

Buildmates Wall



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Contents

	<u>Page</u>
1. Features of Buildmates Wall	4
● Hard and smooth self-finish	4
● Even surfaces	4
● Plasterwork eliminated	4
● Free of cracks	4
● Concealment of conduits	4
● Custom made size and pre-installed conduits	4
● Economically and environmentally friendly	4
2. Qualification	5
3. Experience, Technical Support and System Maturity	5
4. Job Reference	6-8
5. The Benefits of Using Buildmates Wall	9
6. Technical Specifications	10
● Product Description	10
● Range of application	10
● Compliance with standard and specification	10
● Design requirements	10
✧ Size of typical panel	11
✧ Size of return panel and infilling panel	11
✧ Special high wall and mini panel	11
✧ Loading	11
✧ Density and compressive strength	11
✧ Long term shrinkage	11
✧ Water absorption	11
✧ Water resistance	11
✧ Strength and robustness	11
✧ Standard joint	11
✧ Tape housing recess / concealment of joint tape	12
✧ Concealment of conduit	12
✧ Reinforcement	12
✧ Acoustical performance	12
✧ Water proofing / Damp proofing	12
✧ Finish compatibility	12
✧ Fire resistance	13
✧ Ageing property and chemical property	13
✧ Earthquake resistance	13
✧ Anchor loading	13

	<u>Page</u>
7. Testing and Performance	
● Wall in height not exceeding 2.53m	13-14
● Wall in height exceeding 2.53m up to 3.05m	15
8. Precasting and Quality Control	
● Precasting of concrete panel	15
● Vertical casting method	15
● Quality control and Tolerance	15
● Cracks Control	15
9. Documents submitted for Project	16
10. Installation Manual	
● Preparation	16
● Partition wall	16-18
● Party wall between two flats	18
● Door crossing panel	18-19
● Door side post	19
● Treatment to joint and junction	19-20
● Treatment to wall surface	21
● Crack rectifying method	21
● Defect rectifying method	21
● Method statement for installation of conduits on site	21-22
● Method statement for production of pre-installed conduits panel	22-23
● Method statement for batching, mixing of hand mix non-shrink cement sand mortar	23-24
● Mixing of Tape Adhesive	23-24
11. Packing, Stacking and Handling of Panel	24
12. Fixing of Door Frame	24
13. Furnishing and Fixing of Building Services	24-25
14. Decoration on wall surface	
● Laying of tiles	25
● Cementitious material decoration	25
● Nailing	25
● Applying of wall paper or paint	25
15. Method of measurement for precast concrete panel wall	26
16. Key points of the visual inspection for Buildmates Wall	26
17. Announcement of Buildmates Building Technology Ltd	26

		<u>Page</u>
18.	Installation Details	26
●	D1 – Concise Diagram of Wall Installation	27
●	D2 – Detail of Buildmates Panel	28
●	D3 – Standard Packing and Marking	29
●	D4 – Stacking and Lifting	30
●	D5 – Location of Details	31
●	D6 – Ceiling Anchor	32
●	D7 – Mortar between Panels	33
●	D8 – Mortar on Head	34
●	D9 – Wedges at Base	35
●	D10 – Pressing Mortar on Head	35
●	D11 – Junction of Floor	35
●	D12 – Junction of Ceiling	35
●	D13 – Junction of Beam	36
●	D14 – Tongue and Groove Joint	37
●	D15 – Butt Joint	37
●	D16 – Corner Joint	38
●	D17 – ‘T’ joint	39
●	D18 – Junction of In-situ R.C. Structure	40
●	D19 – Junction of Precast Facade	41
●	D20 – Junction of Door Side Post	42
●	D21 – Junction of Existing Duct	43
●	D22 – Fixing of Joint Tape	44
●	D23 – Fixing of Door Crossing Panel	45
●	D24 – Fixing of Door Frame	46
●	D25 – Fixing of Hanging Anchor	47
●	D26 – Pre-installed Conduit Panel	48
●	D27 – Laying of Tiles	49
●	D28 – Applying of Wall Paper or Paint	50
●	D29 – Rectifying of Surface Crack	51
●	D30 – Rectifying of Through Crack	52
●	D31 – Rectifying of Defect	52
●	D32 – Installation Accessories and Tools	53
●	D33 – Construction of Special High Wall	54
●	D34 – Mini Panels Used in Renovation Works	55
●	D35 – Sample	56
●	D36 – Photo Presentation	57
19.	Accessories Catalogue	

1.0 Features of Buildmates Wall

1.1 Hard and smooth self-finish:

Buildmates wall consists of Buildmates precast concrete panels made from 20MPa concrete and steel reinforcement, by the use of an unique vertical casting method which ensures Buildmates panels have the characteristic of hard and smooth self-finish on all surfaces.

1.2 Even Surfaces:

Tape housing recess is formed along each vertical edge of Buildmates panel for housing of the joint tape. This ensures Buildmates wall has the characteristic of even surfaces after fixing of joint tape.

1.3 Plasterwork Eliminated:

Buildmates wall has a hard, smooth and even self-finished ordinary concrete surface to receive a wide range of finishes including paint, wall paper, granite and tiles even without plaster / hardener. All these wet works can be eliminated on site.

1.4 Free of cracks:

All joints of wall panels shall be covered by Wallmates anti-crack Joint tapes which ensure Buildmates wall has no vertical cracks.

1.5 Concealment of conduits

Hollow cores formed within the Buildmates panels facilitate the installation of concealed conduits.

1.6 Custom Made Size and Pre-installed Conduits

Custom made size and pre-installed conduits to eliminate cutting wastage.

1.7 Economically and Environmentally Friendly

From environmental and economical point of view, Buildmates wall is an ideal choice for multi-storey building construction. The analysis results are as follows:

- a. Wall construction cost saving \$193.35/m², useful floor area cost saving \$880/m², total saving is \$1,073.24/m².
- b. 71.43% reduced in transportation, 94.27% reduced in building debris, 100% reduced in plasterwork.
- c. 98.48% decrease in bows of human being for the construction of wall.

For the figures of above items, please refer to page no. 9 "The benefits of using Buildmates Wall instead of small bricks".

2.0 Qualification

Buildmates Wall complies with BS5234: Part 2: 1992 and JG 3063-1999, and has been recognized by the following authorities:

1. Hong Kong Architectural Services Department.
2. Hong Kong Building Department.
3. Hong Kong Housing Authority.
4. Shenzhen Construction Bureau.
5. Wall Reformation Office, Guangzhou.
6. National Bureau of Construction Materials China.
7. Buildmates licensed manufacturer has been certified to comply with ISO 9001: 2000.

3.0 Experience, Technical Support and System Maturity

3.1. Experience :

Buildmates Wall has been used in over hundred projects including Hong Kong Disney's Hotel, Langham Hotel and Cheung Kong Legend (名門), thus proving that Buildmates Wall is a mature and reliable partition wall in building developments.

3.2. Technical Support :

Detailed specifications, drawings and testing report of manufacturing and installation, good and complete technical support.

3.3. System Maturity :

System fully matured, including product design, manufacture, installation and accessories.

Job Reference of Buildmates Wall in Hong Kong (During Last 5 Years)

Item	Project	Type of Development	Client / Architect / Structural Engineer / Main Contractor	Wall Area (m ²)	Wall Height (m)	Completion (Year)
88.	Mongkok West Phase 3	Housing for Senior Citizen	HKHA / Shun Yip	9,800	2.95	2001
89.	Lai Chi Kok Phase 2	Residential	HKHA / Hip Hing	54,000	2.53	2001
90.	Ma On Shan Area 90 Phase 5	Residential	HKHA / Hip Hing	67,500	2.53	2001
91.	Tsz Ching Estate Phase 3	Residential	HKHA / Chinney	27,000	2.53	2001
92.	Tin Shui Wai Area 102 Phase 7	Housing for Senior Citizen	HKHA / Penta Ocean	9,800	2.95	2001
93.	Shatin Area 8, Fung Wo Lane	Residential	HKHA / Ling Chan / Techoy	27,000	2.53	2001
94.	Lam Tin South Phase 8	Residential	HKHA / Hung Wan	12,000	2.53	2001
95.	Tin Shui Wai Area 105 Phase 2	Housing for Senior Citizen	HKHA / China State	9,800	2.95	2001
96.	Lei Yue Mun Phase 1	Residential	HKHA / Paul Y - ITC	40,500	2.53	2001
97.	Ko Chiu Road Estate Phase 5	Residential	HKHA / Paul Y - ITC	40,500	2.53	2002
98.	Upper Ngau Tau Kok Phase 1	Residential	HKHA / China State	54,000	2.53	2002
99.	Ko Chiu Road Estate Phase 3	Residential	HKHA / Chatwin	40,500	2.53	2002
100.	Tseung Kwan O Area, 73A Phase 3	Residential	HKHA / Paul Y - ITC	40,500	2.53	2002
101.	St. Andrew's Church	Office	WMKY Ltd / OAP / Yue Kei	1,000	4.20	2002
102.	Po Kong Village Road	School	ASD / Shun Shing	8,000	2.80-3.80	2002
103.	143-151 Reclamation Street	Residential	NCH Architect / To's Universe	6,000	2.70	2002
104.	Primary Schools and Secondary Schools at Wang Chiu Road	School	ASD / China Civil	3,000	2.70	2002
105.	Prince of Wales Hospital	Hostel	ASD / Ray On	40,000	3.30	2002
106.	477-499 Shun Ning Road	Residential	Liu Kwong & Associates Ltd / Hoo Cheong	8,000	3.20	2002
107.	Tung Chung Area 31 Phase 5	Residential	HKHA / Dennis Lau & Ng Chun Man Architects & Engineers (HK) Ltd / Dickson	40,500	2.53	2003
108.	Mongkok West Area 20 Phase 4	Residential	HKHA / China Overseas	20,000	2.53	2003
109.	Tsz On Estate Phase 3	Residential	HKHA / China State	40,500	2.53	2003
110.	Lei Muk Shue Estate Phase 3	Residential	HKHA / Ling Chan / Hip Hing	40,500	2.53	2003
111.	URA Project K2 (Hotel)	Hotel	Wong & Ouyang (HK) Ltd / Sun Fook Kong	48,000	2.80-4.60	2003
112.	Tin Shui Wai Lot 27, Yuen Long	Residential	Cheung Kong / Dennis Lau & Ng Chun Man Architects & Engineers (HK) Ltd / Chun Wo	69,000	2.70	2003
113.	Kwai Chung Estate Phase 4	Residential	HKHA / Ma Leung & Associate / China State	40,500	2.53	2004
114.	57-63 Luen Wo Road, Fanling	Residential	Ma Leung & Associates / To's Universe	16,000	2.70	2004
115.	216-224 Tung Chau Street, Sham Shui Po	Residential	Andrew Lee King Fun & Associates Architects / To's Universe	18,000	2.70	2004
116.	Proposed Hotels / Service Apartment Development, Tsing Yi, TYTL 140	Hotel	Wong Tung & Partners Limited / Paul Y - ITC	108,000	2.70-4.50	2004

Item	Project	Type of Development	Client / Architect / Structural Engineer / Main Contractor	Wall Area (m ²)	Wall Height (m)	Completion (Year)
117.	Repluse Bluff Residence at 89-91 Repluse Bay Road	Residential	Cason Management Limited / Spence Robinson Limited / Grand Tech Construction Co Ltd	4,000	2.80-5.20	2004
118.	Proposed Residential Development at Mosque Junction	Residential	Ray On Construction Co Ltd	12,000	2.75	2004
119.	Alice Ho Miu Ling Nethersole Elderly Care Home, 4/F., Ancillary Facilities Block, Sau Mau Ping Estate, Kwun Tong, Kowloon	Residential	HKHA / Ray On	27,000	2.53	2004
120.	Shek Kip Mei Estate Phase 1	Residential	HKHA / Paul Y - ITC	27,000	2.53	2004
121.	The Bonham Mansion, 63 Bonham Road	Residential Renovation	Kowloon Development Co Ltd	4,400	2.70	2005
122.	Hong Kong Disneyland Disney's Hollywood Hotel	Hotel	ACG / SFK	30,000	3.30	2005
123.	North Part of West Kowloon Site 10 Phase 3 & 4	Residential	HKHA / CSCEC	12,000	2.53	2005
124.	124-142 Yeung Uk Road, Tsuen Wan, TSWTL 406	Residential	CEHL / WT / COBCL	54,000	3.20	2005
125.	Tung Chung Station Development Package III, TCTL5, Superstructure Works - Phase 4 & 5	Residential	MTR / Cheung Kong / Hsin Yien Architects / Paul Y - ITC	86,000	2.70	2005
126.	Renovation Works for Parkside Services Apartment Phase 1	Hotel	Swire Properties Limited / Yearfull	4,000	2.90-4.20	2005
127.	Choi Hung Park at N.K.I.L 6179 Clear Water Bay Road	Residential	MTR / Ronald Lu & Partners (HK) Ltd / Chun Wo	18,000	2.70-5.00	2005
128.	Proposed Residential Development at 23 Tai Hang Drive, I.L. 8972	Residential	Cheung Kong / Hsin Yieh Architects & Engineers Ltd / Chun Wo	55,000	2.95-5.15	2005
129.	Proposed Residential Building at Lot. 2286, In D.D. 106, Kam Tin, Yuen Long, N.T.	Residential	Cheung Kong / A + T Design Limited / Ever Construction Co	8,000	2.70	2005
130.	Proposed Hotel and Service Apartment at 29-51 Wo Yi Hop Road, Kwai Chung	Hotel and Service Apartment	Cheung Kong / Paul Y	98,000	2.60-3.30	2006
131.	Renovation Works for Parkside Services Apartment Phase 2	Hotel	Swire Properties Limited / Yearfull	8,000	2.90-4.20	2006
132.	Lei Yue Mun Phase 2	Residential	HKHA / Paul Y	27,000	2.53	2006
133.	Shek Lei Estate Phase 10	Residential	HKHA / Nishimatsu Construction Co Ltd	27,000	2.53	2006
134.	Tiu Keng Leng Station Development Site B at TKOTL 73, Area B	Residential	MTR / Cheung Kong / LWK & Partners (HK) Ltd / Paul Y	95,000	2.80	2006
135.	Choi Wan Road Site 1 Phase 1	Residential	HKHA / China State	20,000	2.53	2006
136.	Choi Wan Road Site 1 Phase 2	Residential	HKHA / China State	30,000	2.53	2006
137.	Eastern Harbour Crossing Site Phase 3	Residential	HKHA / China State	30,000	2.53	2006
138.	Proposed Residential Development at Ma On Shan Area 77, STTL No. 487	Residential	Cheung Kong / Ho & Partners Architects Engineers & Development Consultants Ltd / Hien Lee	68,000	2.80	2006

Item	Project	Type of Development	Client / Architect / Structural Engineer / Main Contractor	Wall Area (m ²)	Wall Height (m)	Completion (Year)
139.	Proposed Residential Development at 880-886 King's Road, Quarry Bay, Hong Kong	Residential	Cheung Kong / Ove Arup & Partners Hong Kong Limited / Hien Lee	12,000	2.80	2006
140.	Sau Mau Ping Estate Phase 14	Residential	HKHA / Hanison	29,000	2.53	2007
141.	Proposed Residential Buildings at Lot 2081 in DD109 Kam Tin, Yuen Long	Residential	East Leader Investment Ltd / A+T Design Ltd / Ping On Foundation (Construction) Ltd	21,000	2.85	2007
142.	Sau Mau Ping Estate Phase 13 & 16	Residential	HKHA / Chatwin	20,000	2.53	2007
143.	TKOTL No. 70, Area 86, Site F Phase 1	Residential	City Investment Ltd / Hsin Yieh Architects & Engineers Ltd / Able Engineering Co Ltd	110,000	2.80	2007
144.	Shek Mun Area 11, Shatin	Residential	HKHA / Paul Y	23,000	2.53	2007
145.	Upper Wong Tai Sin Phase 3	Residential	HKHA / Chun Wo	8,000	2.53	2007
146.	Lam Tin Estate Phase 7 & 8	Residential	HKHA / Shui On	40,000	2.53	2007
147.	Eastern Harbour Crossing Site Phase 4	Residential	HKHA / Shui On	23,000	2.53	2007
148.	Tin Shui Wai Area 104	Residential	HKHA / Paul Y	38,000	2.53	2007
149.	Hotel Development at 15-17 Oil Street	Hotel	Super Winner / Mdvista / China Resources	30,000	3.00-6.50	2007
150.	500-502 Tung Chau Street	Residential	Simon Kwan & Associates / Heng Tat	20,000	3.00-3.35	2007
151.	33 Lai Chi Kok Road	Residential	Andrew Lee King Fun Associates Architects / Heng Tat	3,500	3.00-3.35	2007
152.	TKOTL No. 70, Area 86, Site AB Phase 2	Residential	Cheung Kong / Ho & Partners Architects / China Overseas	125,000	2.80	In progress
153.	Shatin Town Lot 539, Tai Wai	Residential	Simon Kwan & Associates / Heng Lai	29,000	2.90-4.20	In progress
154.	No. 6 Cho Yuen Street, Yau Tong	Residential	Heng Shun	19,000	2.90	In progress
155.	Atrium Hotel at Pacific Place, 88 Queensway, Hong Kong	Hotel	Hsin Chong	18,000	2.80	In progress
156.	Hotel Development at K.I.L. 4013 S.D. & R.P. To Kwa Wan	Hotel	Hsin Yieh Architects & Engineers Ltd / Alpha	16,000	2.80	In progress
157.	Carcass Contract at Planning Area 19 Phase 7 Tung Chung Station – Package 3	Residential	Kaden	19,000	3.35	In progress
158.	Tai Wai Maintenance Centre	Residential	East City Investments Limited / Hsin Yieh Architects & Engineers Ltd / Paul Y	86,000	2.80	In progress
159.	16-18 Conduit Road	Residential	Union Art Investment Ltd. / MLA Architects (HK) Ltd. / Kaden	17,000	3.50	In progress
160.	Choi Wan Road Site 2 Phase 2	Residential	HKHA / Hsin Chong	36,000	2.53	In progress
161.	Tseung Kwan O 73B	Residential	HKHA / Shui On	25,000	2.53	In progress
162.	Kwai Luen Road	Residential	HKHA / Shui On	18,000	2.53	In progress

Partition Wall Material Particulars & Cost	Small Bricks 140mm thick (Half brick with plaster on both surfaces) Partition Wall		Large Brick 85mm thick Buildmates (Steel Reinforced Concrete) Partition Wall		Cost Saving	
	Particulars	Cost	Particulars	Cost		
Comparative Item	Particulars	Cost	Particulars	Cost	Item Saving	Accumulated Saving
1. Compressive strength	≥7.5MPa	-	≥20MPa	-	-	-
2. Water absorption	≤12%	-	≤8%	-	-	-
3. Fire resistance	≥1.5 hr	-	≥1.5 hr	-	-	-
4. Sound insulation	≥43dB	-	≥43dB	-	-	-
5. Evenness	≤3mm/m	-	≤1mm/m	-	-	-
6. Anchorage of wall cupboard	≥1.5kN	-	≥3kN	-	-	-
7. Shrinkage	≤0.4mm/m	-	≤0.4mm/m	-	-	-
8. Steel reinforcement	Nil	-	1.5kg	-	-	-
9. Preinstall conduits & boxes in Factory	Impossible	-	Possible	-	-	-
10. Idle time for painting	7 days after plastering	-	1 days after erection of wall	-	-	-
11. Overall wall thickness	140mm	-	85mm	-	-	-
12. Unit weight	301 kg/m ²	-	86 kg/m ²	-	-	-
13. Workman bows (3 bows for 1 brick)	3 bows x 88 Nos = 264 bows	-	3 bows x 2 men ÷ 1.5m ² = 4 bows	-	-	-
14. Wall construction	1m ²	\$160/m ² x 1m ² = \$160.00	1m ²	\$200/m ² x 1m ² = \$200.00	-\$40.00	-\$40.00
15. Door lintel	1 No ÷ 8m ² = 0.125 no	\$80 x 0.125 = \$10.00	Included	0	\$10.00	-\$30.00
16. Steel tie rod to R.C. frame	20 Nos ÷ 20m ² = 1 no	\$5 x 1 = \$5.00	Included, use fibre tape	0	\$5.00	-\$25.00
17. Plasterwork on both surfaces	2m ²	\$60/m ² x 2m ² = \$120.00	Even & smooth surfaces, no plaster required	0	\$120.00	\$95.00
18. Steel mesh to joint with R.C. frame	2.5m x 2 ÷ 10m ² = 0.50m	\$20 x 0.5 = \$10.00	Included, use fibre tape	0	\$10.00	\$105.00
19. Angle beads for sharp angle	2.5m ÷ 10m ² = 0.25m	\$12 x 0.25 = \$3.00	Hard & straight angle, no angle beads required	0	\$3.00	\$108.00
20. Bedding for tiling	1/4 m ²	\$48 x 0.25 = \$12.00	Even surfaces, no bedding required	0	\$12.00	\$120.00
21. 50 km transportation	0.301 x 50 = 15.05 T. Km	\$1 x 15.05 = \$15.05	0.086 x 50 = 4.3 T. Km	\$1 x 4.3 = \$4.30	\$10.75	\$130.75
22. Vertical transportation on site	0.301 T	\$15 x 0.301 = \$4.52	0.086 T	\$15 x 0.086 = \$1.29	\$3.23	\$133.98
23. Scraping off waste mortar on floors	1/2 m ²	\$20 x 0.5 = \$10.00	No floor slurry	0	\$10.00	\$143.98
24. Collecting & cart away building debris	301 x 10% = 30kg	\$0.20 x 30 = \$6.00	86 x 2% = 1.72kg	\$0.2 x 1.72 = \$0.34	\$5.66	\$149.64
25. Sub-frame for door opening	1 no. ÷ 8m ² = 0.125 no.	\$160 x 0.125 = \$20.00	No sub-frame required	0	\$20.00	\$169.64
26. Timber door frame	$\frac{0.14 \times 0.05 \times (2.2 \times 2 + 0.8)}{8}$ = 0.0046m ³	\$3,000 x 0.0046 = \$13.80	$\frac{0.085 \times 0.05 \times (2.2 \times 2 + 0.8)}{8}$ = 0.0028m ³	\$3,000 x 0.0028 = \$8.40	\$6.60	\$176.24
27. Skim coat	2mm	\$3 x 2m ² = 6.00	1mm	\$2 x 2m ² = \$4.00	\$2.00	\$178.24
28. Cut trench & patch up for conduits & boxes	0.75 sets	\$60 x 0.75 = \$45.00	0.75 sets	\$40 x 0.75 = \$30.00	\$15.00	\$193.24
29. Cost of floor area occupied by the wall	0.14 x 1 ÷ 2.5 = 0.056m ²	\$40,000/m ² x 0.056m ² = \$2,240.00	0.085 x 1 ÷ 2.5 = 0.034m ²	\$40,000/m ² x 0.034m ² = \$1,360.00	\$880.00	\$1,073.24

The benefits of using Buildmates (R.C.) Wall in Hong Kong are as follows:

- * Wall construction cost saving \$193.24/m² (Item 28), useful floor area cost saving \$880/m² (Item 29), total saving is \$1,073.24/m².
- * 71.43% reduced in transportation (Item 12), 94.27% reduced in building debris (Item 24), 100% reduced in plasterwork (Item 17).
- * 98.48% decrease in bows of human being for the construction of wall (Item 13).

6.0 Technical Specification

6.1 Product Description:

- 6.1.1 Buildmates wall consists of Buildmates panels, and it is a non-load bearing partition wall constructed by trained workers in accordance with the design, details, installation sequence and specifications of the Buildmates, and using the accessories specified by the Buildmates.
- 6.1.2 Buildmates panel is a kind of precast concrete panel manufactured from 20MPa concrete and steel reinforcement.
- 6.1.3 Tape housing recess is formed along the vertical edge of panel for housing of the joint tape.
- 6.1.4 All surfaces including both main surfaces, tongue and groove and tape housing recesses are formed by an unique vertical mould that ensures Buildmates wall has a hard, smooth and even self-finish on all surfaces so that all plaster / rendering / hardener wet works can be eliminated on site.

6.2 Range of application:

The range of application of Buildmates wall includes all non-load bearing partition walls in wet and dry areas and party walls of residential housings, hotels and schools.

6.3 Compliance with standards and specifications:

Buildmates wall meets the requirements of the appropriate British standard, the Hong Kong Housing Department Specification, the Hong Kong Architectural Services Department Specification, the Hong Kong Building (Construction) Regulations, and Chinese standard JG3063-1999.

6.4 Design Requirements

6.4.1 Reference

- a. The Hong Kong Building (Construction) Regulations.
- b. BS 8110 – structural use of concrete.
- c. The structural Use of Concrete 1987.

6.4.2 Design Parameters

a. Size of typical panel

Thickness(mm)	75	85	100	120	150
Nominal Width(mm)	600	600	600	600	600
Effective Width (mm)	595	595	595	595	595
Length	To fit the ceiling height				
Max. wall height (mm)	3350	3150	3150	2850	2650

b. Size of return panel and infilling panel

- i) The turning width of “L” or “T” shape return panel equals its thickness. All as per detail D16 of page 38 and D17 of page 39.
- ii) The width of the infilling panel should not be less than 250mm.

c. Special high wall and mini panel

- i) For wall exceeding the above maximum wall height of typical panel, construction of steel framing is required before erection of wall panels. Special high wall shall be constructed as per detail D33 of page 54.
- ii) On vertical transportation of panels for renovation works, the length of panel may be limited by the headroom of the lift within the building, the mini panels shall be used. All as per detail D34 of page 55.

d. Loading

The Buildmates walls are designed to sustain all possible loading acting upon the components. In particular, the following loading conditions are taken into account.

- i) Dead loads
- ii) Imposed loads
- iii) Wall cupboards

e. Density and compressive strength

- i) Density of product (Nominal) : 1100kg/m^3 , $\pm 5\%$
- ii) Compressive strength of product concrete: 20MPa

f. Long term shrinkage

- i) Initial shrinkage after 7 days: $\leq 0.04\%$
- ii) Remaining Final shrinkage: $\leq 0.04\%$
- iii) Maximum long term total shrinkage: $\leq 0.08\%$
- iv) The above item (ii) is same as that of R.C. Framing.

g. Water absorption

The water absorption is less than 8% for the achievement of damp proofing.

h. Water resistance

Buildmates wall complies with the requirement of BS4315 and HKHA's specification of no observation of seepage.

i. Strength and robustness

Buildmates wall meets the requirements of BS5234/2 for strength and robustness test.

j. Standard joint

Standard joint is tongue and groove joint which is fully filled with non-shrink Wallmates mortar with 20MPa compressive strength.

k. Tape Housing Recesses / Concealment of Joint Tape

In order to achieve an even and smooth wall surface, a tape housing recess shall be formed along vertical joint between panels for the concealment of joint tape that ensures plaster/rendering can be eliminated on site. See figure (14), (15) and (16) of Page 27.

l. Concealment of conduit

Hollow cores are formed within panel for concealment of conduits.

m. Reinforcement

Reinforcement bars are $\varnothing 4$ mm galvanized cold reduced steel which conform to BS4482.

n. Acoustical Performance

Test to be conducted in accordance with BS5821: 1984, the weighted sound reduction index as follows:

Thickness (mm)	75	85	100	120	150	100 with grouted hollow cores	120 with grouted hollow cores	150 with grouted hollow cores	170, Double layers of 75 with grouted hollow cores and in-filled with glass fibre felt between panels
Sound Reduction (dB)	42	43	45	46	47	48	50	51	55

o. Water Proofing / Damp Proofing

Buildmates Wall is of steel reinforced ordinary concrete and designed with joints filled with non-shrink Wallmates mortar and covered by Wallmates Super 3 joint tape on both sides, so it is water / damp proofing. In order to meet the requirement of BS4315 for water resistance test and in-situ water-tightness test, 2 coats of moisture sealer is required to be applied by the main-contractor to all panel surfaces facing bathroom.

p. Finish compatibility

Buildmates wall has a hard, smooth and even self-finished ordinary concrete surface to receive a wide range of finishes including paint, wall paper, granite, and tiles without or with plaster / rendering / hardener. All plaster works on site can be eliminated on site.

q. **Fire resistance:**

BS476: Part2

Wall Thickness (mm)	75	85	100	120	150	100 with grouted hollow cores	120 with grouted hollow cores	150 with grouted hollow cores
Integrity (hr)	2.00	2.40	3.20	3.60	4.00	4.80	5.60	6.40
Insulation (hr)	1.25	1.5	2.00	2.25	2.50	3.00	3.50	4.00

r. **Ageing property and chemical property**

Buildmates panels are made from ordinary concrete and steel reinforcement, it is same as R.C. framing, so its reactions to variable temperature and humidity from outside keep same steps with the R.C. framing. And servicing life are also as long as that of the R.C. framing.

In resistance to biodeterioration, micro-biological action and all ordinary substances, the panels are same as the R.C. framing.

s. **Earthquake resistance**

Ceiling anchors on the wall head fixed into the ceiling and reinforcement bars cast within panels enhance the earthquake resisting ability of Buildmates wall.

t. **Anchor loading**

The loading and fixing of anchors as per detail D25 of page 47.

