



V-INFILL WALL (Light Weight EPS Wall)

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:
M/s Visaka Industries Limited
Visaka Towers, 1-8-303/69/3
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Performance Appraisal
 Certificate No.
 PAC No.: **1045-S/2019**

Issue No. **01**

Date of Issue: **29.04.2019**



Building Materials & Technology Promotion Council
Ministry of Housing & Urban Affairs
Government of India
 Core 5A, First Floor, India Habitat Centre,
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PERFORMANCE APPRAISAL CERTIFICATE

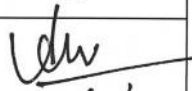
FOR

V-INFILL WALL (Light Weight EPS Wall)

ISSUED TO

VISAKA INDUSTRIES LIMITED

STATUS OF PAC No.:1045-S/2019

S. No	Issue No.	Date of Issue	Date of renewal	Amendment		Valid up to (Date)	Remarks	Signature of authorized signatory
1.	2.	3.	4.	No.	Date	7.	8.	9.
1	1	29.04.2019	29.04.2020	--	--	28.04.2020	--	

PAC No. 1045-S/2019

Issue No. 01

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PART 1 CERTIFICATION

- 1.1 Certificate Holder:** M/s Visaka Industries Limited
Visaka Towers, 1-8-303/69/3
S.P.Road, Secunderabad, Telangana,
India-500003
Email: narsimha.peri@visaka.in

1.2 Description Of System

1.2.1 Name of the System– V-Infill Wall (Light Weight EPS Wall).

1.2.2 Brief Description

V-Infill Wall is an innovative emerging building and construction technology using factory made 8/10mm fibre cement boards (V-board) on either side of GI studs and erected to produce straight to finish walls which are filled with light weight concrete made of EPS, cement, sand and additive. The system may be integrated with conventional column and beam for pre-engineered buildings. The walls may be used as partition walls for external and internal applications.

The GI studs are “C” cross-section with built in notch, slots, service holes etc. fixed with floor and ceiling channels using anchor fasteners at spacing of 300mm c/c. Provisions for doors, windows, ventilators and other cutouts as required shall be incorporated. Electrical and plumbing pipes/conduits shall be provided in the service holes of studs before concreting is done.

The firm is also the manufacturer of fibre cement board branded as Vpremium board, G I studs branded as Vnext, Visaka additive and Visaka bond liquid which are used in producing the V-Infill Wall.

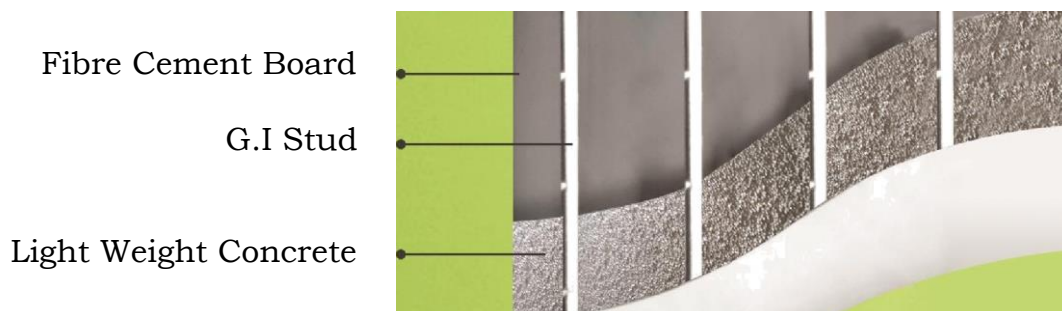


Fig. 1

1.2.3.1 There are two types of V-Infill Walls as per details given below

1. 88 mm thick wall consists of 8mm thick board of size 1.22m x 2.44m on either side of 70mm G.I studs and screw of 8g x 25mm length.
2. 150mm thick wall consists of 10mm thick board of size 1.22m x 2.44m on either side of 130mm G.I studs and screw of 10g x 32mm length.

Walls are made in-situ so there is no standard size of walls. However, height and length of wall shall not be more than 3m and 6m respectively. Details of V-Infill Wall is shown in fig. 2



1.3 Uses, Limitations/Precautions for Walls

1.3.1 Uses:

V-Infill Walls may be used as partition walls for external and internal applications for residential and commercial buildings, schools, hospitals, factories and malls etc.

