

**Index of Provisionally Approved Mix Designs  
Hong Kong Asphalt (Green) Limited**

**I. Reclaimed Asphalt Pavement (RAP) Mix**

<b>Bituminous Material</b>	<b>HyD Mix No.</b>	<b>Supplier's Mix No.</b>	<b>Date of Design</b>	<b>Approval Date</b>	<b>Expiry Date</b>
10mm Wearing Course	10WC/HKA/LT/RAP15/001	10WC/HKA/LT/RAP15/001	22-Apr-2021	21-Jun-2021	20-Jun-2024
20mm Wearing Course	20WC/HKA/LT/RAP15/001	20WC/HKA/LT/RAP15/001	20-Apr-2021	21-Jun-2021	20-Jun-2024
28mm Base Course	28BC/HKA/LT/RAP15/001	28BC/HKA/LT/RAP15/001	26-Apr-2021	21-Jun-2021	20-Jun-2024
37.5mm Base Course	40BC/HKA/LT/RAP15/001	40BC/HKA/LT/RAP15/001	28-Apr-2021	21-Jun-2021	20-Jun-2024
37.5mm Roadbase (recipe mix)	40RB/HKA/LT/RAP15/001	40RB/HKA/LT/RAP15/001	30-Apr-2021	--	--

<b>Bituminous Material</b>	<b>HyD Mix No.</b>	<b>Supplier's Mix No.</b>	<b>Date of Design</b>	<b>Approval Date</b>	<b>Expiry Date</b>
10mm Wearing Course	10WC/HKA/LT/RAP30/001	10WC/HKA/LT/RAP30/001	31-Mar-2021	21-Jun-2021	20-Jun-2024
20mm Wearing Course	20WC/HKA/LT/RAP30/001	20WC/HKA/LT/RAP30/001	12-Apr-2021	21-Jun-2021	20-Jun-2024
28mm Base Course	28BC/HKA/LT/RAP30/001	28BC/HKA/LT/RAP30/001	08-Apr-2021	21-Jun-2021	20-Jun-2024
37.5mm Base Course	40BC/HKA/LT/RAP30/001	40BC/HKA/LT/RAP30/001	16-Apr-2021	21-Jun-2021	20-Jun-2024

**II. Reclaimed Asphalt Pavement (RAP) with Lime Mix**

<b>Bituminous Material</b>	<b>HyD Mix No.</b>	<b>Supplier's Mix No.</b>	<b>Date of Design</b>	<b>Approval Date</b>	<b>Expiry Date</b>
10mm Wearing Course	10WC/HKA/LT/RAP30/LIME/001	10WC/HKA/LT/RAP30/LIME/001	25-Nov-2021	12-Jan-2022	11-Jan-2025
20mm Wearing Course	20WC/HKA/LT/RAP30/LIME/001	20WC/HKA/LT/RAP30/LIME/001	16-Sep-2021	12-Jan-2022	11-Jan-2025
28mm Base Course	28BC/HKA/LT/RAP30/LIME/001	28BC/HKA/LT/RAP30/LIME/001	05-Nov-2021	12-Jan-2022	11-Jan-2025
37.5mm Base Course	40BC/HKA/LT/RAP30/LIME/001	40BC/HKA/LT/RAP30/LIME/001	16-Aug-2021	12-Jan-2022	11-Jan-2025
37.5mm Roadbase (recipe mix)	40RB/HKA/LT/RAP15/LIME/001	40RB/HKA/LT/RAP15/LIME/001	30-Nov-2021	--	--