7.0 Testing and Performance:

7.1 Wall in height not exceeding 2.53m:

Buildmates Wall in height not exceeding 2530mm meets the following requirement and standards:

	Test items	Test method	Performance
7.1.1	Fire resistance	BS476: Part 22	FRP \geq 1 hr for 85mm panel
7.1.2	Sound Insulation	BS2750: Part 3 BS5821: Part 1 BS EN ISO 140-3: 1995	Weight Sound Reduction Index \geq 42dB for 85mm panel
7.1.3	Thermal Insulation	BS874: Part 2 BS EN 12664	Conductivity < 0.4 w/mc
7.1.4	Water Resistance	BS4315: Part 2	No penetration of water when test on tiled surface
7.1.5	Anchor Test	BS5080: Part 1 & 2 The result shall be taken at both the hollow core section and the "tongue and groove" joints of the panel.	Anchor type: "Wallmates" UP8 / "Upat" UV 8/50 Tension: > 1850 N Shear: > 4770 N Anchor type: "Wallmates" UP5 / "Upat" UV 5/30 Tension: > 1000 N Shear: > 2760 N
7.1.6	Strength and Robustness		To satisfy the performance requirement for Heavy Duty (HD) grade unless in contrast to the following which shall take precedence.
	i) Stiffness	BS5234: Part 2: Annex A (Load=500N)	i) Maximum deflection < 15 mm ii) Maximum residual deformation < 2 mm iii) No damage detachment loosening or dislodgement of panel and its fixings

	<u>Test items</u>	<u>Test method</u>	<u>Performance</u>
7.1.6	ii) Small hard body impact – surface damage	BS5234: Part 2: Annex B (Impact energy = 6Nm)	i) Depth of indentation <1.5mm ii) No visible cracking and breakage
	iii) Small hard body impact - perforation	BS5234: Part 2: Annex D (Impact energy = 15Nm)	No perforation of facing
	iv) Large soft body impact - damage	BS5234: Part 2: Annex C (Impact energy = 40Km)	i) Maximum deformation <2mm ii) No visible cracking and breakage
	v) Large soft body impact – structural damage	BS5234: Part 2: Annex E (Impact energy = 120Nm)	No collapse or dangerous damage
	vi) Door slam	BS5234: Part 2: Annex F (100 Impact)	i) Maximum displacement <1mm ii) No visible cracking and breakage of panel iii) Doorframe fittings and architraves shall not be detached and loosened
	vii) Crowd pressure	BS5234: Part 2: Annex G (Load=2kN/m)	No collapse or dangerous damage
	viii) Light weight anchorage – pull out	BS5234: Part 2: Annex H (Load=100N)	Shim retained and no damage to panel
	ix) Light weight anchorage – pull down	BS5234: Part 2: Annex J (Load=250N)	Shim retained and 2mm maximum displacement and no damage to panel
	x) Heavy weight anchorage – wall cupboard	BS5234: Part 2: Annex L (Load = 3kN/m)	i) Shim retained and 5mm maximum deflection and 1mm residual deformation ii) No loosening detachment or damage to panel
7.1.7	Compatibility Test with adhesive	BS5980: 1980 (Class AA)	Tensile Force $\geq 1.97\text{kN}$
7.1.8	Long Term Shrinkage	JG3063-1999	$\leq 0.5\text{mm/m}$
7.1.9	Site Test	Hong Kong Housing Authority standard	Hong Kong Housing Authority Standard
	i) Water tightness	Using telephone type shower head	No seepage through the wall
	ii) Tile removal	By hydraulic tools Annexes C and E of BS5234	i) Maximum deformation $\leq 2\text{mm}$ ii) No visible cracking and breakage iii) No collapse or dislocation
	iii) Chasing	Form 50 x 37.5mm depth chase, Annexes C & F of BS5234	i) Maximum deformation $\leq 2\text{mm}$ ii) No visible cracking and breakage iii) No collapse or dislocation

7.2

Wall in height exceeding 2.53m up to 3.05m:

Buildmates wall in height exceeding 2530mm up to 3050mm wall has also passed the following additional tests:

- 7.2.1 All aspects as listed in the above items of 7.1 for the housing for senior citizen project of Hong Kong Housing Authority.
- 7.2.2 Heavy weight anchorage – wall cupboard BS5234: Part 2: Annex L (Load = 4kN) for Legend (名門) Project.
- 7.2.3 Water absorption / ASTM C97-96 ($\leq 8\%$) for Disney's Hotel Project.
- 7.2.4 Sound insulation test on site for Langham Hotel Project.
- 7.2.5 Sound insulation test on site for Disney's Hotel Project.

8.0

Precasting and Quality Control

8.1

Precasting of concrete panel

Buildmates panel is precast from 20Mpa concrete and steel reinforcement in accordance with quality assurance scheme of ISO 9001.

8.2

Vertical casting method

All surfaces of Buildmates panel including both main surfaces, tongue and groove and base and also including tape housing recess are formed by an unique vertical casting method, all as per figure (1) of Page 27.

8.3

Quality Control and Tolerance

After completion of curing processes, all panels shall be inspected for defects. The results of inspection shall be recorded. Minor defects shall be rectified and made good with mortar which provide the same quality, texture and strength to the parent material. Visual inspection shall be carried out upon delivery.

Tolerances for panels are as follows:

- | | | | | |
|----|--------------------------------|---|--------|-----------|
| a. | Length | : | \pm | 5mm |
| b. | Width | : | \pm | 2mm |
| c. | Thickness | : | \pm | 1.5mm |
| d. | Flatness | : | \pm | 1.5mm / m |
| e. | Diagonal difference | : | \leq | 5mm |
| f. | Hollow core position deviation | : | \pm | 6mm |

8.4

Cracks Control

8.4.1 Vertical Cracks Control

In order to completely eliminate hair cracks appearing at the vertical joints, the following processes are required to be executed accordingly:

- a. Panels to be steam cured for not less than 8 hours.
- b. The density of concrete not less than 1900kg/m³.
- c. The compressive strength of concrete not less than 20MPa.
- d. Panels idling for at least 7 days before delivery to site.
- e. Joints fully filled with non-shrink mortar.
- f. The joint filling idle for at least 7 days for its pre-maturity and all fixing works for door frames and conduits having been completed before covering of joint tape.
- g. The joints covered by Wallmates Super 3 joint tapes.
- h. Paste a painting cracks preventive paper tape along joints before the application of skim coat.

8.4.2 Horizontal Cracks Control

In order to completely eliminate horizontal hair cracks appearing on panel, the following processes are required to be executed accordingly:

- a. Handle with care during the processes of lifting, transportation and stacking, all as per clause 11 of page 24.
- b. The temporary prop of structure framing is not allowed to rest on the panel bundle stacking on the floor.

9.0 Documents Submitted for Project

Documents shall be submitted for project site as follows:

- a. Loading plan indicating quantities and locations to be stacked on working floors.
- b. Partitions layout plan in compliance with the requirements of the project specification.
- c. Details of panels including panel label as per detail D3 of page 29.
- d. Installation Manual (as follows).
- e. Installation Details (as follows).

10.0 Installation Manual

10.1 Preparation:

- 10.1.1 For understanding the installation, please refer to the concise diagrams of page 27.
- 10.1.2 Provision of the supply points of water and electricity on working floor by main-contractor.
- 10.1.3 Clean up working floor by main-contractor.
- 10.1.4 Provision of setting out lines on floors and walls by main-contractor. If no plaster required on panel wall surface, the panel wall surface should match the plaster surface of in-situ wall / block for the construction of flush junction.
- 10.1.5 If the floor or wall to be connected with Buildmates wall is out of tolerance, remedial works like wall trimming and floor leveling should be carried out by main contractor until the concrete elements is kept within the tolerance.
- 10.1.6 Prepare tools and accessories as per detail D32 of page 53.
- 10.1.7 Plan the usage of panels according to the partition layout plan provided.
- 10.1.8 Unpack and handle those panels to be erected to the nearest location.

10.2 Partition Wall

10.2.1 Erect the first panel which shall be connected with door frame as per detail D5 on page 31.

- a. If the dimension of panel shown on shop drawings does not exist, then choose a standard panel and cut it into required size with electrical saw.
- b. Lay a 50mm wide glass fibre net on the top of panel to cover the hollow cores.
- c. Put and fix 2 nos of rubber spacer pads with clips on the top of panel.
- d. Apply mortar on the top of panel, all as per detail D8 of page 34.
- e. Clean the floor such that setting out lines are clearly shown.
- f. Push up the panel up to the ceiling and erect it along the setting out line on the floor.
- g. Insert and hammer timber wedges under the base of panel.
- h. Check the panel face and the panel edge with a calibrated aluminum spirit level ensure the verticalities in two directions. Make a fine adjustment if necessary. All as per detail D9 of page 35.
- i. Tighten the timber wedges until the rubber spacer pads on the head are compressed such the panel is temporary fixed, all as per detail D9 of page 35.
- j. Re-check the verticality in two directions of the panel and it is erected along the setting out line.
- k. Pre-wet the groove joint and fill it up non-shrink cement mortar. All as per detail D7 of Page 33.
- l. A hole of Ø8mm is required to be drilled at ceiling, then insert Ø8 x 25mm plastic plug and Ø4.5 x 70mm ceiling anchor, hammer the anchor into the hole. A "V" shape slot also be formed in the top of panel to accommodate ceiling anchor, all as per detail D6 of page 32.

10.2.2 Erect subsequent panels as per the above working procedures (a) to (l).

- 10.2.3 Clean up overflow mortar on the top and along the vertical joint of panels, all as detail D7 of page 33 and detail D10 of page 35.
- 10.2.4 If the mortar is insufficient on the top and along the vertical joint, all as per detail D7 of page 33 and detail D10 of page 35.
- 10.2.5 All electrical works should be completed before patching up the conduit slots at ceiling, all as per detail D26 of page 48.
- 10.2.6 Pre-wet slots, gaps formed at floor and ceiling then fill them up with non-shrink cement mortar.
- 10.2.7 Remove timber wedges after non-shrink cement mortar is hardened in the next day.
- 10.2.8 Pre-wet the voids formed by timber wedges and fill up with non-shrink cement mortar, all as per detail D9 and D11 of page 35.
- 10.2.9 All vertical joints to be covered by Wallmates Super 3 crackless joint tapes that are concealed in the tape housing recesses, all as per detail D22 of page 44.

10.3 Party wall between Two Flats

- 10.3.1 Use 100mm thick panels to construct a party wall for height up to 3150mm.
- 10.3.2 Use 120mm thick panels to construct a party wall for height up to 2850mm.
- 10.3.3 The 150mm thick partition wall in height not exceeding 2650mm may be constructed by one-off panels.
- 10.3.4 The 150mm thick partition wall in height exceeding 2650mm to be formed by two numbers of 75mm thick panel, moisture sealer should be painted all faces at both layers of panels.

10.4 Door crossing panel

- 10.4.1 Construction procedures of door crossing panel above the door set are as follows:
 - a. Mark level and vertical lines on wall by main-contractor.
 - b. Drill four holes with 8mm diameter, 50mm deep at wall panels, then insert 8mm diameter plastic universal plug.
 - c. Fix Wallmates bracket with 5.5mm diameter 70mm long screws.
 - d. Place door crossing panel, insert and hammer timber wedges at the both vertical joints.

- e. Check the level and the verticality, make a fine adjustment if necessary.
- f. Tighten the timber wedges, and then fix 5.5mm diameter, 70mm long screws with plastic universal plugs to the door crossing panel, the crossing panel is temporary fixed.
- g. Re-check the verticalities and levels as per the setting out lines.
- h. Pre-wet all vertical joints, openings, gaps formed at ceiling and edges.
- i. Patch up all joints, gaps and openings with non-shrink cement mortar.
- j. Vertical joints to be covered by Wallmates Super 3 joint tape.
- k. All as per detail D23 of page 45.

10.5 Door Side Post

Erect door side post as per detail D20 of page 42.

10.6 Treatment to Joint and Junction

- 10.6.1 The vertical joint between panels to be constructed as per detail D14 and D15 of page 37.
- 10.6.2 The corner joint between panels to be constructed as per detail D16 of page 38.
- 10.6.3 The 'T' joint between panels to be constructed as per detail D17 of page 39.
- 10.6.4 The junction of in-situ wall / block wall and panel to be constructed as per detail D18 of page 40.
- 10.6.5 The junction of ceiling and panel to be constructed as per detail D12 of page 35.
- 10.6.6 The junction of beam and panel to be constructed as per detail D13 of page 36.
- 10.6.7 The junction of floor and panel to be constructed as per detail D11 of page 35.

- 10.6.8 The junction of precast facade and panel to be constructed as per detail D19 of page 41. A coat of bitumen paint shall be applied on facade at the junction to separate the movement of precast facade. If infill of recess on painting surface at junction is required, it should be infilled by other.
- 10.6.9 The junction of precast door jamb and panel wall to be constructed as per detail D20 of page 42.
- 10.6.10 The junction of existing duct and panel to be constructed as per detail of D21 of page 43.
- 10.6.11 Water all joints and junctions excepts those of facade and panel with bonding agent before application of non-shrink cement mortar.
- 10.6.12 The joints and junctions should be filled by non-shrink cement mortar.
- 10.6.13 Fixing of joint tape should be commenced after the completion of fixing of door frames and conduits. For the pre-maturity of the joint and junction, at least idling for 7 days after the filling of joints and junctions (this pre-maturity process can prevent crakes appearing at joints and junctions), and then cover a strip of 50mm wide Wallmates joint tape including door crossing panel on both sides as per detail D22 of page 44 at the following location:
- a. All vertical joints between individual panels.
 - b. All vertical junctions of concrete block / in-situ concrete wall / door jamb / facade in step joint and panel.
 - c. Horizontal junction of beam and panel in flush joint.
- 10.6.14 2mm deep tape housing recesses to be formed along joints and junctions for the concealment of all joint tapes ensure to achieve even surfaces of wall, so that the plaster / rendering can be eliminated on site.
- 10.6.15 Recommended joint width as follows:
- a. 5 ± 3 mm for joints between individual panels.
 - b. 15 ± 5 mm for joints between wall panel and door crossing panel.
 - c. 15 ± 5 mm for junctions of concrete block / in-situ wall / facade and panel.

10.7**Treatment to wall surface****10.7.1 Plaster / hardener:**

- a. No plaster / hardener is required for the hard, smooth and even surfaces of Buildmates wall, so that we strongly recommend to eliminate plaster / hardener for avoiding the waste of resources.
- b. Buildmates wall without plaster had been used in over hundred projects including hotels, schools and residential buildings.
- c. In case of rendering with the plaster / hardener of cementitious material on the wall, apply a coat of Wallmates bonding agent (to replace spatter dash) on the wall surface by other (decorator) before rendering. The thickness of the rendering should not be more than 4mm, and its compressive strength should not be more than 20 MPa. The recommended recipe as the clause 10.12 of Page 23.

10.7.2 Laying of tiles:

For the surface of walls facing the interior of bathroom and kitchen, 2 coats of moisture sealer is required to be applied by other (decorator) before tiling work, all as per detail D27 of page 49.

10.7.3 Painting and wall paper:

The even normal concrete surface of Buildmates Wall is ready for receiving the skim coat of painting / wall paper, the skim coat thickness is as per specification of Hong Kong Housing Authority, all as per detail D28 of page 50.

10.8**Crack Rectifying Method**

During the processes of transportation, stacking, removing and decoration, panels may be damaged due to human errors and walls may be damaged by the movements of the R.C. framing of building, if so, the following methods should be used to rectify cracks in accordance with the classifications of the cracks as indicated in the following table:

Width of crack	Treatment Method
Less than or equal to 0.3mm	10.8.1
Greater than 0.3mm	10.8.2

The above rectification has been proved to be satisfactory in compliance with BS5234, Part 2, 1992, Annex E.

10.8.1 Rectify the hair crack as followings:

- a. Thoroughly clean out decorative materials along the hair crack on wall surface.
- b. Apply two layers of Wallmates Elastic Skim Coat along the hair crack. The second layer should be apply after the first one becomes not sticky to fingers.
- c. After the second layer dries up, start to do decoration works, all as per detail D29 of page 51.

10.8.2 Rectify the through crack as per detail D30 of page 52.**10.9****Defect Rectifying Method**

Rectifying of the defects as per detail D31 of page 52.

10.10**Method statement for Installation of conduits on site****10.10.1 The U-shape void at the head of panel is formed by cutting before erection of panel.**

- 10.10.2 Push up and erect the panel.
- 10.10.3 After completion of erection of panel wall, mark setting out line on wall by others for the forming of openings.
- 10.10.4 Forming of voids for switch box by cutting.
- 10.10.5 Installation of conduit and switch box by others.
- 10.10.6 After installation of conduits and switch boxes patch up the voids and openings with non-shrink cement mortar for conduits and boxes.

10.11 Method statement for Production of Pre-installed conduits panel

- 10.11.1 Planning including decomposing, numbering, modeling and FRP moulding.
 - a. Decomposing of partition walls specified in the plan of contract drawings by two people in different way and then check with each other and make a choice in which the decomposed panel pieces are correct and economic.
 - b. Numbering on the decomposed panel piece, the numbering contains its block, flat, and number, all as shown on the layout plan. For example, a panel piece shall sit on No. 36 of Flat E of Block II, it can be numbered as II-E-36.
 - c. Mark an arrowhead at two thirds in height on the right side of the decomposed panel piece to indicate its head and base, right and left, front and rear and relationship with its close panel, and to facilitate the installation and the inspection on site.
 - d. Use 1 : 25 scale to produce the decomposed panel piece with numbering and indicating conduits, and compose the decomposed panel pieces to build a flat unit model, and then call a meeting with the presence of the line heads of production, conduits planning and installation to approve its correctness and workability.
 - e. Make a FRP mould with actual size according to the decomposed panel piece of the joint approved flat model, the panel piece with conduits on its back surface should have double FRP moulds, pay much attention on making of its back FRP mould, and the back FRP mould should be without the arrowhead.
All FRP moulds should be checked and signed by the approval members.
- 10.11.2 Change design during the production
 - a. The processes are same as items (a) to (e) of the above 10.11.1.
 - b. 100% retrieve and seal the existing relative information, specially 100% retrieve and seal the existing FRP moulds.
 - c. Prepare claims including production, planning and abortive work.
- 10.11.3 Discovery of mistake during the production
The processes are same as the items (a) and (b) of the above 10.11.2.
- 10.11.4 Production
 - a. After demoulding process of the panels, panels are transferred to the pre-installed conduit panel production line.

- b. Mark setting out line, numbering and arrowhead on panel for forming of openings and voids by the use of approved FRP mould.
- c. Form an opening just slightly bigger than the switchbox and to a depth of approximate 60mm.
- d. Form an U-shape void at the head of panel for conduit connection on site by cutting.
- e. Insert a conduit into a hollow core within panel from panel head to reach the switch box opening's location.
- f. Connect the coupler between conduit and switch box with white glue.
- g. Fix conduit and switch box with plastic spacers.
- h. Check the positioning of switch box, make a fine adjustment if necessary.
- i. Patch up the voids around the switch box with non-shrink cement mortar.
- j. Repeat above (a) to (i) for other switch box and conduit until completion.
- k. Conduit ends are plugged by plastic cap.
- l. Switch boxes are plugged by plastic switch box mould or fixing a plastic sheet to cove the switch box.
- m. Collect panels according to packing list.
- n. The panels are well packed with P.E. foam paper at all corners, plastic cover on top and sides of each bundle and then are tightened by nylon strip.
- o. The panels are delivered to site.
- p. The panels are erected. **Let panel numberings in order, all upward arrowheads on right side.**
- q. The panel conduits are connected to the ceiling conduits at the head (by others).
- r. Patch up with non-shrink cement mortar for the voids at the head after conduit connection.
- s. For the details, please refer to the detail D26 of page 48.

10.12

Method statement for Batching, mixing of hand mix non-shrink cement sand mortar for repairs

10.12.1 Mixing proportion by weight

Recipe	42.5 O.P.C. cement	Sand	Water	Wallmates Admixtures (Mix 300)
Wallmates Mortar	100	200	50	5

- i) The compressive strength: 20MPa
- ii) The shrinkage is less than 0.4mm/m

- 10.12.2 Batching and mixing the cement and sand on a clean surface.
- 10.12.3 Dry mix the cement and sand. The dry mix should be handle and used within 1 hour after mixing.
- 10.12.4 Mix and churn water and admixtures constituents to become mixed liquid.
- Add the mixed liquid to the well-mixed cement / sand until it achieved consistency, and churn up the mortar by electrical drill with brades for at least 5 minutes. The workable time of mortar is not more than 3 hours.

10.13 Mixing of tape Adhesive:

Refer to the above clauses 10.12.2, 10.12.3, 10.12.4 and 10.12.5.

Recipe (By weight)	
Wallmates Admixtures (Mix 300)	1
Water	10
42.5 cement	25
Sand ($\leq 1\text{mm}$)	25

(usable time ≤ 3 hours)

11.0 **Packing, stacking and Handling of panel**

- 11.1 Panels are to be packed in bundle as per detail D3 of page 29.
- 11.2 Panels are to be loaded and unloaded by lifting as per detail D4 of page 30.
- 11.3 Only one bundle shall be lifted for each loading and uploading operation.
- 11.4 Stacking of bundles on ground should not be more than three layers, all as per detail D4 of page 30.
- 11.5 The main contractor shall provide safe and enough space on site for the temporary storage of panels before the panels are distributed to the working area.
- 11.6 Storage place on site should be a reasonable flat solid area where should be accessible by delivery truck and tower crane.
- 11.7 Do not double stack the bundles on work floors.
- 11.8 Horizontal moving of a panel by trolley as the Figure 4 of page 27.

12.0 **Fixing of Door Frame**

Fixing of door frame should follow the door frame manufacture's specification. The recommendation shown on the detail D24 of page 46 and clause (13.3) is for reference only.

13.0 **Finishing and fixing of building services**

- 13.1 General:
All hanging units to Buildmates wall shall be fixed by adequate number of suitable anchors. The following recommendations are for reference only. Suitable plastic anchors shall be used for hanging furniture on the wall; Installation procedures shall follow the anchor manufacturer's specification.

13.2 Lightweight Fixture:

For lightweight fixtures (less than 10kg), ordinary plastic line plug anchors can be used. The length of the plastic plug anchor should not be less than 30mm and 5mm in diameter. The diameter of screw should not be less than 70% of the diameter of the plastic plug to be used.

13.3 Heavy Weight Fixture

For heavy weight fixtures e.g. range hood, cupboard, kitchen cabinet, bookcases or cloth cabinet, proprietary plastic plugs as shown in the following table are recommended. The number of anchors used subject to the weight of the furniture.

Band	Model	Safe Working Load	
		Pull Out (kg)	Shear (kg)
Upat	UV 5	30	60
	UV 8	50	100
	UV 10	70	140
Wallmates	UP 5	30	60
	UP 8	50	100
Fischer	URS 10 (for Door Frame)	70	140
	S10H80R (for Door Frame)	70	140
Hilti	HUD 6 x 30	30	60
	HUD 10 x 50	50	100
	HRD – UGT 10 x 80 (for Door Frame)	70	140

* **For the ultimate loading, please refer to the detail D25 of Page 47.**

The size of the anchor applied to different fixtures is subject to the actual loading requirements. The distance of spacing between anchors is referred to HILTI's or Fischer or Upat's recommendations and technical handbook.

14.0 Decoration on wall surface

14.1 General

Decoration procedures should follow the decoration materials manufacturers' specification. The recommendation as listed in 14.2 and 14.3 are for reference only.

14.2 Laying of Tiles, Cementitious Material Decoration, Nailing

14.2.1 For laying of tiles, please refer to per detail D27 of page 49 and detail D19 of page 41 and the clause 10.7.2 of page 21.

14.2.2 For cementitious material decoration, please refer to the clause 10.7.1 of page 21.

14.2.3 For nailing, please refer to the detail D25 of page 47.

14.3 Applying of Paint or Wall Paper

For applying of paint or wall paper, please refer to the detail D28 of page 50 and the clause 10.7.3 of page 21.

15.0 Method of Measurement for Precast Concrete Panel Wall

15.1 General:

The following method of measurement for precast concrete panel wall is for reference only. The method of measurement for project should follow the contract documents.

Panel wall shall be given super stating the thickness and the height with or without pre-installed conduits. No deduction shall be made for openings for doors, access panels, glazed screens and the like. In case of measurement of pre-installed conduits panel wall, all panels with and without Pre-installed conduits shall be measured.

15.2 Description, Item and Unit

Design, supply and installation of concrete panel wall system complies with the specification; rate includes forming slots and openings for electrical conduits and boxes as shown on the drawings; filling gaps, slots and openings with mortars and joint tapes; forming of tape housing recesses; completed with rubber spacer pads, anchors, bolts, screws and plugs, bonding agent and all necessary accessories; fixing of door crossing lintel panels, delivery breakage and installation wastage; all as manufacturer's recommendations.

(Panel wall not exceeding 3m high)

- a) 85mm thick not exceeding 3m high with 1 hr FRP to receive skim coats and painting (no plaster work required). m²
- b) But 100mm thick with 2 hr FRP, and ditto. m²

(Pre-installed conduits panel wall not exceeding 3m high)

- c) 85mm thick pre-installed conduits panel wall not exceeding 3m high with 1 hr FRP to receive skim coats and painting (no plaster work required), rate including fixing of electrical conduits and boxes off site. m²
- d) But 100mm thick with 2 hr FRP, and ditto. m²

(Panel wall not exceeding 4m high)

- e) 85mm thick not exceeding 4m high with 1 hr FRP to receive skim coats and painting (no plaster work required), rate including the construction of steel framing if necessary. m²
- f) But 100mm thick with 2 hr FRP, and ditto. m²

16.0 Key Points of the Visual Inspection for Buildmates Wall

16.1 Inspection key points for wall functional properties

Buildmates Wall consists of the following essential elements:

- a. Buildmates panels;
 - b. Wallmates accessories (eg. Wallmates rubber spacer pad, Wallmates Super-2 or 3 joint tape, Wallmates bracket, Wallmates universal plug and Wallmates mortar and tape adhesive);
 - c. Buildmates installation details;
 - d. Buildmates trained qualified labours (with license);
 - e. Licensed qualified installation company (with license);
 - f. Grouting of joint is done by Wallmates mortar. The sectional area of grouting at each joint between panels should not be less than 2/3 of the total section area of that joint;
 - g. The slots, voids, openings and gaps should be pre-wetted with Wallmates bonding agent solution;
 - h. The broken edges, cracks and defects of the panel should be repaired by Wallmates mortar;
- * Any change of the above items would affect the functional properties of Buildmates Wall;
* The broken edges, cracks and defects are checked by visual inspection of standing at least 1m apart from the inspected wall.

16.2 Inspection key points for wall positioning

- a. Position on ground ($\pm 3\text{mm}$);
- b. Straightness ($\pm 3\text{mm}/1.2\text{m}$);
- c. Verticality ($\pm 3\text{mm}/1.2\text{m}$).

16.3 Inspection key points on operation for minimal wall cracks

- a. Methods for stacking and lifting of Buildmates Wall panels on ground or in the building should comply with the instructions listed in page 30 of the specification (Detail 4);
- b. Methods for opening recess should comply with the instructions listed in page 48 of the specification (Detail 26);
- c. Plastic universal plug or plastic line plug should be used for fixing of hanging anchor. (Details referred to page 47 of the specification, Detail 25).

17.0 Announcement of Buildmates Building Technology Ltd.

17.1 No part of the design, construction sequence, details, specifications and accessories may be revised by any means without the prior permission of Buildmates Building Technology Ltd.

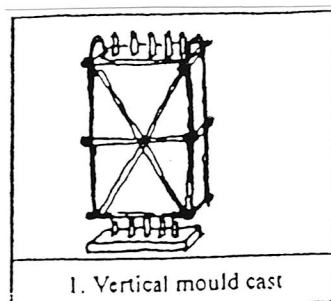
17.2 Any installation, alternation or rectification works in relation to Buildmates Wall should be executed by the experienced worker who has been trained by Buildmates Building Technology Ltd. and obtained the valid trained certificates issued by Buildmates Building Technology Ltd.

17.3 The licensed manufacturer and / or fitter who does not conform the above requirement, its name shall be deleted from the license list of the BUILDMAATES without any compensation.

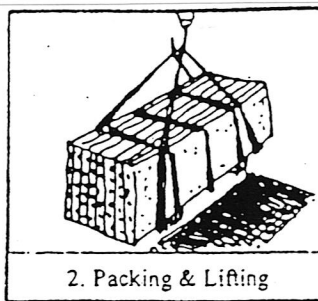
17.4 The content of this booklet has been proofread carefully to ensure all information to be accurate in strenuous way. However, the company shall not be responsible for any consequence for the information produced due to printing error, if any. The printing process may make a slightly difference between the product in information and the reality. All information, product features and specifications are subject to change without notice.

18.0 Installation Details

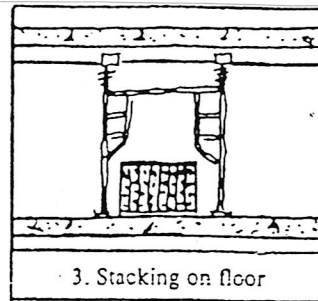
The installation details are shown on page 27 to page 56. For the details list, please refer to page 3.



