

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ



ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಶಿಕ್ಷಣ ಇಲಾಖೆ

ಕರ್ನಾಟಕ ಸರ್ಕಾರ : ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಶಿಕ್ಷಣ ಇಲಾಖೆ
(ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಶಿಕ್ಷಣ ಇಲಾಖೆ) 6200
ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಶಿಕ್ಷಣ ಇಲಾಖೆ
ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಶಿಕ್ಷಣ ಇಲಾಖೆ

57-T/IU/2021/28 : ಸಂಖ್ಯೆ

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ
ಶಿಕ್ಷಣ ಇಲಾಖೆ

2.4	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>13 ነሐሴ 2021 ዓ.ም. ለ 13:00 ሰዓት ለማሰባሰብ ይቻላል፡፡</p>
2.5	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>15 ነሐሴ 2021 ዓ.ም. ለ 23:59 ሰዓት ለማሰባሰብ ይቻላል፡፡</p>
2.6	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>22 ነሐሴ 2021 ዓ.ም. ለ 13:00 ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p>
3	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p>
3.1	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p>
3.2	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p>
3.3	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p>
3.4	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p>
3.5	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p>
3.6	<p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p> <p>የጊዜ ሰዓት ለማሰባሰብ ይቻላል፡፡</p>

سوال شماره 2 - روش‌های محاسبهٔ تغییرات انرژی در سیستم‌های بسته

دما	تغییرات انرژی در سیستم	روش محاسبه
70	$(\text{دما} \times \text{جرم} \times \text{گرم‌ساز}) \times 70$ (در صورتی که تغییرات در دما و جرم رخ دهد)	روش اول
30	$30 \times (\text{جرم} \times \text{گرم‌ساز} / \text{دما} + \text{تغییرات انرژی در سیستم}) \times$ 30 (در صورتی که تغییرات در دما و جرم رخ دهد)	روش دوم*
100		جمع کل

* روش: در صورتی که تغییرات در دما و جرم رخ دهد، روش اول و دوم هر دو قابل استفاده است. در صورتی که تغییرات در دما و جرم رخ دهد، روش اول و دوم هر دو قابل استفاده است. در صورتی که تغییرات در دما و جرم رخ دهد، روش اول و دوم هر دو قابل استفاده است.

روش اول: در صورتی که تغییرات در دما و جرم رخ دهد، روش اول و دوم هر دو قابل استفاده است. در صورتی که تغییرات در دما و جرم رخ دهد، روش اول و دوم هر دو قابل استفاده است.

روش دوم: در صورتی که تغییرات در دما و جرم رخ دهد، روش اول و دوم هر دو قابل استفاده است. در صورتی که تغییرات در دما و جرم رخ دهد، روش اول و دوم هر دو قابل استفاده است.

(نشان دهید: 7: در صورتی که تغییرات در دما و جرم رخ دهد)

مرفق 2 - نموذج ضمان/كفالة البنك

Form of Tender Security (Bank Guarantee)

The Issuing Bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.

..... {Bank's Name, and Address of Issuing Branch or Office}

Beneficiary: {Name and Address of Employer}

Date:

TENDER GUARANTEE No.: _____

We have been informed that _____ {name of the Tenderer} (hereinafter called "the Tenderer") has submitted to you its Tender dated _____ (hereinafter called "the Tender") for the execution of _____ {name of contract} under Invitation for Tenders No. _____ ("the IFB").

Furthermore, we understand that, according to your conditions, Tenders must be supported by a Tender guarantee.

At the request of the Tenderer, we _____ {name of Bank} hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ [amount in figures] (_____) [amount in words] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Tenderer is in breach of its obligation(s) under the Tender conditions, because the Tenderer:

- (a) has withdrawn its Tender during the period of Tender validity specified by the Tenderer in the Form of Tender; or
- (b) having been notified of the acceptance of its Tender by the Employer during the period of Tender validity, (i) fails or refuses to execute the Contract Form, if required, or (ii) fails or refuses to furnish the performance security, in accordance with the ITB.

This guarantee will expire: (a) if the Tenderer is the successful Tenderer, upon our receipt of copies of the contract signed by the Tenderer and the performance security issued to you upon the instruction of the Tenderer; and (b) if the Tenderer is not the successful Tenderer, upon the earlier of (i) our receipt of a copy your notification to the Tenderer of the name of the successful Tenderer; or (ii) {insert date} twenty-eight days after the expiration of the Tenderer's Tender.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458

[Signature(s)]

مرفوع 3 - ضمان أداء المشتري

Performance Security

[The issuing bank, as requested by the successful Contractor, shall fill in this form in accordance with the instructions indicated]

Date: [insert date (as day, month, and year)]

Title of the procurement: [Insert general title of the procurement]

Procurement Reference No: [insert reference]

Bank's Branch or Office: [insert complete name of Guarantor]

Beneficiary: [insert complete name of Employer/Procuring Entity]

Performance Guarantee No:

We have been informed that [name of the Contractor], (hereinafter called "the Contractor") has entered into Contract No. [procurement reference number of the Contract]. dated [insert day and month], [insert year], with you, for the execution of [name of contract and brief description of Works] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we [name of the Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of [name of the currency and amount in figures] ¹.... (. . . . [amount in words]) such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the day of , ², and any demand for payment under it must be received by us at this office on or before that date. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed[six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458, except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.

.....
[Seal of Bank and Signature(s)]

Note -

All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

¹ The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract and denominated either in the currency (ies) of the Contract or a freely convertible currency acceptable to the Employer.

² Insert the date twenty-eight days after the expected completion date. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

ضمان ائتمانية الدفع المسبق - 4

Advance Payment Security

[The bank, as requested by the successful Contractor, shall fill in this form in accordance with the instructions indicated.]

Date: [insert date (as day, month, and year)]

Title of the Procurement: [Insert general title of the procurement]

Procurement Reference No: [insert reference]

[Issuing bank's letterhead]

Beneficiary: [insert legal name and address of Procuring Entity]

ADVANCE PAYMENT GUARANTEE No.: [insert Advance Payment Guarantee no.]

Advance Payment Guarantee No:

We have been informed that [name of the Contractor] (hereinafter called "the Contractor") has entered into Contract No..... [procurement reference number of the Contract], dated [insert day and month], [insert year] with you, for the execution of [name of contract and brief description of Works] (hereinafter called "the Contract").

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum [name of the currency and amount in figures] ¹ (..... [amount in words]) is to be made against an advance payment guarantee.

At the request of the Contractor, we [name of the Bank]. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of [name of the currency and amount in figures]* (..... [amount in words]) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number[Contractor's account number]. at [name and address of the Contractor's Bank].

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the day of ², whichever is earlier. Consequently, any demand for payment under this

guarantee must be received by us at this office on or before that date. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

..... **[Seal of Bank and Signature(s)]**.....

Note

All italicized text is for guidance in preparing this demand guarantee and shall be deleted from the final document.

- 1 The Guarantor shall insert an amount representing the amount of the advance payment denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Employer.
- 2 Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee

عَنْ قُرْبَانَ - دَسَائِدُ قُرْبَانَ نَسَبُهُ قُرْبَانُ مَوْلَانِي مَوْلَانِي

GEDOR CONSULTING PVT. LTD.



INSPECTION REPORT

People's Majlis Building

Part 2
People's Majlis new Building Terrace waterproofing

Client: People's Majlis

Date: 23rd August 2021

Gedor Consulting Pvt. Ltd.

2nd Floor, H. Deens Villa

Meheli Goalhi

Malé, 20012, Maldives

phone: (960) 3318452, fax: (960) 3310317

email: admin@gedor.com.mv

www.gedor.com.mv

1.0 Introduction

This report is made after inspecting the terrace floor of the People's Majlis new building. The objective of this report is to advise the client on a suitable methodology for waterproofing and suggest a methodology to rectify the wall structure damaged on the terrace level.

2.0 Assessment methodology

The inspection was carried out visually. The existing structures, damage and the terrace flooring was observed. In addition, screed was checked by tapping for de-bonding.

3.0 Findings

- Steel frame members used to construct the walls covering the AC outdoor units were corroded.
- Part of the framing was completely demolished due to strong winds.
- Signs of corrosion was observed on the structure covering the staircase.
- Cracks were observed on the screed made for water proofing.
- Expansion joints constructed were ineffective causing cracks.

4.0 Proposed waterproofing method

Materials required:

- Purtop HA or equivalent – Hand Applied Polyurea Membrane3
- Primer SN – two component fillerized epoxy primer
- Mapefloor Finish 451 – Two component aliphatic polyaspartic finish resistant wear and ultra-violent rays
- Mapeband - Treatment to expansion joints and construction joints
- Mapeproof Swell - Treatment to drain outlets pipes
- PUtop – As a Top Coat

Procedure:

- All cracks must be repaired with Polymer modified mortar/mapegrout thixotropic
- Make 10mm wide, 16mm deep grooves for crack repair in the cracked areas. Staraight saw cut grooves or other means of creating the groove avoiding edge chippings is important.
- Surfaces shall be free from oil, grease, friable matter and general curing compounds and any other foreign substances. Shall be free from honeycombs and undulations.
- The surface shall be grinded properly, and all loose particles are removed and blown off using a compressed air
- Providing Coving at Junction of Slab and the Vertical walls or Up- stands with Polymer modified mortar
- Apply the epoxy Primer SN
- While the product is still fresh, fully sprinkle on a layer of QUARTZ 0.5. Once the PRIMER SN has hardened, remove excess sand and dust with a vacuum cleaner.
- Apply Purtop HA as a waterproofing coating
- Apply PUtop coat at 0.5mm
- Apply Mapefloor finish 451 as a finish coating
- Reffer to the detail application procedure mentioned at Annexure 1

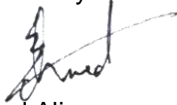
5.0 Proposed rectification method for damaged wall structures

- Remove all steel framing used to construct the walls and staircase area.
- Roughen the area where the wall will be constructed.
- Apply Eurobond 203 to provide bonding between beam and slab.
- Construct beam (B2) shown in the enclosures on the slab level.
- Drill into the slab about 75mm and anchor the 12mm anchor bars at 500mm C/C.
- Use Anchorset Red 300 and anchor grout.
- Erect concrete columns of 200x200 of reinforcement 4T12 with links R6@150, at every 3 meters.
- Drill into the slab about 75mm (or as per anchoring grout data sheet) and anchor the column reinforcement using Anchorset Red 300 or equivalent.
- On top of the columns, construct beams of 250x200 with reinforcement 4T12 and links R6@150.
- Construct masonry walls between columns.
- Same beam and column details can be used to support the roof of the staircase area.
- If columns and roof beams already exists, existing columns and beams can be used.

6.0 Conclusion

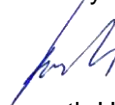
In conclusion, the observed damages and water leakage issues can be solved with the above mentioned procedures. All chemicals recommended must be used according to the data sheets. Rebound hammer test was conducted on the terrace floor screed and the test results are satisfactory for the waterproofing work.

Prepared by



Ahmed Ali
Civil/Structural
Gedor Consulting Pte Ltd

Checked by



Kinaanath Hussain
Engineer Civil Engineer
Gedor Consulting Pte Ltd

Enclosures

Photos from site
Drawings for wall construction
Annexure 1





MAPEI INDIA

TECHNICAL PROPOSAL FOR WATERPROOFING WITH PURTOP HA



Annexure 1



MAPEI INDIA

Index	Page
Introduction to Purtop HA	3
Methodology for Waterproofing System	6
Site Requirement	6
Surface Preparation	7
Primer Application	8
Application of Purtop HA	10
Application of Alipahtic Top Coat	11
Protective Screed	12
Tiling	13
Technical and Application Video	14
BOQ	15



MAPEI INDIA

Introduction to “Purtop HA – Hand Applied Polyurea Membrane “

Purtop HA is a two-component, solvent-free, polyurea resin formulate according to a Formula developed in the MAPEI R&D laboratories. The product is applied manually, and has a workability time of 20 minutes at +23°C.