**III. Polymer Modified Mix**

<b>Bituminous Material</b>	<b>HyD Mix No.</b>	<b>Supplier's Mix No.</b>	<b>Date of Design</b>	<b>Approval Date</b>	<b>Expiry Date</b>
10mm Polymer Modified Friction Course	10PMFC/HKA/LT/PG/001	10PMFC/HKA/LT/PG/001	16-Mar-2021	21-Jun-2021	20-Jun-2024
3.35mm Polymer Modified Cushion Course	CC/HKA/LT/PG/001	CC/HKA/LT/PG/001	29-Mar-2021	21-Jun-2021	20-Jun-2024
10mm Polymer Modified Stone Mastic Asphalt	10PMSMA/HKA/LT/PG/DP/75/001	10PMSMA/HKA/LT/PG/DP/75/001	22-Mar-2021	21-Jun-2021	20-Jun-2024
6mm Polymer Modified Stone Mastic Asphalt	6PMSMA/HKA/LT/PG/DP/75/001	6PMSMA/HKA/LT/PG/DP/75/001	25-Mar-2021	21-Jun-2021	20-Jun-2024

Remark: Mix design details are tabled in the appropriate spreadsheets.

**Summary of Provisionally Approved Mix Designs  
Hong Kong Asphalt (Green) Limited  
(RAP Mix)**

## 1. Source and Type of Constituent Materials :

Constituent Material	Source	Type
Bitumen	Shell (Hong Kong) Limited	Grade Pen 60/70 FreshAir
Coarse Aggregate (retained on 5mm BS sieve)	Lam Tei Quarry	Crushed rock (Granite)
Fine Aggregate (passing 5mm BS sieve)	Lam Tei Quarry	Crushed rock (Granite)
Filler (passing 75 $\mu$ m BS sieve)	Lam Tei Quarry	Crushed rock filler

## 2. Mix Designs :

Bituminous Material	10mm Wearing Course		20mm Wearing Course		28mm Base Course		37.5mm Base Course		37.5mm Roadbase (recipe mix)	
	Design Grading	GS Requirement*	Design Grading	GS Requirement*	Design Grading	GS Requirement*	Design Grading	GS Requirement*	Design Data	GS Requirement*
HyD Mix No.	10WC/HKA/LT/RAP15/001		20WC/HKA/LT/RAP15/001		28BC/HKA/LT/RAP15/001		40BC/HKA/LT/RAP15/001		40RB/HKA/LT/RAP15/001	
Supplier's Mix No.	10WC/HKA/LT/RAP15/001		20WC/HKA/LT/RAP15/001		28BC/HKA/LT/RAP15/001		40BC/HKA/LT/RAP15/001		40RB/HKA/LT/RAP15/001	