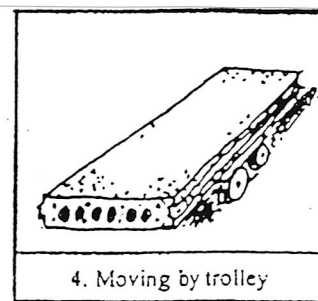
1. Vertical mould cast



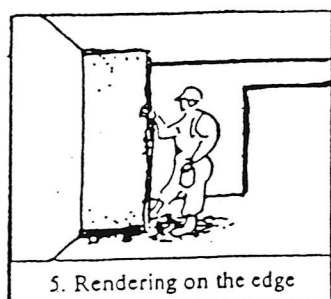
2. Packing & Lifting



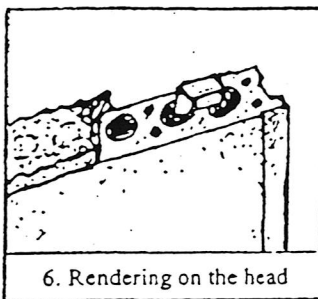
3. Stacking on floor



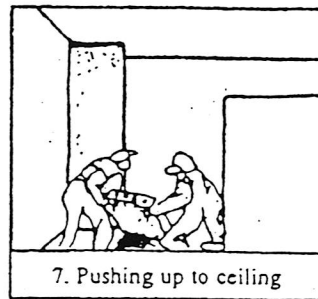
4. Moving by trolley



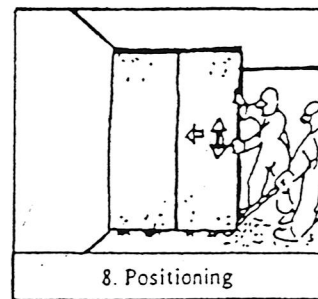
5. Rendering on the edge



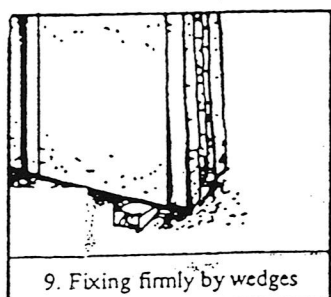
6. Rendering on the head



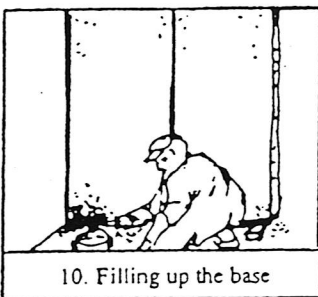
7. Pushing up to ceiling



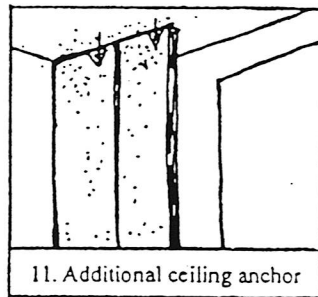
8. Positioning



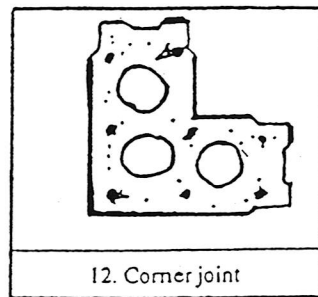
9. Fixing firmly by wedges



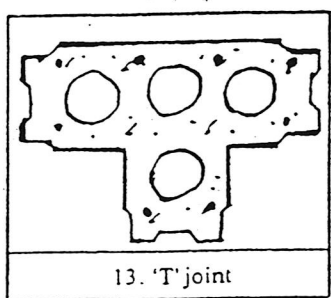
10. Filling up the base



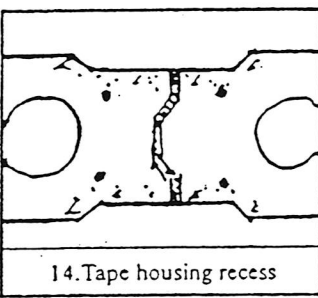
11. Additional ceiling anchor



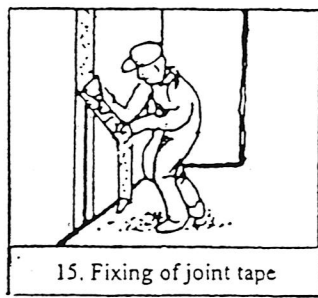
12. Corner joint



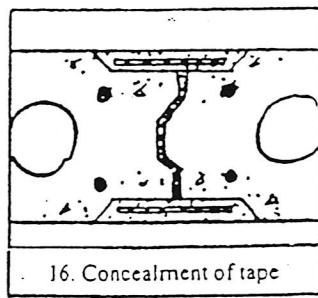
13. 'T' joint



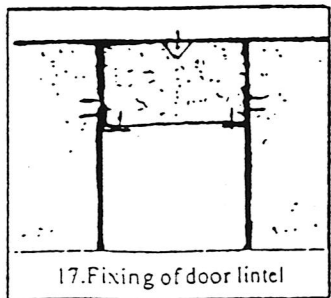
14. Tape housing recess



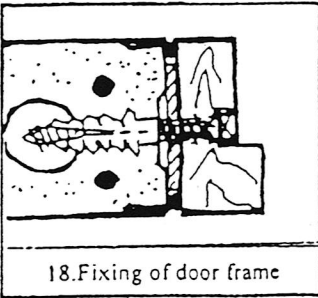
15. Fixing of joint tape



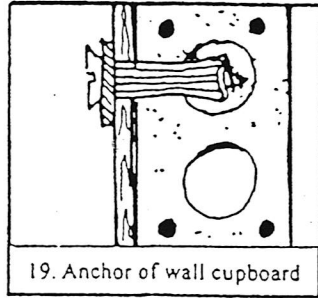
16. Concealment of tape



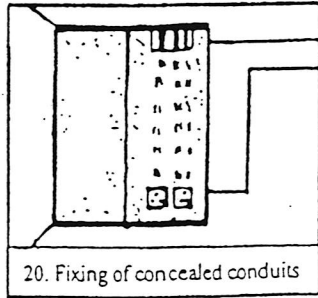
17. Fixing of door lintel



18. Fixing of door frame



19. Anchor of wall cupboard



20. Fixing of concealed conduits

D1 - CONCISE DIAGRAM OF WALL INSTALLATION

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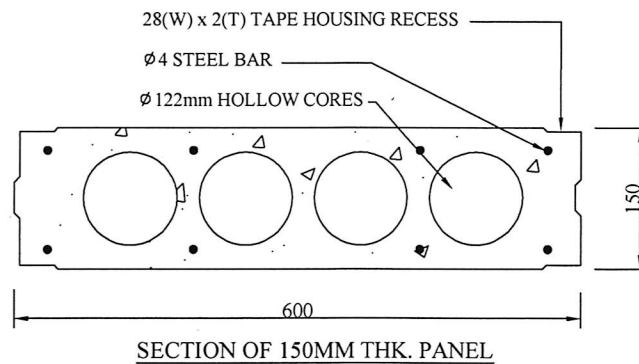
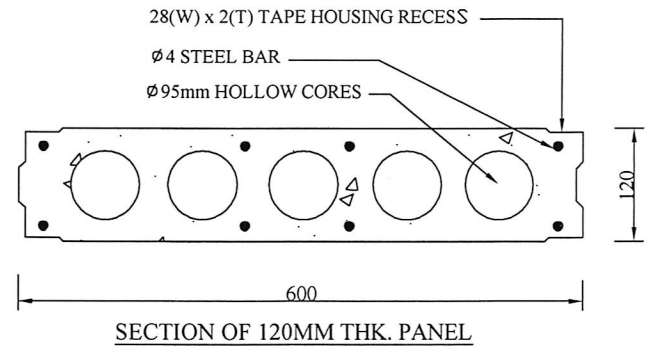
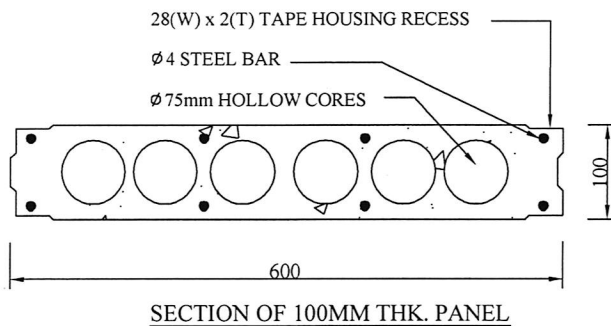
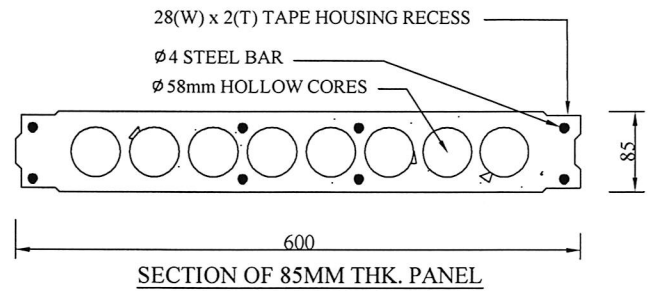
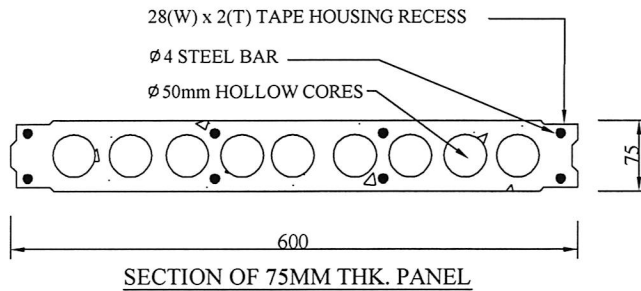
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Composition :

1. Compressive Strength of Concrete : 20MPa
2. Steel Reinforcement :
 - a. \varnothing 4mm see sections for spacing.
 - b. All rebars are galvanized.
3. Concrete Cover : 12mm .
4. Finish : Fair-face finishes .
5. Product Density (Nominal) : $1100\text{kg/m}^3 \pm 5\%$



D2 - DETAIL OF BUILDMATES PANEL

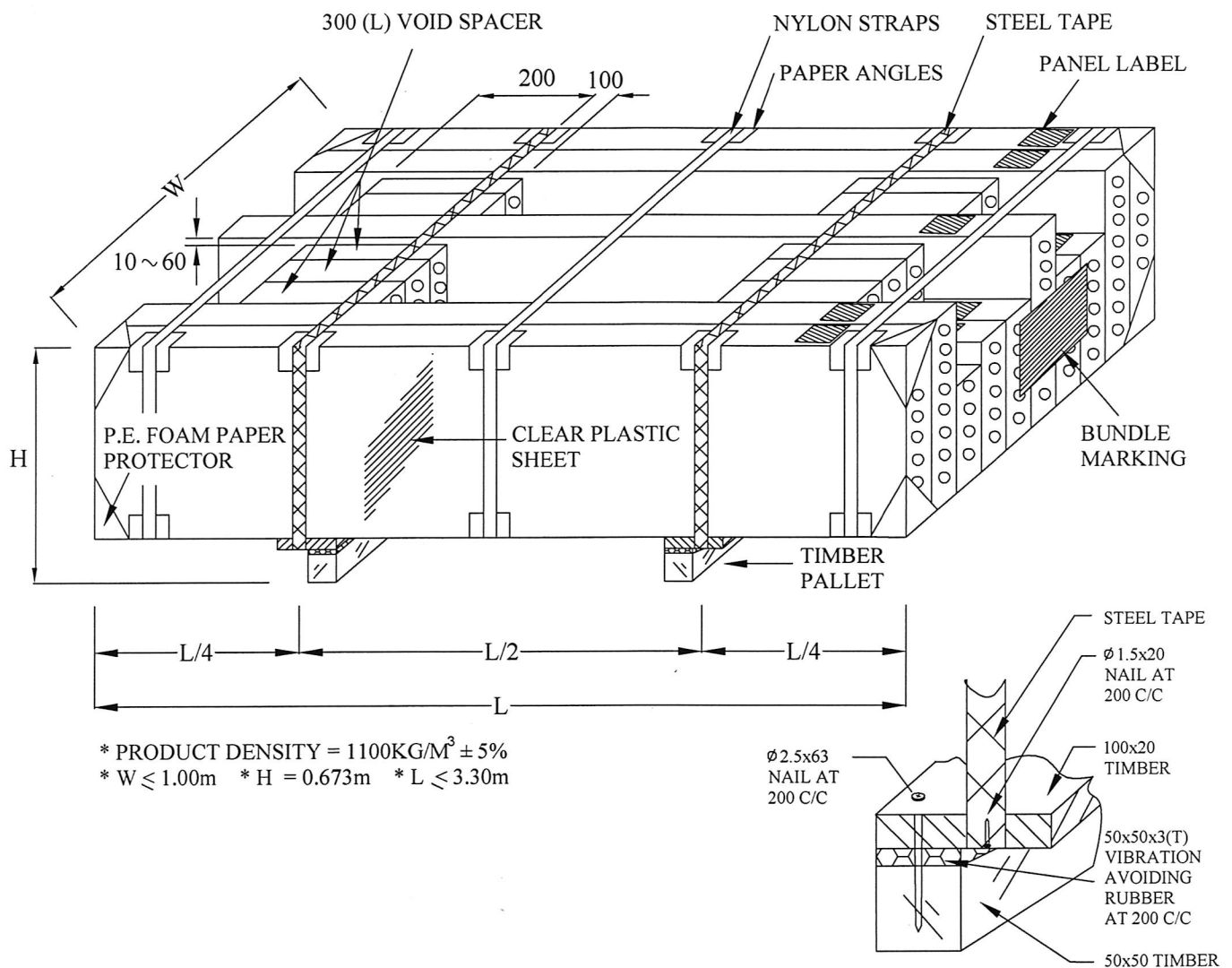
- * Length of Panel : To Fit the Ceiling Height
- * Effective Width of Standard Panel : 595mm

PROJECT	TAI HANG	BLOCK	2
FLAT	D	LOCATION	KITCHEN
TYPE	Y2	BATCHING	020909A

PANEL LABEL

PROJECT	TAI HANG	BLOCK	2
FLAT	D	LOCATION	KITCHEN
QTY (NOS.)	10	GW. (T)	1.65
MEASUREMENT (M) : 0.85(W) x 0.673(H) x 2.95(L) = 1.69			
BUILDMATES PANEL : 85 x 2950			

BUNDLE MARKING



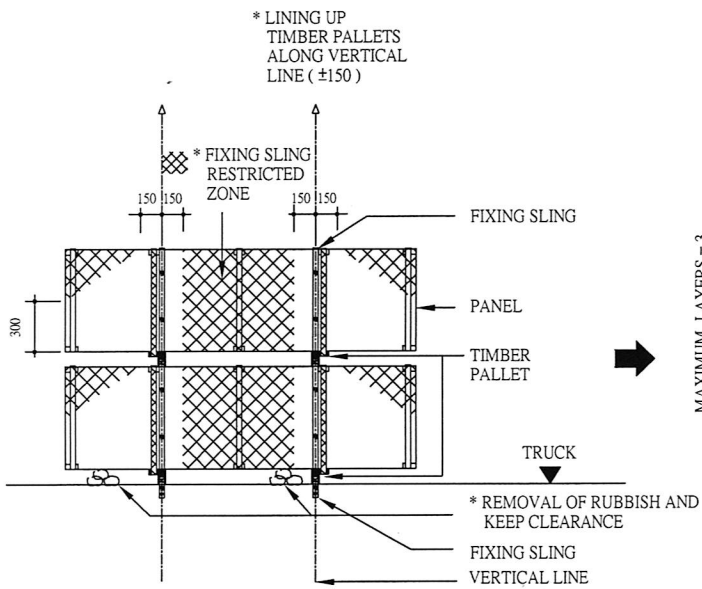
DETAILS OF TIMBER PALLET

D3 - STANDARD PACKING AND MARKING

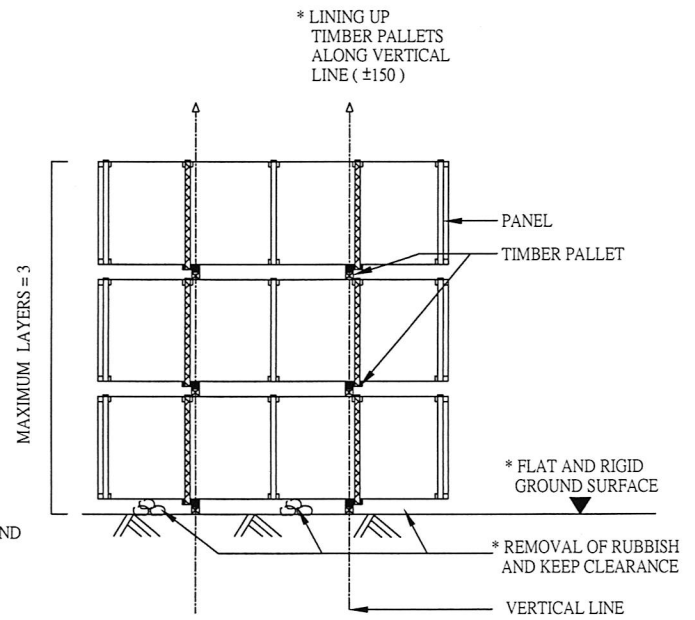
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PRODUCT : BUILDMATES WALL	DETAIL TITLE : D3 - STANDARD PACKING AND MARKING	DATE : 09-09-2002	BUILDMATES BUILDING TECHNOLOGY LIMITED	PAGE : 29
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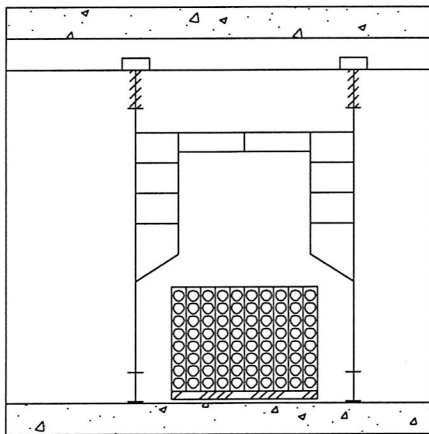
NOTE: ALLOW A LEVEL AND RIGID AREA 7M X 3M
FOR STACKING PANELS ON THE SITE.
THE AREA SHOULD BE ACCESSIBLE BY
DELIVERY TRUCK AND TOWER CRANE.



STACKING ON TRUCK

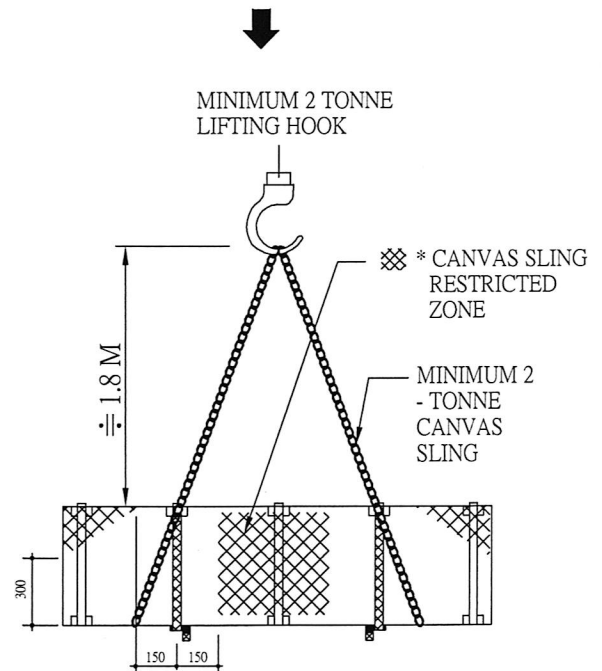


STACKING ON GROUND



- * NO DOUBLE STACKED BUNDLES OF PANELS
ARE ALLOWED INSIDE THE BUILDING FOR
EASIER UNPACK AND HANDLE
- * NO TEMPORARY PROPINGS AND FALEWORK
REST ON THE BUNDLES OF PANELS

STACKING IN THE BUILDING



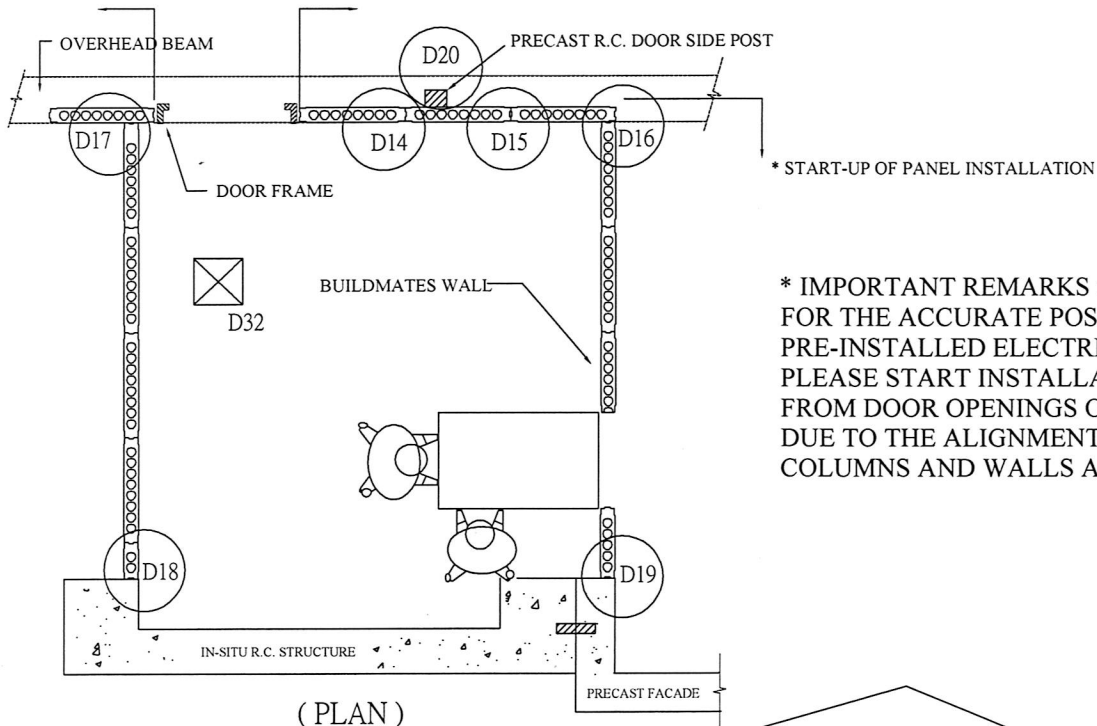
LIFTING

D4 - STACKING AND LIFTNG

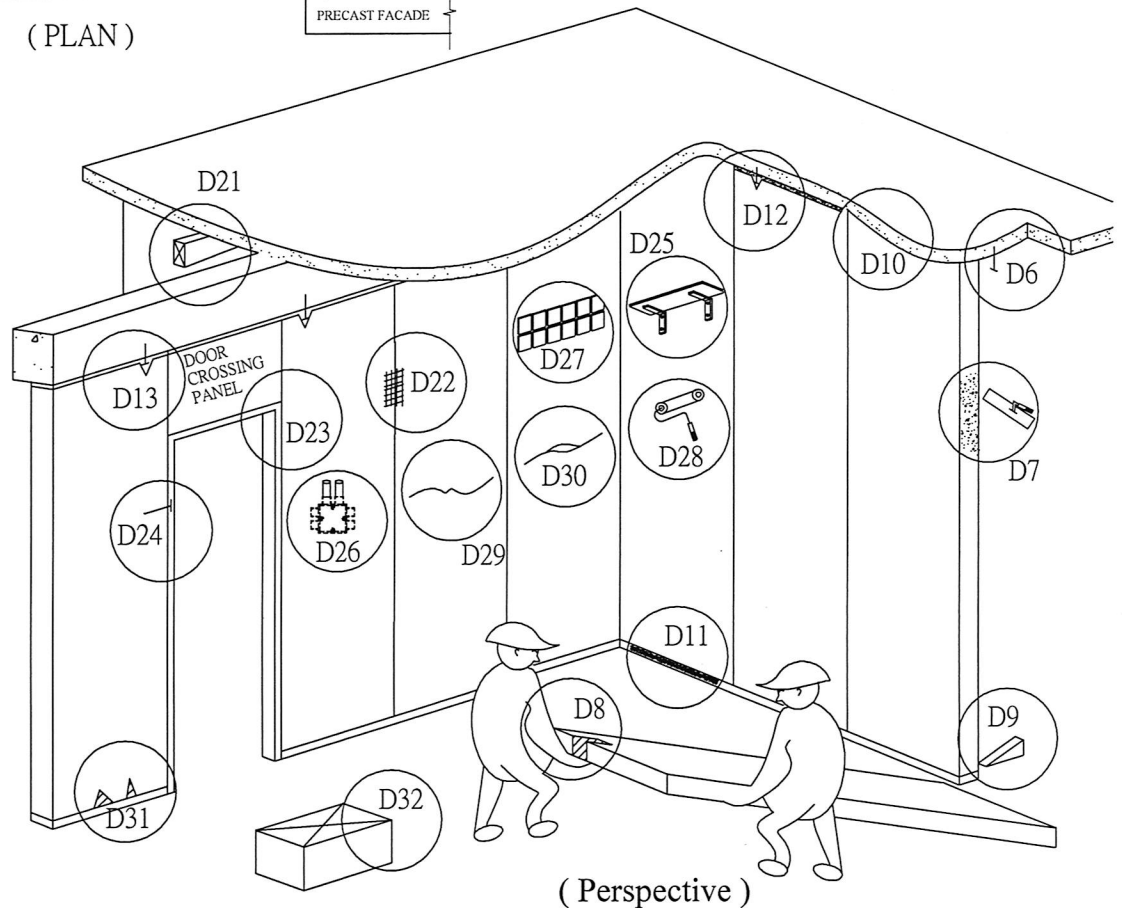
* THE TRANSGRESSION OF THE ABOVE RULES MAY DAMAGE PANELS

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* START-UP OF PANEL INSTALLATION



* IMPORTANT REMARKS :
FOR THE ACCURATE POSITION OF
PRE-INSTALLED ELECTRICAL BOXES,
PLEASE START INSTALLATION OF PANELS,
FROM DOOR OPENINGS OR CORNER JOINTS,
DUE TO THE ALIGNMENTS OF IN-SITU R.C.
COLUMNS AND WALLS ARE VARIABLE !



LEGEND :

D6 = CEILING ANCHOR — PAGE 32
D7 = MORTAR BETWEEN PANELS — PAGE 33
D8 = MORTAR ON HEAD — PAGE 34
D9 = WEDGES AT BASE — PAGE 35
D10 = PRESSING MORTAR ON HEAD — PAGE 35
D11 = JUNCTION OF FLOOR — PAGE 35
D12 = JUNCTION OF CEILING — PAGE 35
D13 = JUNCTION OF BEAM — PAGE 36

D14 = TONGUE & GROOVE JOINT — PAGE 37
D15 = BUTT JOINT — PAGE 37
D16 = CORNER JOINT — PAGE 38
D17 = 'T' JOINT — PAGE 39
D18 = JUNCTION OF IN-SITU R.C. STRUCTURE — PAGE 40
D19 = JUNCTION OF PRECAST FACADE — PAGE 41
D20 = JUNCTION OF DOOR JAMB — PAGE 42
D21 = JUNCTION OF EXISTING DUCT — PAGE 43
D22 = FIXING OF JOINT TAPE — PAGE 44

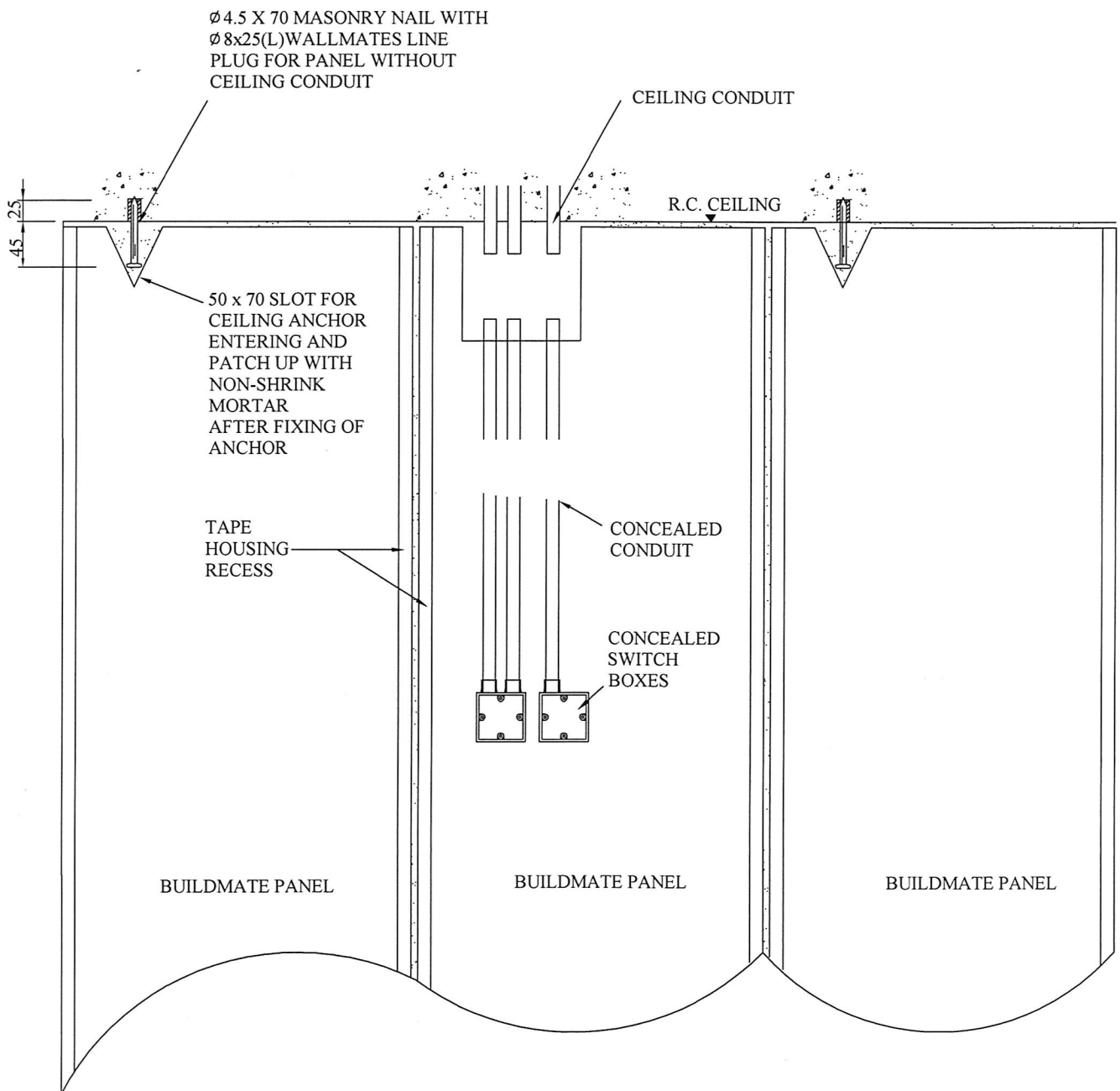
D23 = FIXING OF DOOR CROSSING PANEL — PAGE 45
D24 = FIXING OF DOOR FRAME — PAGE 46
D25 = FIXING OF HANGING ANCHOR — PAGE 47
D26 = PRE-INSTALLED CONDUIT PANEL — PAGE 48
D27 = LAYING OF TILES — PAGE 49
D28 = APPLYING OF WALL PAPER OR PAINT — PAGE 50
D29 = RECTIFYING OF SURFACE CRACK — PAGE 51
D30 = RECTIFYING OF THROUGH CRACK — PAGE 52
D31 = RECTIFYING OF DEFECT — PAGE 52
D32 = INSTALLATION ACCESSORIES & TOOLS — PAGE 53

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D5 - LOCATION OF DETAILS

PRODUCT : BUILDMMATES WALL	DETAIL TITLE : D5 - LOCATION OF DETAILS	DATE : 09-09-2002	BUILDMMATES BUILDING TECHNOLOGY LIMITED	PAGE : 31
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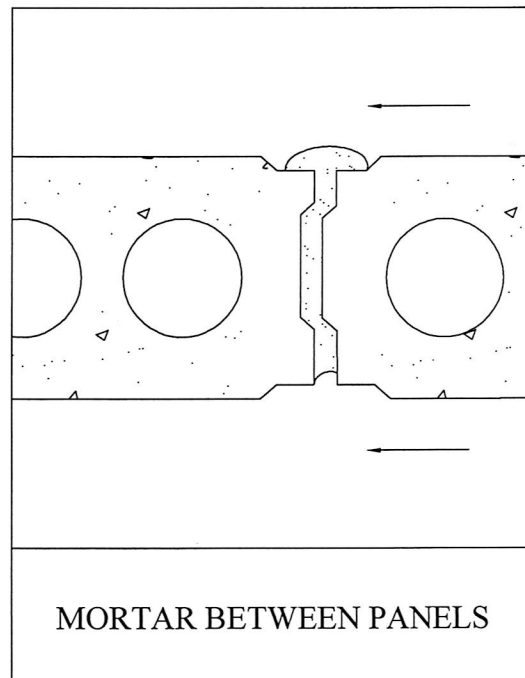
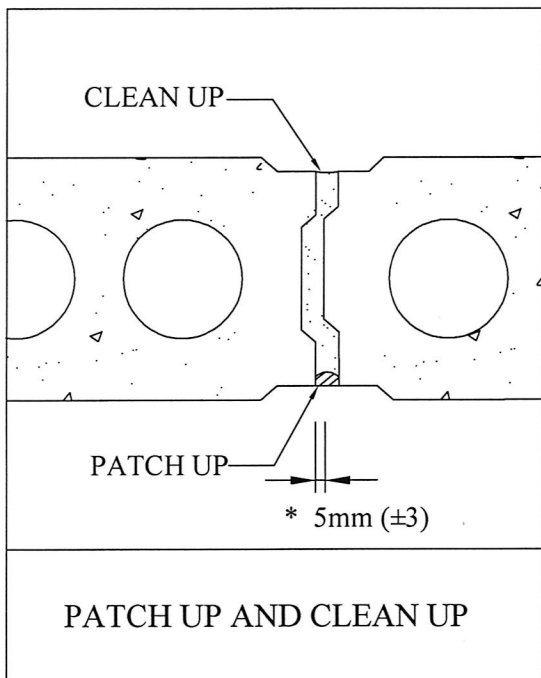
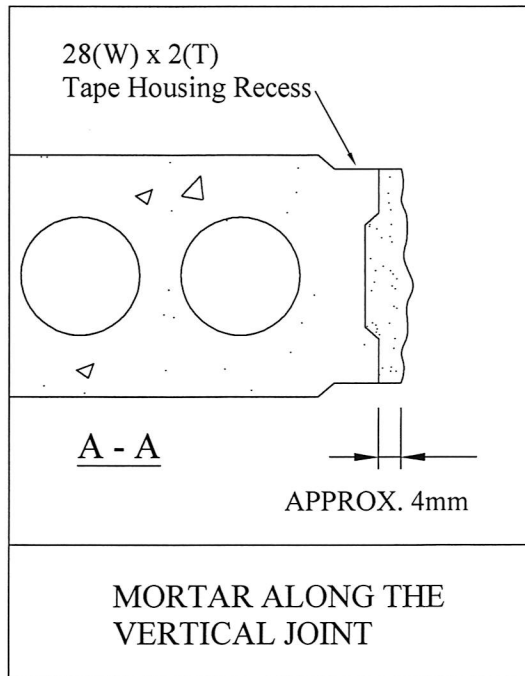
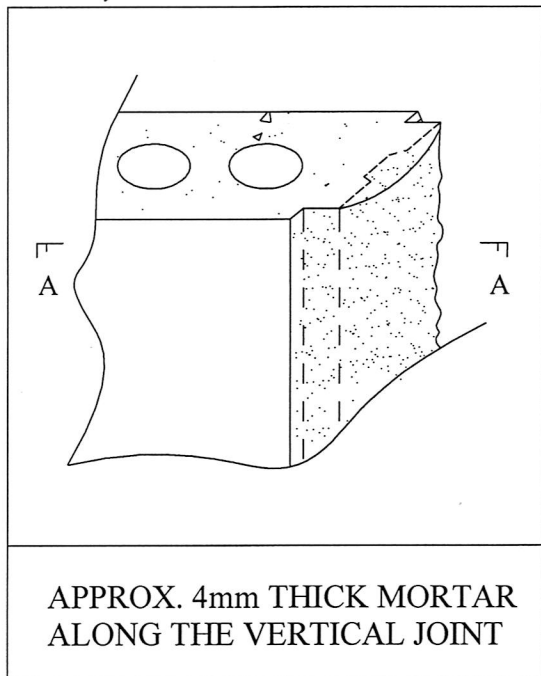


D6 - CEILING ANCHOR

MIXING OF HAND MIX NON-SHRINK CEMENT SAND MORTAR FOR REPAIRS
MIXING PROPORTION BY WEIGHT

RECIPE	42.5 CEMENT	SAND	WATER	ADMIXTURE (MIX 300)	USABLE TIME (hr.)
WALLMATES MORTAR	100	200	50	5	≤3

i) THE COMPRESSIVE STRENGTH IS 20MPa.