Apply Purtop HA in layers at least 2 mm thick. Due to its high tensile strength, tear strength and crack-bridging capacity, when reticulation is complete, Purtop HA forms a seamless, waterproof coating which adapts to any shape of substrate without cracking (including in service temperatures lower than -20°C).

Due to its excellent chemical resistance, high elasticity and high tear strength, Purtop HA is suitable for forming waterproofing membranes on small to medium size terraces and flat roofs, and for repairing surfaces waterproofed with hybrid polyurea and/or pure polyurea membranes.

Purtop HA is an integral part of the Purtop range of products made by MAPEI, and so may be used wherever these products are employed on limited surface areas, or to repair surfaces after adequate preparation.

Advantages:

Purtop HA adheres extremely well to various types of substrate if treated with a suitable primer, and once applied forms a strong, elastic seamless membrane.

Purtop HA offers the following advantages:

- Excellent tensile strength (10 N/mm² according to ISO 37);
- Excellent tear strength (40 N/mm according to ISO 34-1);
- High static and dynamic crack-bridging capacity, including at low temperatures (below -20°C
- Elongation capacity of more than 500% (ISO 37);
- No reinforcement required;



MAPEI INDIA

- Does not generate overloads on load-bearing structures

Recommendations

- Clean and prime substrates before applying Purtop HA.
- Do not apply Purtop HA on substrates with rising damp
- Do not dilute Purtop HA with water or solvent.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Component A

Consistency:	thixotropic
Colour:	grey
Density (g/m ³):	1.6 ± 0.03
Dry solids content (%):	85
Brookfield viscosity (+23°C, mPa·s):	70,000 ± 5,000 (rotor 7 - rpm 20)

Component B

Consistency:	liquid
Colour:	colorless
Density (g/m ³):	1.02 ± 0.03
Dry solids content (%):	100
Brookfield viscosity (+23°C, mPa·s):	9,700 ± 500 (rotor 7 - rpm 100)

MAPEI INDIA

APPLICATION DATA (A+B)	
A/B ratio (in weight):	100/106.5
A/B ratio (in volume):	37/63
Density A+B (g/cm ³):	1.30 ± 0.03
Workability time at +23°C (min):	20
Resistance to rain at +23°C (hours):	1
Waiting time before stepping on at +23°C (hours):	24
Min/max surrounding temperature (°C):	+5/+40
Maximum level of relative humidity in the air (%):	85
PERFORMANCE ON FREE FILM (thickness 2 mm)	
Mechanical characteristics after 7 days at +23°C:	10
– Tensile Strength (ISO 37) (N/Mm ²):	500
– Elongation At Failure (ISO 37) (%):	3
– Modulus At 100% (ISO 37) (Mpa):	40
– Tear Strength (ISO 34-1) (N/Mm):	72
– Shore A Hardness (DIN 53505):	–55
– Glass Transition Temperature (°C):	





MAPEI INDIA

Methodology for waterproofing System:

The total methodology of waterproofing and insulation of the roof slab consists of the following steps,

Site requirements for waterproofing works.

1. Surface preparation of the slab.
2. Manual applied waterproofing coating
3. Laying screed for the desired thickness / Top Coat
4. Reflective Tiles in case of screed concrete.

1. Site requirements:

- a) Concrete should be sound and free from honeycombs. In case the concrete has any cracks, honeycombs shall be treated well in advance.
- b) All the construction joints have to be treated with Polymer Modified Mortar / Mapegrout Thixotropic
- c) **The installation or provision for fixing AC shafts, pipelines, steel fabrications, pedestals etc., which needs to be anchored to mother slab, shall be completed before giving site clearance for waterproofing and insulation installation.**
- d) All the rain water outlets have to be provided before waterproofing application and covered with necessary arrangements. Grouting for the outlets has to be done in advance.
- e) If any Honey comb / Blow-holes are present, shall be filled using a repair mortar at a trowel able consistency, scraped tightly into the saturated surface,

MAPEI INDIA

Use Nivoplan (< 10 mm Thickness) and Mapegrout Thixotropic (> 12 mm -30 mm Thickness)

- f) Any debris/ mud or trash on the surface of the Concrete to be removed and cleaned by water jetting. Arrises shall be rounded off and surface protrusions shall be ground down to ensure a smooth substrate. Any cracks with Low Viscous epoxy grout Epojet LV and undulations on the roof slab have to be treated with Adisilex PG 4, epoxy bedding and repair mortar.

- g) Each type of substrate must be individually accessed to choose the most suitable surface preparation such a grinding, sand blasting, scarifying and brush hammering or other methods and the surface has to be treated with suitable primer

- h) Application on concrete substrate and cementious screed:
Compressive strength and tear strength of the concrete to be ≥ 25 MPA & 1.5 Mpa respectively.

- i) If the level of residual humidity in the substrate is higher than 4% and it is not possible to wait until it drops to a lower value, apply a number of coats of **TRIBLOCK P** three-component epoxy-cementitious primer according to the condition of the substrate, until the system is completely sealed.



Fig 1. Cracks on Substrate



Fig 2. Determine and chasing the cracks



Fig Cracks filled with Epoxy Mortar

2. Surface preparation of the roof slab:

- a) Surfaces shall be free from oil, grease, friable matter and general curing compounds and any other foreign substances. Shall be free from honeycombs and undulations.
- b) The surface shall be grinded properly, and all loose particles are removed and blown off using a compressed air



Fig 1. Existing Substrate



Fig: 2 Preparations with Grinder



Fig 3. Prepared Substrate

3. Parapet wall and Slab, Pedestal and Slab Joint Treatment:

Providing Coving at Junction of Slab and the Vertical walls or Up- stands with Polymer modified mortar (1:3 CM admixed with Panicrete SP , to form a cove of 25 & 25 mm thickness .



Fig 1 . Coving of the joints and Up stand

3. Base Coat /Priming:

Priming the surface with Primer SN: Two component epoxy resin based pre filled primer shall be applied by adding 0.5 Quartz at specified ratio. The quartz acts like a mechanical key, and helps in bonding the membrane with the concrete.

The surface to be treated shall be sound and free from dust. The surface shall be dry or with very low residual moisture < 4%.

MAPEI INDIA

While the product is still fresh, fully sprinkle on a layer of QUARTZ 0.5. Once the PRIMER SN has hardened, remove excess sand and dust with a vacuum cleaner.

Compatible primer coat to be applied on Concrete / metal substrates.

FINAL PERFORMANCE			
Performance characteristic	Test method	Requirements according to UNI EN 13813 for synthetic resin screeds	Product performance
Bond strength (N/mm ²):	UNI EN 13892-8; 2004	≥ 1.5	3.20
Reaction to fire:	EN 13501-1	from A1 _{fl} to F _{fl}	B _{fl} -s1
Compressive strength:	EN 196-1	-	63 (N/mm ²) (7 days at +23°C)
Shore D-hardness:	DIN 53505	-	78 (N/mm ²) (7 days at +23°C)



Fig 1. Priming the Surface



Fig 2. Broad casting Quartz for Mechanical Key



MAPEI INDIA

4. Waterproofing of slab: Manual applied waterproofing coating:

Purtop HA is an integral part of the Purtop range of products made by MAPEI, and so may be used wherever these products are employed on limited surface areas, or to repair surfaces after adequate preparation

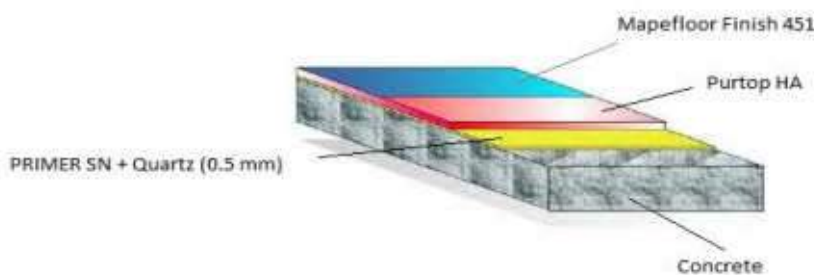
Due to its excellent chemical resistance, high elasticity and high tear strength, Purtop HA is suitable for forming waterproofing membranes on small to medium size terraces and flat roofs, and for repairing surfaces waterproofed with hybrid polyurea and/or pure polyurea membranes.



Fig 1 : Application of Purtop HA

Fig 2 : Completed Purtop HA

5. System Built Up





MAPEI INDIA

5. Top Coat

Application of PU Top Coat at 0.5 mm:

Mapefloor Finish 451 is a two-component, aliphatic, elastic polyurethane finish that offers high resistance to wear, abrasion and UV rays. Surfaces treated with Mapefloor Finish 451 also have an attractive finish.

Substrates to be coated must be structurally sound and free of loose parts, dust, dirt, grease, oil and any other material or substance that could compromise adhesion of the finish to the substrate.

Preparation of the product :

Mix the two components separately with an electric mixer at low speed. Then pour component B into the container of component A and mix for several minutes until they are completely blended. Only prepare the quantity required within the maximum workability time (approximately 40 minutes at +23°C).

Application of the product :

Mapefloor Finish 451 may be applied in a single coat with a roller or with a smooth steel or rubber trowel. If the finish is applied with a roller, we recommend applying the product with criss-cross strokes and to make sure that it is applied evenly to get a good, attractive finish. If the finish is applied with a rubber trowel, consumption will be lower and the surface will be rougher.



6. Provision of Screed:

The slope/fall required on the terrace to drain off the rain water is built with concrete screed. A slope built-up of 1 in 100 is done on the with concrete screed. The thickness of screed shall be minimum 50mm with Minimum reinforcement usually , M20 – M25 grade of concrete, low fine concrete where in a good workable concrete can be obtained using a hyperplasticizers “DYNAMON SX 534” in the concrete.

Control Joints shall be filled with Mapeflex PU 45

7. Providing Protection tiles:

After the screed is cured, the reflecting tiles shall be laid using the Kerabond T and joint shall be filled utracolor Plus



MAPEI INDIA

Application of PURTOP HA



8. Verify acceptability of surface before applying Primer / Polyurea



**Tensile strength by Pull off TEST
Moisture Metre**



Moisture Test by Impedance



Compressive Test by Schmidt-Hammer test



MAPEI INDIA

Technical Data sheet



Videos

MAPEI Corporate Video: <https://youtu.be/qo-KVMEXCiw>

Mapefloor Finish 451 application: <https://youtu.be/MXAqTWpxazE>



Mapecoat PU 20 N

**Two-component
coloured aliphatic
polyurethane topcoat
for membranes from
the Purtop range**



WHERE TO USE

Mapecoat PU 20 N is a coloured protective topcoat for membranes from the **Purtop** range with high level of elasticity and excellent resistance to abrasion.

TECHNICAL CHARACTERISTICS

Mapecoat PU 20 N is a two-component, solvent-based, aliphatic polyurethane topcoat developed in the MAPEI research laboratories with the following characteristics:

- elasticity, which makes it suitable for coating membranes from the **Purtop** range;
- resistant to UV rays and atmospheric agents;
- good hydrolysis stability;
- highly attractive shiny finish;
- easy to clean and resistant to the growth of mould and fungus;
- available in various RAL colours.