Date of Design	22-Apr-2021		20-Apr-2021		26-Apr-2021		28-Apr-2021		30-Apr-2021	
Approval Date	21-Jun-2021		21-Jun-2021		21-Jun-2021		21-Jun-2021		--	
Expiry Date	20-Jun-2024		20-Jun-2024		20-Jun-2024		20-Jun-2024		--	
Binder content ( % )	6.0	5.5 - 6.5	5.0	4.5 - 5.5	4.5	4.0 - 5.0	4.0	3.5 - 4.5	3.5	3.0 - 4.0
B.S. Sieve (mm)	% Passing		% Passing		% Passing		% Passing		% Passing	
50							100	100	100	100
37.5					100	100	96	92 - 100	100	90 - 100
28			100	100	96	92 - 100	86	79 - 93	91	70 - 94
20			96	92 - 100	90	83 - 97	75	68 - 82	79	62 - 84
14	100	100	90	83 - 97	82	75 - 89	66	59 - 73	--	--
10	98	94 - 100	82	75 - 89	71	64 - 78	58	51 - 65	61	49 - 67
5	79	72 - 86	68	61 - 75	48	41 - 55	45	38 - 52	49	37 - 55
2.36	54	47 - 61	47	40 - 54	33	26 - 40	34	27 - 41	36	27 - 43
1.18	39	32 - 46	34	27 - 41	22	15 - 29	23	16 - 30	--	--
0.600	28	23 - 33	24	19 - 29	16	11 - 21	17	12 - 22	18	13 - 28
0.300	19	14 - 24	16	11 - 21	11	6 - 16	12	7 - 17	10	7 - 21
0.150	12	9 - 15	12	9 - 15	8	5 - 11	8	5 - 11	--	--
0.075	7.4	5.4 - 9.4 10.4 <sup>#</sup>	7.6	5.6 - 9.6 10.6 <sup>#</sup>	5.0	3.0 - 7.0 8.0 <sup>#</sup>	4.6	2.6 - 6.6 7.6 <sup>#</sup>	4.4	2.0 - 8.0 8.0 <sup>@</sup>
	(including 15% RAP)		(including 15% RAP)		(including 15% RAP)		(including 15% RAP)		(including 15% RAP)	
	Marshall Properties		Marshall Properties		Marshall Properties		Marshall Properties		Marshall Properties	
Air voids in mix, VIM (%)	4.0	3.0 - 5.0	4.9	3.0 - 5.0	4.9	3.0 - 5.0	4.6	3.0 - 5.0	--	--
Voids in mineral aggregate, VMA (%)	17.0	$\geq 16$	15.7	$\geq 14$	14.8	$\geq 13$	13.4	$\geq 12.5$	--	--
Marshall stability (kN)	10.8	$\geq 10$	13.3	$\geq 10$	12.4	$\geq 10$	12.9	$\geq 10$	--	--
Flow (mm)	2.0	$\leq 4.0$	1.5	$\leq 4.0$	2.1	$\leq 4.0$	2.3	$\leq 4.0$	--	--