1.3.2 Limitations/precautions to be taken for using V-Infill Walls on the basis of performance, safety, geo-climatic Conditions:

- Height of 88mm wall thickness shall be limited to 3m only.
- Height of 150mm wall thickness shall be limited to 5m with intermediate naggings in the frame work.
- If wall tiles are to be changed, wall shall not be hacked for fixing new tiles for bonding. Instead, cementitious tile adhesive shall be used which will act as bonding agent between the wall and tile instead of mortar

1.4 Basis of Assessment

1.4.1 Scope of Assessment

1.4.1.1 Scope of assessment included conformance of manufactured non-load bearing walls to the specified requirements for external and internal applications for commercial buildings, schools, hospitals, factories and malls etc.

1.4.2 Basis of Assessment

Assessment of the suitability of the Lost-in-Place Formwork System V-Infill Wall is based on:

- (i) Tests conducted for performance characteristics of the Wall by Bureau Veritas(I) Pvt.Ltd, Hyderabad.
- (ii) Test performance for heavy weight anchorage by J.N.T.U.H. College of Engineering, Hyderabad.
- (iii) Quality Assurance of Fibre Cement Board, G.I studs, Channel, Screws & anchors used in V-Infill walls shall be as per the relevant IS/specifications of the manufacturers.
- (iv) Performance Evaluation of two bed room house by Bureau Veritas (I) Pvt.Ltd, Hyderabad.
- (v) Assessment of quality assurance procedures implemented for Quality Assurance Scheme followed by the Certificate holder for process control as per Quality Assurance Plan is attached at Annex I.

1.5 Machinery & Equipment

The following equipments are required for erection of V-Infill Wall as reported:

Sl.No.	Name of the Machine	Make
1	2	3
1.	Screw driving drill Machine	Bosch --
2.	Anchoring/Grouting Machine	Crompton Greaves
3.	Fibre Cement Board cutting Machine	Crompton Greaves
4.	Concrete Miller	Indian
5.	Manual Pouring Tools	--
6.	Digital Weighing Machine	

1.6 Typical Activity

Typical Activity for construction using V-Infill Wall is given below:

Activity

Pre-construction

Excavation, PCC and Raft foundation

Construction Activities

- 1) Erection of frame work with GI studs and channel
- 2) Placing 10mm & 8mm dia TMT bars as specified
- 3) Providing electrical and plumbing conduits
- 4) Fixing of fibre cement board on both sides of frame
- 5) V-Infill Concrete mixing and pumping
- 6) Finishing of joints with jointing powder mixed with fevicol.

1.6.1 Framing

The framing section shall be cold form “C” type of 0.55 mm to 0.60 mm thickness in required length as per structural design requirements, duly punched with dimple slots at required locations as per approved drawings. The slots shall be along center line of the web and shall be placed at 250 mm min. away from both edges of the member. The studs shall be of specified dimensions and fastened with GI channel to both top and bottom slab. Frames shall be assembled together to fabricate structures using anchor fastener. The V-Infill Wall frames shall be connected by using special screws which shall conform to ASTM C 1513.

1.6.2 *Fibre Cement Board* shall be non-Asbestos autoclaved product. It shall be composed of a composite matrix containing special grade cellulose fibres, ordinary Portland cement, fine silica, quartz and

mineral additives. It shall be manufactured as per IS 14862:2000 having good acoustic and thermal insulations.

- 1.6.3** *Light Weight Concrete* shall be prepared by mixing the raw materials in proportion as below:

1	Cement -Kg	50	per batch
2	Water -Ltrs	22.5	per batch
3	Visaka Additive- gms	100	per batch
4	EPS- 3 to 5 mm Dia beads- Kg	1	per batch
5	Sand - coarse- Kg	25	per batch

The concrete used shall be light weight and free flow. The light weight concrete shall be mixed and used at site. The light weight concrete shall be pumped into the gap between the panels.

1.7 Conditions of Certifications

1.7.1 *Technical Conditions*

1. Raw materials shall conform to the requirements of the prescribed specifications.
2. M/S Visaka Industries Limited shall provide full details of manufacture and erection of the panels to the agency who may be engaged for production and construction.
3. The Certificate is being issued after visit to the site and satisfactory test results of the samples from NABL Accredited labs/ Institutes as per Indian conditions and Standards.

1.7.2 *Quality Assurance*

The Certificate Holder shall implement & maintain a quality assurance system in accordance with Quality Assurance Plan (QAP) given in Annex I attached with this Certificate.