RECOMMENDATIONS

- Only apply **Mapecoat PU 20 N** if the temperature of the substrate is at least 3°C higher than dew point.
- Apply **Mapecoat PU 20 N** within 24 hours of applying membranes from the **Purtop** range.
- Do not apply **Mapecoat PU 20 N** on substrates with a moisture content of more than 4%.

APPLICATION PROCEDURE

Substrate preparation

If the substrate to be treated has been coated with a membrane from the **Purtop** range, it must be structurally sound and free of loose areas, dust, dirt, grease, oil and any other material or substance that could affect adhesion of the finish to the substrate. When applying **Mapecoat PU 20 N** by spray on polyurethane membranes from the **Purtop** range, roughen the surface by sanding (remove all dust with a vacuum cleaner). Then apply **Primer P3** two-component polyurethane primer.

Preparation of the product

Prepare **Mapecoat PU 20 N** with an electric mixer. To prepare the mix, blend the two components separately with an electric mixer at low-speed, pour the contents of component B into the container of component A and mix for a few minutes until they are thoroughly blended; make sure you only prepare an amount that can be used within the maximum workability time (approximately 60 minutes at +23°C).

If a higher degree of non-slip finish is required, add micronized polyamide **Mapecoat Filler** to **Mapecoat PU 20 N** at a rate of 7% of the weight of component A while mixing at low-speed.

Application of the product

Apply two coats of **Mapecoat PU 20 N** with a roller, making sure the total consumption rate is never less than 0.3 kg/m². The product may also be applied by airless spray; in such cases it must be diluted with maximum 5% of **Thinner PU**.

TECHNICAL DATA (typical values)		
PRODUCT IDENTITY		
	component A	component B
Consistency:	liquid	liquid
Colour:	according to RAL colour available	neutral
Density (g/cm ³):	1.25	1.07
Dry solids content (%):	71	75
Brookfield viscosity at +23°C (mPa-s):	1350 (rotor 4 - 50 RPM)	320 (rotor 3 - 50 RPM)
APPLICATION DATA (at +23°C and 50% R.H.)		
Mixing ratio:	comp.A : comp.B = 4.3 : 0.7	
Consistency of mix:	liquid	
Density of mix (g/cm ³):	1.20	
Brookfield viscosity of mix (mPa-s):	1200 (rotor 4 - 50 rpm)	
Pot-life of mix (mins.):	approx. 60	
Application temperature:	+10°C to +35°C	
Set to foot traffic (h):	24	

If the topcoat is applied with a roller, it is recommended to spread it out evenly and apply it in criss-cross strokes to get a nice, attractive finish.

Cleaning tools

Tools used to mix and apply the product may be cleaned with thinners before it hardens. Once hardened, it may only be removed mechanically from tools and mixers.

CONSUMPTION

0.15-0.2 kg/m² per coat.

In general, the consumption rates below are for a seamless film on a flat surface and will be higher on uneven substrates.

PACKAGING

Mapecoat PU 20 N is available in metal drums in two sizes:

- comp. A = 17.2 kg and comp. B = 2.8 kg;
- comp. A = 4.3 kg and comp. B = 0.7 kg.

STORAGE

Mapecoat PU 20 N may be stored for 12 months in its original packaging in a covered, dry area at a temperature of +5°C to +35°C.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapecoat PU 20 N components A and B are inflammable. It is recommended to store the product away from naked flames and sparks, to avoid smoking, to prevent the build-up of electrostatic energy and to work in well ventilated areas.

Components A and B may irritate the respiratory system and may cause sensitisation to those predisposed if they come into contact with the skin. Mapecoat

PU 20 N component A may also cause drowsiness and dizziness. Component B irritates the skin and is harmful if inhaled. During use wear protective gloves and goggles and take the usual precautions for handling chemicals. If the product comes in contact with the eyes or skin wash immediately with plenty of water and seek medical advice. Wear suitable protection for the respiratory system.

Mapecoat PU 20 N component A is also hazardous for aquatic life. Do not dispose of this product in the environment. For further and complete information about the safe use of our product please refer to the latest version of our Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In

every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement or replace requirements per the TDS in force at the time of the MAPEI product installation.

The most up-to-date TDS can be downloaded from our website www.mapei.com.

ANY ALTERATION TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.

All relevant references for the product are available upon request and from www.mapei.com

**Mapecoat
PU 20 N**



BUILDING THE FUTURE

Any reproduction of texts, photos and illustrations published here is prohibited and subject to prosecution

7487-3-2019-1 (GB)



Mapecofloor Finish 451



Two-component aliphatic elastic coloured polyaspartic finish resistant to wear and ultra-violet rays

WHERE TO USE

Thanks to its flexibility, extremely simple application procedure and high resistance to abrasion and UV rays, **Mapecofloor Finish 451** is recommended as a protective finish for **Mapecofloor PU 400**, **Mapecofloor PU 400 LV** and/or **Mapecofloor PU 410**, used to make protective and watertight coatings for flat and sloping roofs accessible to pedestrians and vehicles use, including external surfaces.

Some application examples

- Protective, abrasion-resistant finish for external waterproof systems made from **Mapecofloor PU 400**, **Mapecofloor PU 400 LV** and **Mapecofloor PU 410** membranes after broadcasting them in excess with quartz sand.
- Coloured finish for bridges and walkways after applying specific, elastic polyurethane waterproofing membranes.

TECHNICAL CHARACTERISTICS

Mapecofloor Finish 451 is a two-component, aliphatic, elastic polyaspartic finish with excellent resistance to wear, abrasion and ultra-violet rays. Surfaces treated with **Mapecofloor Finish 451** also have an attractive finish.

Mapecofloor Finish 451 has the following characteristics:

- good level of elasticity;
- high resistance to wear and abrasion;
- excellent resistance to ultra-violet rays;
- excellent resistance to atmospheric agents;

- available in various RAL colours. Please contact Head Office for a full list of the colours available.

Thanks to its high resistance to ultra-violet rays and atmospheric agents, **Mapecofloor Finish 451** is ideal for use on external surfaces.

Mapecofloor Finish 451 applied on concrete supports, it complies with the principles defined in EN 1504-9 (*"Products and systems for protecting and repairing concrete structures. definitions, requirements, quality control and conformity evaluation - General principles for the use and application of systems"*) and with the requirements of EN 1504-2 (*"Products and systems for the protection and repair of concrete"*) for class: products for protecting surfaces – coating (C) – protection against ingress (PI) + moisture control (MC) + physical resistance/surface improvement (PR) + resistance to chemicals (RC) + increasing resistivity by limiting moisture content (IR).

RECOMMENDATIONS

- The workability of the product is influenced by the surrounding temperature and the temperature of the substrate. Workability time varies according to the surrounding temperature and reduces as the temperature increases. We recommend, therefore, preparing only the quantity to be applied within the maximum workability time (approximately 40 minutes at +23°C).
- Do not dilute **Mapecofloor Finish 451** with solvent or water.

TECHNICAL DATA (typical values)		
PRODUCT IDENTITY		
	comp. A	comp. B
Colour:	various RAL colours	transparent colourless
Consistency:	liquid	liquid
Brookfield viscosity at +23°C (mPa·s):	6,000 ÷ 9,000 (rotor 6 - 50 revs)	175 ÷ 300 (rotor 2 - 50 revs)
Density (g/cm³):	1.63 ± 0.05	1.1 ± 0.05
APPLICATION DATA (at +23°C - 50% R.H.)		
Mixing ratio:	comp. A : comp. B = 70 : 30	
Colour of mix:	RAL colours	
Consistency of mix:	fluid paste	
Density of mix (kg/m³):	1,480	
Viscosity of mix (mPa s):	1,500 ± 200 (rotor 4 - 50 revs)	
Pot life at +23°C:	40 mins.	
Dust dry at +23°C, 150 microns on glass:	90 mins.	
Application temperature:	+10°C to +30°C	
Set to foot traffic at +23°C:	24 hours	
Final hardening time at +23°C:	3 days	
FINAL PERFORMANCE		
Maximum deformation after 7 days at +23°C + 14 days at +50°C (DIN 53504) (%):	43	
Tear strength after 7 days at +23°C + 14 days at +50°C (DIN 53515) (N/mm):	97	
Tensile strength after 7 days at +23°C + 14 days at +50°C (DIN 53504) (N/mm²):	12.2	
Taber abrasion resistance (CS17 disk - 1,000 g - 1,000 revs) after 7 days at +23°C (EN ISO 5470-1) (mg):	95	
Shore A hardness (DIN 53505):	85	
Shore D hardness (DIN 53505):	40	

- Do not apply **Mapefloor Finish 451** on dusty or crumbling substrates.
- Do not apply **Mapefloor Finish 451** on substrates with oil, grease or stains in general.
- Do not mix partial quantities of the components to avoid mixing errors; the product may not harden correctly.
- Do not expose the mixed product to sources of heat.
- The coating may change colour if it comes into contact with aggressive chemicals. A change in colour, however, does not mean that it has been damaged by the chemical.
- Remove aggressive chemicals as soon as possible after they come into contact with **Mapefloor Finish 451**.
- Use suitable specific cleaning equipment and detergent to clean the coating, depending on the type of dirt or stain to be removed.
- Protect the product from water for at least 24 hours after application.
- The product and resin system containing this product must not be applied on cementitious substrates with a moisture content higher than 4% or with capillary rising damp (check with a sheet of polythene).
- The temperature of the substrate must be at least 3°C above dew-point.

APPLICATION PROCEDURE

Substrate preparation

Apply **Mapefloor Finish 451** on the surface of hardened resin broadcast in excess with

sand, such as **Mapefloor PU 400**, **Mapefloor PU 400 LV** and **Mapefloor PU 410**, and after removing any excess sand from the surface. Substrates must be structurally sound with no detached areas and must also be clean, dry and free of all traces of dust, oil, grease and any other compound or substance that could affect adhesion.

Preparation of the product

Mix the two components separately with a low speed electric mixer. Pour component B into the container of component A and mix for several minutes until completely blended. Only prepare the quantity required within the maximum workability time (approximately 40 minutes at +23°C).

Application of the product

Apply **Mapefloor Finish 451** in a single coat by roller or by straight steel or rubber trowel. If the finish is applied by roller, it is recommended to apply the product in criss-cross strokes and to make sure it is applied uniformly to get an even, attractive finish. If the finish is applied by rubber trowel, consumption will be lower and the surface will be rougher.

Cleaning

Clean tools used to mix and apply the product with polyurethane thinners before it hardens. Once hardened the material may only be removed mechanically.

CONSUMPTION

Consumption depends on the roughness of the substrate, the surrounding temperature and the type of tool used to apply the product. The figures indicated are for application on a substrate at a temperature of +15°C to +25°C. Lower temperatures increase the consumption rate and the hardening time of the product.

Theoretical consumption: 0.6-0.8 kg/m² (it is recommended to carry out a preliminary test to estimate the actual consumption rate for the material).

PACKAGING

Component A: 14 kg.
Component B: 6 kg.

STORAGE

Store the product in a covered, dry place at a temperature of +15°C to +25°C. The product may be stored for 12 months in such conditions.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapefloor Finish 451 components A and B may cause sensitisation to those predisposed if it comes in contact with the skin.

Mapefloor Finish 451 component B is inflammable. It is recommended to store the product away from flames and sparks, to avoid smoking, to prevent the build-up of electrostatic charges and to work in well ventilated areas.

