

Our Ref : LTA/DBC/R70.018.001

Date : 24 January 2025

CIRCULAR TO PROFESSIONAL INSTITUTIONS

Who should know:

Developers, Registered Architects, and Professional Engineers making road infrastructure submissions to LTA for regulatory approval.

Dear Sir/ Madam

USE OF ENHANCED FLEXIBLE PAVEMENT OVER WATER PIPE AT TRAFFIC JUNCTIONS, BUS LANES AND BUS BAYS

OBJECTIVE

1. This circular is to inform the industry regarding the established workflow on assessment of water pipe eligible for the rigid pavement waiver.

BACKGROUND

2. LTA requires rigid pavement to be provided for high traffic stress areas (i.e. signalised junction, bus lane and bus bay) for new street or road improvement proposal.
3. PUB's water pipes provide essential water supply to households and businesses. Quick access for maintenance of the water pipes is crucial to prevent water supply interruptions. PUB can assess affected water pipe as:
 - Category A: Eligible to be under enhanced flexi-pavement.
 - Category B: Eligible to be under rigid pavement.

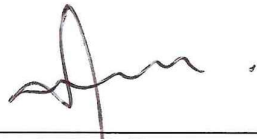
ESTABLISHED WORKFLOW

4. LTA and PUB (WSN) had jointly reviewed the rigid pavement waiver request over an affected water pipe. While rigid pavement will continue to be the default at signalised junction, bus lane and bus bays, we are pleased to inform that **LTA will allow the use of enhanced flexi-pavement (i.e. Stone Mastic Asphalt) in place of rigid pavement for locations above Category A - water pipes**. This approach will take place **with immediate effect**.
5. Refer to Annex A and B on the established workflow to obtain an assessment of the affected water pipe:
 - a) If there is an existing water pipe under a proposed signalised junction, bus lane or bus bays (i.e. rigid pavement by default), the QP can request PUB for an assessment of the affected water pipe.
 - b) QP is to locate the alignment of proposed water pipe away from the proposed/existing rigid pavement. Where services corridor constraints exist, QPs must share their study when requesting PUB for an assessment of the proposed water pipe to be laid under existing or proposed signalised junctions, bus lanes, or bus bays.
 - c) Upon receiving QP's request, PUB will provide an assessment (with an assigned reference number) for the affected water pipe. If the affected water pipe is assessed as Category A, QP shall submit their proposal for the use of enhanced flexible pavement together with PUB's assessment email (with PUB's reference number for the water pipe) to LTA for approval. Rigid pavement remains the default for Category B water pipes.

ENQUIRIES

6. We would appreciate if you could convey the contents of this circular to members of your organization. Should you have any queries, you may contact LTA at LTA_DBC_Regulatory_Engagement@lta.gov.sg, or the 2-designated PUB officers.