* THE JOINT SHOULD BE PATCHED UP WITH MORTAR IN FULL HEIGHT OF THE PANEL
AND THE MORTAR PATCHING AREA OF THE JOINT CROSS SECTION SHOULD NOT BE LESS THAN 2/3.

D7 - MORTAR BETWEEN PANELS

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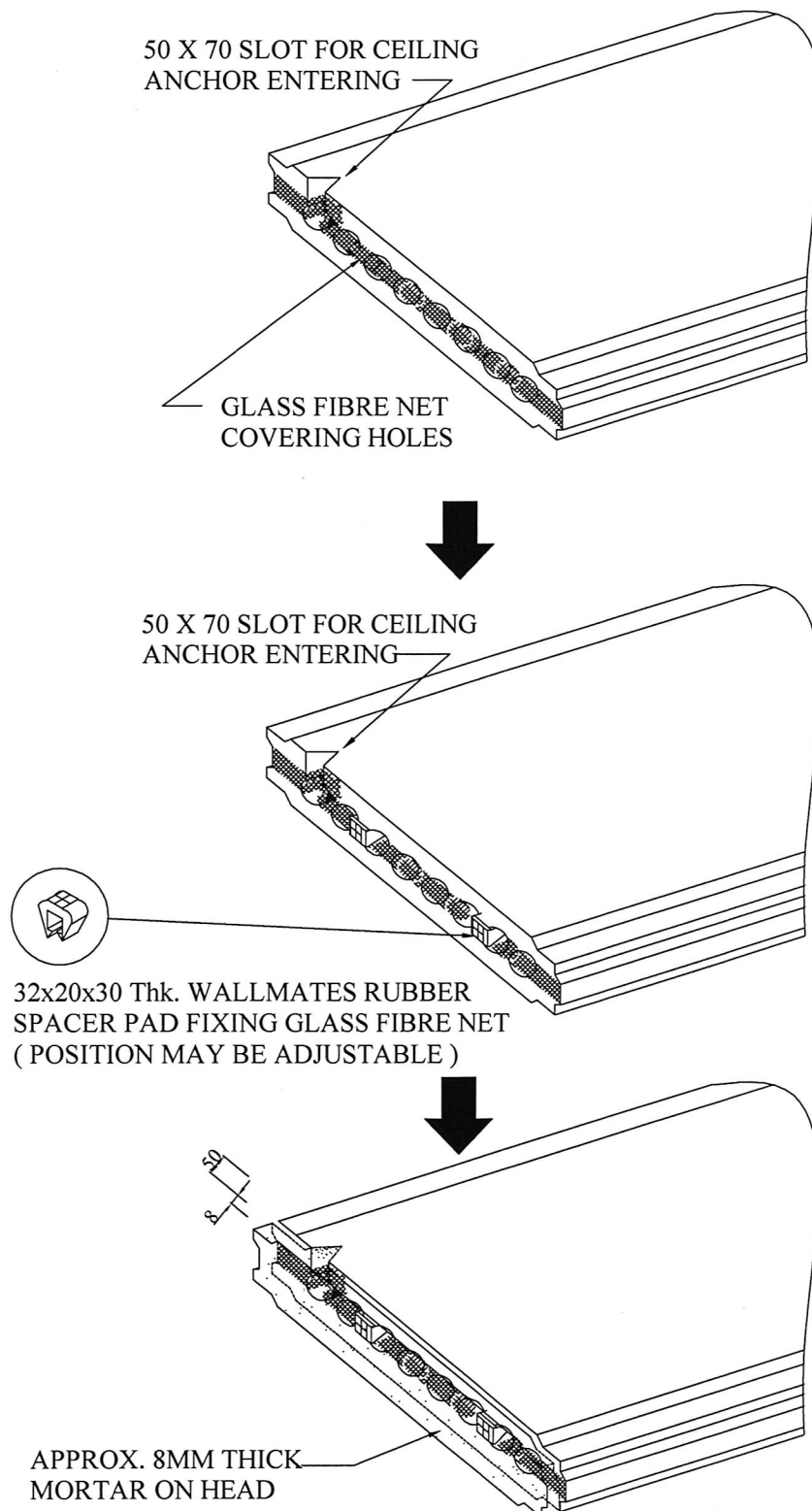
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MIXING OF HAND MIX NON-SHRINK CEMENT SAND MORTAR FOR REPAIRS
MIXING PROPORTION BY WEIGHT

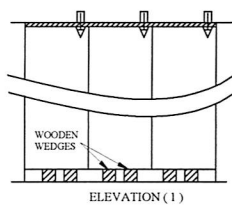
RECIPE	42.5 CEMENT	SAND	WATER	ADMIXTURE (MIX 300)	USABLE TIME (hr.)
WALLMATES MORTAR	100	200	50	5	≤ 3

i) THE COMPRESSIVE STRENGTH IS 20MPa.

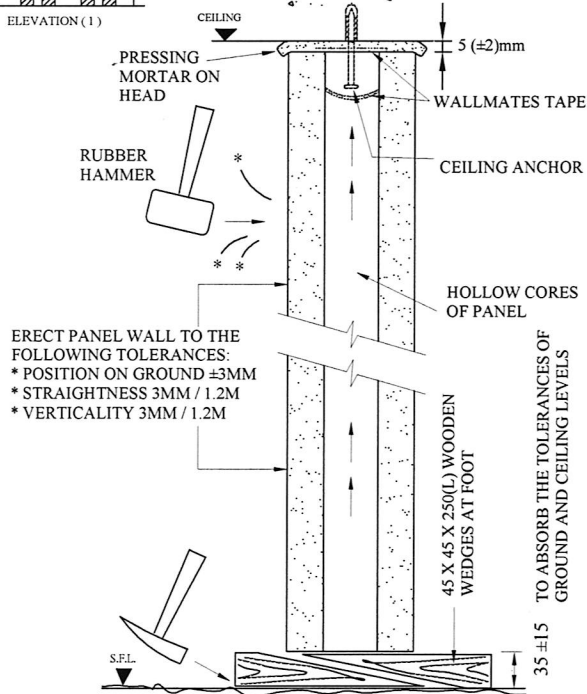


D8 - MORTAR ON HEAD

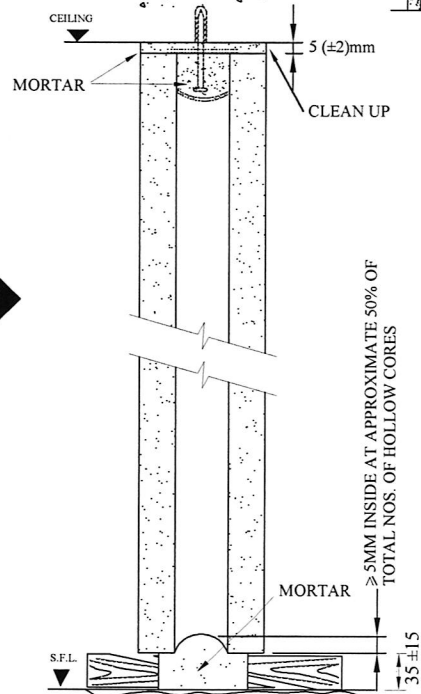
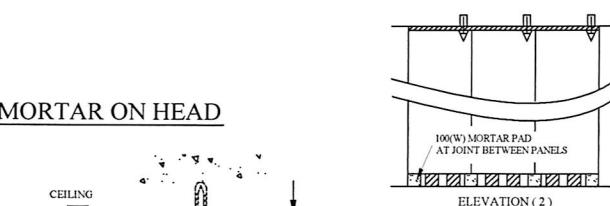
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D10 - PRESSING MORTAR ON HEAD

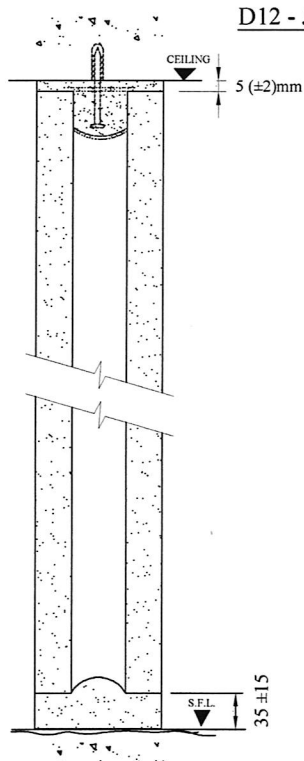
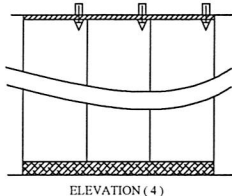


(1) WEDGES AT BASE.



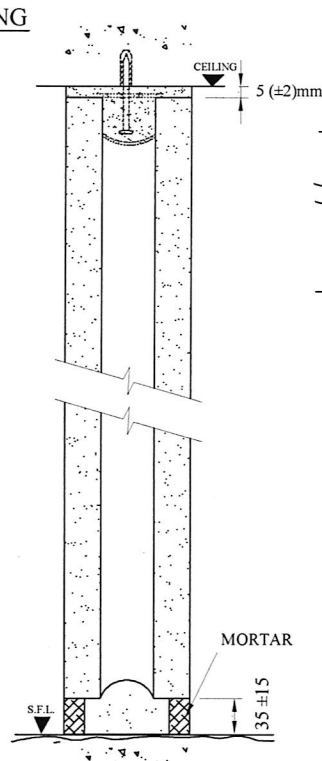
(2) MORTAR PADS AT THE JOINT OF PANELS AT BASE

D9 - WEDGES AT BASE

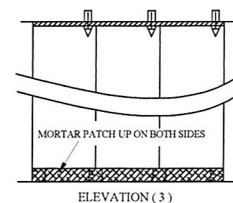


(4) BASE MORTAR.

D12 - JUNCTION OF CEILING



(3) MORTAR PATCH UP ON BOTH SIDES.



D11 - JUNCTION OF FLOOR

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WORKING PROCEDURE :

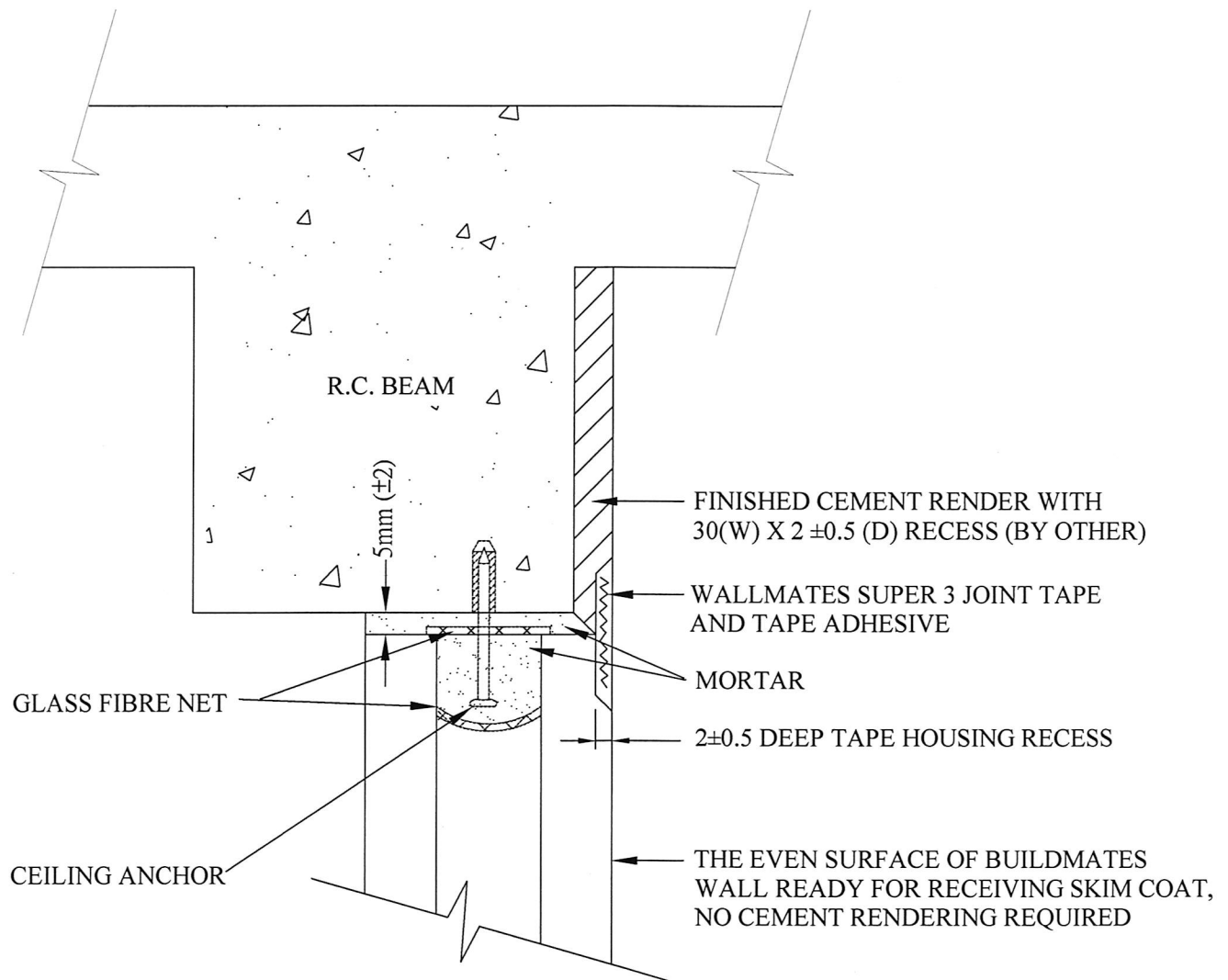
- STEP (I) - INSTALLATION OF PANELS
STEP (II) - FINISHED CEMENT RENDER OF BEAM
STEP (III) - FIXING OF JOINT TAPE
STEP (IV) - SKIM COAT

TAPE ADHESIVE MIX :

BY WEIGHT :

- MIX 300	1.00
- WATER	10
- 42.5 CEMENT	25
- SAND ($\leq 1\text{mm}$)	25

(USABLE TIME ≤ 3 HRS)

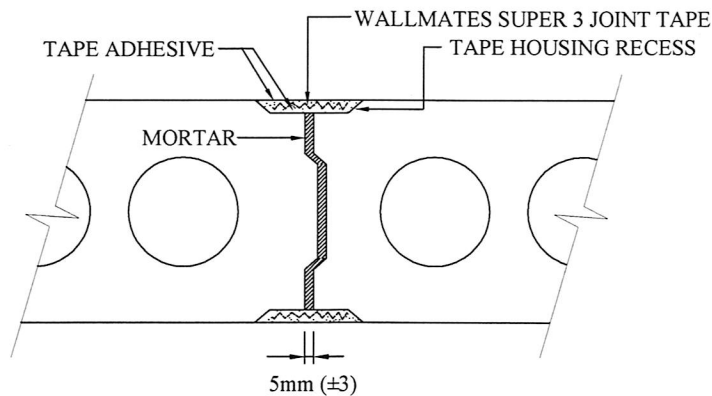


D13 - JUNCTION OF BEAM

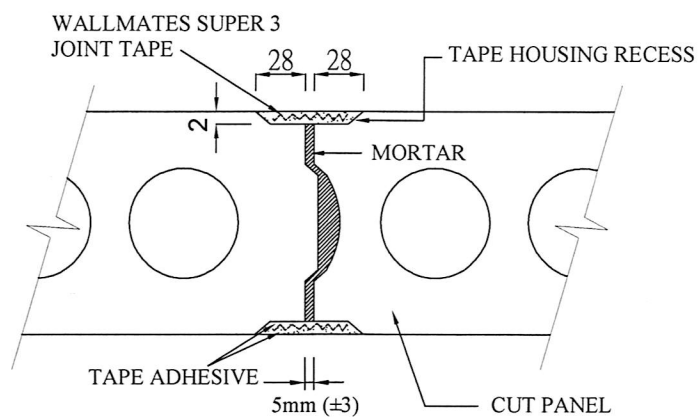
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RECIPE	42.5 CEMENT	SAND	WATER	ADMIXTURE (MIX 300)	USABLE TIME (hr.)
WALLMATES MORTAR	100	200	50	5	≤ 3

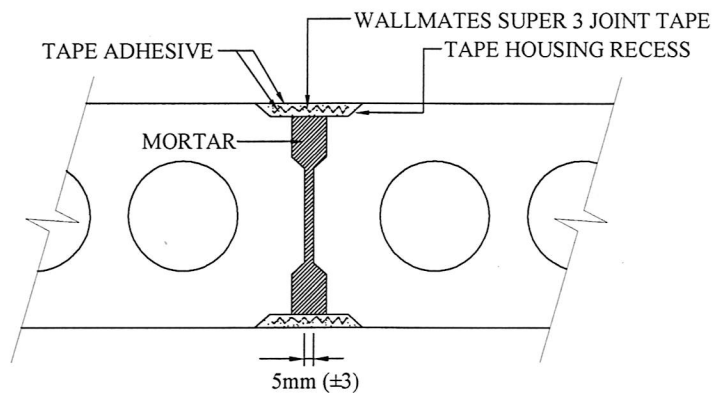
i) THE COMPRESSIVE STRENGTH IS 20MPa.



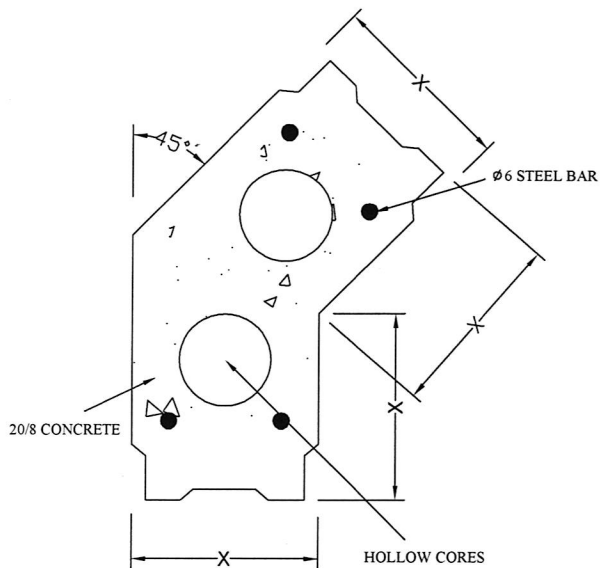
D14 - TONGUE & GROOVE JOINT



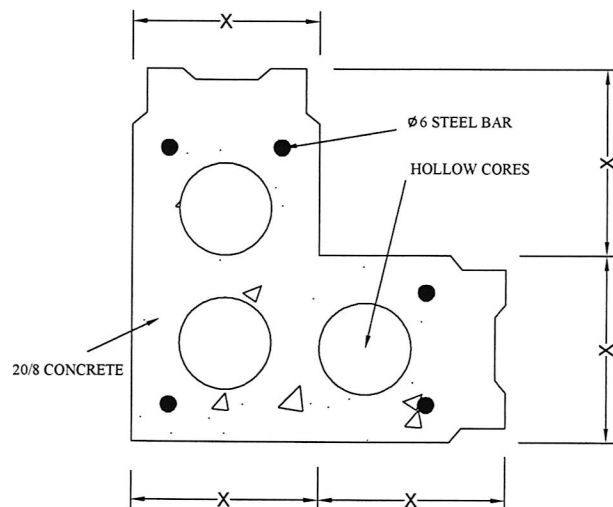
D15 - BUTT JOINT TYPE A



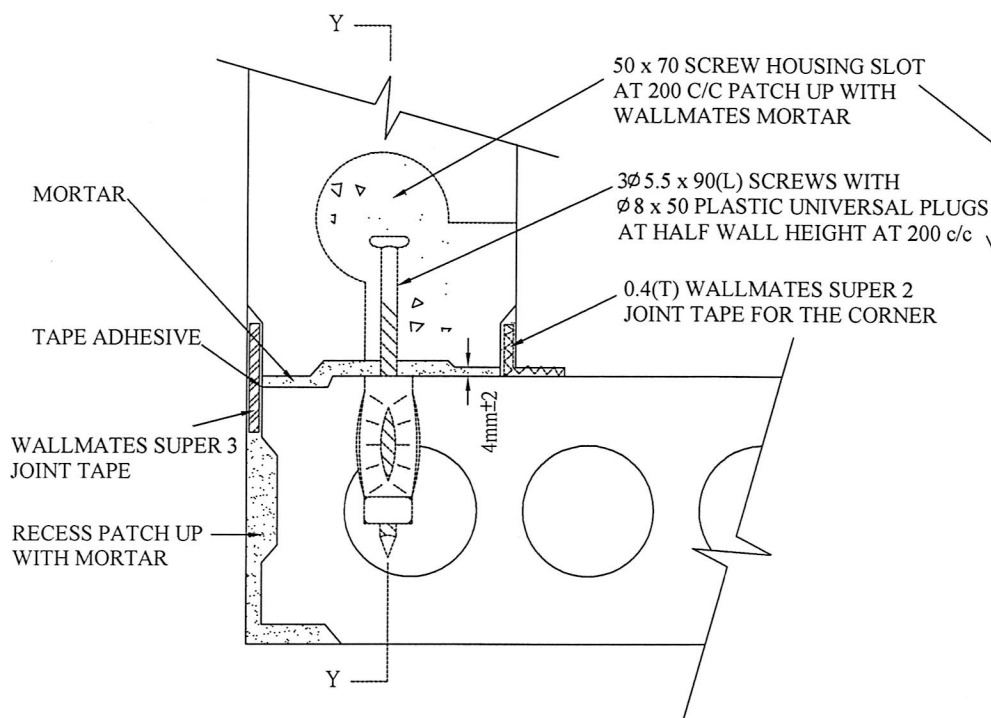
D15 - BUTT JOINT TYPE B



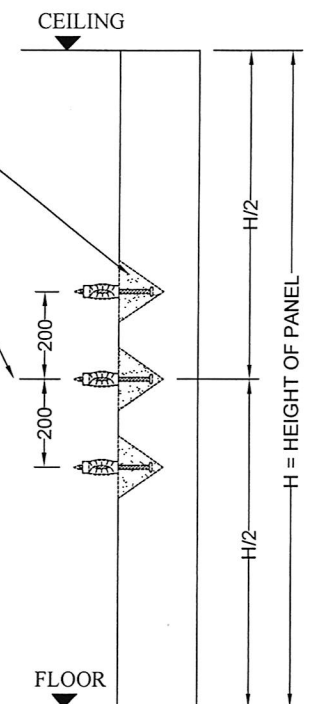
TYPE A : HALF RETURN PANEL



TYPE B : L - SHAPE SECTION PANEL

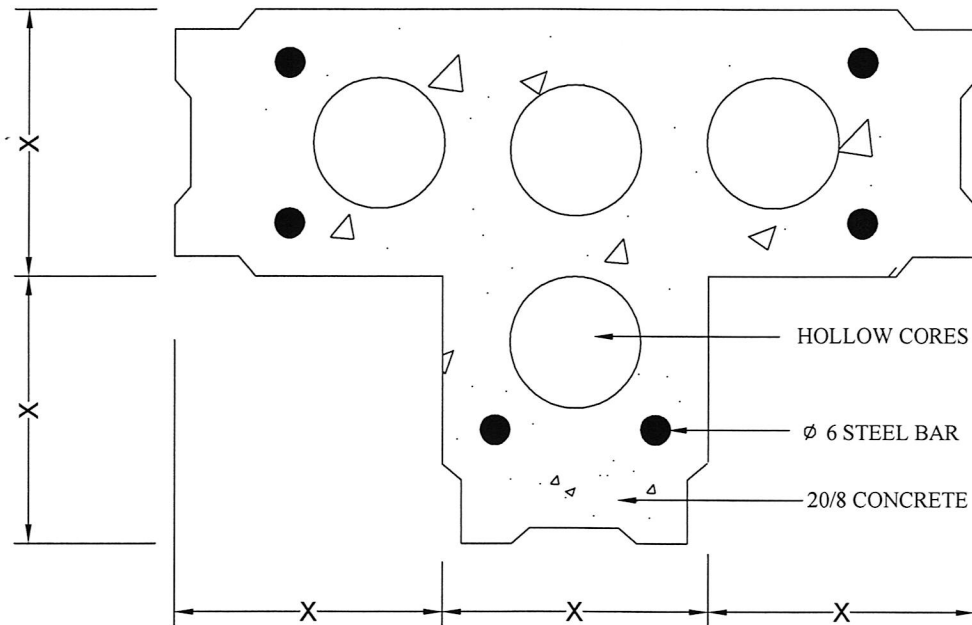


TYPE C : ' L ' JOINTED BY PANELS

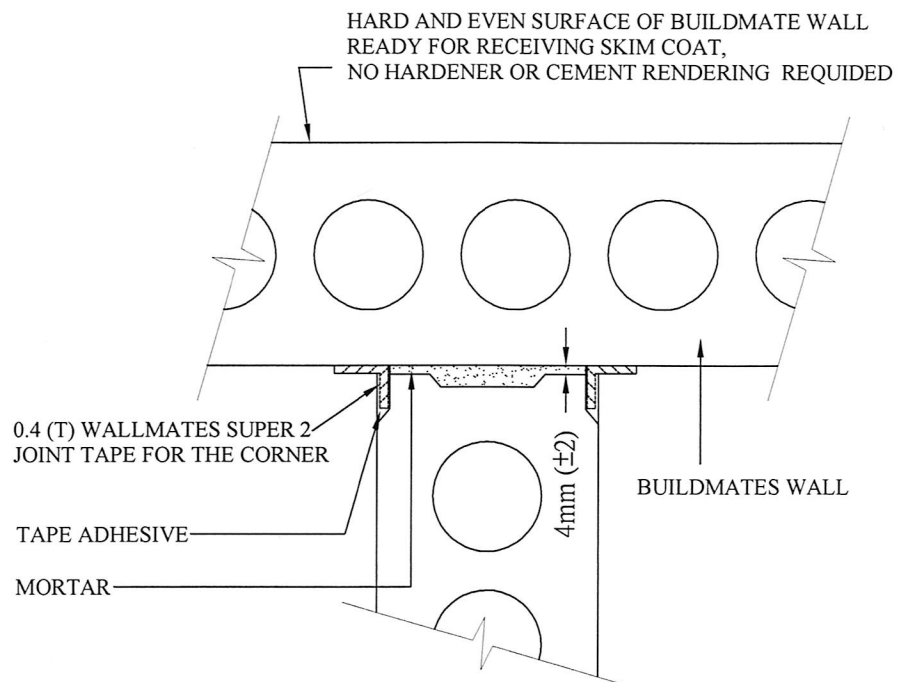


SECTION Y - Y

D16 - CORNER JOINT



TYPE A : T - SHAPE SECTION PANEL

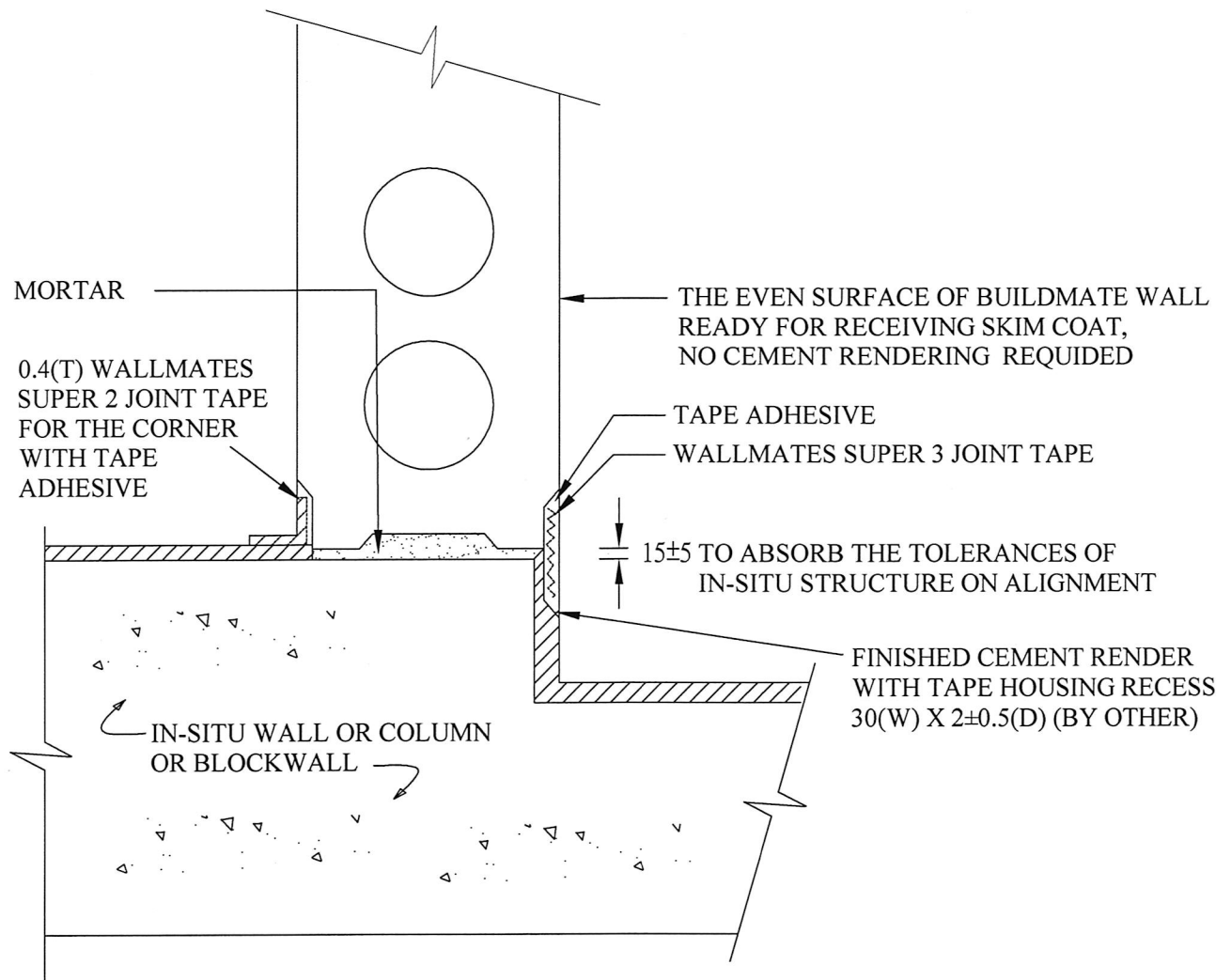


TYPE B : ' T ' JOINTED BY PANELS

D17 - ' T ' JOINT

WORKING PROCEDURE :-

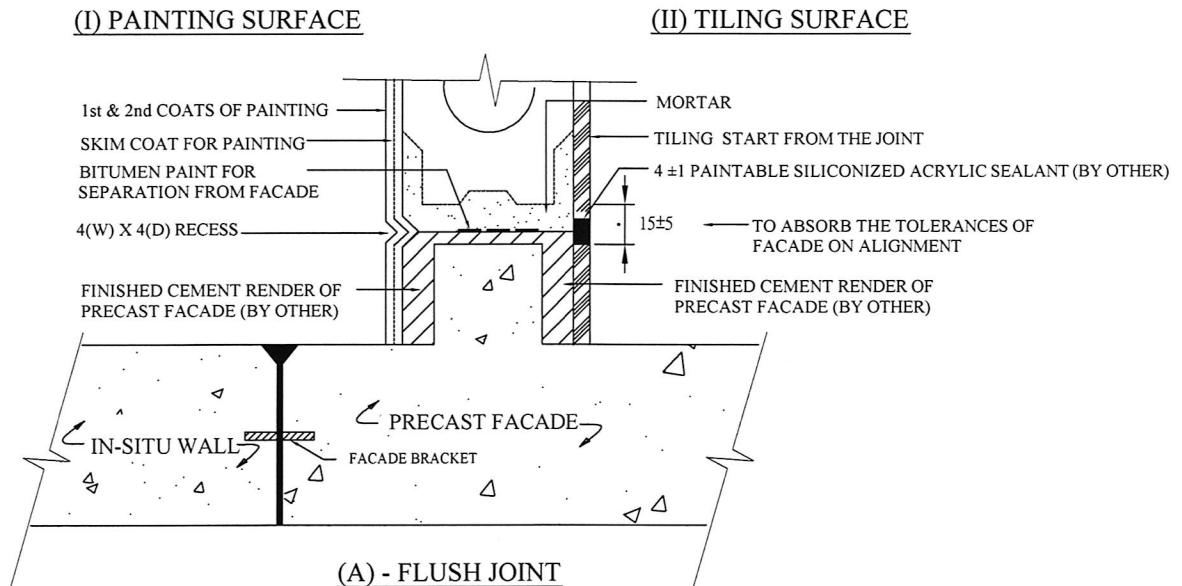
- STEP (I) - INSTALLATION OF PANELS
- STEP (II) - FINISHED CEMENT RENDER OF IN-SITU WALL OR COLUMN
- STEP (III) - FIXING OF JOINT TAPE
- STEP (IV) - SKIM COAT