During use wear protective gloves and goggles and take the usual precautions for handling of chemicals. If the product comes in contact with the eyes or skin, wash immediately with plenty of clean water and seek medical attention. Wear suitable protection for the respiratory system.

Mapefloor Finish 451 component A is also hazardous for aquatic life; do not dispose of the product in the environment.

For further and complete information about the safe use of our product please refer to the latest version of our Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement or replace requirements per the TDS in force at the time of the MAPEI product installation.

The most up-to-date TDS can be downloaded from our website www.mapei.com.

ANY ALTERATION TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.

**All relevant references
for the product are available
upon request and from
www.mapei.com**

PERFORMANCE CHARACTERISTICS FOR CE CERTIFICATION ACCORDING TO EN 1504-2 – TAB. ZA. 1d ; ZA.1e; ZA 1f; ZA 1g (coating C, PI-MC-PR-RC-IR)			
Main characteristics	Test method according to UNI EN 1504-2	Requirements	Performance of product
Abrasion resistance (TABER test) Note: testing methods for flooring systems according to EN 13813 are also acceptable	EN ISO 5470-1	Loss in weight less than 3000 mg with an H22 abrasive disk/1,000 cycles/1,000 g load	“800 mg (typical value)”
Permeability to CO₂	EN 1062-6	Permeability to CO ₂ S _D > 50 m	S _D 130 m
Permeability to water vapour	EN ISO 7783	Class I: S _D < 5 m (permeable to water vapour) Class II: 5 m < S _D < 50 m Class III: S _D > 50 m (impermeable to water vapour)	Class III
Resistance to thermal shock (1x)	EN 13687-5	After thermal cycles a) no swelling, cracking or delamination b) Average direct traction adherence test (N/mm ²) Cracking or flexible systems with no traffic: ≥ 0.8 (0.5) ^{b)} with traffic: ≥ 1.5 (1.0) ^{b)} Rigid systems ^{c)} with no traffic: ≥ 1.0 (0.7) ^{b)} with traffic: ≥ 2.0 (1.0) ^{b)}	3.48 MPa (Flexible system with traffic)
Capillary absorption and permeability to water	EN 1062-3	w < 0.1 kg/m ² · h ^{0.5}	0.004 kg/m ² · h ^{0.5}
Impact strength measured on MC (0.40) coated concrete samples according to EN 1766. Note: the thickness and design impact load influence which class is chosen	EN ISO 6272 - 1	No cracks or delamination after loading Class I: ≥ 4 Nm Class II: ≥ 10 Nm Class III: ≥ 20Nm	Class II
Direct traction adherence test. Reference substrate: MC (0.40) as specified in EN 1766, curing time: – 28 days for one-component systems containing concrete and PCC systems: – 7 days for reactive resin systems:	EN 1542	Average (N/mm ²) Cracking or flexible systems: with no traffic: ≥ 0.8 (0.5) ^{b)} with traffic: ≥ 1.5 (1.0) ^{b)} Rigid systems ^{c)} with no traffic: ≥ 1.0 (0.7) ^{b)} with traffic: > 2.0 (1.0) ^{b)}	3.38 MPa (Flexible system with traffic)
Resistance to severe chemical attack. Class I: 3 days with no pressure Class II: 28 days with no pressure Class III: 28 days with pressure It is advisable to use test liquid for the 20 classes indicated in EN 13529 to cover all common types of chemical agents. Other test liquids may be agreed upon between those interested in the tests	EN 13529	Reduction of hardness less than 50% when measured according to the Buchholz method, EN ISO 2815, or the Shore method from EN ISO 868), 24 hours after removing the coating from immersion in the test liquid	GROUP 1: Class II GROUP 3: Class II GROUP 12: Class II
Exposure to artificial atmospheric agents according to EN 1062-11:2002, 4.2 (radiation, UV rays and humidity) for external applications only. Only white and RAL 7030 require testing	EN 1062-11	After 2,000 hours of artificial bad weather: – no swelling according to EN ISO 4628-2 – no cracking according to EN ISO 4628-4 – no flaking according to EN ISO 4628-5 slight colour variation, loss of brightness and crumbling may be acceptable	No swelling, cracking or flaking
Reaction to fire	EN 13501-1	A1 _{FL} to F _{FL}	B _{FL} -s1



Primer SN



Two-component fillerized epoxy primer

WHERE TO USE

Primer SN has been specifically formulated to carry out preliminary priming treatments on surfaces before applying epoxy and polyurethane resin systems from the **Mapefloor** range and self-levelling cementitious mortars from the **Ultratop/Ultratop Living** range to protect and coat civil and industrial floors, terrazzo floors and cementitious substrates in general.

Some application examples

- Adhesion promoter for epoxy and polyurethane coating products in general.
- Adhesion promoter for self-levelling and/or multi-layered coating products.
- Adhesion promoter for flooring made from synthetic mortar.
- Adhesion promoter for coatings from the **Ultratop** and **Ultratop Living** ranges.
- Fluid adhesive to seal cracks and make structural bonds.

TECHNICAL CHARACTERISTICS

Primer SN is a two-component, fillerized epoxy resin-based primer applied with a roller, metal trowel or smooth rake according to a formula developed in the MAPEI R&D Laboratories.

Primer SN may be used as it is or mixed with

Quartz 0.5 to improve adhesion of resin coating systems and even out surfaces.

Thanks to its special formulation, **Primer SN** is characterised by its ability to penetrate into substrates and may even be applied on moderately damp surfaces.

RECOMMENDATIONS

- Do not apply **Primer SN** on substrates with rising damp if they are going to be coated with an epoxy or polyurethane system.
- Do not dilute **Primer SN** with solvent or water.
- Do not apply **Primer SN** on dusty, crumbling or weak substrates.
- Do not apply **Primer SN** on substrates with oil or grease stains or stains in general.
- Do not apply **Primer SN** on substrates that have not been prepared according to specification.
- Do not mix partial quantities of the components to avoid mixing errors; the product may not harden correctly.
- Do not expose the mixed product to sources of heat.
- If rooms where the product is being used need to be warmed up do not use heaters that burn hydrocarbons, otherwise the carbon dioxide and water vapour given off into the air will affect the shine

TECHNICAL DATA (typical values)			
PRODUCT IDENTITY			
	component A	component B	
Colour:	neutral	straw-yellow	
Consistency:	liquid	liquid	
Density (EN ISO 2811-1) (g/cm³):	1.65	0.99	
Viscosity at +23°C (EN ISO 2555) (mPa-s):	3000 (# 4 - 20 rpm)	200 (# 1 - 20 rpm)	
APPLICATION DATA (at +23°C and 50% R.H.)			
Mixing ratio:	component A : component B = 80 : 20		
Colour of mix:	neutral		
Consistency of mix:	thick fluid		
Density of mix (EN ISO 2811-1) (kg/m³):	1500		
Viscosity of mix (EN ISO 2555) (mPa-s):	1100 ± 100 (# 3 - 50 rpm)		
Workability time at +20°C:	30 mins.		
Application temperature:	from +8°C to +35°C		
Waiting time between coats at +23°C and 50% R.H.: – on Primer SN without a dry-shake finish of quartz sand: – on Primer SN with a dry-shake finish of quartz sand:	min. 12 hours, max. 48 hours min. 12 hours, no maximum limit* *surfaces must be dry with no dust		
Hardening time at +23°C and 50% R.H.: – dust dry: – set to foot traffic: – full hardening time:	approx. 6 hours approx. 24 hours approx. 7 days		
The times above are for indication purposes only and are influenced by actual site conditions (e.g. temperature of the surroundings and substrate, relative humidity of the surrounding air, etc.)			
FINAL PERFORMANCE			
Performance characteristic	Test method	Requirements according to EN 13813 for synthetic resin-based screeds	Performance of product
Adhesion strength (N/mm²):	EN 13892-8; 2004	≥ 1.5	3.20
Reaction to fire:	EN 13501-1	from A _{fl} to F _{fl}	B _{fl} -s1
Compressive strength (N/mm²):	EN 196-1	–	63 (7 days at +23°C)
Shore D hardness:	DIN 53505	–	78 (7 days at +23°C)

on the finish and ruin its appearance.
Use electric heaters only.

- Protect the product from water for at least 24 hours after application.
- Do not apply the product directly on substrates with moisture content higher than 4% and/or with capillary rising damp (check by testing it with a sheet of polythene).
- The temperature of the substrate must be at least 3°C higher than the dew-point temperature.

APPLICATION PROCEDURE **Preparation of the substrate**

The surface of concrete floors must be preferably dry or slightly damp, clean and sound and have no crumbling or detached portions. The substrate concrete must have a compressive strength of at least 25 N/mm² and a minimum tensile strength of 1.5 N/mm². The strength of the substrate must also be suitable for its final use and the types of load to which it will be subjected.

The level of moisture in the substrate must be a maximum of 4% and there must be no capillary rising damp (check by testing it with a sheet of polythene).

The surface of the floor must be prepared with a suitable mechanical process (e.g. shot-blasting or grinding with a diamond disk) to remove all traces of dirt, cement laitance and crumbling or detached portions, and to make the surface slightly rough and absorbent. Concrete surfaces impregnated with oil and grease must be thoroughly cleaned with a 10% solution of water and soda or detergent soap and then rinsed several times with plenty of clean water. Remove any water from the surface and wait until the level of residual moisture is no higher than 4% before applying **Primer SN**.

If the oil or grease has penetrated deeper into the substrate, on the other hand, all the affected concrete must be removed by scarifying. The substrate must then be integrated with **Mapefloor EP19**, a three-component epoxy mortar. Before applying **Primer SN** remove all traces of dust from the surface with a vacuum cleaner.

Preparation of the product

The two components which make up **Primer SN** must be blended together just before application. Mix component A thoroughly and add the contents of component B. Add **Mapecolor Paste** if required and up to 50% by weight of quartz sand according to the surrounding temperature (to even out rough surfaces). Mix again with an electric mixer at low speed to prevent entraining air into the mix (300-400 revs/min) for at least 2 minutes until the mix is completely blended.

Pour the mix into a clean container and briefly mix again.

Do not mix the product for too long to prevent entraining too much air into the mix. Apply the mix within the pot life indicated in the table (refers to a temperature of +20°C). Higher surrounding temperatures will reduce the pot life of the mix, while lower temperatures will increase its pot life.

Application of Primer SN

Apply an even coat of neat **Primer SN** or mixed with **Quartz 0.5** on the substrate after it has been prepared as specified with a straight trowel or rake. Then broadcast with **Quartz 0.5** – according to the kind of system to be realized – to ensure the next coat of resin adheres perfectly. If **Ultratop** or **Ultratop Living** is to be applied, use 1.2 mm quartz sand for the broadcast.

Make sure there are no open pores in the surface of the substrate, otherwise air bubbles could escape from the substrate and form pinholes in the coating system to be applied. This is particularly important when applying self-levelling resin or cementitious systems.

Cleaning tools

Clean tools used to prepare and apply **Primer SN** immediately after use with ethanol. Once hardened, the product may only be removed mechanically.

CONSUMPTION

0.3-0.7 kg/m² per coat depending on the characteristics of the substrate such as roughness, absorbency, temperature, etc.

PACKAGING

5 kg kits: component A = 4 kg;
component B = 1 kg.
20 kg kits: component A = 16 kg;
component B = 4 kg.