\* For reference only

<sup>#</sup> The percentage passing the 0.075mm BS sieve shall not deviate from the approved design value by more than 3%.<sup>@</sup> The percentage passing the 0.075mm BS test sieve shall not exceed 8.0%.

**Summary of Provisionally Approved Mix Designs  
Hong Kong Asphalt (Green) Limited  
(RAP Mix)**

## 1. Source and Type of Constituent Materials :

Constituent Material	Source	Type
Bitumen	Shell (Hong Kong) Limited	Grade Pen 60/70 FreshAir
Coarse Aggregate (retained on 5mm BS sieve)	Lam Tei Quarry	Crushed rock (Granite)
Fine Aggregate (passing 5mm BS sieve)	Lam Tei Quarry	Crushed rock (Granite)
Filler (passing 75 $\mu$ m BS sieve)	Lam Tei Quarry	Crushed rock filler

## 2. Mix Designs :

Bituminous Material	10mm Wearing Course		20mm Wearing Course		28mm Base Course		37.5mm Base Course	
HyD Mix No.	10WC/HKA/LT/RAP30/001		20WC/HKA/LT/RAP30/001		28BC/HKA/LT/RAP30/001		40BC/HKA/LT/RAP30/001	
Supplier's Mix No.	10WC/HKA/LT/RAP30/001		20WC/HKA/LT/RAP30/001		28BC/HKA/LT/RAP30/001		40BC/HKA/LT/RAP30/001	
Date of Design	31-Mar-2021		12-Apr-2021		08-Apr-2021		16-Apr-2021	
Approval Date	21-Jun-2021		21-Jun-2021		21-Jun-2021		21-Jun-2021	
Expiry Date	20-Jun-2024		20-Jun-2024		20-Jun-2024		20-Jun-2024	
	Design Grading	GS Requirement*	Design Grading	GS Requirement*	Design Grading	GS Requirement*	Design Grading	GS Requirement*
Binder content ( % )	6.0	5.5 - 6.5	5.0	4.5 - 5.5	4.5	4.0 - 5.0	4.0	3.5 - 4.5
B.S. Sieve (mm)	% Passing		% Passing		% Passing		% Passing	
50							100	100
37.5					100	100	96	92 - 100
28			100	100	96	92 - 100	86	79 - 93
20			96	92 - 100	90	83 - 97	75	68 - 82
14	100	100	90	83 - 97	82	75 - 89	66	59 - 73
10	96	92 - 100	82	75 - 89	71	64 - 78	58	51 - 65
5	79	72 - 86	68	61 - 75	48	41 - 55	45	38 - 52
2.36	54	47 - 61	47	40 - 54	33	26 - 40	34	27 - 41
1.18	39	32 - 46	34	27 - 41	22	15 - 29	23	16 - 30
0.600	28	23 - 33	24	19 - 29	16	11 - 21	17	12 - 22
0.300	19	14 - 24	16	11 - 21	11	6 - 16	12	7 - 17
0.150	12	9 - 15	12	9 - 15	8	5 - 11	8	5 - 11
0.075	7.4	5.4 - 9.4 10.4 <sup>#</sup>	7.6	5.6 - 9.6 10.6 <sup>#</sup>	5.0	3.0 - 7.0 8.0 <sup>#</sup>	4.6	2.6 - 6.6 7.6 <sup>#</sup>
	(including 30% RAP)		(including 30% RAP)		(including 30% RAP)		(including 30% RAP)	
	Marshall Properties		Marshall Properties		Marshall Properties		Marshall Properties	
Air voids in mix, VIM (%)	4.9	3.0 - 5.0	4.4	3.0 - 5.0	4.9	3.0 - 5.0	4.2	3.0 - 5.0
Voids in mineral aggregate, VMA (%)	18.1	$\geq 16$	15.5	$\geq 14$	14.7	$\geq 13$	13.2	$\geq 12.5$
Marshall stability (kN)	12.9	$\geq 10$	15.6	$\geq 10$	14.7	$\geq 10$	16.1	$\geq 10$
Flow (mm)	2.0	$\leq 4.0$	2.1	$\leq 4.0$	1.6	$\leq 4.0$	1.8	$\leq 4.0$

\* For reference only

<sup>#</sup> The percentage passing the 0.075mm BS sieve shall not deviate from the approved design value by more than 3%.

**Summary of Provisionally Approved Mix Designs**  
**Hong Kong Asphalt (Green) Limited**  
**(RAP with Lime Mix)**

## 1. Source and Type of Constituent Materials :

Constituent Material	Source	Type
Bitumen	Shell (Hong Kong) Limited	Grade Pen 60/70 FreshAir
Coarse Aggregate (retained on 5mm BS sieve)	Lam Tei Quarry	Crushed rock (Granite)
Fine Aggregate (passing 5mm BS sieve)	Lam Tei Quarry	Crushed rock (Granite)
Filler (passing 75 $\mu$ m BS sieve)	Lam Tei Quarry Hydrated Lime - Great Wall Brand, China	Mixture of crushed rock filler and hydrated lime

