to single-washed M-sand for joints, 1:3 rich mortar for RCC interfaces.
   ii. Apply cement slurry on RCC surfaces where blocks are laid.
   iii. Lay the first course with rich mortar and avoid filling block cavities with mortar.
   iv. Check level and plumb continuously and correct alignment immediately.

j) Electrical and Plumbing Installation:
   i. Create niches for conduits using angle grinder or chisels; install and secure conduits and junction boxes with silicone adhesive.
   ii. Cover conduits and niches with rich plaster mortar (1:3 ratio).

k) Curing and Protection
   i. Curing necessary for mortar-based blockwork; initially keep walls damp.
   ii. Protect curing walls from rapid drying and direct sunlight by covering with damp burlap.

l) Waterproofing and Finishing:
   i. Apply acrylic cement modifier-based waterproofing sealer on external or moisture-exposed walls.
   ii. Use a two-coat application (horizontal then vertical) of sealer on damp plaster surfaces.
   iii. For internal walls, apply a single sealer coat before gypsum plaster for a smooth finish.

m) Safety Precautions:
   i. Use proper PPE: gloves, helmets, safety glasses.
   ii. Maintain site safety with clear access and signage.

n) Maintenance:
   i. Regularly inspect walls for damage.

ii. Address cracks, water seepage, or plaster issues promptly to maintain durability.

A-2.3 Drawings for Installation/Construction

a) Typical construction drawings include wall layouts for load-bearing solid blocks (suitable up to G+ 1 structure) and non-load-bearing hollow blocks for partitions and insulation.
b) Details cover jointing methods, block alignment, reinforcement placement if any, and finishing plaster layers using BINDR mortar.
c) The design allows for easy routing of concealed service lines without chasing, as the blocks' cavity structure accommodates electrical and plumbing conduits.
d) Green Jams shall provides technical support and installation manuals to franchisees and construction partners to ensure proper assembly and quality control, on request.

A-2.4 *Special precautions in installation/construction/assembly*

a) Careful Handling:
   i. Avoid excessive mechanical impact during nailing or fixing as the blocks, while strong, have different mechanical behavior than fired bricks.
b) Proper Storage and Protection:
   i. Store blocks in dry, shaded areas to protect from direct sunlight and rain.
   ii. Stack blocks securely, not exceeding 5 feet in height, on a flat surface.
   iii. Cover blocks stored outdoors with tarps or plastic sheets.
   iv. Avoid prolonged exposure of blocks to rain or water before installation to prevent weakening of the binder matrix.
c) Strict Site Preparation:
   i. Thoroughly clean surfaces to remove debris, dust, and contaminants before laying blocks.
   ii. Ensure accurate marking and alignment using the 3-4-5 diagonal check and continuous leveling/plumbing during block laying.
d) Mortar and Binder Application:
   i. Guidelines for joint thickness (typically 10 mm for cement-sand mortar or 3-5 mm for block adhesives) to maintain thermal and structural performance.
   ii. Apply mortar only on the outer face shells; avoid filling hollow cavities with mortar to maintain block integrity and insulation properties.
e) Reinforcement and Structural Strength:
   i. Install vertical reinforcement bars inside block cavities at specified intervals and fill cavities with M10 concrete containing 10 mm coarse aggregates for anchorage.
   ii. Use horizontal reinforcement bars within mortar joints when specified by the structural engineer.
   iii. Anchor precast RCC lintel/sill beams properly within block cavities and fill gaps with rich mortar.
f) Electrical & Plumbing Installation:

i. Use proper chiselling tools and techniques to create neat niches for conduits and junction boxes without damaging blocks.
ii. Secure conduits and boxes with silicone adhesive and cover with rich plaster mortar.

g) Curing Practices
   i. Ensure proper curing of blocks after laying, typically moist curing for 7 to 28 days to achieve full strength.
   ii. Protect curing walls from rapid drying and direct sunlight using damp burlap or coverings.

h) Waterproofing and Finishing
   i. Apply acrylic cement modifier-based waterproof sealer appropriately in two coats on external or moisture-exposed walls.
   ii. For internal walls, apply a single sealer coat before gypsum plaster for a smooth finish.
   iii. Follow manufacturer's plaster application procedures to ensure thermal efficiency and structural integrity.

i) Safety Measures
   i. Always wear PPE such as gloves, helmets, and safety glasses during all installation activities.
   ii. Maintain a clean, organized construction site with clear signage and safe access.

j) Prevent Common Installation Errors
   i. Avoid dropping mortar into block cavities and overfilling joints.
   ii. Continuously check alignment and levels to prevent misalignment.
   iii. Address any defects or damage immediately to avoid compromising structural strength.

A-2.5 Any Associated Health Hazards/Precautions/Antidote

a) Agrocrete is made from natural crop residues and industrial byproducts with no toxic chemical additives, minimizing health risks during handling.
b) Dust generation during cutting or grinding blocks should be controlled using masks and adequate ventilation to prevent respiratory irritation.
c) No specific antidotes are required; in case of skin or eye contact with binder or dust, rinse thoroughly with water and seek medical advice if irritation persists.
d) The product reduces environmental health hazards by preventing stubble burning and industrial waste dumping, thus indirectly benefiting public health.

A-2.6 Special Training Needs for Artisans

a) No special training is needed. Standard masonry practices as outlined in IS1905 and IS456.