STORAGE

Primer SN must be stored in its original packaging in a dry place at a temperature of between +5°C and +30°C.
Max. 24 months.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Primer SN component A is irritant for the eyes and skin. Both component A and B may cause sensitization when in contact with the skin of those predisposed. **Primer SN** component B is corrosive and may cause burns. Furthermore, it is hazardous if swallowed. The product contains low molecular weight epoxy resins that may cause sensitization if cross-contamination occurs with other epoxy compounds. During use, wear protective gloves and goggles and take the usual precautions for handling chemicals. In case of contact with the eyes or skin wash immediately with plenty of clean water and seek medical attention. When the product reacts it generates considerable heat. After mixing components A and B we recommend applying the product as soon as possible and to never leave the

Primer SN

container unguarded until it is completely empty.
Furthermore, **Primer SN** component A is dangerous for aquatic life. Do not dispose of it into the environment.
For further and complete information about the safe use of our product please refer to the latest version of our Material Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.



Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

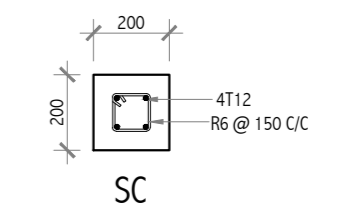
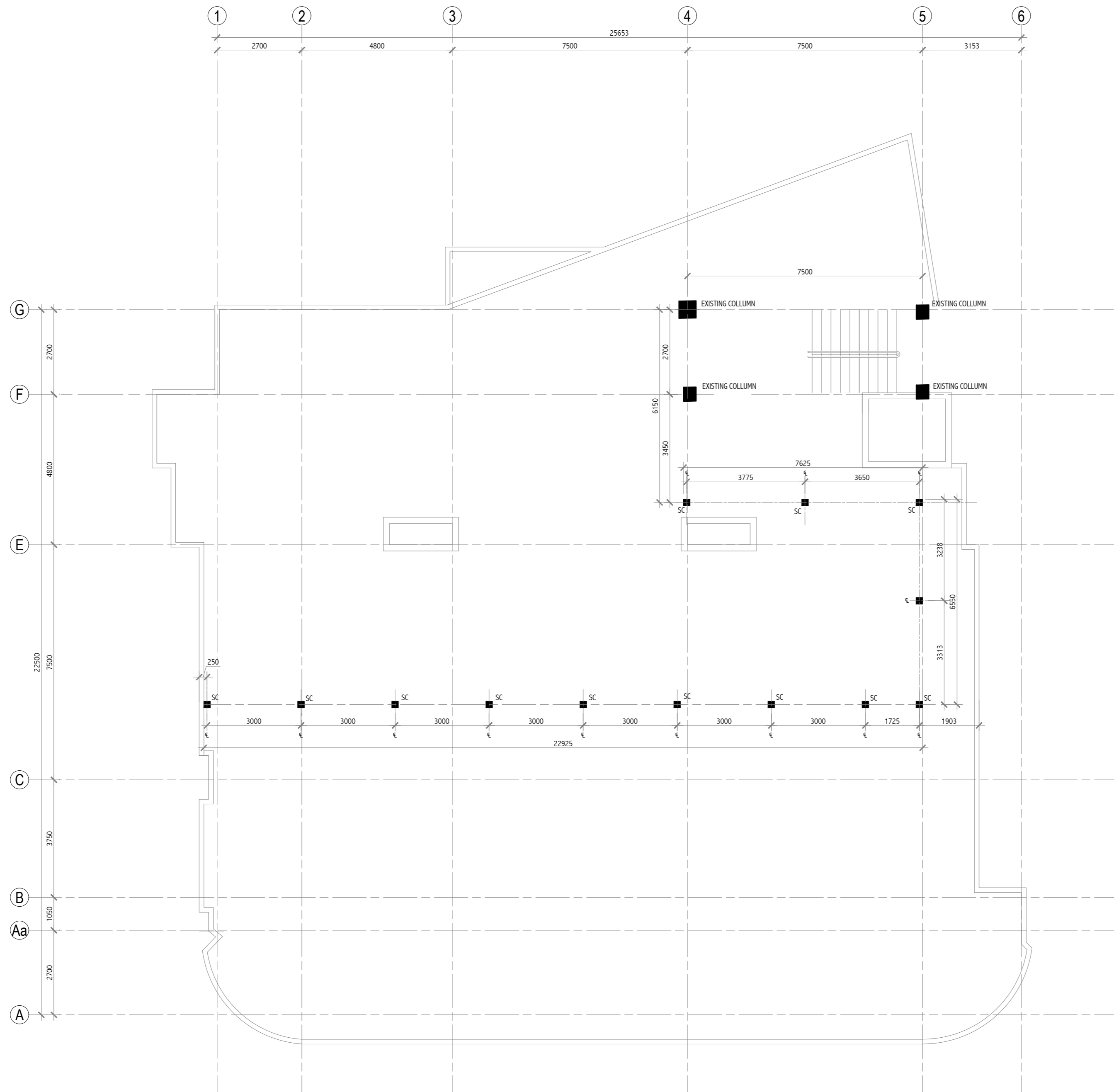
LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement or replace requirements per the TDS in force at the time of the MAPEI product installation.

The most up-to-date TDS can be downloaded from our website www.mapei.com.

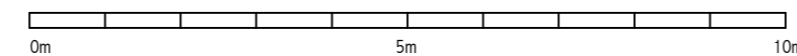
ANY ALTERATION TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.

All relevant references for the product are available upon request and from www.mapei.com



SCALE 1:20

STUMP COLUMN PLAN
SCALE 1:100



Revision	Date	Drawn By	Checked By
R01	28-07-2021	YVONNE	KINANATH
R02	12-08-2021	YVONNE	KINANATH

REV "A" ACCORDING TO ARCHITECTURAL PLAN XXX

Client: **PEOPLE'S MAJILIS**

Project Title: **PEOPLE'S MAJILIS NEW BUILDING TERRACE WATER PROOFING**

Building Name: **PEOPLE'S MAJILIS**

Drawing Title: **COLUMN PLAN STUMP COLUMN (SC) DETAILS**

Scale: **AS SHOWN**

Discipline: **STRUCTURAL**

Stage: **SUBMISSION**

Original Drawn By: **YVONNE** Date: **05 APRIL 2021**

Checked By: **-**

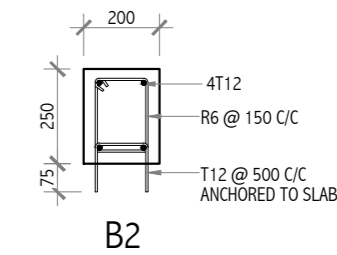
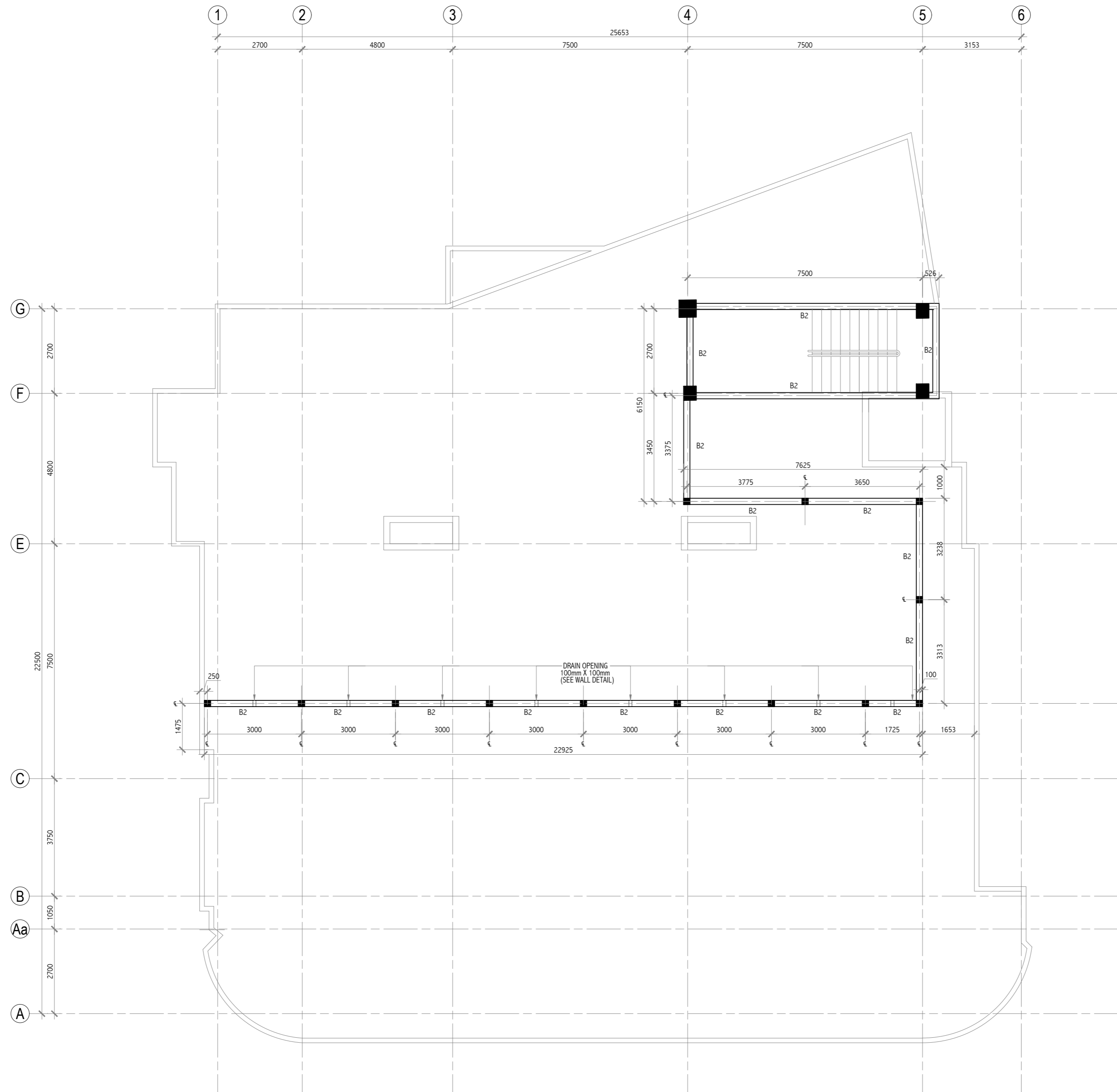
Drawing Number: **21-101**

Revision Number: **R02**

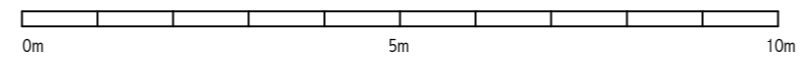
File Name: **PMNB-21-101R02.dwg**

Deens Villa
Mehell Goathi
Male 20012
Republic of Maldives
Tel: +960 3318452
Fax: 960 3110317
E-Mail: admin@gedor.com.mv
Webpage: gedor.com.mv





LOWER BEAM PLAN
 SCALE 1:100



Revision	Date	Drawn By	Checked By
R01	28-07-2021	YVONNE	KINANATH
R02	12-08-2021	YVONNE	KINANATH

REV "A" ACCORDING TO ARCHITECTURAL PLAN XXX

Client: **PEOPLE'S MAJILIS**
 Project Title: **PEOPLE'S MAJILIS NEW BUILDING TERRACE WATER PROOFING**
 Building Name: **PEOPLE'S MAJILIS**
 Drawing Title: **LOWER BEAM PLAN BEAM DETAIL (B2)**