1.7.3 *Handling of User Complaints*

- 1.7.3.1** The Certificate holder shall provide quick redressal to Consumer/user complaints proved reasonable & genuine and within the Conditions of warranty provided by it to customer/purchaser.
- 1.7.3.2** The Certificate holder shall implement the procedure included in the Scheme of Quality Assurance (SQA). As part of PACS Certification, he shall maintain data on such complaints with a view to assess the complaint satisfaction and suitable preventive measures taken.

1.8 Certification

- 1.8.1** 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 Parts 1 & 2 of this Certificate, the V-Infill Walls covered by this Certificate are fit for use set out in the Scope of Assessment.

PART 2 CERTIFICATE HOLDER'S TECHNICAL SPECIFICATION

2.1 General

- 2.1.1** The PAC holder shall provide services in accordance with the requirements specified in the relevant Standards. In addition, it shall follow the Company standards specifying requirements of various materials used in the manufacture of the panels (see Part 5).

2.2 Specifications

2.2.1 *Raw Materials*

- (i) OPC shall conform to relevant grade of Indian Standard.
- (ii) Fly ash shall conform to IS 3812 (Part 2):2003.
- (iii) Coarse sand shall conform to IS 383:2016
- (iv) Fibre cement board shall be 100% asbestos free and of Type A, Category 3 min. as stipulated in IS 14862:2000.
- (v) EPS beads shall conform to IS 4671:1984
- (vi) GI stud and channel shall conform to IS 277:2003.
- (vii) Adhesive shall conform to the specifications of the manufacturer.
- (viii) Liquid bond shall conform to the specifications of the manufacturer.
- (ix) Screws and anchors shall conform to IS 277:2018.

2.3 Design Parameters

- V-infill Walls shall be erected using fibre cement board, G.I studs and channels, anchor bolts, cement, fly ash along with EPS beads and bonding agent to form walling material.
- All concreting work shall be done in accordance with light weight concrete mix design or as per the requirement of the manufacturer with regard to workmanship and materials.
- M/s Visaka Industries Limited shall provide design data for good practices and as ready reckoner for users.

Typical sketches for non-load bearing walls are shown in Fig 3.