D18 - JUNCTION OF IN-SITU R.C. STRUCTURE

INFILL OF RECESS ON PAINTING SURFACE AT JUNCTION

- * DUE TO THE MOVEMENT OF FACADE AND R.C. STRUCTRE, A APPROXIMATE 1MM WIDTH CRACK SHALL APPEAR ALONG THE RECESS.
- * A YEAR AFTER FIXING OF FACADE, FACADE STARTS TO STOP ITS MOVEMENT AND RESTS ON ITS FINAL POISTION, THEN INFILL THE RECESS.
- * THE RECESS SHALL BE APPLIED A COAT OF SBR BONDING AGENT, FILLED WITH FILLER CONSISTING OF 1 PART OF STONE POWER (A KIND OF SKIM COAT MATERIAL AND THE LIKES) AND 0.40 PART SBR BONDING AGENT BY WEIGHT, AND THEN COVERED WITH A STRIP OF 50MM(W) x 0.2MM (T) PAINTING CRACKS PREVENTIVE PAPER TAPE AND APPLIED SKIM COAT AND PAINT ON THE SURFACE.
- * THIS INFILL WORKS SHOULD BE DONE BY PAINTER AND THE COST SHOULD BE PAID BY MIAIN-CONTRACTOR OR DEVELOPER.
- * APPROXIMATE COST : HK\$20/M IN YEAR 2002.

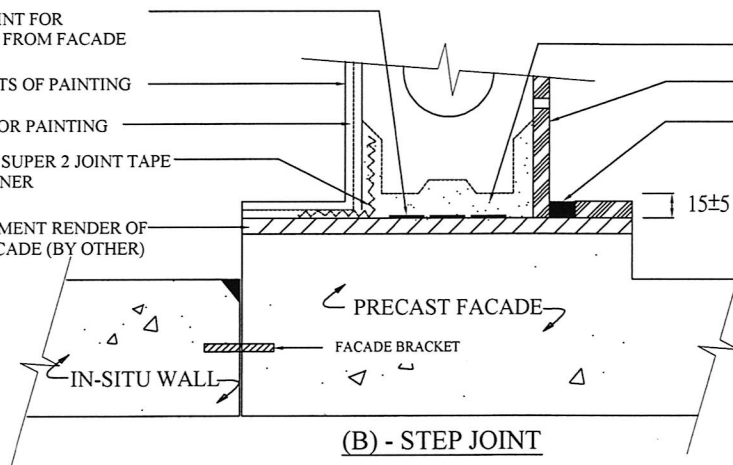


(I) PAINTING SURFACE

BITUMEN PAINT FOR SEPARATION FROM FACADE
1st & 2nd COATS OF PAINTING
SKIM COAT FOR PAINTING
WALLMATES SUPER 2 JOINT TAPE FOR THE CORNER
FINISHED CEMENT RENDER OF PRECAST FACADE (BY OTHER)

(II) TILING SURFACE

MORTAR
TILING START FROM THE JOINT
4 ± 1 PAINTABLE SILICONIZED ACRYLIC SEALANT (BY OTHER)
15 ± 5
TO ABSORB THE TOLERANCES OF FACADE ON ALIGNMENT



WORKING PROCEDURE-
STEP (I) - FINISHED CEMENT RENDER FOR PRECAST FACADE
STEP (II) - BITUMEN PAINT FOR SEPARATION FROM PRECAST FACADE
STEP (III) - INSTALLATION OF PANEL

D19 - JUNCTION OF PRECAST FACADE

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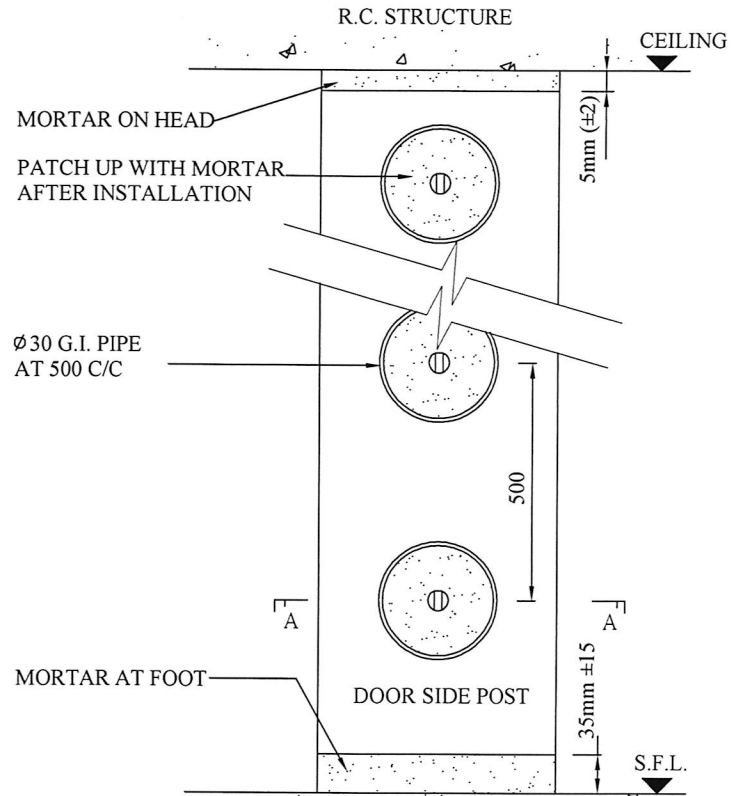
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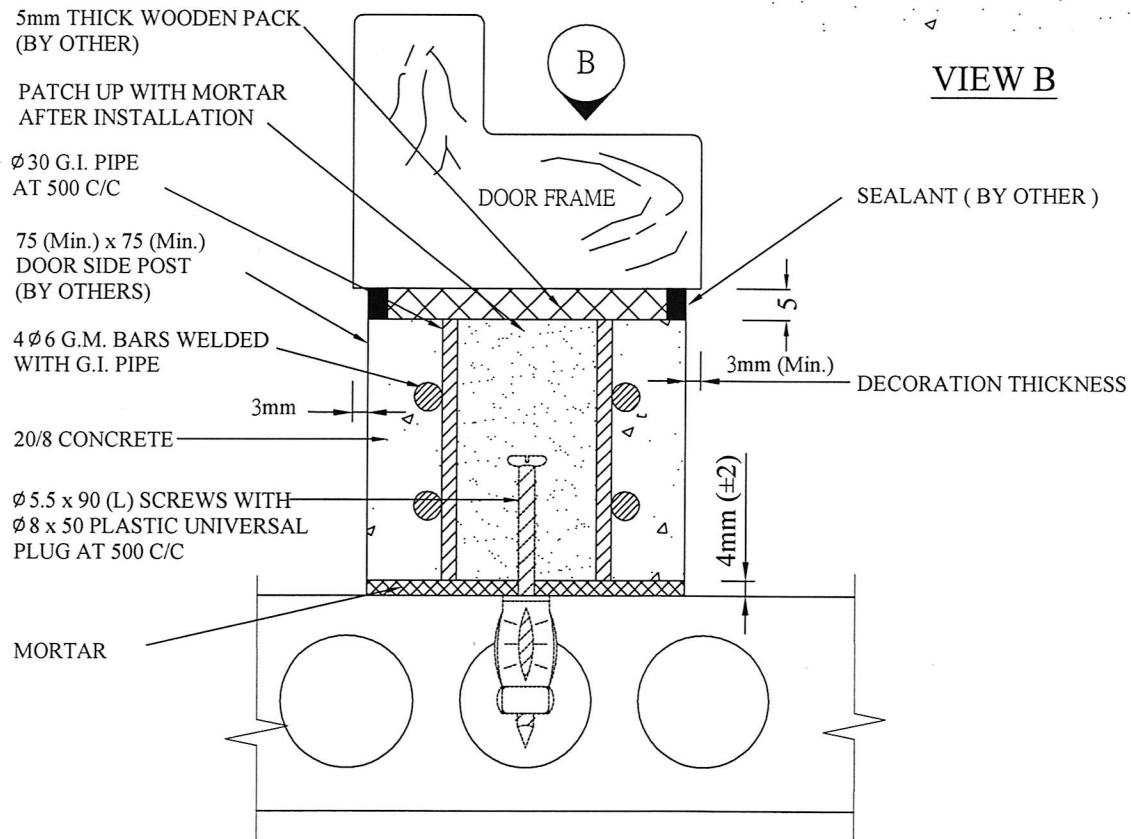
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*Approximate Cost of Door Side Post : \$60/m in Year 2002



VIEW B



SECTION A-A

D20 - JUNCTION OF DOOR SIDE POST

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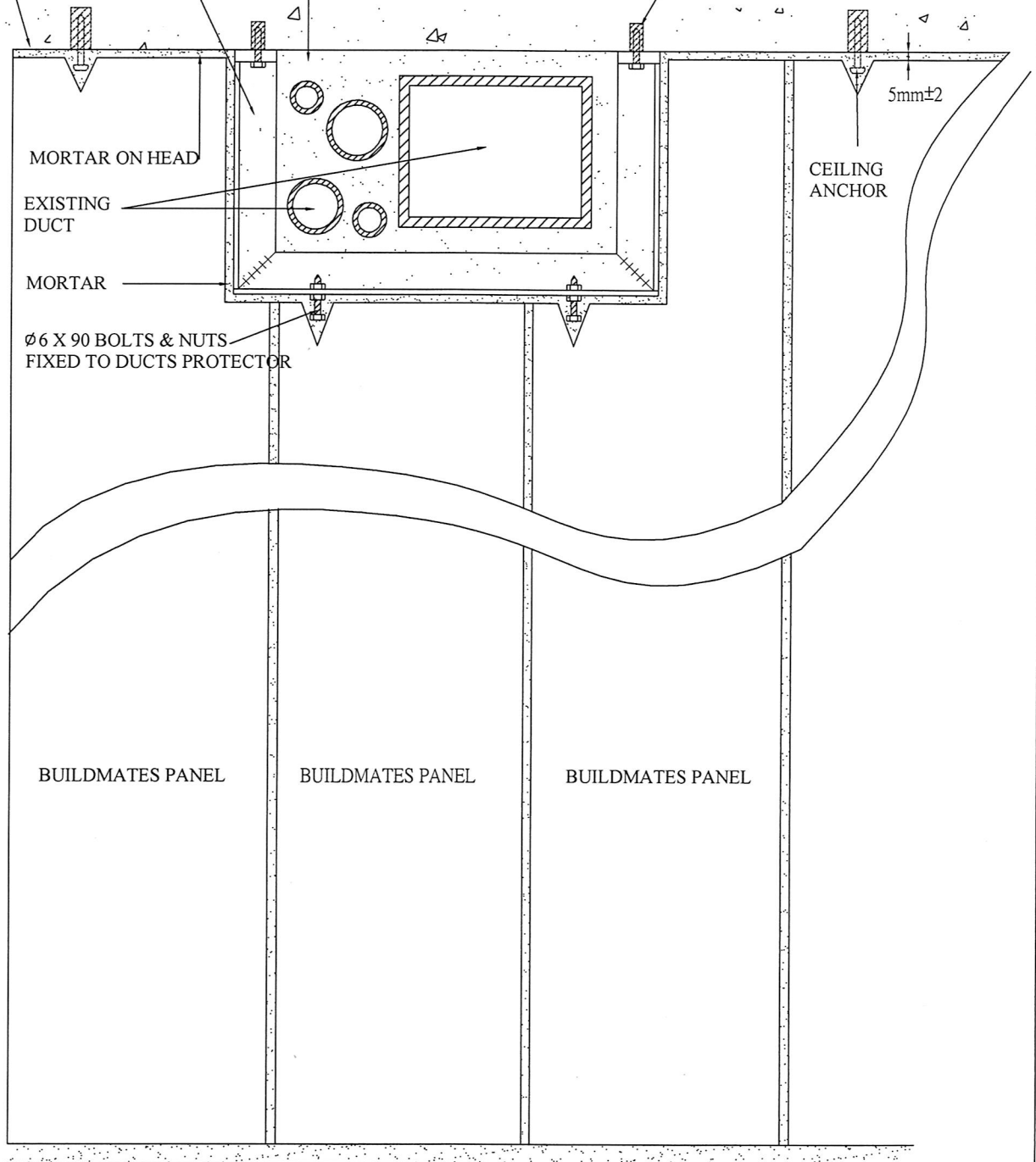
* Approximate cost of ducts protector with mortar patch up: \$1,000/m² in year 2002.

50 X 50 X 3(T) STEEL ANGLE DUCTS PROTECTOR
FIXED TO CEILING (BY OTHER)

R.C. STRUCTURE

PATCH UP VOIDS SURROUNDING
DUCTS WITH MORTAR (BY OTHER)

Ø6 X 25 EXPANDING BOLT
(BY OTHER)



D21 - JUNCTION OF EXISTING DUCT

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PRODUCT: BUILDMATES WALL	DETAIL TITLE: D21 - JUNCTION OF EXISTING DUCT	DATE: 09-09-2002	BUILDMATES BUILDING TECHNOLOGY LIMITED	PAGE: 43
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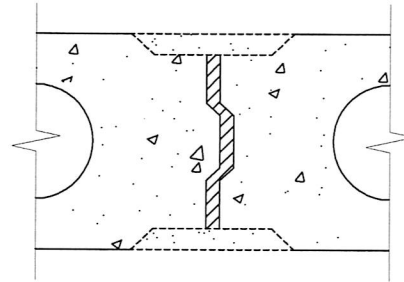
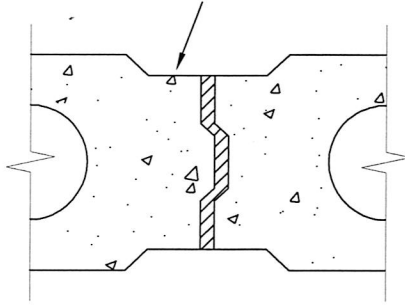
IMPORTANT REMARKS :

FIXING OF JOINT TAPE SHOULD BE COMMENCED AFTER THE COMPLETION OF FIXING WORKS FOR DOOR FRAMES AND E & M CONDUITS. FOR PRE-MATURITY OF THE JOINTS AND JUNCTIONS AT LEAST IDLING FOR 7 DAYS AFTER THE FILLING OF JOINTS AND JUNCTIONS.
(THE ABOVE ITEMS CAN PREVENT CRACKS APPEARING AT JOINTS AND JUNCTIONS).

TAPE ADHESIVE MIX (BY WEIGHT)

MIX 300	1.00
WATER	10
42.5 CEMENT	25
SAND (≤ 1mm)	25
(USABLE TIME ≤ 3 hrs.)	

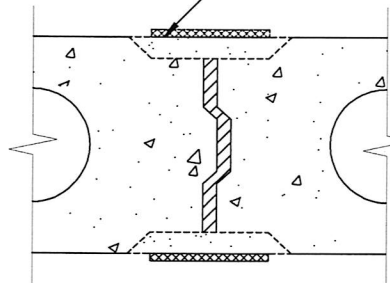
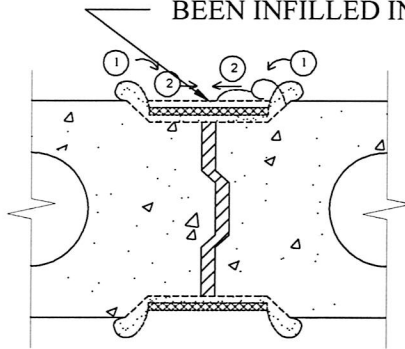
TAPE HOUSING RECESS



CLEAR AWAY DEBRIS FROM THE TAPE HOUSING RECESS OF BUILDMAATES WALL

FULLY INFILL THE RECESS WITH TAPE ADHESIVE

THE JOINT TAPE SHOULD BE LAID AND PRESSED WITHIN ONE MINUTE AFTER THE TAPE ADHESIVE HAD BEEN INFILLED IN THE TAPE HOUSING RECESS.

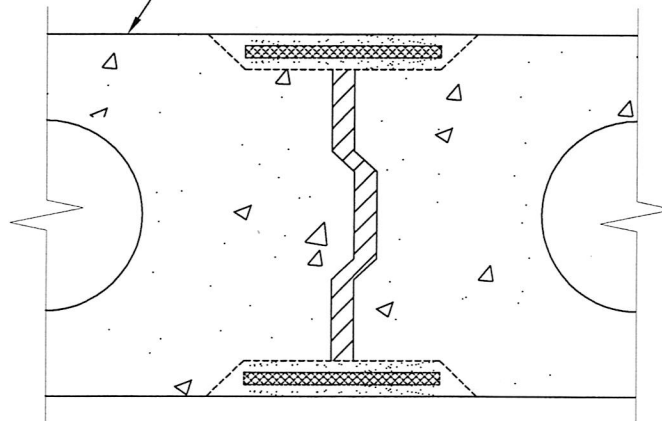


PRESS THE JOINT TAPE INTO THE TAPE HOUSING RECESS

LAY WALLMATES SUPER 3 JOINT TAPE ON ADHESIVE



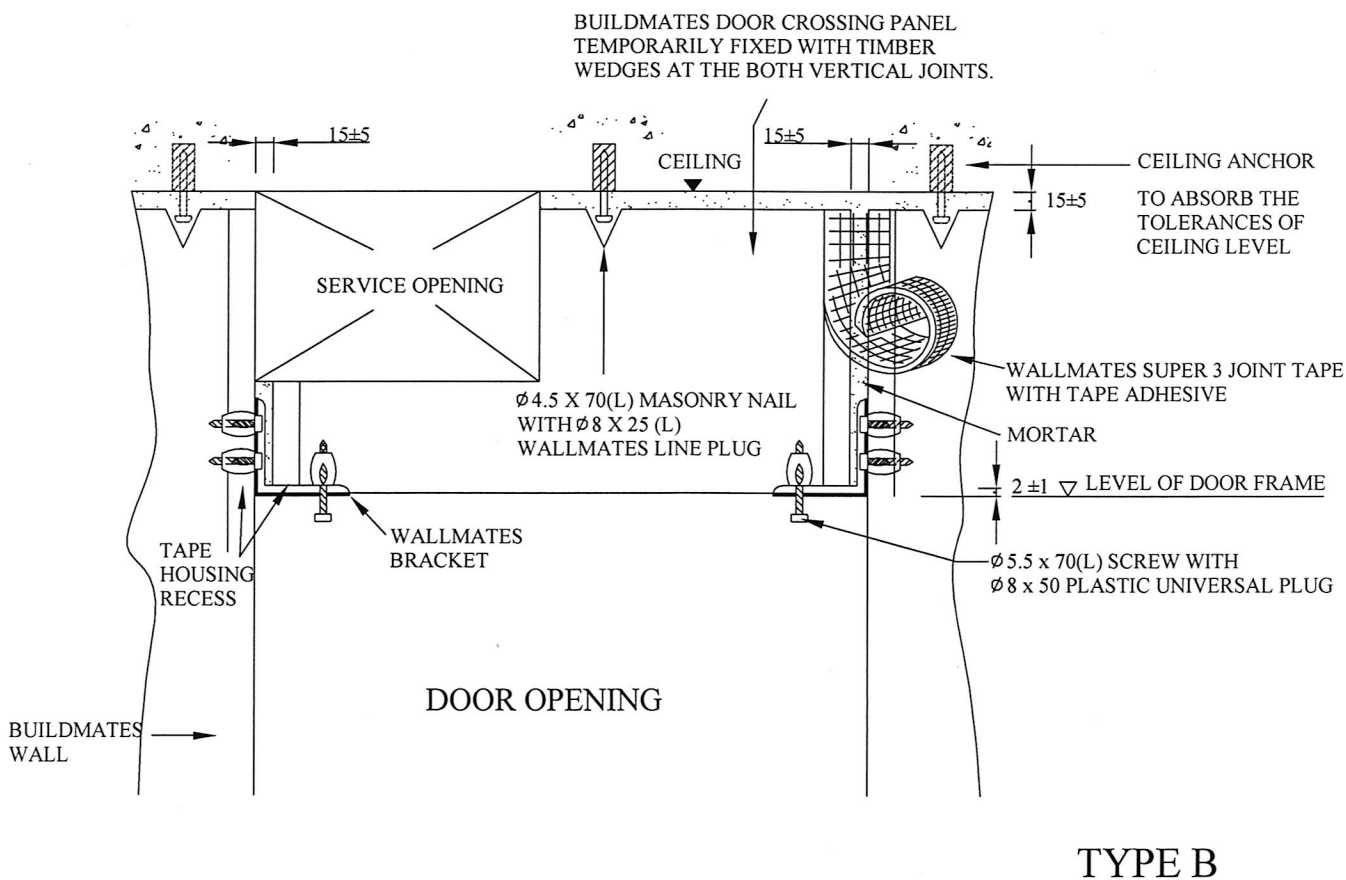
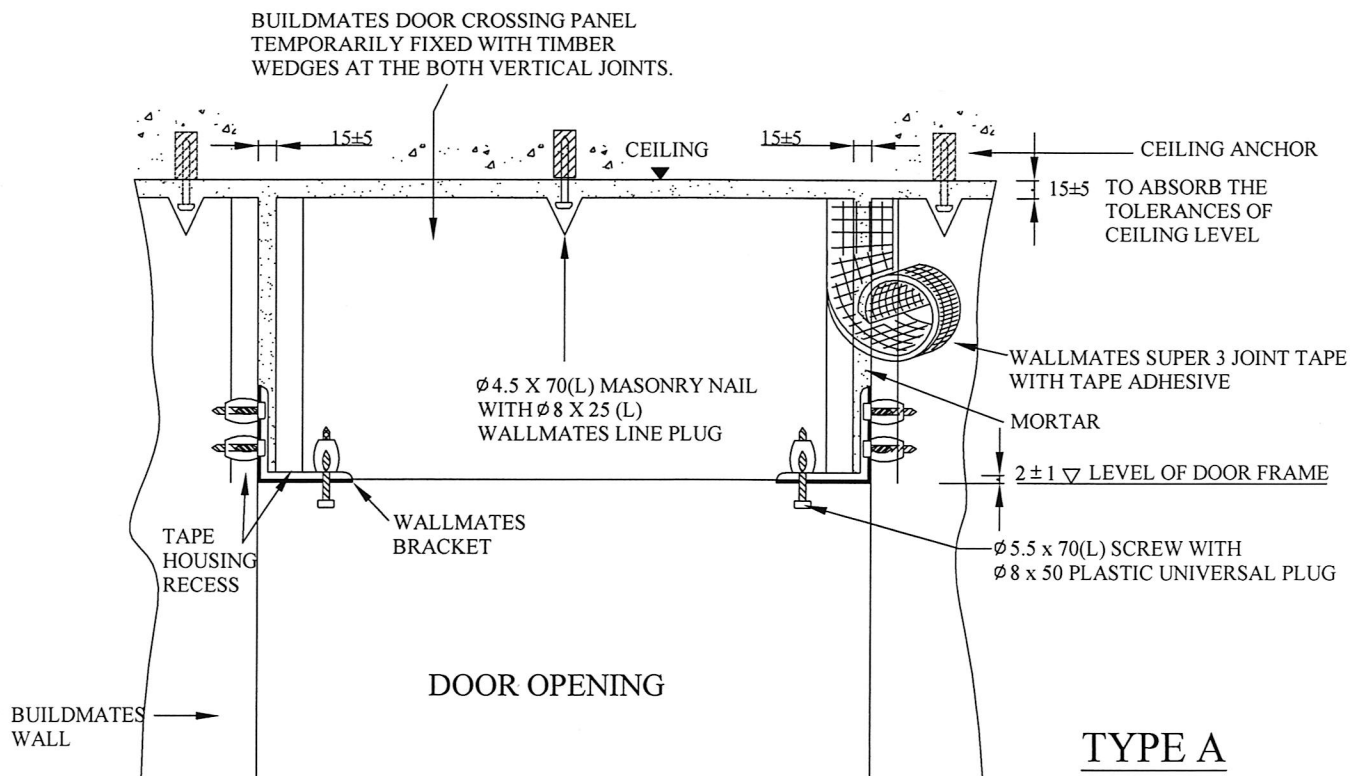
THE EVEN SURFACE OF BUILDMAATES WALL READY FOR RECEIVING SKIM COAT, NO CEMENT RENDERING REQUIRED.