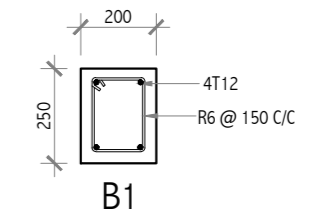
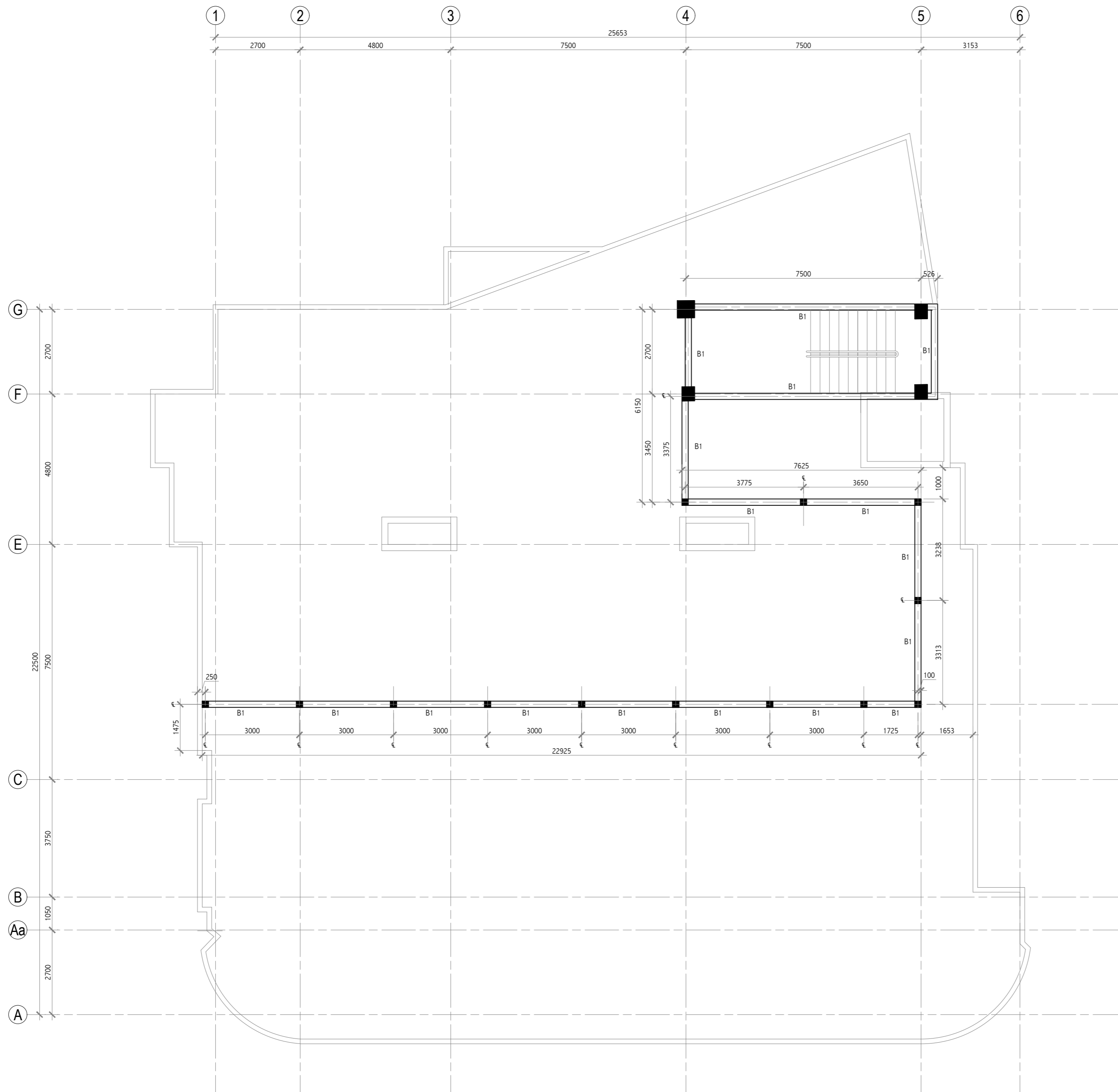
Scale: **AS SHOWN**
 Discipline: **STRUCTURAL**
 Stage: **SUBMISSION**

Original Drawn By: **YVONNE** Date: **05 APRIL 2021**
 Checked By: **KINANATH**
 Drawing Number: **21-102**

Revision Number: **R02**
 File Name: **PMNB-21-102R02.dwg**

Deens Villa
 Mehell Goathi
 Malé 20012
 Republic of Maldives
 Tel: +960 3318452
 Fax: 960 3110317
 E-Mail: admin@gedor.com.mv
 Webpage: gedor.com.mv





BEAM (B1) DETAILS
SCALE 1:20

Revision	Date	Drawn By	Checked By
R01	12-08-21	YVONNE	KINANATH

REV "A" ACCORDING TO ARCHITECTURAL PLAN XXX

Client: **PEOPLE'S MAJILIS**

Project Title: **PEOPLE'S MAJILIS
NEW BUILDING TERRACE
WATER PROOFING**

Building Name: **PEOPLE'S MAJILIS**
Drawing Title: **UPPER BEAM PLAN
BEAM DETAIL (B1)**

Scale: **AS SHOWN**

Discipline: **STRUCTURAL**

Stage: **SUBMISSION**

Original Drawn By: **YVONNE** Date: **05 APRIL 2021**

Checked By: **R02**

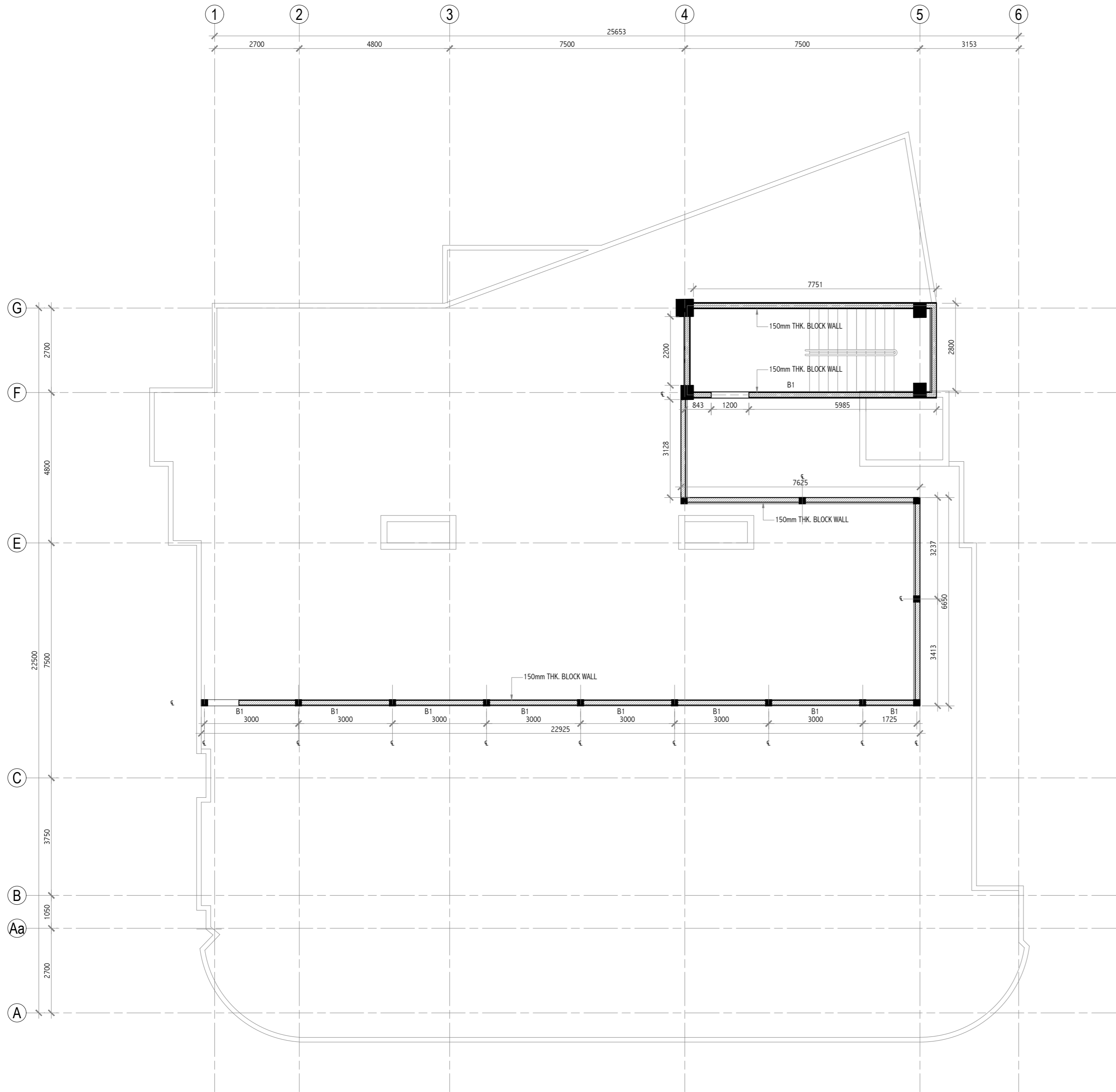
Drawing Number: **21-103**

Revision Number: **R02**

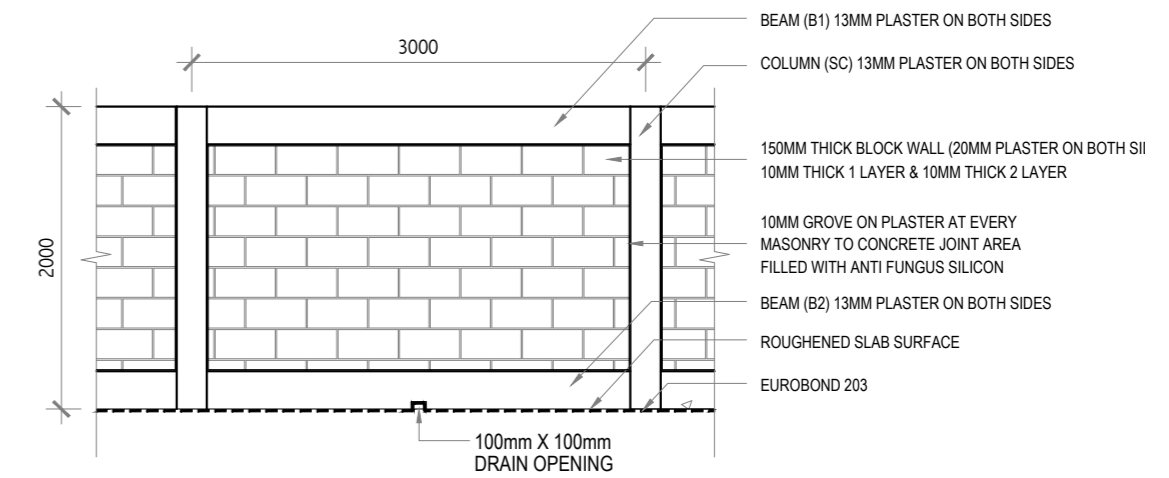
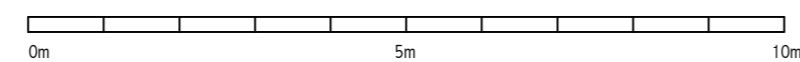
File Name: **PMNB-21-103R01.dwg**