## 2. Mix Designs :

Bituminous Material	10mm Wearing Course		20mm Wearing Course		28mm Base Course		37.5mm Base Course		37.5mm Roadbase (recipe mix)	
	Design Grading	GS Requirement*	Design Grading	GS Requirement*	Design Grading	GS Requirement*	Design Grading	GS Requirement*	Design Data	GS Requirement*
HyD Mix No.	10WC/HKA/LT/RAP30/LIME/001		20WC/HKA/LT/RAP30/LIME/001		28BC/HKA/LT/RAP30/LIME/001		40BC/HKA/LT/RAP30/LIME/001		40RB/HKA/LT/RAP15/LIME/001	
Supplier's Mix No.	10WC/HKA/LT/RAP30/LIME/001		20WC/HKA/LT/RAP30/LIME/001		28BC/HKA/LT/RAP30/LIME/001		40BC/HKA/LT/RAP30/LIME/001		40RB/HKA/LT/RAP15/LIME/001	
Date of Design	25-Nov-2021		16-Sep-2021		05-Nov-2021		16-Aug-2021		30-Nov-2021	
Approval Date	12-Jan-2022		12-Jan-2022		12-Jan-2022		12-Jan-2022		--	
Expiry Date	11-Jan-2025		11-Jan-2025		11-Jan-2025		11-Jan-2025		--	
Binder content ( % )	6.1	5.6 - 6.6	5.0	4.5 - 5.5	4.6	4.1 - 5.1	4.0	3.5 - 4.5	3.5	3.0 - 4.0
B.S. Sieve (mm)	% Passing		% Passing		% Passing		% Passing		% Passing	
50							100	100	100	100
37.5					100	100	96	92 - 100	96	90 - 100
28			100	100	96	92 - 100	86	79 - 93	85	70 - 94
20			96	92 - 100	90	83 - 97	75	68 - 82	74	62 - 84
14	100	100	90	83 - 97	82	75 - 89	66	59 - 73	--	--
10	96	92 - 100	82	75 - 89	71	64 - 78	58	51 - 65	58	49 - 67
5	79	72 - 86	68	61 - 75	48	41 - 55	45	38 - 52	46	37 - 55
2.36	54	47 - 61	47	40 - 54	33	26 - 40	34	27 - 41	39	27 - 43
1.18	39	32 - 46	34	27 - 41	22	15 - 29	23	16 - 30	--	--
0.600	28	23 - 33	24	19 - 29	16	11 - 21	17	12 - 22	18	13 - 28
0.300	19	14 - 24	16	11 - 21	11	6 - 16	12	7 - 17	13	7 - 21
0.150	12	9 - 15	12	9 - 15	8	5 - 11	8	5 - 11	--	--
0.075	7.4	5.4 - 9.4	7.6	5.6 - 9.6	5.0	3.0 - 7.0	4.6	2.6 - 6.6	4.2	2.0 - 8.0
		10.4 <sup>#</sup>		10.6 <sup>#</sup>		8.0 <sup>#</sup>		7.6 <sup>#</sup>		8.0 <sup>@</sup>
	(including 30% RAP & 1.5% hydrated Lime)		(including 30% RAP & 1.5% hydrated Lime)		(including 30% RAP & 1.5% hydrated Lime)		(including 30% RAP & 1.5% hydrated Lime)		(including 15% RAP & 1.5% hydrated Lime)	
	Marshall Properties		Marshall Properties		Marshall Properties		Marshall Properties		Marshall Properties	
Air voids in mix, VIM (%)	4.9	3.0 - 5.0	4.4	3.0 - 5.0	4.8	3.0 - 5.0	4.8	3.0 - 5.0	--	--
Voids in mineral aggregate, VMA (%)	18.0	$\geq 16$	15.1	$\geq 14$	14.4	$\geq 13$	13.5	$\geq 12.5$	--	--
Marshall stability (kN)	12.8	$\geq 10$	16.1	$\geq 10$	13.9	$\geq 10$	17.1	$\geq 10$	--	--
Flow (mm)	1.8	$\leq 4.0$	1.6	$\leq 4.0$	2.5	$\leq 4.0$	1.6	$\leq 4.0$	--	--
Hydrated Lime (%)	1.5	$\geq 1.5$	1.5	$\geq 1.5$	1.5	$\geq 1.5$	1.5	$\geq 1.5$	1.5	$\geq 1.5$

\* For reference only

<sup>#</sup> The percentage passing the 0.075mm BS sieve shall not deviate from the approved design value by more than 3%.<sup>@</sup> The percentage passing the 0.075mm BS test sieve shall not exceed 8.0%.