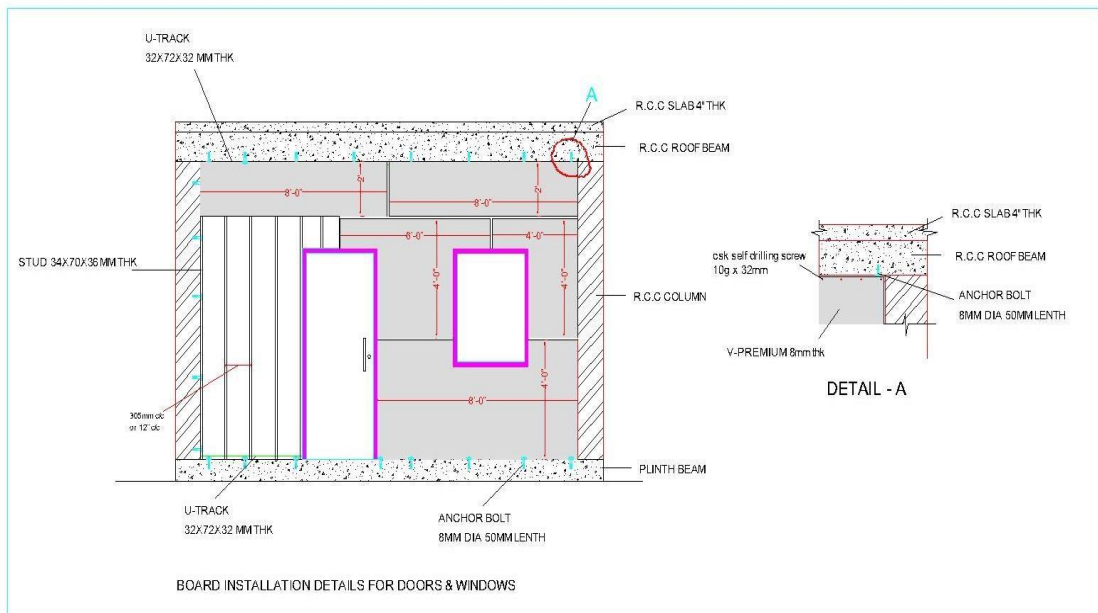


Fig. 3

2.4 Erection of V-Infill Wall:

- Line marking shall be as per wall layout with chalk or pencil.
- The frame structure shall comprise of “C” cross section studs (vertical members) and tracks (horizontal members) frames assembled together by means of mechanical screws. GI Channel tracks (72mm) shall be placed on the foundation or on the floor and ceiling in alignment. They shall be fixed using anchor fasteners of 6mm dia. at spacing of 400mm c/c.
- After fixing of floor and ceiling channels, GI “C” studs (70mm) shall be placed vertically with a minimum gap of 12mm to 20mm from top and bottom of floor channel webs. They shall be fixed together with self-driven metal screws at spacing of 300mm c/c. For provision of doors, windows and other openings, additional studs shall be provided. See in Fig. 4



Fig. 4

- Electrical conduits and plumbing pipes shall be placed through the slots/holes provided in the web of the studs. Electrical boxes and boards should be fixed and embedded in EPS concrete properly. See in Fig. 5

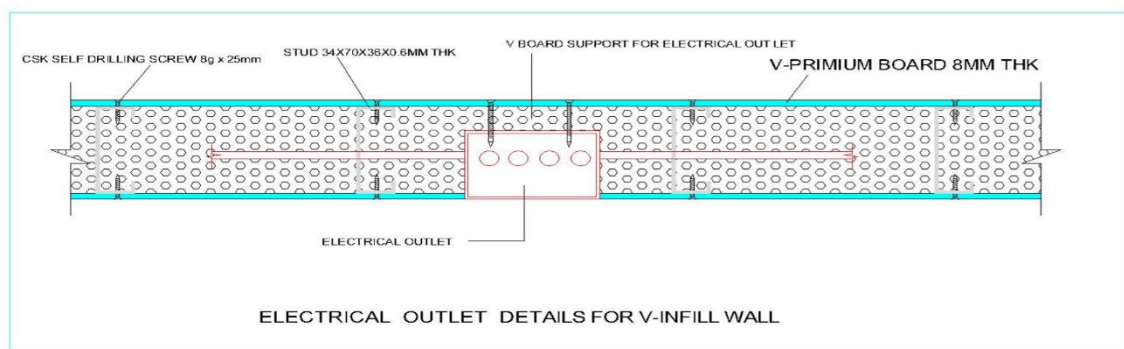


Fig. 5

- Before fixing of cement fibre board, adhesive (liquid PU) shall be applied on flanges of GI studs. After that Vpremium board of thickness 8/10 mm shall be fixed horizontally on both sides of the frame work up to 1200mm height using self-driven screws of 8g x 32mm at 200mm spacing. See in Fig.6.



Fig. 6

2.5 Concrete mix

Light weight and free flow concrete shall be used for this purpose. Concrete shall be prepared by mixing cement, coarse sand, EPS beads, water and additives in specified ratio.

2.6 Pouring of Concrete

Prior to start concrete pour, it must be re-checked to ensure that all members are properly aligned and plumbed. The concrete specified shall be highly workable, free flowing mix poured from the top into the cavities using a small hose for pumping. For small building construction, concrete can be poured manually using a funnel. Filling the cavities with concrete shall be done in two layers of 600mm height with an interval of 2 to 3 hours between each layer. Needle vibrator or rubber mallet may be used for equal distribution and compaction of concrete inside the cavities. Pouring shall be continued in the upper portion in a similar manner. Top portion shall be filled after cutting 150mm x 150mm U shape slot in the board.

2.7 Joint Treatment:

- After walls are completely filled and mix dried, joint treatment shall be done using fibre mesh tape and putty mixed with binder (fevicol) in specified ratio on both exterior and interior joints.
- One coat of putty shall be applied to close the joint, then second coat shall be applied in order to flush recessed part.
- Mesh tape shall be sandwiched between first & second coats to have a hold over the wall. See in Fig.7