COVER THE JOINT TAPE WITH TAPE ADHESIVE

D22 - FIXING OF JOINT TAPE

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D23 - FIXING OF DOOR CROSSING PANEL

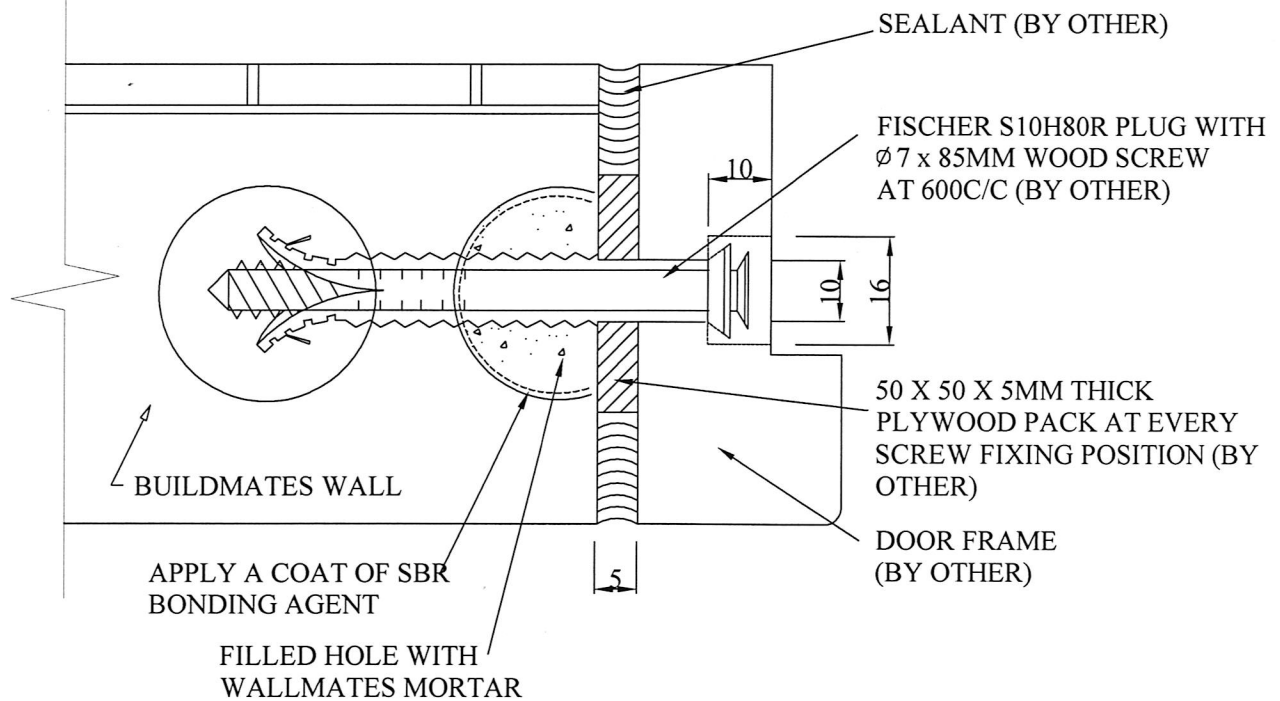
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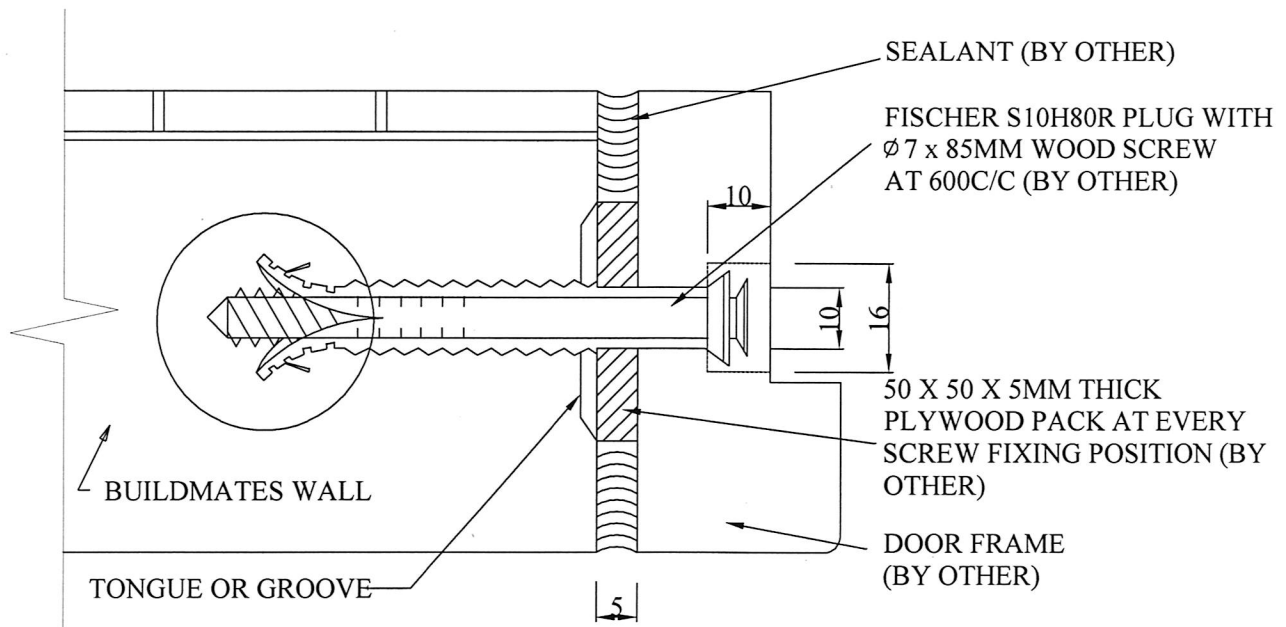
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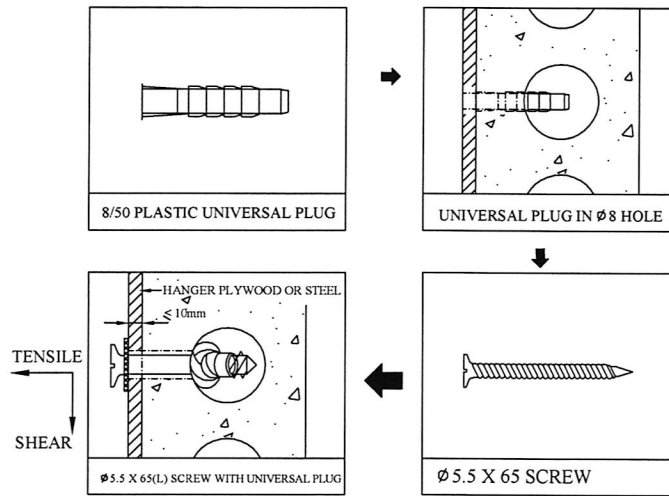
(I) - JOINT WITH CUT PANEL



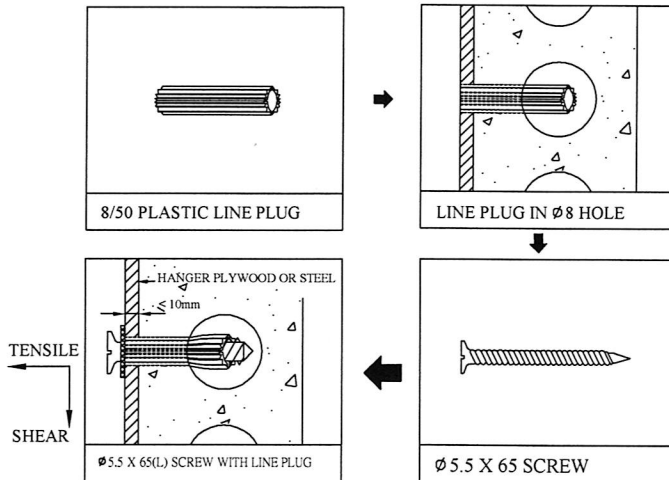
(II) - JOINT WITH FULL PANEL

D24 - FIXING OF DOOR FRAME

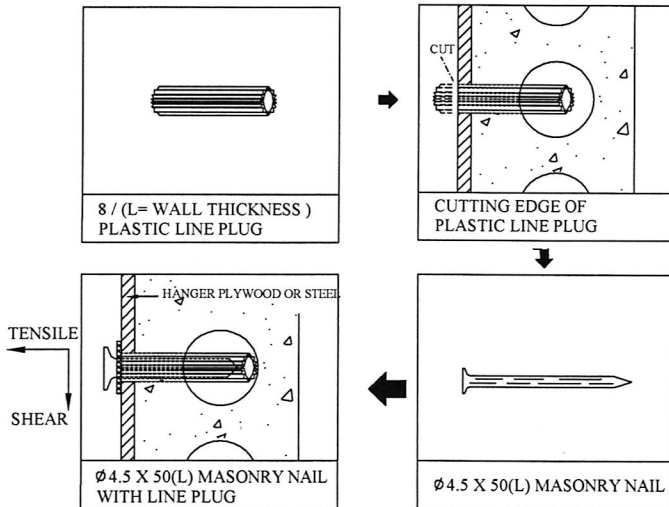
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SCREW WITH PLASTIC UNIVERSAL PLUG



SCREW WITH PLASTIC LINE PLUG



MASONRY NAIL WITH LINE PLUG

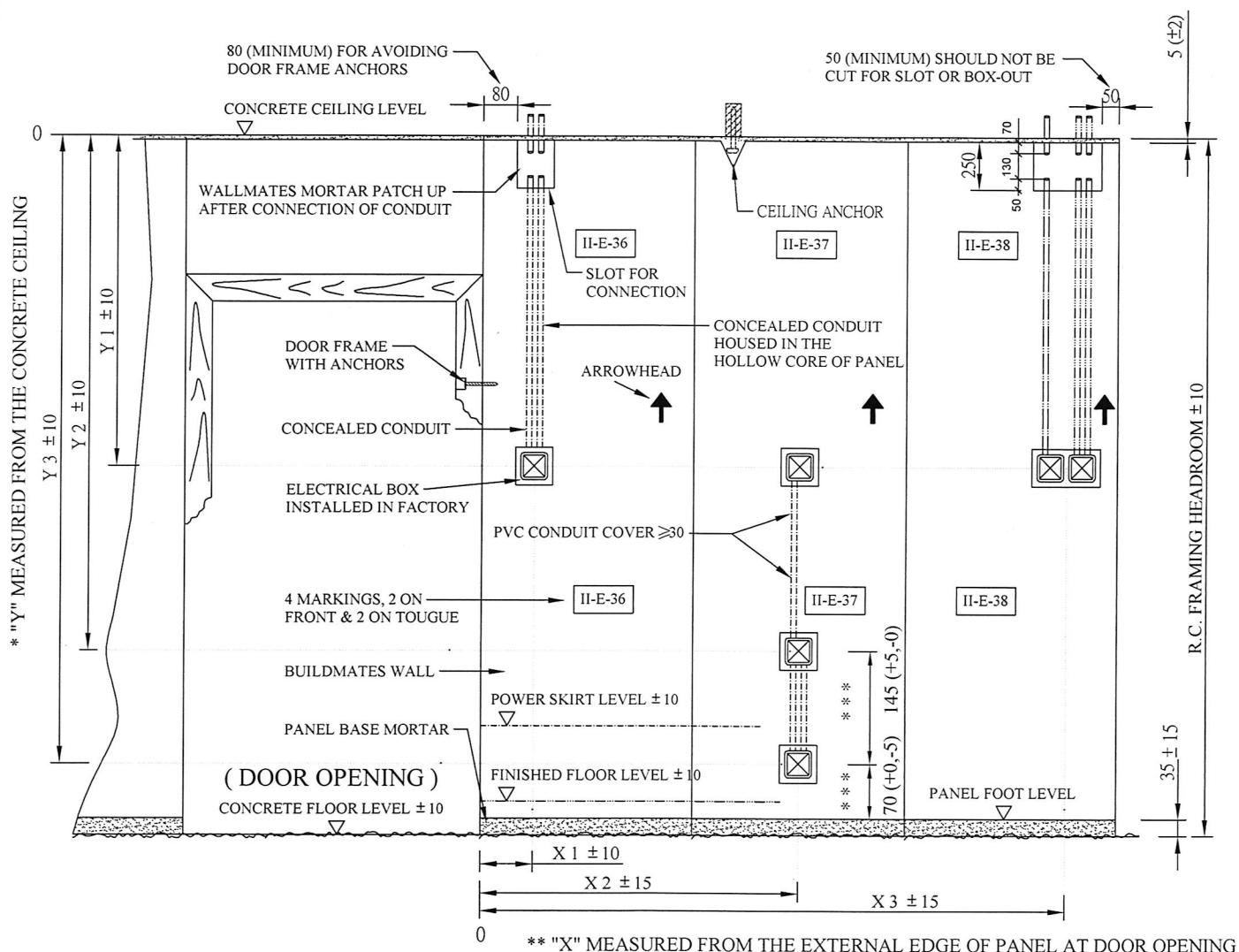
PLUGS	MASONRY NAIL	SCREWS	TENSILE LOADING	LOADING IN SHEAR
8/50 PLASTIC UNIVERSAL PLUG	-----	$\varnothing 5.5 \times 65 (\text{L})$	> 1850 N	> 4770 N
8/50 PLASTIC LINE PLUG	-----	$\varnothing 5.5 \times 65 (\text{L})$	> 500 N	> 1000 N
8 / (L= WALL THICKNESS) PLASTIC LINE PLUG	$\varnothing 4.5 \times 50 (\text{L})$	-----	> 250 N	> 500 N

* FOR THE SAFE WORKING LOAD, PLEASE REFER TO THE CLAUSE 13.3 OF PAGE 25.

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D25 - FIXING OF HANGING ANCHOR



(CUT SLOT AND BOX-OUT WITH PORTABLE ELECTRICAL SAW)

D26 - PRE-INSTALLED CONDUIT PANEL

* LEVEL " Y " FOR SWITCH BOXES MEASURED FROM THE CONCRETE CEILING.

** ALIGNMENT " X " FOR SWITCH BOXES MEASURED FROM THE EXTERNAL EDGE OF PANEL AT DOOR OPENING

*** THE FIGURE IS VERY IMPORTANT FOR THE POWER SKIRTING

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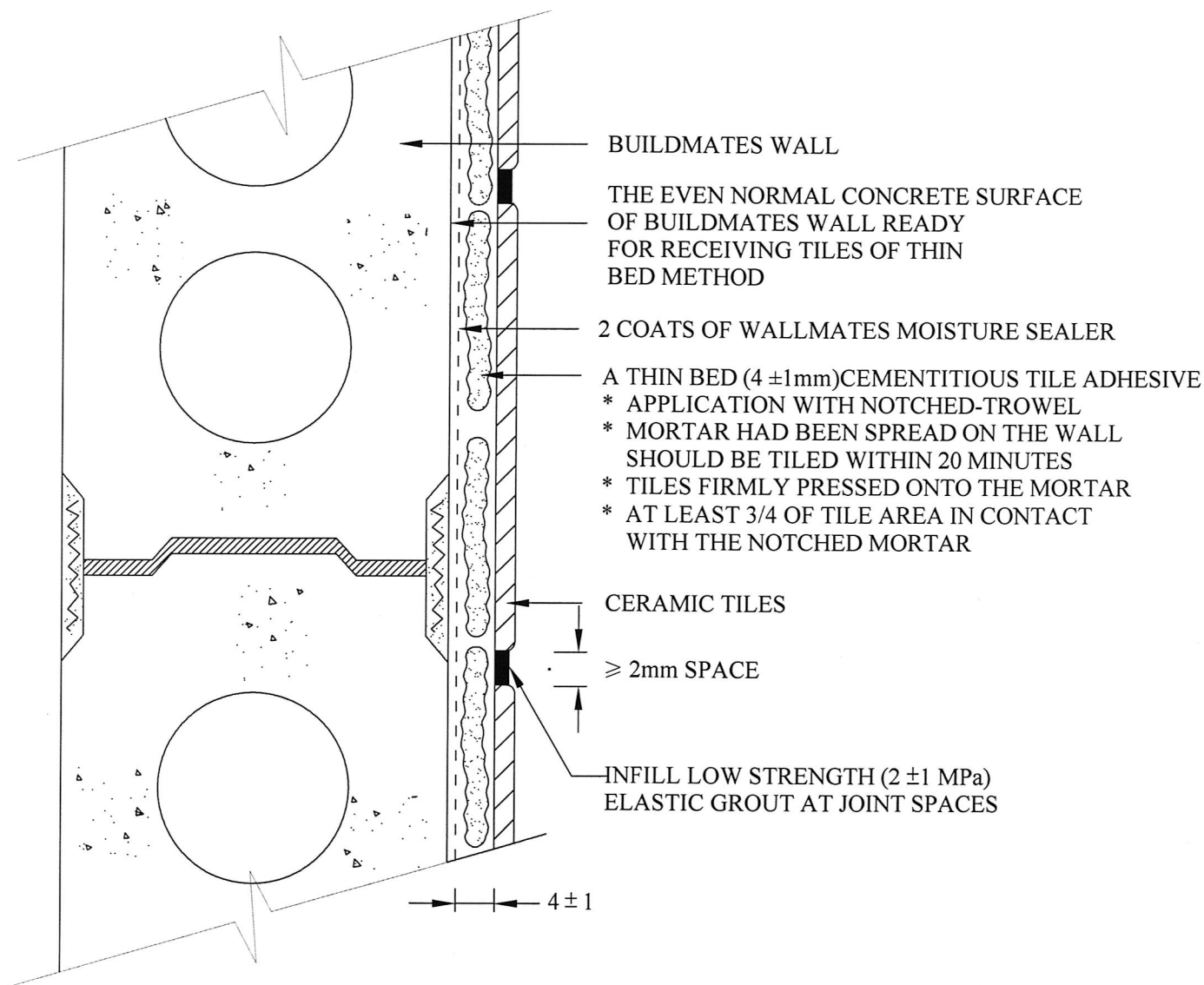
PRODUCT:
BUILDMATES WALL

DETAIL TITLE:
D26 - PRE-INSTALLED CONDUIT PANEL

DATE:
09-09-2002

BUILDMATES BUILDING TECHNOLOGY LIMITED

PAGE:
48



D27 - LAYING OF TILES

REMARKS :

- * THE ABOVE CEMENTITIOUS TILE ADHESIVE CAN BE REPLACED BY ORDINARY CEMENT SAND SLURRY.
- * RECOMMENDED CEMENT SAND SLURRY AS MENTIONED AS PER CLAUSE 10.12 OF PAGE 23.
- * THE WORKING METHOD AND SEQUENCE ARE SAME AS THAT OF TILE ADHESIVE.

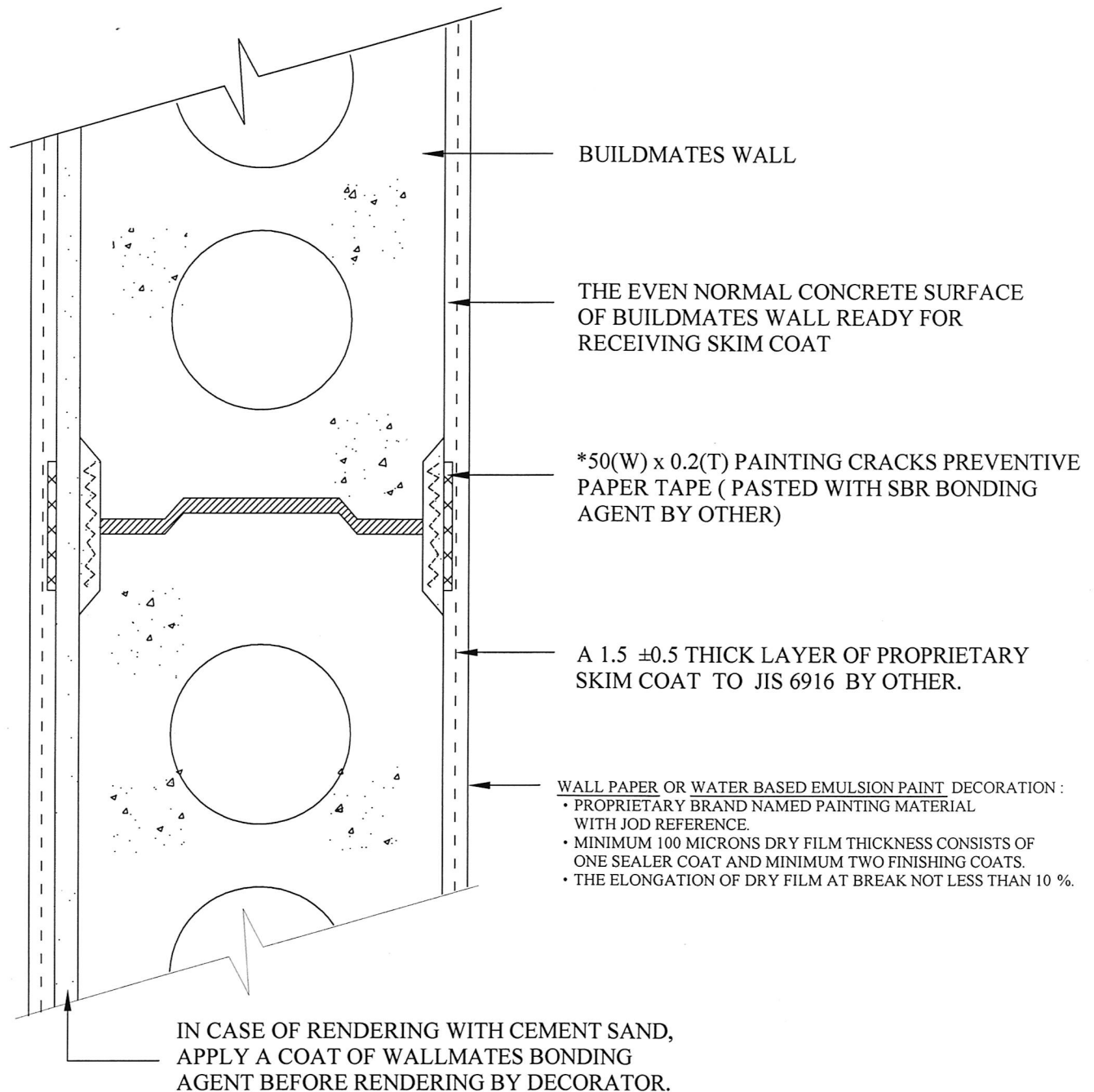
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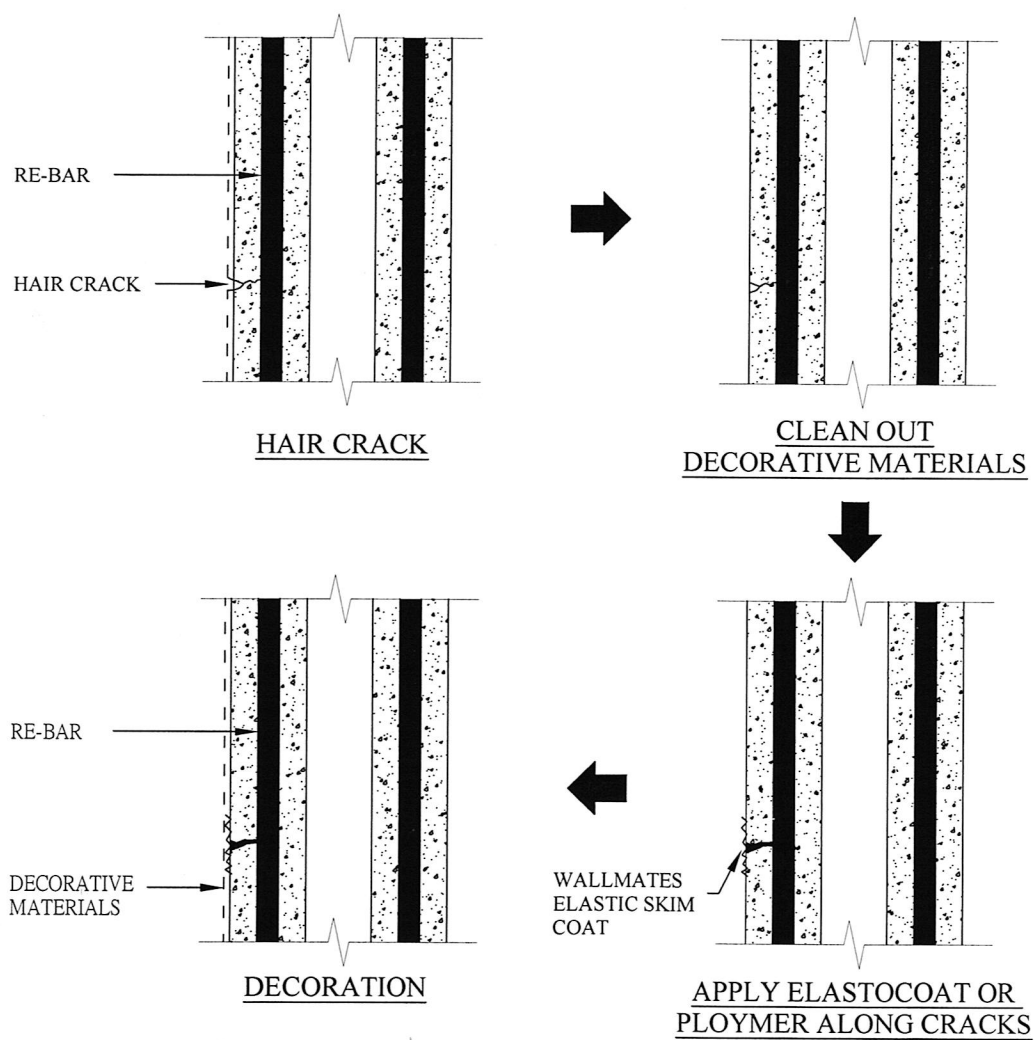


* THE PAINTING CRACKS PREVENTIVE PAPER TAPE CAN BE DELETED IF IT ENSURES THAT THE PAINT AND SKIM COAT COMPLY WITH THE ABOVE REQUIREMENTS.

D28 - APPLYING OF WALL PAPER OR PAINT

RECTIFYING OF HAIR CRACK (CRACK WIDTH $\leq 0.30\text{MM}$) :

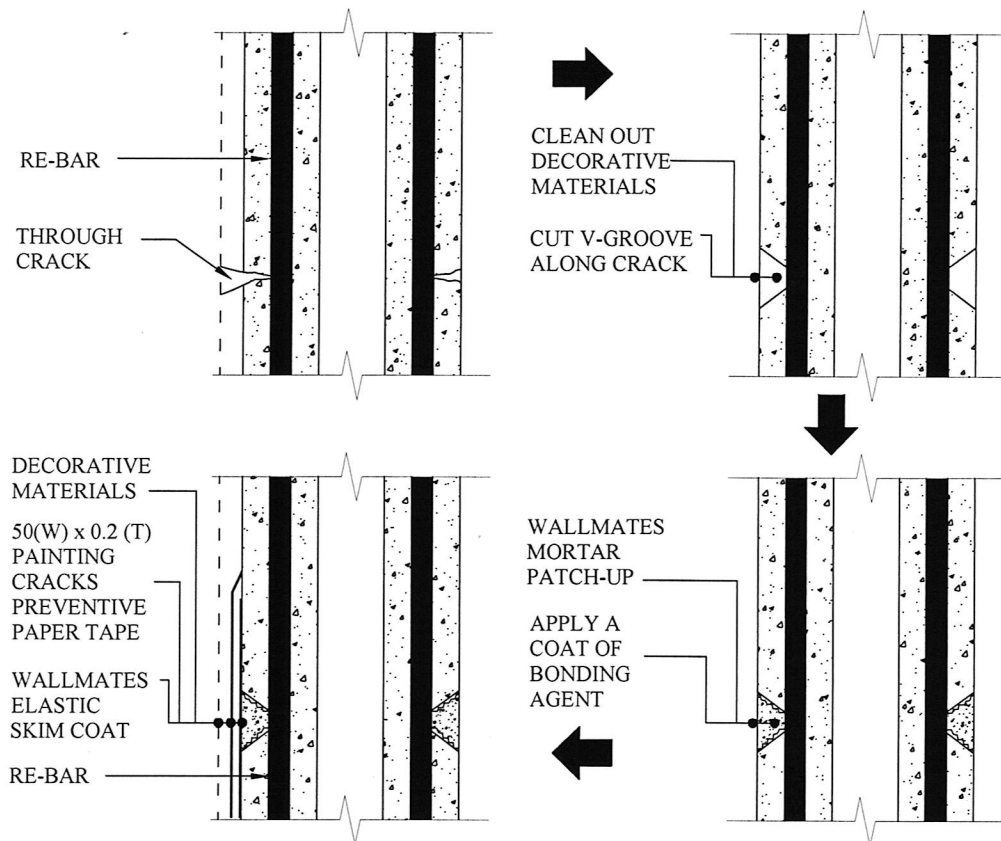
- (I) THOROUGHLY CLEAN OUT DECORATIVE MATERIALS ALONG CRACKS ON PANEL SURFACE .
- (II) APPLY TWO LAYERS OF WALLMATES ELASTIC SKIM COAT ALONE CRACKS.
THE SECOND LAYER SHOULD BE APPLIED AFTER THE FIRST ONE BECOMES NOT STICKY TO FINGERS.
- (III) AFTER THE SECOND LAYER DRIES UP, START TO DO DECORATION WORKS.



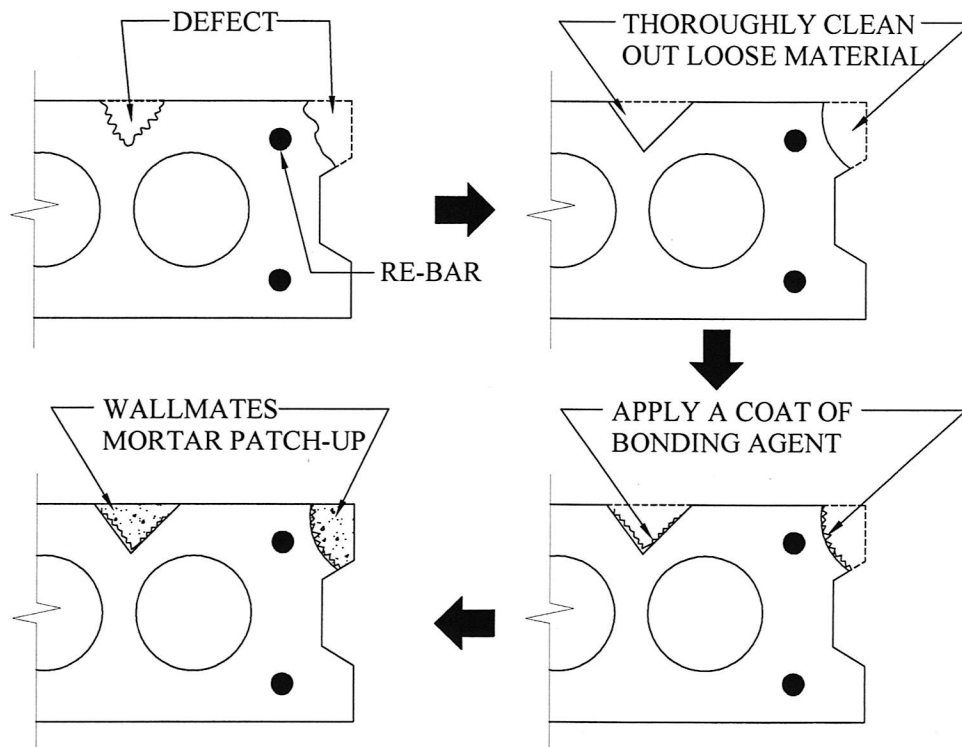
D29 - RECTIFYING OF HAIR CRACK

RECIPE	42.5 CEMENT	SAND	WATER	ADMIXTURE (MIX 300)	USABLE TIME (hr.)
WALLMATES MORTAR	100	200	50	5	≤ 3

i) THE COMPRESSIVE STRENGTH IS 20MPa.