Deens Villa
Meheli Goathi
Male 20012
Republic of Maldives
Tel: +960 3318452
Fax: 960 3110317
E-Mail: admin@gedor.com.mv
Webpage: gedor.com.mv





WALL PLAN
SCALE 1:100



WALL DETAIL
SCALE 1:50

Revision	Date	Drawn By	Checked By
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

REV "A" ACCORDING TO ARCHITECTURAL PLAN XXX

Client:
PEOPLE'S MAJILIS

Project Title:

**PEOPLE'S MAJILIS
NEW BUILDING TERRACE
WATER PROOFING**

Building Name:
PEOPLE'S MAJILIS
Drawing Title:
**WALL PLAN
WALL DETAIL**

Scale:
AS SHOWN

Discipline:
STRUCTURAL

Stage:
SUBMISSION

Original Drawn By: **YVONNE** Date: **05 APRIL 2021**

Checked By: **KINANATH**

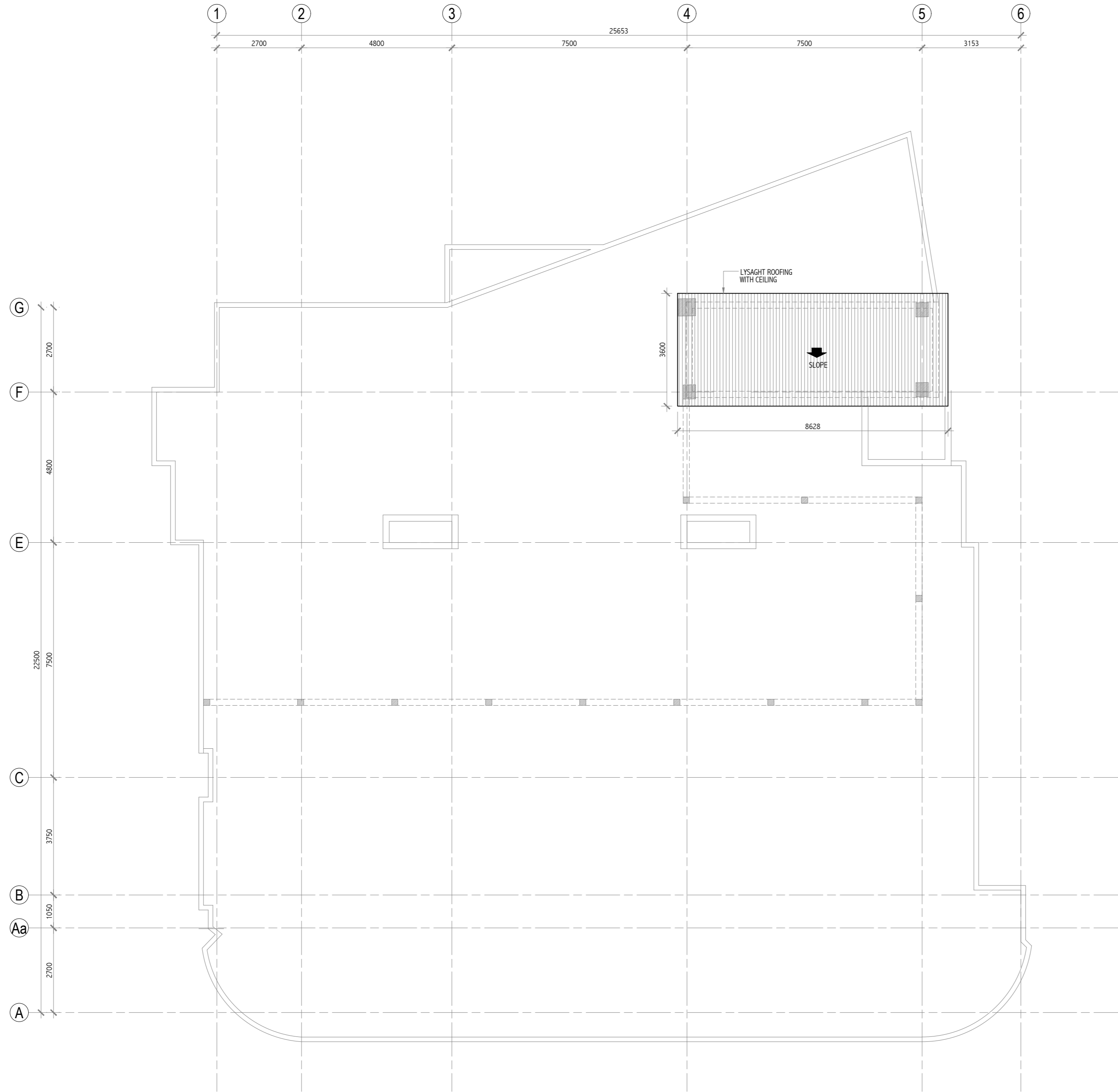
Drawing Number: **21-104**

Revision Number:
R00

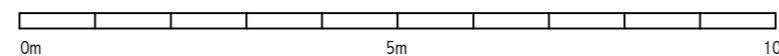
File Name:
PMNB-21-104R00.dwg

Deens Villa
Maheili Goathi
Male 20012
Republic of Maldives
Tel: +960 3318452
Fax: 960 3103117
E-Mail: admin@gedor.com.mv
Webpage: gedor.com.mv





ROOF PLAN
SCALE 1:100



Revision	Date	Drawn By	Checked By
-	-	-	-

REV "A" ACCORDING TO ARCHITECTURAL PLAN XXX

Client:
PEOPLE'S MAJILIS

Project Title:

**PEOPLE'S MAJILIS
NEW BUILDING TERRACE
WATER PROOFING**

Building Name:
PEOPLE'S MAJILIS
Drawing Title:
ROOF PLAN

Scale:
1:100

Discipline:
STRUCTURAL

Stage:
SUBMISSION

Original Drawn By :
YVONNE Date :
05 APRIL 2021

Checked By :
KINANATH

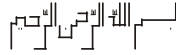
Drawing Number :
21-106

Revision Number :
R00

File Name :
PMNB-21-106R00.dwg

Deens Villa
Maheili Goathi
Male 20012
Republic of Maldives
Tel: +960 3318452
Fax: 960 3103117
E-Mail: admin@gedor.com.mv
Webpage: gedor.com.mv





Building Engineering and Services

G.PROSPECT, RAHDHEBAI MAGU, MALE' 20130, MALDIVES, PHONE: 3308652, FAX: 3307903

COMPRESSIVE STRENGTH TEST BY REBOUND HAMMER

BS 1881 (Part-202)

Reference no.: BLM2021/1264

Client: Majlis New Building

Project: Majlis New Building

Position of hammer: A

Placement: Terrace Area Location 01

Report No: RH/21/184

Date of Testing: 22/08/2021

	1	2	3	4	5	6	7	8	9
Rebound Number	33	36	37	38	31	34	32	29	30
Average Rebound Number	33.33								
Avg. Compressive Strength N/mm ²	36								

- Note:
1. Concrete mix ratio
 2. Admixture:
 3. Tested at saturated/moist/dry condition
 4. Sample identification and concrete admixture details as supplied by the client



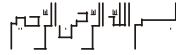
Remarks:

Tested & Prepared by:

Fazil Junaideen
Laboratory Technician

Checked by:

For, Kinaanath Hussain
Supervising Engineer



Building Engineering and Services

G.PROSPECT, RAHDHEBAI MAGU, MALE' 20130, MALDIVES, PHONE: 3308652, FAX: 3307903

COMPRESSIVE STRENGTH TEST BY REBOUND HAMMER

BS 1881 (Part-202)

Reference no.: BLM2021/1264

Client: Majlis New Building

Project: Majlis New Building

Position of hammer: A

Placement: Terrace Area Location 02

Report No: RH/21/185

Date of Testing: 22/08/2021

	1	2	3	4	5	6	7	8	9
Rebound Number	28	26	30	25	25	24	28	26	32
Average Rebound Number	27.11								
Avg. Compressive Strength N/mm ²	24								

- Note:
1. Concrete mix ratio
 2. Admixture:
 3. Tested at saturated/moist/dry condition
 4. Sample identification and concrete admixture details as supplied by the client



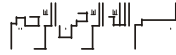
Remarks:

Tested & Prepared by:

Fazil Junaideen
Laboratory Technician

Checked by:

For, Kinaanath Hussain
Supervising Engineer



Building Engineering and Services

G.PROSPECT, RAHDHEBAI MAGU, MALE' 20130, MALDIVES, PHONE: 3308652, FAX: 3307903

COMPRESSIVE STRENGTH TEST BY REBOUND HAMMER

BS 1881 (Part-202)

Reference no.: BLM2021/1264

Client: Majlis New Building

Project: Majlis New Building

Position of hammer: A

Placement: Terrace Area Location 03

Report No: RH/21/186

Date of Testing: 22/08/2021

	1	2	3	4	5	6	7	8	9
Rebound Number	25	20	21	25	27	29	24	21	24
Average Rebound Number	24.00								
Avg. Compressive Strength N/mm ²	21								

- Note:
1. Concrete mix ratio
 2. Admixture:
 3. Tested at saturated/moist/dry condition
 4. Sample identification and concrete admixture details as supplied by the client



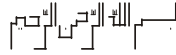
Remarks:

Tested & Prepared by:

Fazil Junaideen
Laboratory Technician

Checked by:

For, Kinaanath Hussain
Supervising Engineer



Building Engineering and Services

G.PROSPECT, RAHDHEBAI MAGU, MALE' 20130, MALDIVES, PHONE: 3308652, FAX: 3307903

COMPRESSIVE STRENGTH TEST BY REBOUND HAMMER

BS 1881 (Part-202)

Reference no.: BLM2021/1264

Client: Majlis New Building

Project: Majlis New Building

Position of hammer: A

Placement: Terrace Area Location 04 (AC Area)

Report No: RH/21/187

Date of Testing: 22/08/2021

	1	2	3	4	5	6	7	8	9
Rebound Number	23	33	23	24	24	20	26	28	24
Average Rebound Number	25.00								
Avg. Compressive Strength N/mm ²	22								

- Note:
1. Concrete mix ratio
 2. Admixture:
 3. Tested at saturated/moist/dry condition
 4. Sample identification and concrete admixture details as supplied by the client



Remarks:

Tested & Prepared by:

Fazil Junaideen
Laboratory Technician

Checked by:

For, Kinaanath Hussain
Supervising Engineer



Building Engineering and Services

G.PROSPECT, RAHDHEBAI MAGU, MALE' 20130, MALDIVES, PHONE: 3308652, FAX: 3307903

COMPRESSIVE STRENGTH TEST BY REBOUND HAMMER

BS 1881 (Part-202)

Reference no.: BLM2021/1264

Client: Majlis New Building

Project: Majlis New Building

Position of hammer: A

Placement: Terrace Area Location 05 (AC Area)

Report No: RH/21/188

Date of Testing: 22/08/2021

	1	2	3	4	5	6	7	8	9
Rebound Number	29	38	36	32	34	29	26	30	37
Average Rebound Number	32.33								
Avg. Compressive Strength N/mm ²	34								

- Note:
1. Concrete mix ratio
 2. Admixture:
 3. Tested at saturated/moist/dry condition
 4. Sample identification and concrete admixture details as supplied by the client



Remarks:

Tested & Prepared by:

Fazil Junaideen
Laboratory Technician

Checked by:

For, Kinaanath Hussain
Supervising Engineer



Building Engineering and Services

G.PROSPECT, RAHDHEBAI MAGU, MALE' 20130, MALDIVES, PHONE: 3308652, FAX: 3307903

COMPRESSIVE STRENGTH TEST BY REBOUND HAMMER

BS 1881 (Part-202)