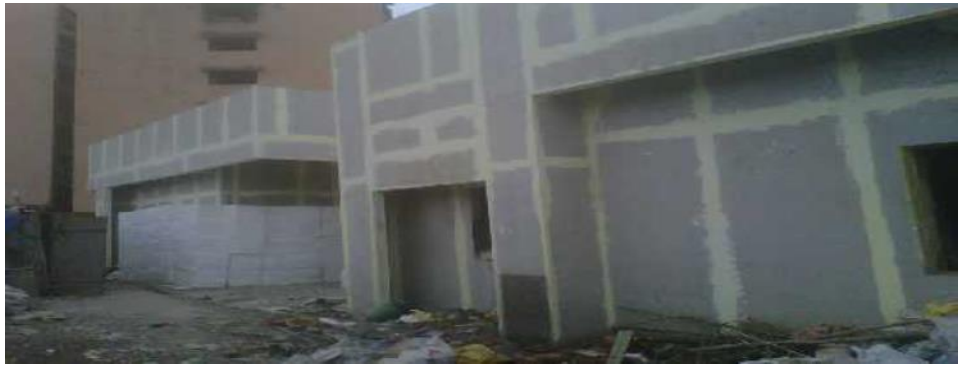


Fig. 7

Wall is now ready to accept primer & paint.

2.8 Typical Connection Details

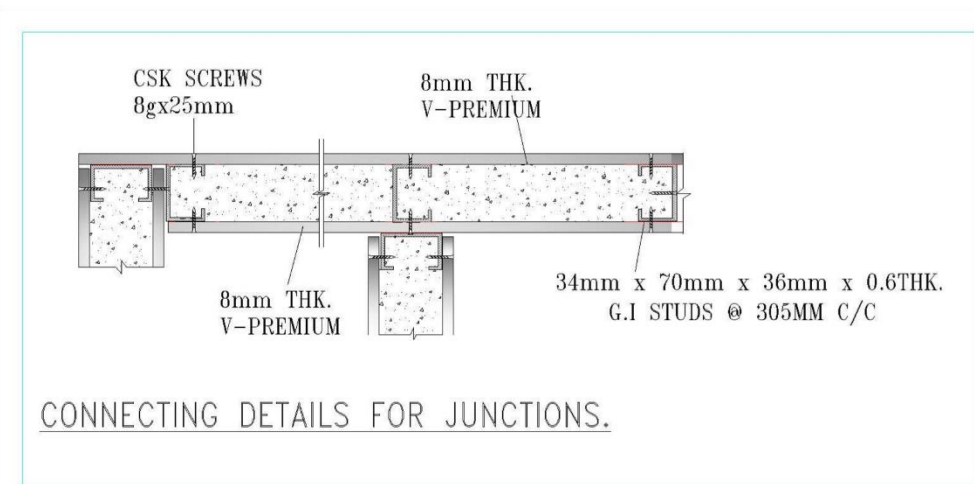


Fig. 8

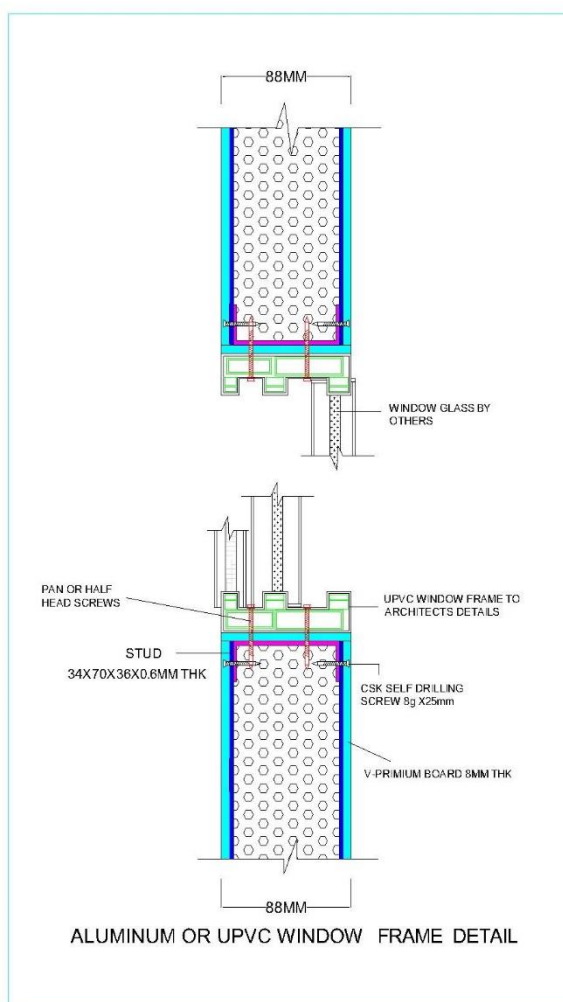


Fig. 9

2.9 Manuals

PAC holder shall provide Construction, Installation and Quality Manuals and necessary diagrams, drawings, detailing to the customers and/or their structural designer.