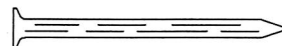
D30 - RECTIFYING OF THROUGH CRACK



D31 - RECTIFYING OF DEFECT



Ø 8 x 25 (L) mm
WALLMATES LINE PLUG



Ø 4.5 x 70 (L) mm
WALLMATES MASONRY NAIL



32 x 20 x 30 mm THICK
WALLMATES RUBBER SPACER PAD



50 mm WIDE WALLMATES
SUPER 2 - JOINT TAPE



WALLMATES UNIVERSAL
PLUG - UP8



Ø 5.5 x 70 (L) mm
WOOD SCREW



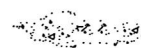
Ø 5.5 x 90 (L) mm
WOOD SCREW



50mm WIDE WALLMATES
SUPER 3 - JOINT TAPE



45 (W) x 250 (L) x 3-40 (T) mm
TIMBER WEDGE



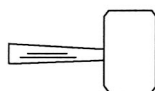
20 MPa MORTAR FOR GROUTING INTO VOIDS (BY WEIGHT)
42.5 CEMENT : SAND : MIX 300 : WATER
100 : 200 : 5.5 : 55



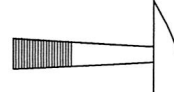
20 MPa MORTAR FOR GROUTING INTO REPAIRS (BY WEIGHT)
42.5 CEMENT : SAND : MIX 300 : WATER
100 : 200 : 5 : 50



TAPE ADHESIVE (BY WEIGHT)
42.5 CEMENT : SAND : MIX 300 : WATER
25 : 25 : 1.00 : 10



RUBBER HAMMER



STEEL HAMMER



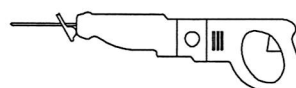
STEEL POST WITH 50mm (W) FLAT END



MASONRY CIRCULAR SAW



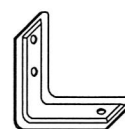
150mm LONG, 8mm DIAMETER
DRILL BIT



ELECTRICAL DRILL



50 (W) x 0.2 (T) SPARK-PERFORATED
PAINTING CRACKS PREVENTIVE PAPER TAPE



WALLMATES BRACKET

D32 - INSTALLATION ACCESSORIES & TOOLS

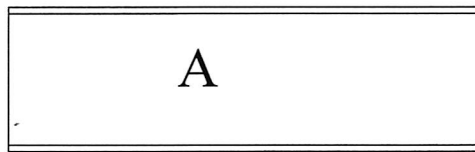
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600 (W) x 85 (T) STANDARD PANEL



A2

MINI PANEL



A1

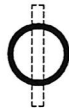
MINI PANEL

STANDARD PANEL CUT INTO MINI PANELS
FOR THE CONVENIENCE OF VERTICAL
TRANSPORTATION BY THE LIFT AND FORMING
OF TAPE HOUSING RECESS IN FACTORY



Ø 50 I.D. Ø 56 O.D. uPVC CONDUIT 600 (L)

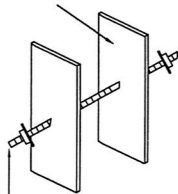
Ø 6 x 65 (L) STEEL BAR



SECTION OF COUPLER

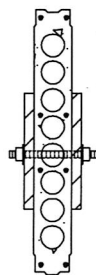
COUPLER

200 (W) x 600 (L) x 19 (T) PLYWOOD

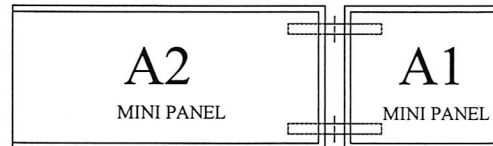


Ø 10 x 150 (L) BOLTS AND NUTS
WITH WASHERS

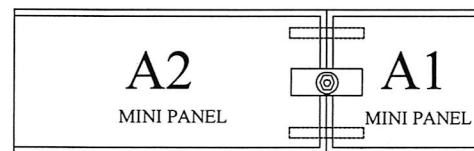
CLIP



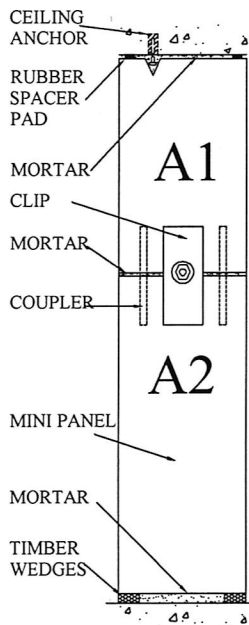
SECTION OF CLIP



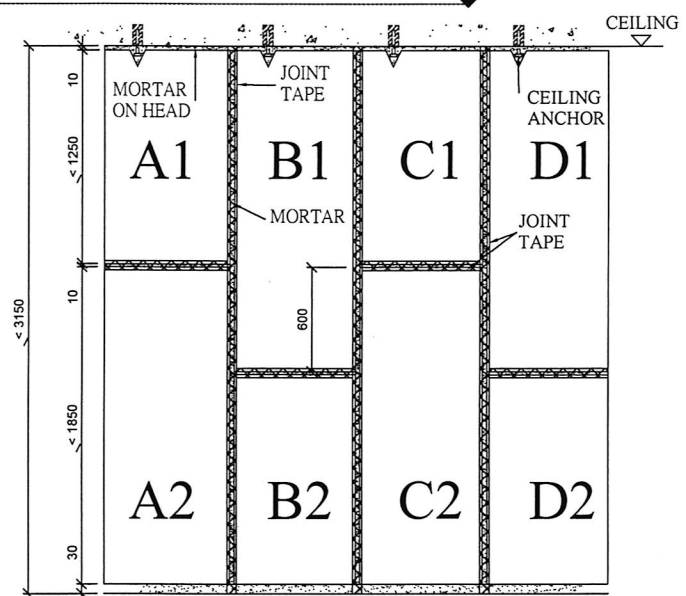
COUPLERS INSERTED INTO HOLLOW CORES
WITHIN THE MINI PANELS ON WORKING FLOOR



MINI PANELS FASTENED BY THE CLIP ON WORKING FLOOR



INSTALLATION OF MINI PANELS



*FILL JOINTS UP WITH NON SHRINK CEMENT SAND
MORTAR, JOINT FILLING AWAITING SEVEN (7) DAYS AND THEN
COVER JOINT TAPES.

* FOR JOINT TREATMENT, PLEASE REFER TO THE CLAUSES 10.0
INSTALLATION MANUAL OF PAGE 16 TO PAGE 18.

D34 - MINI PANELS USED IN RENOVATION WORKS

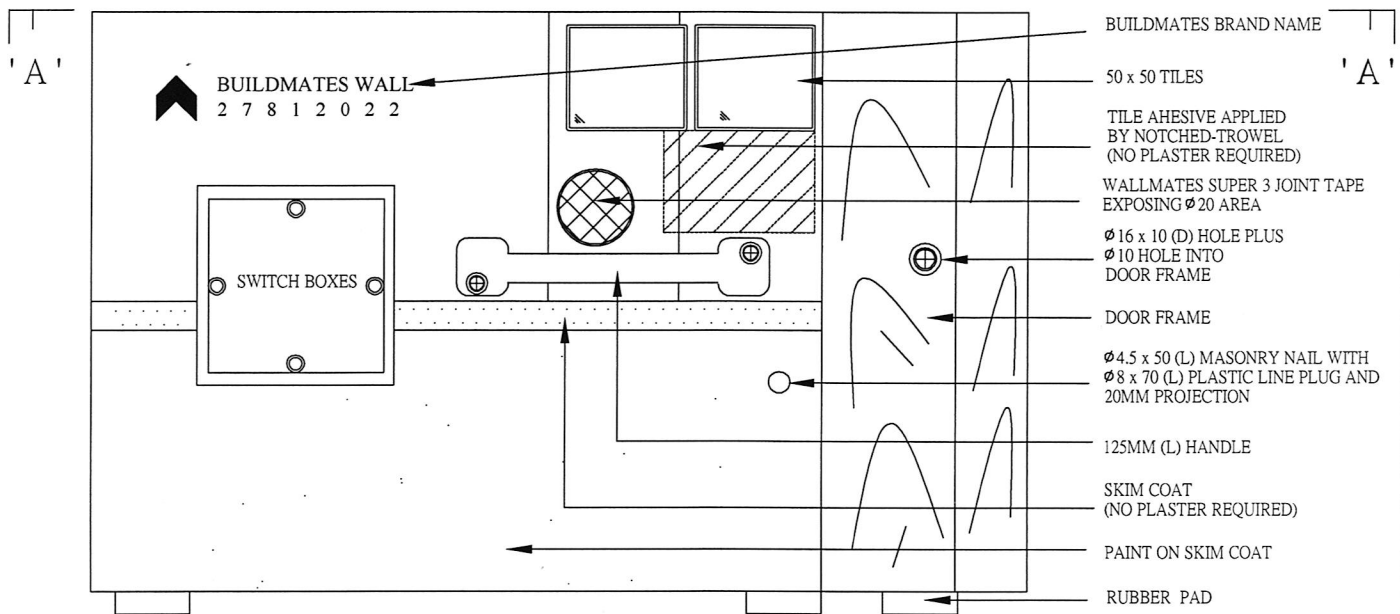
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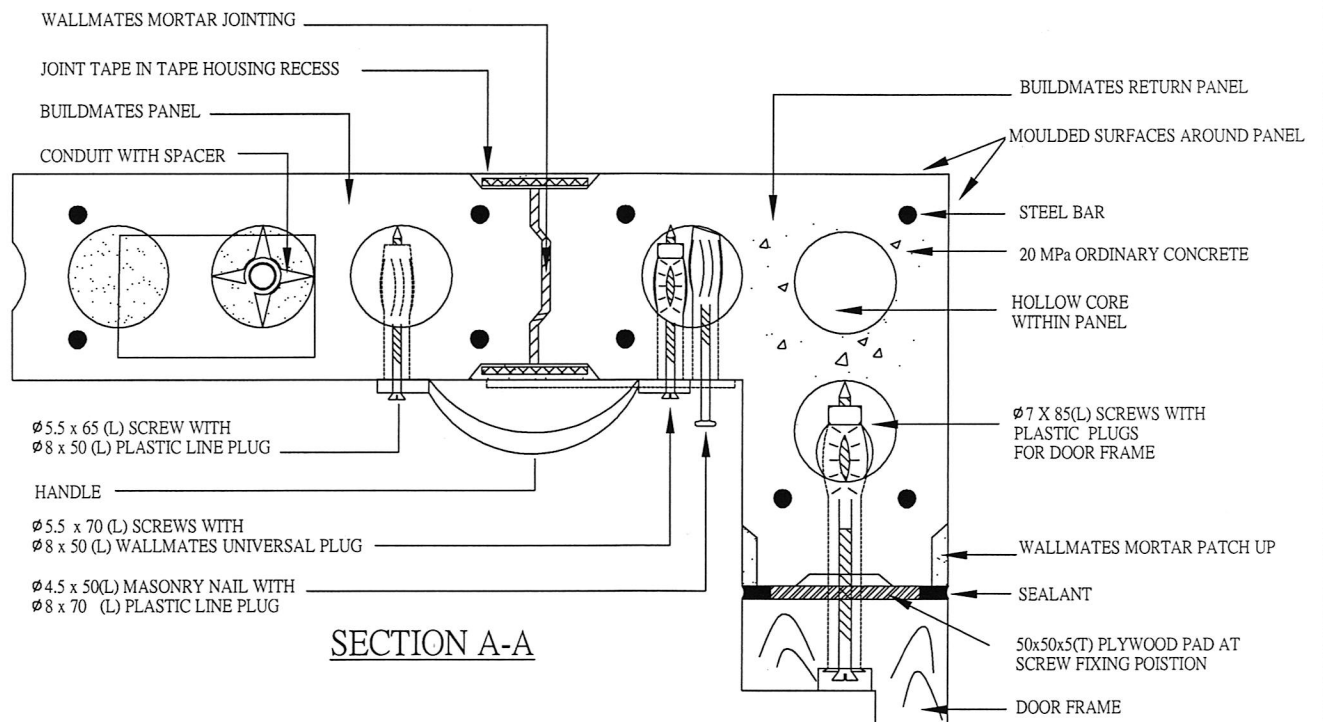
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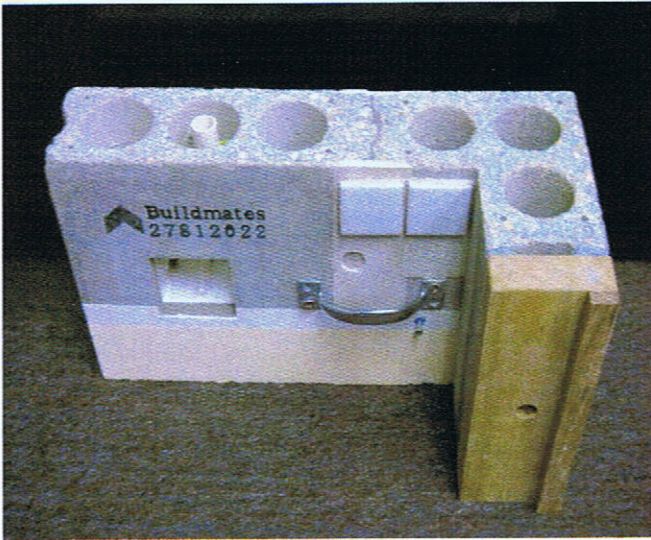
FRONT VIEW



SECTION A-A

D35 - SAMPLE

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A. Buildmates Factory	B. Production Line	C. Batching Plant	D. Concrete Casting
			
E. Withdrawing of Pipes	F. Withdrawing Finishing	G. Demoulding	H. Pre-installed Conduits
			
I. Return Panels	J. Storage Yard	K. Stacking on Floor	L. Erecting up to Ceiling
			
M. Positioning	N. Filing up the Base	O. Door Crossing Panel	P. Decorated Wall
			
Q. Buildmates Wall		R. Langham Hotel	S. Disney Hollywood Hotel
			
		T. The Legend	U. Parkside Services Apartment

D36 - PHOTO PRESENTATION 照片展示

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PRODUCT: BUILDMATES WALL	DETAIL TITLE: D36 - PHOTO PRESENTATION 照片展示	DATE: 09-09-2002	BUILDMATES BUILDING TECHNOLOGY LIMITED 標特美建築技術有限公司	PAGE: 57
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Accessories & Tools
for
Buildmates Wall













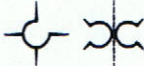




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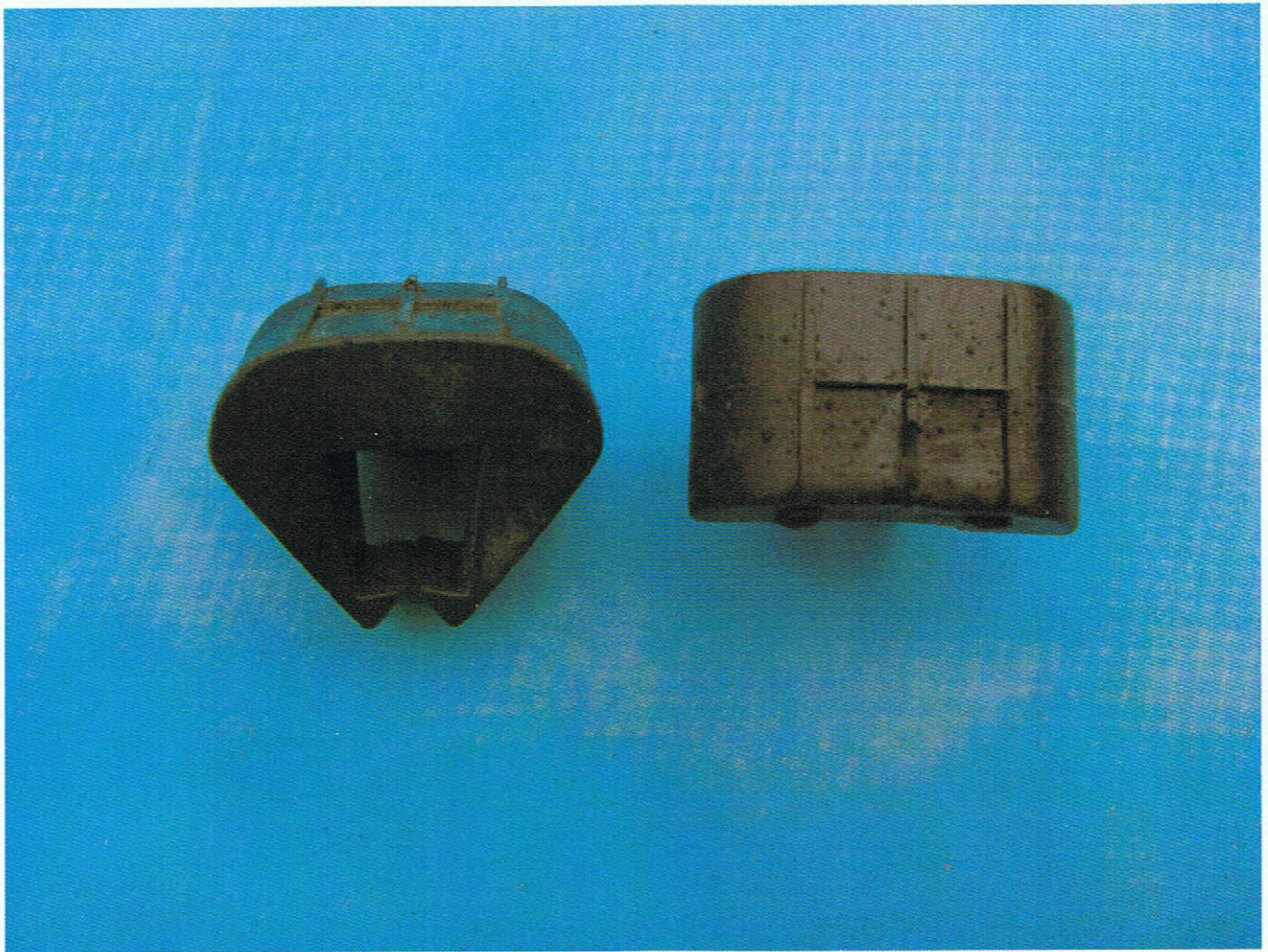
CONTENTS

	WALLMATES RUBBER SPACER PAD P.1
	WALLMATES TIMBER WEDGE P.2
	WALLMATES STEEL POST..... P.3
	WALLMATES BRACKET..... P.4
	WALLMATES UNIVERSAL PLUG P.5
	WALLMATES PLASTIC LINE PLUG..... P.6
	WALLMATES MASONRY NAIL P.7
	WALLMATES SUPER - 2 JOINT TAPE..... P.8
	WALLMATES SUPER - 3 JOINT TAPE..... P.9
	WALLMATES VOIDS STOP..... P.10
	WALLMATES CONDUITS SPACER..... P.11
	WALLMATES BONDING AGENT MIX 288 P.12
	WALLMATES MOISTURE SEALER MIX 298..... P.13
	WALLMATES ADMIXTURES MIX 300..... P.14
	WALLMATES ELASTIC SKIM COAT MIX 328 P.15



Wallmates Rubber Spacer Pad

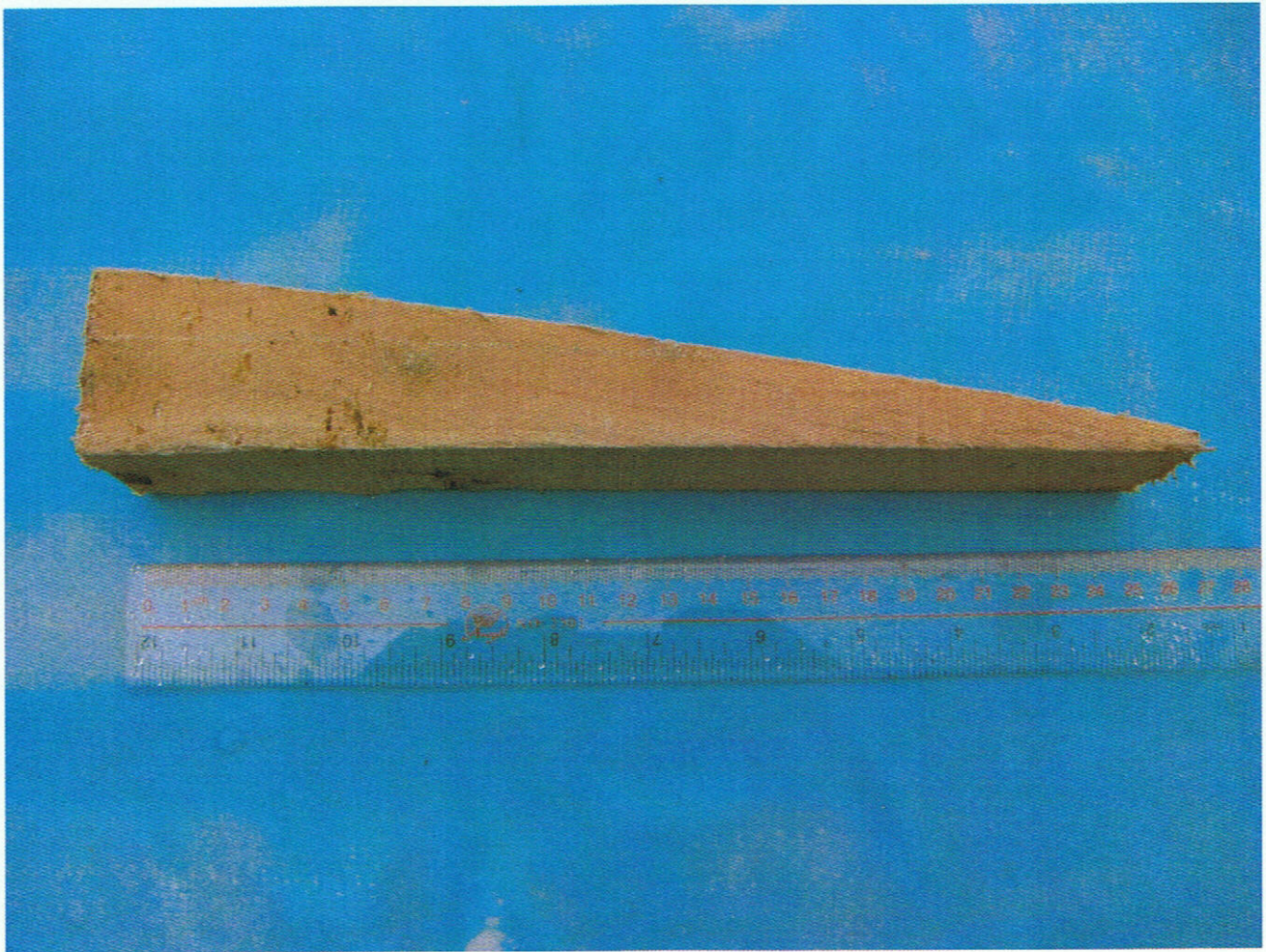
- **Material :** Rubber
- **Dimension :** 32 x 20 x 30mm
- **Range of use :** Spacer for panel heads





Wallmates Timber Wedge

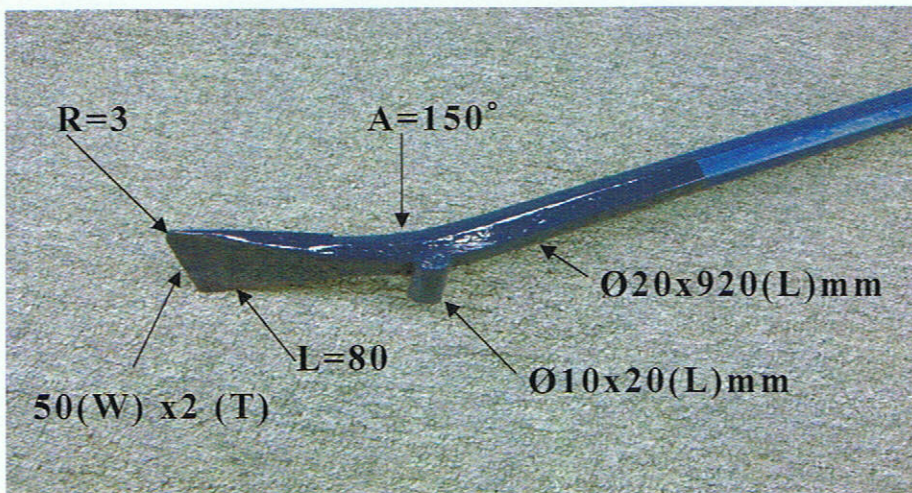
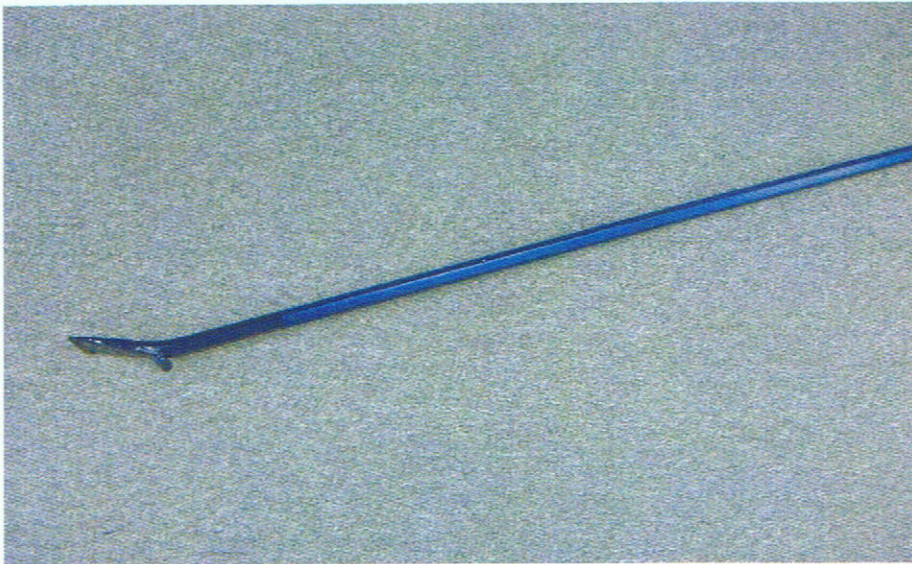
- **Material :** Timber
- **Dimension :** 45(W) x 250(L) x 3mm – 40mm(T)
- **Range of use :** Temporarily fixing of wall panel





Wallmates Steel Post

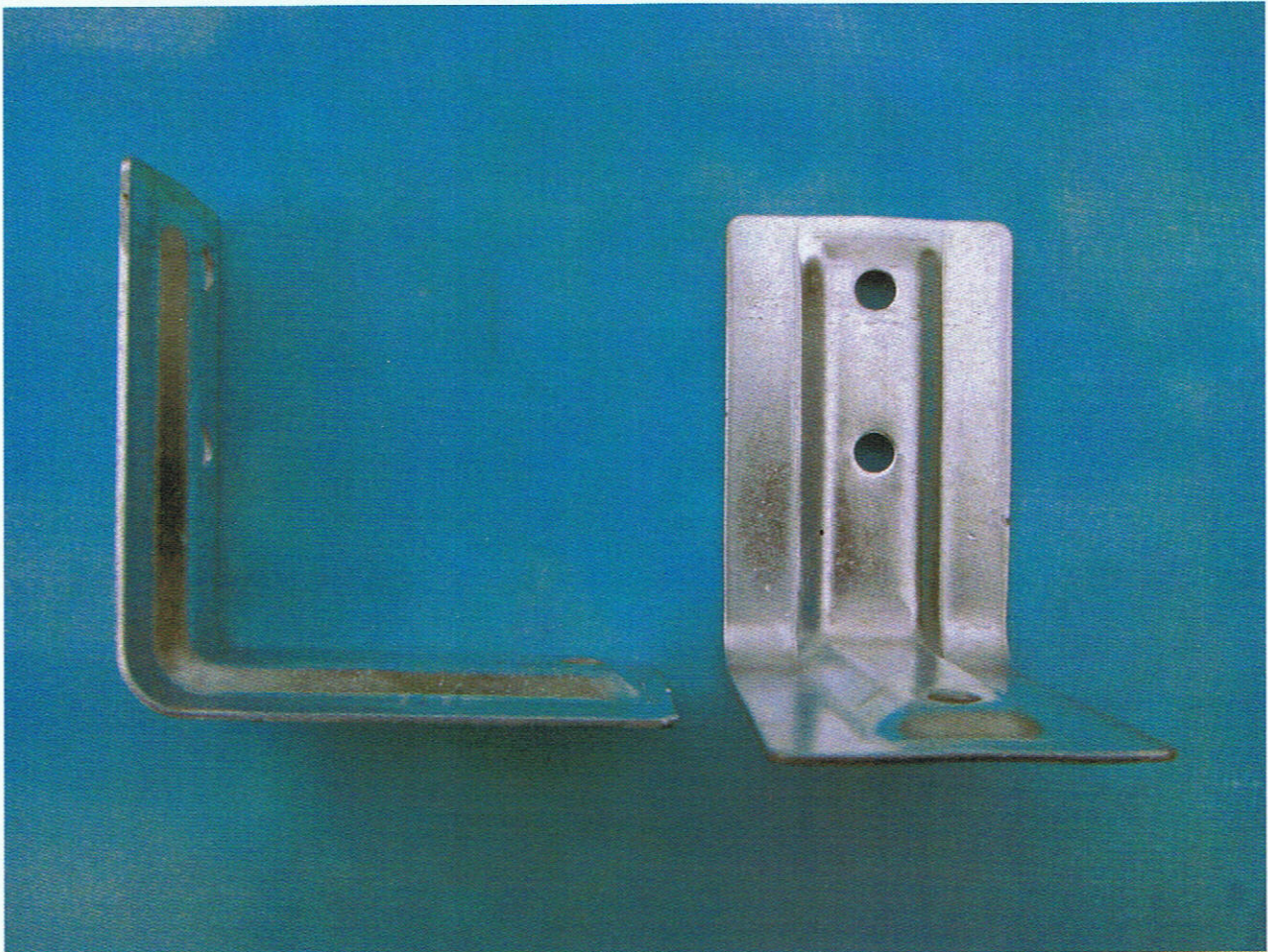
- **Material :** Steel
- **Dimension :** Overall 50(W)mm x 2(T)mm x $\varnothing 20 \times 1000$ (L)mm
- **Range of use :** Erection and Adjustment of panels





Wallmates Bracket

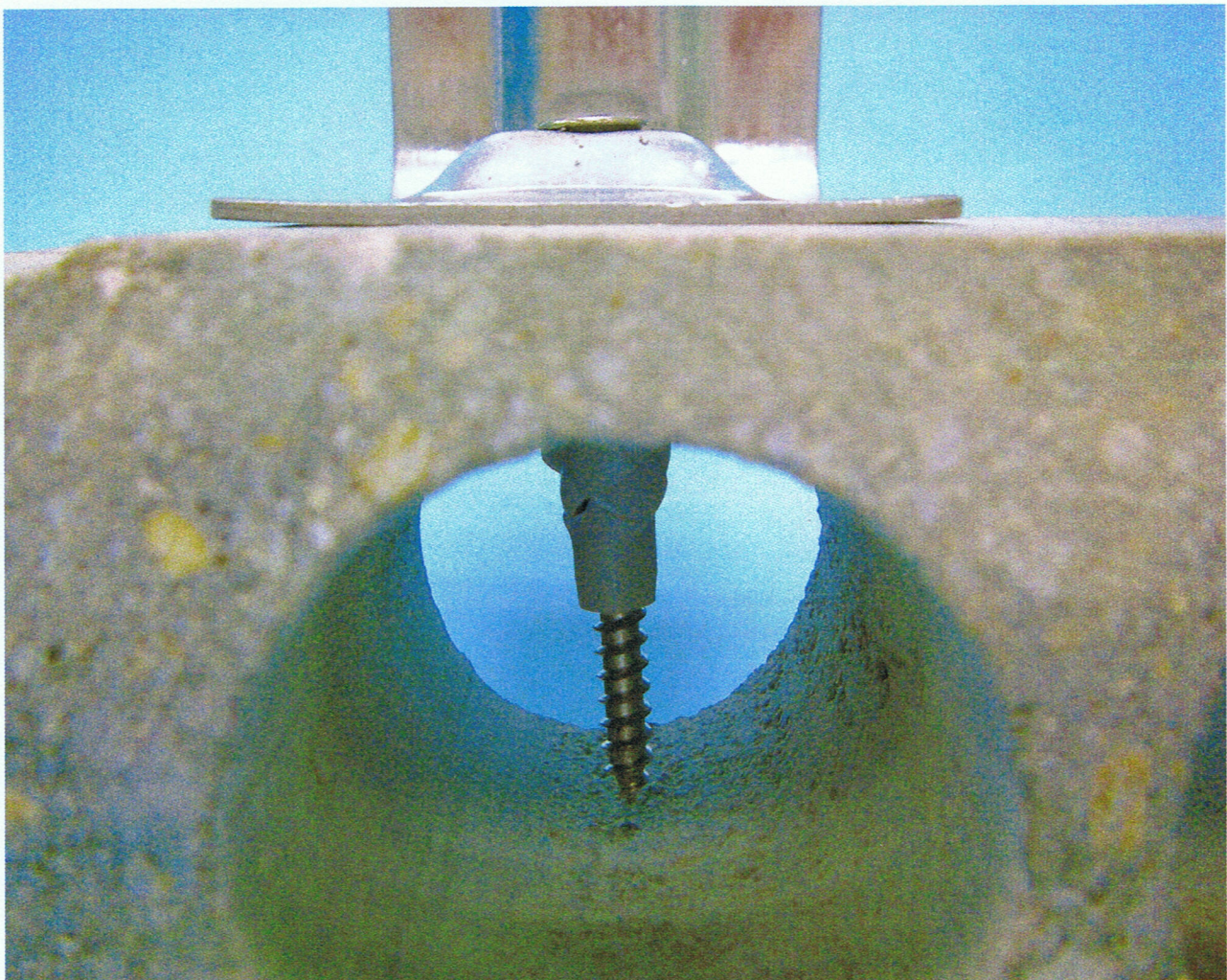
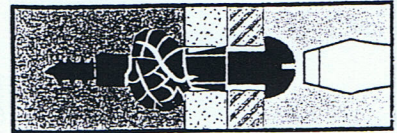
- **Material :** Steel
- **Dimension :** Corrugated Overall 65(W) x 100(L) x 100(H) x 8(T)mm
- **Recommended Safe Working Load :** 60 kg
- **Range of use :** Door Crossing Panel