**Summary of Provisionally Approved Mix Designs  
Hong Kong Asphalt (Green) Limited  
(Polymer Modified Mix)**

## 1. Source and Type of Constituent Materials :

Constituent Material	Source	Type			
		10PMFC/HKA/LT/PG/001	CC/HKA/LT/PG/001	10PMSMA/HKA/LT/PG/DP/75/001	6PMSMA/HKA/LT/PG/DP/75/001
Bitumen	Shell (Hong Kong) Limited	Cariphalte PG76			
Coarse Aggregate (retained on 5mm BS sieve)	Lam Tei Quarry	Crushed rock (Granite)	Not applicable	Crushed rock (Granite)	
Fine Aggregate (passing 5mm BS sieve)	Lam Tei Quarry	Crushed rock (Granite)		Crushed rock (Granite)	
Filler (passing 75 $\mu$ m BS sieve)	Lam Tei Quarry Hydrated lime - Great Wall Brand, China	Mixture of crushed rock filler and hydrated lime			
Fibre	Jiangsu Shi Teng Engineering Materials Co., Ltd., China	Not applicable		Cellulose Fibre (DUN PAI)	

## 2. Mix Designs :

Bituminous Material	10mm Polymer Modified Friction Course		3.35mm Polymer Modified Cushion Course		10mm Polymer Modified Stone Mastic Asphalt		6mm Polymer Modified Stone Mastic Asphalt	
HyD Mix No.	10PMFC/HKA/LT/PG/001		CC/HKA/LT/PG/001		10PMSMA/HKA/LT/PG/DP/75/001		6PMSMA/HKA/LT/PG/DP/75/001	
Supplier's Mix No.	10PMFC/HKA/LT/PG/001		CC/HKA/LT/PG/001		10PMSMA/HKA/LT/PG/DP/75/001		6PMSMA/HKA/LT/PG/DP/75/001	
Date of Design	16-Mar-2021		29-Mar-2021		22-Mar-2021		25-Mar-2021	
Approval Date	21-Jun-2021		21-Jun-2021		21-Jun-2021		21-Jun-2021	
Expiry Date	20-Jun-2024		20-Jun-2024		20-Jun-2024		20-Jun-2024	
	Design Grading	PS Requirement*	Design Grading	PS Requirement*	Design grading	PS Requirement*	Design grading	PS Requirement*
Polymer modified binder content (%)	5.5	5.0 - 6.0	9.5	9.0 - 10.0	6.0	5.3 - 6.3	6.0	5.3 - 6.3
B.S. Sieve (mm)	% passing		% passing		% Passing		% Passing	
14	100	100			100	100	100	100
10	96	92 - 100			96	92 - 100	98	94 - 100
6.3	--	--	100	100	--	--	--	--
5	26	19 - 33	--	--	35	28 - 42	82	75 - 89
3.35	--	--	95	91 - 99	--	--	--	--
2.36	13	6 - 20	--	--	21	14 - 28	24	17 - 31
1.18	--	--	57	50 - 64	--	--	20	13 - 27
0.300	--	--	26	21 - 31	--	--	--	--
0.075	5.4	3.4 - 7.4 8.4 <sup>#</sup> (including 2% hydrated lime)	13.6	11.6 - 15.6 16.6 <sup>#</sup> (including 2% hydrated lime)	11.1	9.1 - 13.1 14.1 <sup>#</sup> (including 2% hydrated lime)	11.3	9.3 - 13.3 14.3 <sup>#</sup> (including 2% hydrated lime)
	Marshall Properties		Marshall Properties		Marshall Properties		Marshall Properties	
Air voids in mix, VIM (%)	20.3	$\geq 20$	--	--	4.5	3.5 - 4.5	7.8	7.0 - 10.0
Voids in mineral aggregate, VMA (%)	--	--	--	--	17.5	$\geq 17$	20.4	$\geq 17$
Marshall stability (kN)	--	--	--	--	12.1	$\geq 6$	10.8	$\geq 6$
Binder draindown (%)	--	--	--	--	0.1	$\leq 0.3$	0.07	$\leq 0.3$
Marshall quotient (kN/mm)	--	--	1.0	0.7 - 1.2	--	--	--	--
Binder drainage test	Pass	Tmax > Binder content	--	--	--	--	--	--

\* For reference only

<sup>#</sup> The percentage passing the 0.075mm BS sieve shall not deviate from the approved design value by more than 3%.