2.10 Skilled/Training Needed for Installation

Skilled labourers like carpenter, masons shall be trained on the system and other unskilled labourers shall be trained in max. 7 days' time by the PAC holder. Training shall be conducted on or off site depending upon the numbers.

2.11 Guarantees/Warranties Provided by the PAC Holder

Visaka Industries Limited warrants to the Client and the Architect/client that all materials and equipment furnished under this Contract shall be fit for their intended purpose, unless

otherwise specified. All work shall be of good quality, free from faults and defects and in conformance with the Contract Documents. All work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Architect/Client, Visaka Industries Limited shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Warranties shall be in accordance with the Contract Documents.

2.12 Responsibility

- Specific design using **V-Infill Wall** is the responsibility of the designer with the instructions, supervision and approval of Visaka Industries Limited.
- Quality of maintenance of the building is the responsibility of the building owner.
- Providing necessary facilities and space for movement of machines and vehicles is the responsibility of the building developer.

PART 3 BASIS OF ASSESSMENT AND BRIEF DESCRIPTION OF ASSESSMENT PROCEDURE

3.1 Assessment

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

3.1.2 *Inspection of the production unit.*

TAC members and BMTPC Officials inspected the manufacturing process of the cement fibre board in detail. The process was found to be satisfactory and with minimum training of manpower.

3.2 Tests Performed on V-Infill Wall

3.2.1 Tests performed on Premium Fibre Cement Board IS: 14862-2000 (Type A, CAT-3) by manufacturer.

S.No.	Test conducted	Test Method	Test Result
1.	Dry Density	ASTM C1185 - --	1298 kg/m ³
2.	Flexural Strength	ASTM C 1185	8.8 N/mm ²
3.	Water Absorption	ASTM C1185	30.64 %
4.	Heat-Rain resistance (25 cycle)	ASTM C 1165	O.K
5.	Thermal Conductivity	ASTM C 518	0.0748 0.0643
6.	Sound Insulation (8mm thick)	dB	29

3.2.2 Tests performed on samples of V-Infill Wall of thickness 150 mm collected by the IOs for carrying out the following tests by Bureau Veritas, Hyderabad.

S.No.	Tests	Test Method	Result Obtained
1.	Dry Density	IS 15622:2006	1450 kg/m ³
2.	Compressive Strength	IS 15622:2006	5.56 MPa
3.	Water Absorption	IS 15622:2006	17.15%
4.	Pull Out test	IS 15622:2006	913 N
5.	Flexural Strength	IS 15622:2006	6.81 MPa
6.	Nail Holding capacity	IS 15622:2006	813 N

3.2.3 Tests performed on samples of V-Infill Wall of thickness 88 mm collected by the IOs for carrying out the following tests by Bureau Veritas, Hyderabad.

S.No.	Tests	Test Method	Result Obtained
1.	Dry Density	IS 15622:2006	1450 kg/m ³
2.	Compressive Strength	IS 15622:2006	3.21 MPa
3.	Water Absorption	IS 15622:2006	17.15%
4.	Pull Out test	IS 15622:2006	1373 N
5.	Flexural Strength	IS 15622:2006	6.01MPa
6.	Nail Holding capacity	IS 15622:2006	627 N

3.3 Execution of Projects

The manufacturer, as reported, has executed the projects as per the details given below (as reported):

S. No.	Name & location of the Project	Quantity approx.	Period of Completion
1.	(G+3) residential building in Warangal	7000 Sq.ft	Dec., 2018
2.	City Land Bank and Properties at Madikonda(Telangana)	2527sq.ft	Dec, 2017
3.	(G+1) Residential building in Hyderabad.	1700 Sq.ft	March, 2018

PART 4 STANDARD CONDITIONS

The certificate holder shall satisfy the following conditions:

- 4.1** The certificate holder shall continue to have the product reviewed by BMBA.
- 4.2** 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.
- 4.3** The quality of the product shall be maintained by the certificate holder.
- 4.4** The product user should install, use and maintain the product in accordance with the provisions in this Certificate.
- 4.5** This certificate does not cover uses of the product outside the scope of this appraisal.
- 4.6** 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.
- 4.7** 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)
- 4.8** 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.
- 4.9** 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.
- 4.10** If at any time during the validity period, PACH is unable to fulfill 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.