Wallmates Universal Plug

Article No	UP 5	UP 8
Material	Plastic	Plastic
Dimension (mm)	Ø5 x 30	Ø8 x 50
Drilling Hole (mm)	Ø5 x 38	Ø8 x 70
Wood Screw (mm)	Ø3.5 x 38	Ø5.5 x 70
Screw-in-depth (mm)	38	70
Safe working Load (kg)	30	50
Range of use	*Lamps *Skirting *Curtain Rail	*Wall Cupboards *Wall Panel Joins



P.5



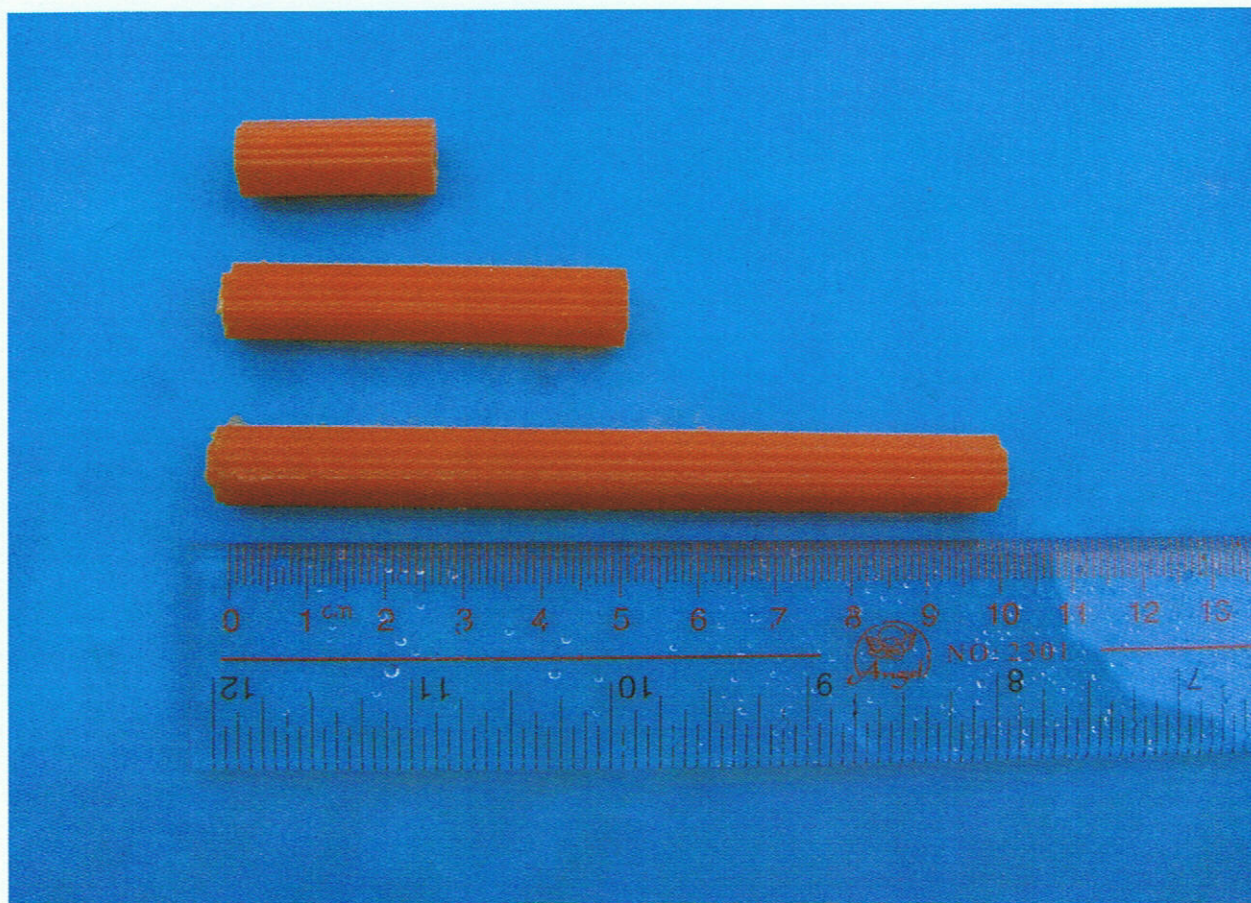
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Wallmates Plastic Line Plug

- **Material :** Plastic
- **Dimension :** $\varnothing 8\text{mm} \times 25(\text{L})\text{mm}$, $\varnothing 8\text{mm} \times 50(\text{L})\text{mm}$, $\varnothing 8\text{mm} \times 100(\text{L})\text{mm}$
- **Drilling Hole :** $\varnothing 8\text{mm}$
- **Masonry Nail / Wood Screw :** $\varnothing 4.5\text{mm}$ Nail / $\varnothing 5.5\text{mm}$ Screw
- **Screw-in-depth :** $\geq 25\text{mm}$
- **Recommended Safe working Load :** 25 kg
- **Range of use :** Ceiling Anchor and Joint connection



P.6



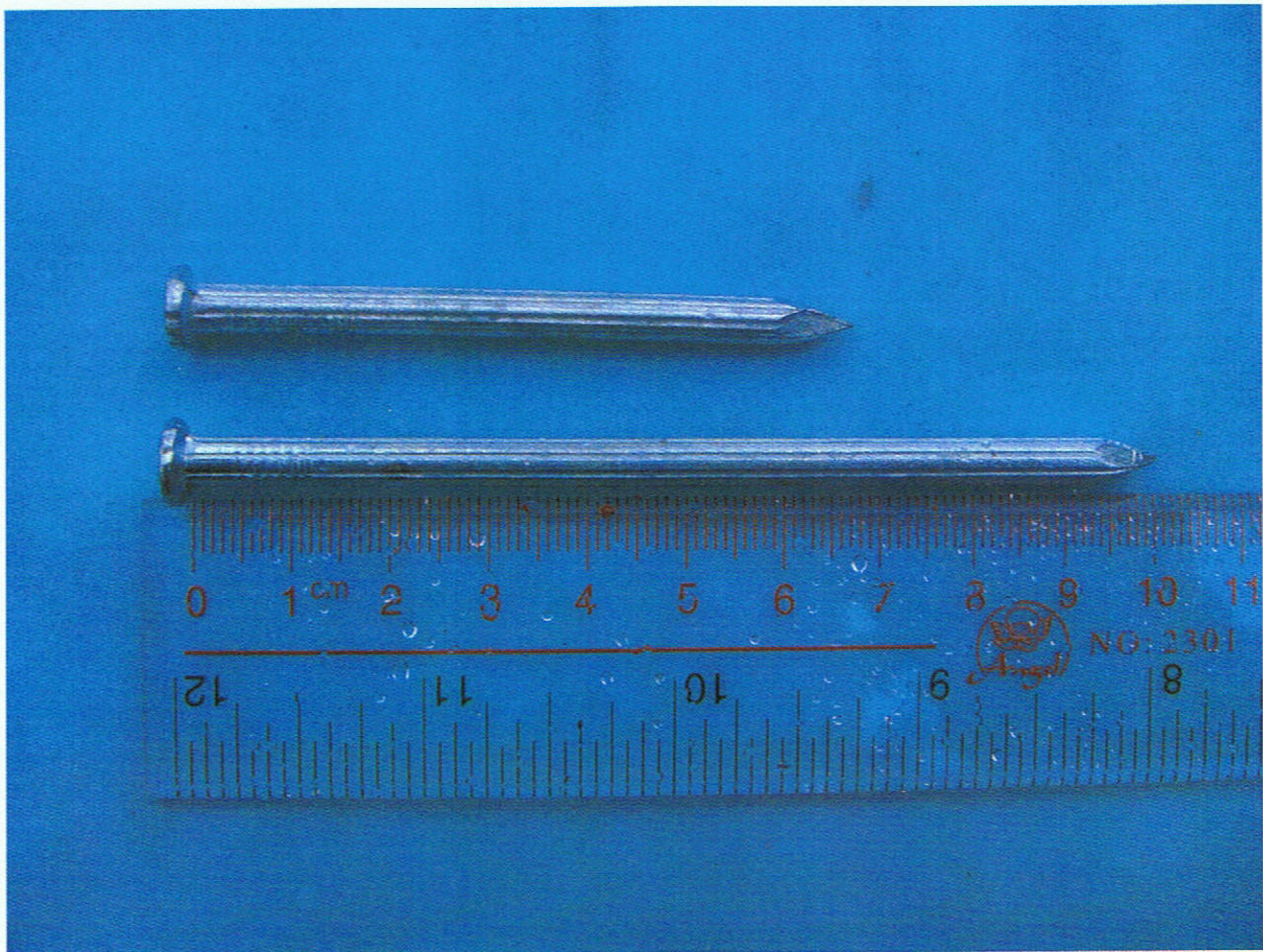
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Wallmates Masonry Nail

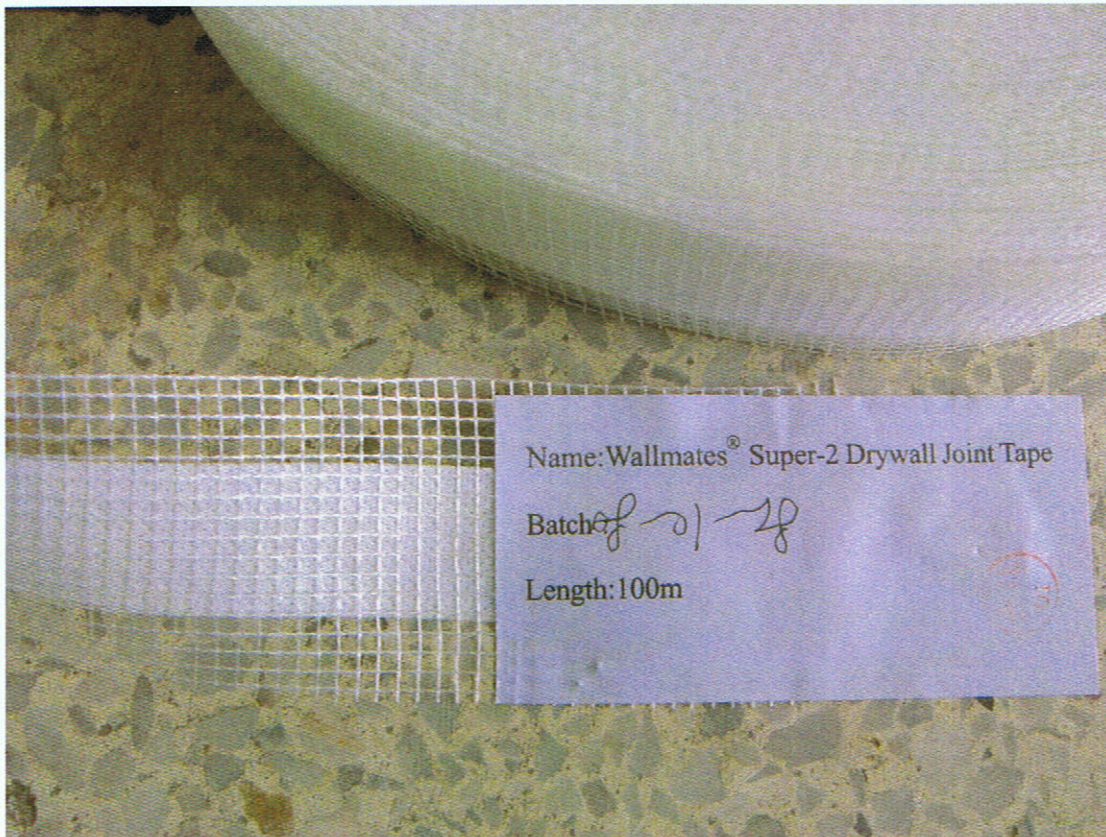
- **Material :** Steel
- **Dimension :** $\varnothing 4.5\text{mm} \times 70\text{mm}$, $\varnothing 4.5 \times 100\text{mm}$
- **Range of use :** Ceiling anchor and Joint connection





Wallmates Super-2 Joint Tape

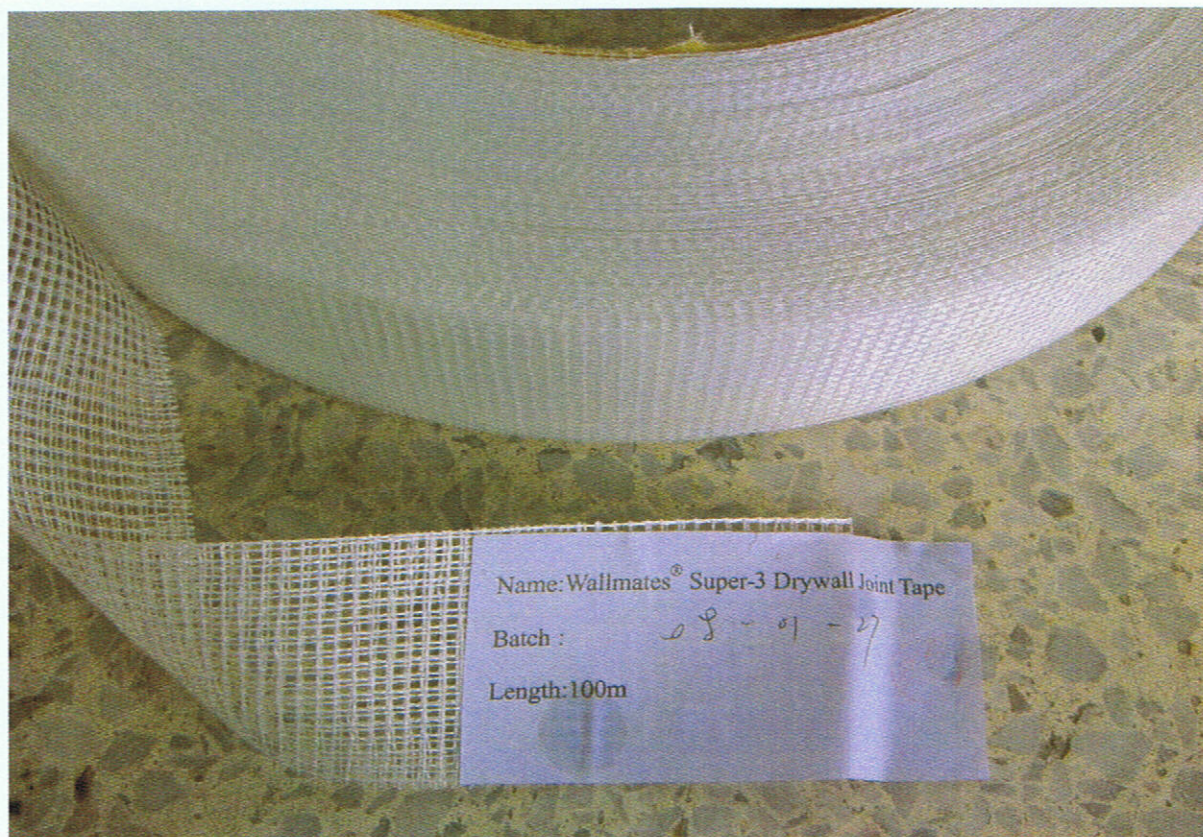
- **Material :** Fibreglass Mesh and Plastic Cloth
- **Dimension :** 50(W)mm x 0.25(T)mm x 100(L)m
- **Tensile Strength :** 470 N per 50 mm along tape
- **Acid Resistance :** 72 hrs in 25°C. No effect when exposed to sulphuric acid solution.
- **Alkaline Resistance :** 72 hrs in 25°C. No effect when exposed to sodium hydroxide solution
- **Range of use :** Drywall Joints, Cracks Repair on Drywall, Concrete Wall and Brick Wall





Wallmates Super-3 Joint Tape

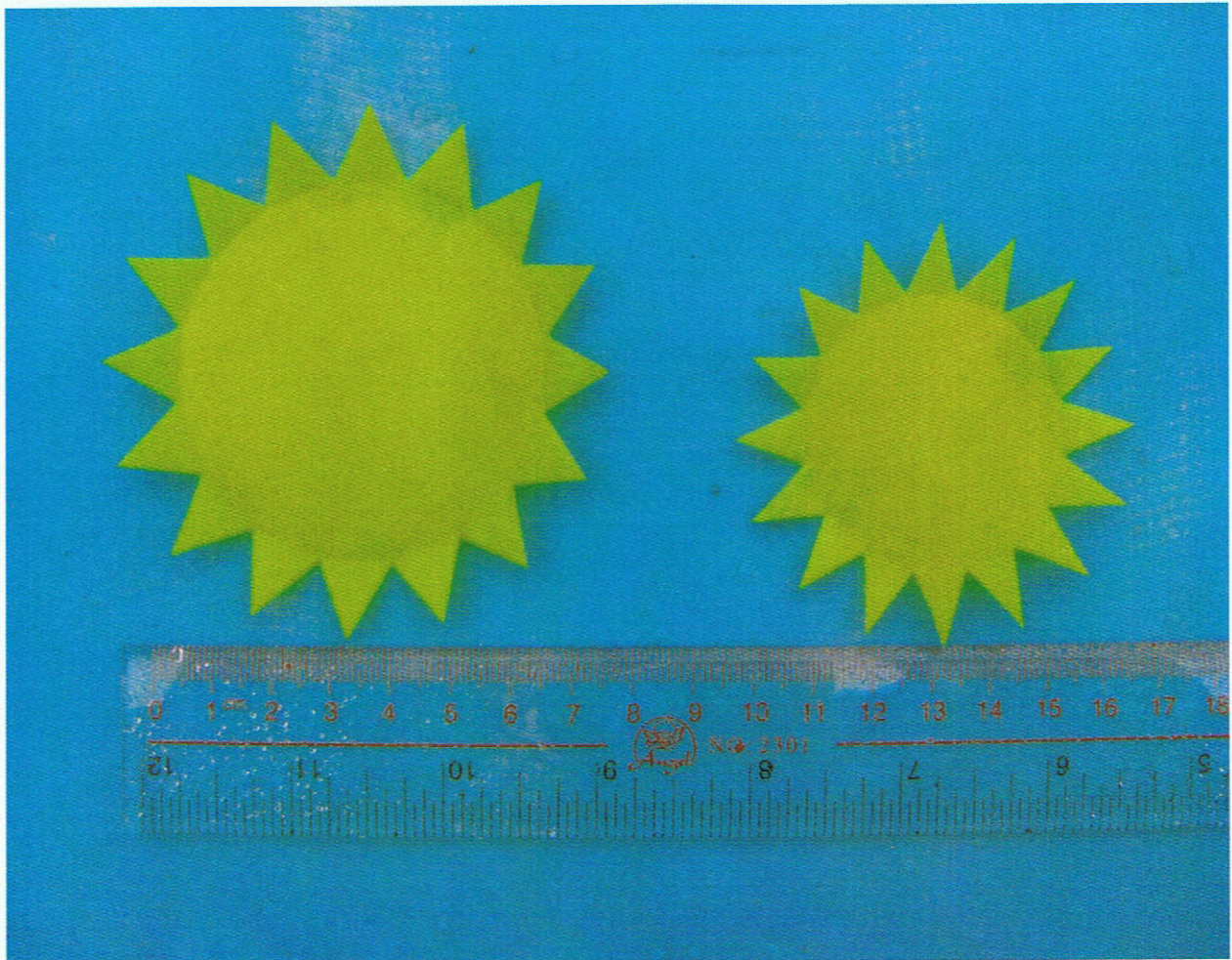
- **Material :** Fibre glass Meshes (3 layers)
- **Dimension :** 50(W)mm x 0.45(T)mm x 100(L)m
- **Tensile Strength :** 1410 N per 50 mm along tape
- **Acid Resistance :** 72 hrs in 25°C. No effect when exposed to sulphuric acid solution
- **Alkaline Resistance :** 72 hrs in 25°C. No effect when exposed to sodium hydroxide solution
- **Range of use :** Drywall Joints, Cracks Repair on Drywall, Concrete Wall and Brick Wall





Wallmates Voids Stop

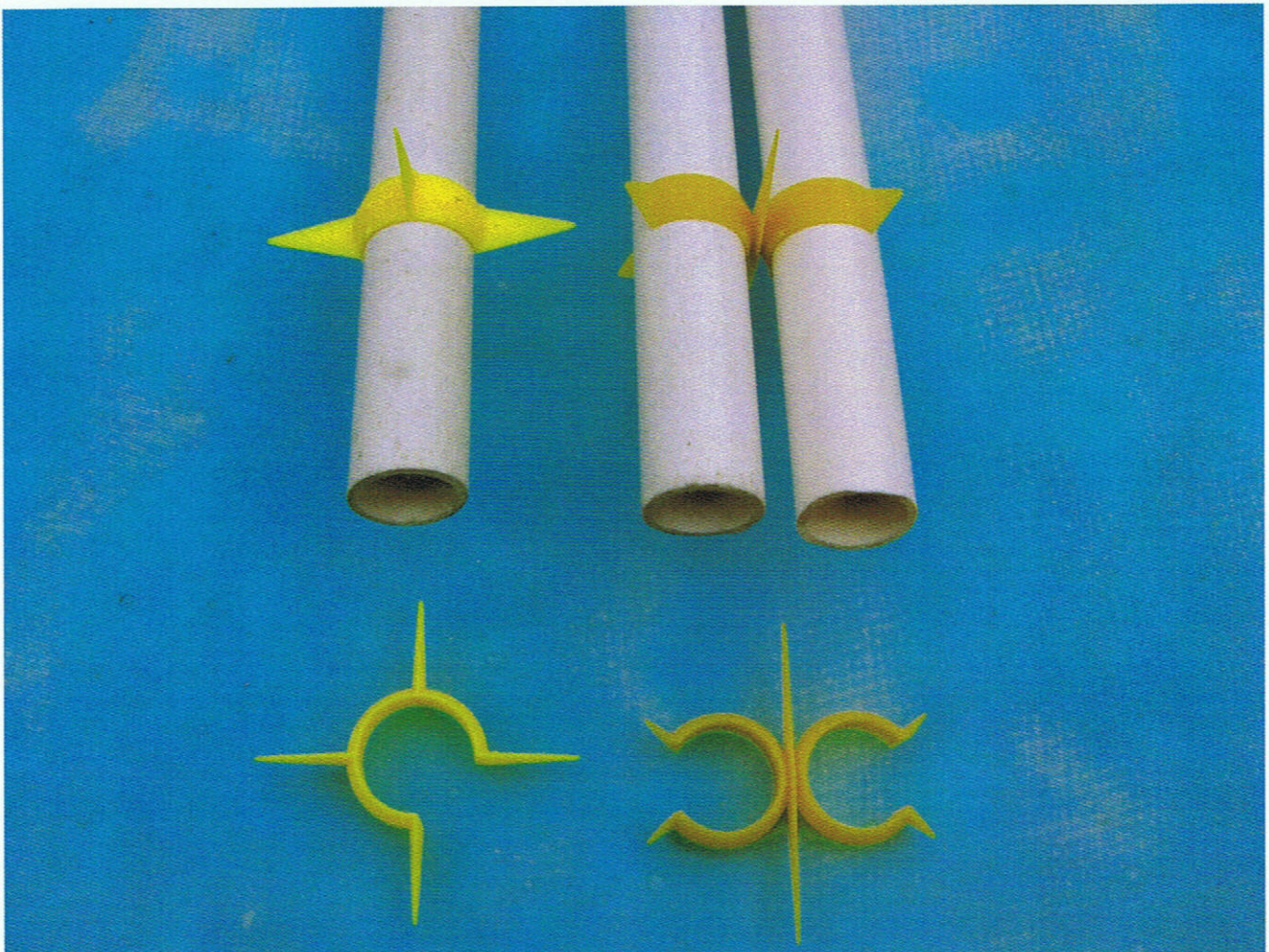
- **Material :** Plastic
- **Dimension :** Overall $\phi 66\text{mm} \times 10\text{mm}$, $\phi 83 \times 10\text{mm}$
- **Range of use :** Stop the movement of backfill mortar in voids





Wallmates Conduits Spacer

- **Material :** Plastic
- **Dimension :** Overall $\varnothing 58\text{mm} \times 10\text{mm}$
- **Range of use :** Provide min. 30mm cover for conduit in panel wall

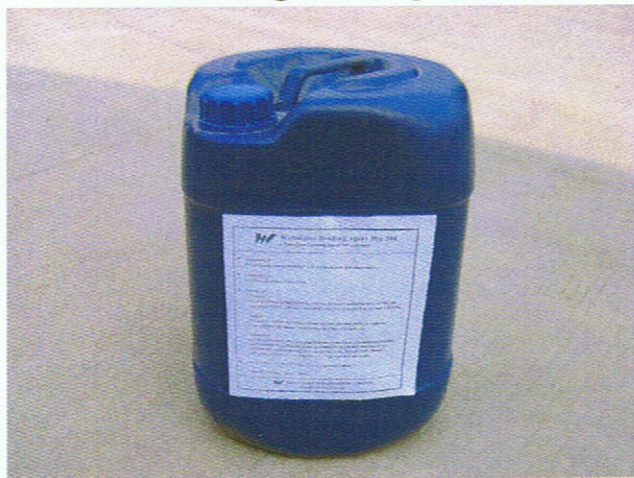




Wallmates Bonding Agent Mix 288

- Interface Treating Agent for concrete

- **Composition:**
Polymer, adhesive and rubber, it is non-toxic and non-hazardous.
- **Scope of Use:**
Interface treating for concrete.
- **Advantage:**
 - * **Bonding:**
It is adhesive bonding material with two direction adhesion between old and new cementitious concrete, the tensile adhesion strength is more than 1.20MPa.
 - * **Buffer:**
It is elastic rubber material between old and new cementitious concrete, so it appeases the impact of shrinking movement to each other.
 - * **Water Stop:**
It is polymer water stop material between old and new cementitious concrete, so it can stop or reduce the water movement from the new concrete to the old concrete, and then avoid the cracks and avoid degrading the tensile adhesion strength of new concrete due to the loss of recipe water.
- **Storage Life:** 12 months if stored in dry and cool place.
- **Standard Packing:** 25 kg / Barrel.



P.12



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Wallmates Moisture Sealer Mix 298

- **Composition:**

A self penetrating polymer which will penetrate the concrete surface and form a impervious crystalline layer. This layer which is insoluble to water will remain as a moisture protector for the concrete surface for it's lift-time. The moisture sealer had been tested to complied with Housing Authority Standard for Water Penetration, Compatibility with Tile Adhesive, etc. It is non-toxic and non-hazardous.

- **Scope of Use:**

Concrete surface on wall.

- **Application:**

*The surface for application should be clean and dry prior to application.

*Diluted in the ratio of 1 : 10 by volume of Moisture sealer to water. Apply a single coat of moisture sealer evenly on the application surface. Let it cure for 4 hours before application of tile adhesive. The surface should be kept dry during the curing period.

- **Storage Life: 12 months if stored in dry and cool place.**

- **Standard Packing: 25 kg / Barrel.**





Wallmates Admixtures Mix 300

•Tape Adhesive Improve •Mortar Improve •Skim Coat Improve

- **Composition:**

Wallmates Admixtures Mix 300 is a kind of polymer-modified cementitious mixtures. It contains polymer, adhesive, water-reducing admixture, set retarder admixture, shrinkage reducing agent and water-retaining admixture. It is non-toxic and non-hazardous.

- **Scope of Use:**

* Improving of adhesive for fixing of joint tape in respect of consistency, workability, water retaining, adhesion and non shrinkage.

* Improving of mortar for repairs and grouting in respect of consistency, workability, water retaining, adhesion and non shrinkage.

* Improving of skim coat for painting in respect of consistency, workability, water retaining, adhesion and non shrinkage.

- **Method of Use:**

Use of Admixtures Mix Mix Proportion (By Weight) Materials	Tape Fix	Mortar Improve		Skim Coat
		Non-shrink Mortar		
		Repairing Concrete	Grouting Voids	
42.5R (P II) Cement	100	100	100	100
Sand	100	200	200	200(Stone Powder)
Water (±1)	40	50	55	55
Wallmates Admixtures Mix 300 (±0.10)	4	5	5.50	5.50
Total (Av.)	244	355	360.50	360.50
Time for Mixing by Electrical Drill with Blades (Minutes) ≥	5	5	5	5
Maturing Time (Minutes) ≥	10	10	10	10
Time for Second Mixing (Minutes) ≥	0.5	0.5	0.5	0.5
Workable Time (Hrs) ≤	3	3	3	3
Compressive Strength (MPa) ≥	20	20	20	10
Tensile Adhesion Strength (With Concrete) (MPa) ≥	1.00	0.90	0.80	0.80
Fresh Mortar Density (kg/m ³) ±3%	2050	1950	1900	1900

- **Storage Life:** 12 months if stored in dry place.

- **Standard Packing:** 15 kg / Barrel.



P.14



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Wallmates Elastic Skim Coat Mix 328

- **Composition :**

- * Polymer, adhesive and stone powder, it is non-toxic and non-hazardous.

- **Scope of Use :**

- * Repair hair cracks on painting surfaces of walls and ceilings.

- **Advantages :**

- * Ready for application
 - * Anti-cracks

- **Applications :**

- * Preparing of 50mm(W)x0.2mm(T) perforated paper tape in approximate 800mm long.
 - * Application of a thin layer of approximate 100mm(W)x800mm(L)x0.2mm(T) Elastic Skim Coat along the crack. (Cleaning out of decorative materials on the surface of wall is not necessary.)
 - * Immediately laying of the paper tape along the crack within 1 minute after the application of skim coat and pressing firmly, ensuring there are no voids under the tape.
 - * Application of a thin layer of 100mm(W)x800mm(L)x0.1mm(T) Elastic Skim Coat to cover the paper tape within 1 minute after laying of the paper tape. (The coat should be thin and without trowel marks.)
 - * Repeat the above items in the successive cracks rectifying.
 - * Keeping the paper tape at approximate 5mm separation from the other.
 - *Awaiting for 2 hours. Then, applying a layer of skim coat with material same as the existing and grinding with coarse sand paper. Applying painting with material same as the existing.
 - * Diluting the coat mix slightly with water and re-mixing if necessary.

- **Storage Life :** 12 months if stored in dry and cool place.

- **Standard Packing :** 15 kg / Barrel.



P.15



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