Reference no.: BLM2021/1264

Client: Majlis New Building

Project: Majlis New Building

Position of hammer: A

Placement: Terrace Area Location 06 (AC Area)

Report No: RH/21/189

Date of Testing: 22/08/2021

	1	2	3	4	5	6	7	8	9
Rebound Number	27	31	36	35	31	35	28	37	30
Average Rebound Number	32.22								
Avg. Compressive Strength N/mm ²	34								

- Note:
1. Concrete mix ratio
 2. Admixture:
 3. Tested at saturated/moist/dry condition
 4. Sample identification and concrete admixture details as supplied by the client



Remarks:

Tested & Prepared by:

Fazil Junaideen
Laboratory Technician

Checked by:

For, Kinaanath Hussain
Supervising Engineer

سید محمد سعید احمد - 6

Bill Of Quantities (BOQ)

BOQ for:

Renovation Works for Majlis New Building at Terrace Floor Works

Project Title:

Majlis New Building Terrace Waterproofing

August 15, 2021



Renovation Works for Majlis New Building at Terrace Floor Works

BOQ Summary

Date : 15-Aug-21

Bill Item No	Description	Total Amount (MVR)
1.0	Preliminaries	-
2.0	Concrete Works	-
3.0	Masonry Works	-
4.0	Water Proofing Works	-
5.0	Demolishing & Removing Works	-
6.0	Other Works	-
7.0	Additional Works	-
8.0	Omission Works	-
	Total Amount (MVR)	-
	GST - 6%	-
	Grand Total (MVR)	-

Item	Description	Unit	Qty	Rate (MVR)	Amount (MVR)
	<u>Bill No : 1</u> <u>Preliminaries</u>				
1.1	<u>General Notes</u>				
1	<u>Symbols & Abbreviations</u> m - meter nr - numbers m ³ - cubic meter m ² - square meter kg - kilograms t - tonne incl - including mm - millimeter > - exceeding ≥ - equal to or exceeding dia - diameter ≤ - not exceeding < - less than % - percentage SS - Stainless Steel GI - Galvanized Iron				
1.2	<u>Site Management , Staff & Office Maintain Cost</u>				
1	Allow for site management cost including technical staff etc.	Item	1.00		-
2	Allow for temporary office maintain at site, facilities including office equipment , stationeries , computers & printers , if any other cost.	Item	1.00		-
3	Allow to the Contractor to include plant , machineries and equipment cost related to the works.	Item	1.00		-
1.3	<u>Temporary Fencing and Hoarding</u> NA				
1	Supply, erect & maintain of a fence through out the construction period and hoarding all along the perimeter of the site until completion.	Item	1.00		NA
1.4	<u>Safety On Site and Site Security Works</u>				
1	Providing and maintains adequate safety measures for whole workers , staff and authorized visitors and site security works for the works and people until completion of the works.	Item	1.00		-
1.5	<u>Clean-up</u>				
1	Allow for clean-up of completed works and site upon completion. Rate to include demobilization & removal of debris and garbage from site.	Item	1.00		-
1.6	<u>Setting Out</u>				
1	Setting out of the Works, If any.	Item	1.00		-

Item	Description	Unit	Qty	Rate (MVR)	Amount (MVR)
1.7	<u>Precautionary protect on ground , underground or existing utilities , structures , services until complete the works.</u>				
1	Allow for precaution measures & maintaining for existing building , structure , foundation , existing utilities until completion the works as required. If there is any existing services to be protected can be included under this item.	Item	1.00		-
Total of Bill No: 01 - Carried to Bill Summary					-

Item	Description	Unit	Qty	Rate (MVR)	Amount (MVR)
	Bill No: 02 Concrete Works				
2.0	General (a) The Bidder is requested to refer the General Notes, Schedules, Drawings, Specifications and other relevant documents. (b) Rates shall include for: placing in position; making good after removal of formwork and casting in all required items; additional concrete required to conform to structural and excavated tolerances. (c) Mix ratio for reinforced concrete shall be 1:3:6 and lean concrete shall be 1:2:4 by volume. (d) Quantity is measured to the edges of concrete foundation members. Rates shall be inclusive for any additional concrete required to place the formwork and excavated tolerances. (e) Rate to include water proofing compound/admixtures to concrete for wet area unless other wise measured separately. separately. (f) All works are according to the drawing and Rate to include all the work items unless other wise measured separately. (g) All works are according to the drawing and technical specification. (h) Where there may be any discrepancies between the drawings and BOQ , details given in the drawings shall proceed.				
1	Allow for concrete testing works until completion the works.	Item	1.00		-
	Concrete Works				
2.1	Reinforced Concrete <u>Rate to include concrete , reinforcement , formwork and drilling & anchoring when necessary for reinforcement works.</u>				
1	Columns	m ³	1.25		-
2	Beam - Top	m ³	2.00		-
3	Beam - Bottom	m ³	2.00		-
Total Of Bill No: 02 - Carried to Bill summary					-

Item	Description	Unit	Qty	Rate (MVR)	Amount (MVR)
	Bill No: 03 <u>Masonry & Plastering Works</u>				
3.1	<u>General</u> (a) The Bidder is requested to refer the General Notes, Schedules, Drawings, Specifications and other relevant documents. (b) Rates shall include for cleaning out cavities, forming rebated reveals and pointing and cleaning down to reveals where necessary, all necessary machine cutting, filling of gaps. (c) Suitable filling material shall be used in all joints of concrete and masonry as a bonding agent according to the drawing. (d) Rate shall include water proofing chemicals/admixtures unless other wise measured separately. (e) All in accordance with the drawing and specification & The rates shall cover all the works completely unless other wise measured separately. (f) Where there may be any discrepancies between the drawings and BOQ, details given in the drawings shall proceed.				
3.2	<u>Block Wall</u> <u>150 mm thick vertical solid block wall in 1:5 cement sand mortar.</u>				
1	Middle Wall	m ²	59.00		-
2	Staircase Outer Wall	m ²	29.00		-
3.3	<u>Plastering Works</u> <u>20 mm thk. External plastering (10 mm thk. 1 layer & 10 mm thk. 2 layer, on block/ concrete surface with 1:5 cement sand mortar finish with semi rough.</u>				
1	Middle Wall	m ²	156.00		-
2	Staircase Outer Wall	m ²	58.00		-
	Total Of Bill No: 03 - Carried to Bill Summary				-

Item	Description	Unit	Qty	Rate (MVR)	Amount (MVR)
	<p style="text-align: center;">Bill No: 04 <u>Water Proofing Works</u></p> <p>4.1 <u>General</u></p> <p>(a) The bidders are requested to visit the site for pricing related work items. Further , please refer detailed drawings , schedules & technical specification.</p> <p>(b) All are according to the detailed drawing and specification.</p> <p>(c) Rate shall include all the works completely unless other wise measured separately.</p> <p>(d) Where there may be any discrepancies between the drawings and BOQ , details given in the drawings shall proceed for completion.</p> <p>4.2 <u>Water Proofing</u></p> <p>1 Application of approved water proofing chemical for terrace area in accordance with the drawings , specification & manufacture's instructions. Please refer Engineer's report to further details. Rate shall be covering all the work items completely.</p>	m ²	579.00		-
	Total Of Bill No: 04 - Carried to Bill summary				-

Item	Description	Unit	Qty	Rate (MVR)	Amount (MVR)
	Bill No: 05 <u>Demolishing & Removing Works</u>				
5.0	<u>General</u> (a) The bidders are requested to visit the site for pricing related work items. Further , please refer detailed drawings , schedules & technical specification. (b) All are according to the detailed drawing and specification. (c) Rate shall include all the works completely unless other wise measured separately. (d) Where there may be any discrepancies between the drawings and BOQ , details given in the drawings shall proceed for completion.				
5.1	<u>Demolish & Remove Works</u>				
1	Demolish & remove existing steel frame/steel wall frame completely. Rate to include disposal of materials away from the site & all related works.	Item	1.00		-
2	Demolish & remove existing staircase wall including door & roof completely. Rate to include disposal of materials away from the site & all related works.	Item	1.00		-
Total Of Bill No: 05 - Carried to Bill summary					-

Item	Description	Unit	Qty	Rate (MVR)	Amount (MVR)
	<u>Bill No: 06</u> <u>Other Works</u>				
6.0	<u>General</u>				
	(a) The bidders are requested to visit the site for pricing related work items. Further , please refer detailed drawings , schedules & technical specification.				
	(b) All are according to the detailed drawing and specification.				
	(c) Rate shall include all the works completely unless other wise measured separately.				
	(d) Where there may be any discrepancies between the drawings and BOQ , details given in the drawings shall proceed for completion.				
6.1	<u>Related Other Works</u>				
1	Supply & fixing new door at staircase area as shown in the drawing completely.	Item	1.00		-
2	Supply & fixing new Lysaght roofing sheet at staircase roof covering including related frame, fittings & accessories completely.	Item	1.00		-
3	Supply & fixing new ceiling (directed by the employer/engineer) at including timber frame, fittings & accessories completely.	Item	1.00		-
Total Of Bill No: 06 - Carried to Bill summary					-

Item	Description	Unit	Qty	Rate (MVR)	Amount (MVR)
7.0	<p style="text-align: center;"><u>Bill No: 07</u> <u>Additional Works</u></p> <p><u>General</u></p> <p>The Contractor shall describe and price hereunder any items/quantities shown on the drawings, mentioned in the Specifications, or required for the satisfactory completion of the project, not mentioned BOQ.</p>				
	Total Of Bill No: 07 - Carried over to summary				-

Item	Description	Unit	Qty	Rate (MVR)	Amount (MVR)
8.0	<p style="text-align: center;"><u>Bill No: 08</u> <u>Omission Works</u></p> <p><u>General</u></p>				
Total Of Bill No: 08 - Carried over to summary					

سید محمد سعید - 7 - سید محمد سعید

Annex-7

Announcemnet No. 57-T/IU/2021/28

Date: 05.09.2021

Experience Form

Scope of the experience: Building where Terrace waterproof work has been done in past 5 years

#	Project Name	Area (Building Footprint in SQFT)	Project cost (Optional)	Project Completion Date (Aug 2016- Sep 2021)	Client Name	Client Contact Address	Client mobile Phone No.	Client Email address
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
...								

Note: A copy of reference letter from the client should be attached for each mentioned project

تَجْرَعُونَ 8 - بِرَبِّكُمْ وَسَاءَ مَا كُفِّرُوا بِهِ مَا كَانُوا يَكْفُرُونَ سَاءَ مَا كَانُوا يَكْفُرُونَ

Annex-8: Payment Schedule

BOQ bill no	Work detail	Progress payments	Remarks
5.1 (1) (2) + 25% prelim	Completion of Demolition work and remove existing steel frame wall and dispose Plus 25% Preliminary	Progress payment 1	
2.1 (1) (2) (3) = + 25% Prelim	Completion of concrete works Plus 25% preliminary	Progress payment 2	
3.2 (1) (2) 3.3 (1) (2) 6.1 (1) (2) (3) + 25% Prelim	Completion of Masonry Plastering, painting & roofing work on stair well including door fixing Plus 25% preliminary	Progress payment 3	
4.2 (1)	Completion of Water Proofing application work Plus 25% preliminary	Progress Payment 4	

Note : 5% from Each progress payment can be retained which will finally make total 5% upon completion of the last bill amount. If contractor fills additions and omission bills the progress bill amounts have to be adjusted with that.