- 4.11** 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.
- 4.12** 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.
- 4.13** 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.
- 4.14** 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.
- 4.15** 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
- 4.16** 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.
- 4.17** The PAC holder shall not use this certificate for legal defense in cases against him or for legal claims he may make from others.

Place: New Delhi

Date of issue **29.04.19**



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

Dr. Shailesh Kr. Agrawal
Chairman, TAC

& Member Secretary, BMBA

19 **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

PART 5 LIST OF STANDARDS AND CODES USED IN ASSESSMENT

5.1 Standards - These Standards are referred for carrying out a particular test only and do not specify the requirement for the whole product as such.

IS 383: 2016	Specifications for coarse and fine aggregates from natural resources
IS 456: 2000 Reaffirmed 2016	Code of practice for plain and reinforced cement concrete
IS 3346:1980 Reaffirmed 2004	Method for the determination of thermal conductivity of thermal insulation materials
IS 3809: 1979 Reaffirmed 2002	Fire resistance test for structures
IS 3812 (Part 2):2003	Specifications for fly ash for use as admixture in cement mortar and concrete
IS 8112:2013	Specifications for 43 grade ordinary portland cement
IS 9901(Part III):1981	Measurement of sound insulation in buildings and of building elements
IS 12269:2013	Specifications for 53 grade ordinary Portland cement
IS 14862:2000	Specifications for fibre cement flat sheets
IS 516:1969 Reaffirmed 2004	Standard test method for strength of concrete
ASTM C 1185(08):2016	Standard test methods for sampling and testing non-asbestos fibre cement flat sheets
IS 4671:1984 (Reaffirmed 2004)	Specifications for expanded polystyrene for thermal Insulation purposes
BS 476 (Part 20-22): 1987	Method of determination of fire resistance of elements of building materials and structures
BS 5234 (Part 2):1992	Specifications for performance requirements for strength and robustness of partitions including method of tests
GB 8624:2012	Classification of burning behavior of building materials
IS 277 –2003	Specification for GI section & channel

5.2 Company Standards of the PAC holder – The branded design & specifications of the raw materials and finished product are as submitted by the manufacturer. The PAC holder has to make available the company standards to the consumers according to which testing have been done.

CERTIFICATION

In the opinion of Building Materials & Technology Promotion Council's Board of Agreement (BMBA), V-Infill Walls bearing the mark manufactured by M/s Visaka Industries Ltd., is satisfactory if used as set out above in the text of the Certificate. This Certificate **PAC No. 1045-S/2019** is awarded to M/s Visaka Industries Ltd., Secunderabad

The period of validity of this Certificate is for a period of One year i.e. from 29.04.2019 to 28.04.2020 as shown on Page 1 of the PAC.

This Certificate consists of a cover page and pages 1 to 25.



Dr. Shailesh Kr. Agrawal
Chairman, TAC

& Member Secretary, 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:29.04.19

PART 6 ABBREVIATIONS

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 BBA
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 years, 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 I
(Clause 1.4.2)

Quality Assurance Plan For V-Infill Wall System

S. No.	Parameters to be inspected	Requirement Specified	Test Method	Frequency of Testing
I. Raw Materials				
1.	O P Cement 43 Grade	As per IS 8112: 2013	Manufacturer's test report	Every batch/lot
2.	Fly ash Grade 1	As per IS 3812(Part 1):2003	As per IS 1727: 1967	Every batch/lot
3.	Fibre cement board	IS 14862:2000, Type A,cat-3	Manufacturer's test report	Every batch/lot
4.	GI Section	Manufacturer's test report	Manufacturer's test report	Every batch/lot
5.	EPS Beads	Manufacturer's test report	Manufacturer's test report	Every batch/lot
6.	Screws/Anchor bolt	Manufacturer's test report	Manufacturer's test report	Every batch/lot
7.	Putty	As per IS 419:1967	Manufacturer's test report	Every batch/lot
8.	Nail Holding capacity	4.6 kg/cm ² (single nail)	IS 2380 (Part 14):1977	One time or as per requirement
9.	Fire Resistance	4 hours	ASTM E 119	One time or as per requirement

ANNEX II*(Clause 1.6.3)***PROCESS FLOW CHART OF V-Infill Wall**