Your Sincerely,

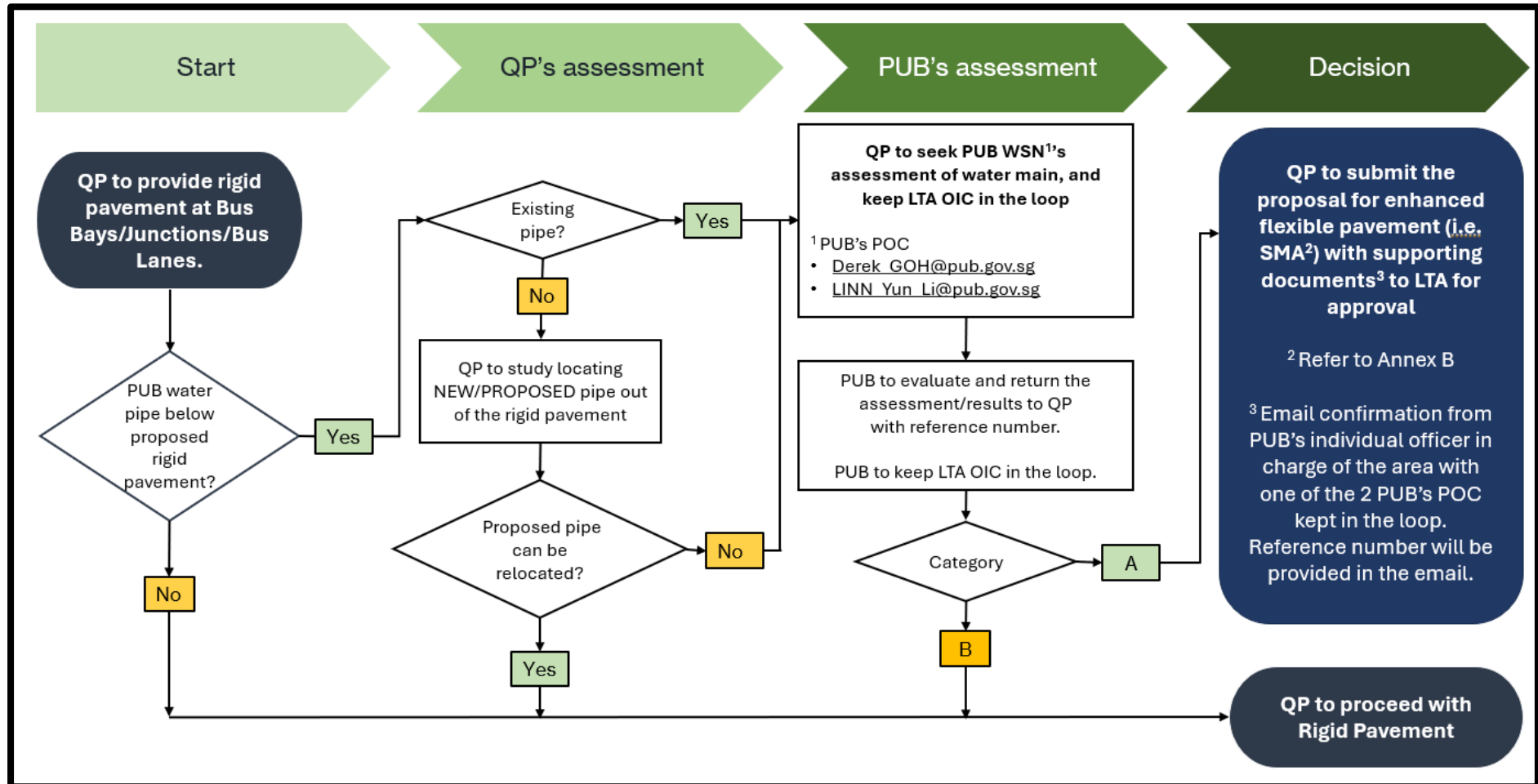


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ANNEX A – WORKFLOW FOR IDENTIFYING WATER PIPE ELIGIBLE FOR RIGID PAVEMENT WAIVER.



ANNEX B – DETAILS OF STONE MASTIC ASPHALT (SMA) AND ITS APPLICATION ON NEW STREET AND EXISTING STREET.

Materials and Workmanship Specifications for Civil and Structural Works (Revision A2, Sep 2020)

Engineering Group Document
M&W for Civil & Structural Works

E/GD/09/104/A2
MW / 10 / 14

Table 10.6 Properties of Coarse Aggregate

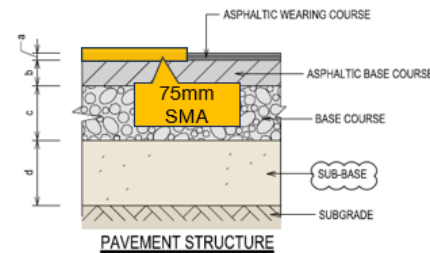
Property	Method of Testing	Required Standard for the different Type of Mix		
		Porous Asphalt / OGW*	WSS*/SMA*	W1/W3/W3B/W3B(20R)*/B1/B1(30R)*
Impact Value	B.S. 812 Part 112	Not more than 25%	Not more than 25%	Not more than 30%
Crushing Value	B.S. 812 Part 110	Not more than 25%	Not more than 25%	Not more than 30%
Water Absorption (in terms of surface dry mass)	B.S. 812 Part 2	Not more than 1%	Not more than 1%	Not more than 1%
Flakiness Index	B.S. 812 Part 105.1	Not more than 25%	Not more than 25%	Not more than 35%
Elongation Index	B.S. 812 Part 105.2	Not more than 30%	Not more than 35%	Not more than 35%
L.A. Abrasion Value (500 revolutions)	SS 73	Not more than 20%	Not more than 25%	Not more than 35%
Silt Content of Aggregate in Hot Bin (by weight)	SS 73	Not more than 0.3%	Not more than 0.3%	Not more than 0.3%

*OGW – Open Graded Wearing Course, WSS – Washed Steel Slag Wearing Course, SMA – Stone Mastic Asphalt, W3B(20R) & B1(30R) – Asphalt concrete using Reclaimed Asphalt Pavement.

For new street

- To **replace** the **wearing course** (thickness “a”) with **75mm SMA**.
- No change to the thickness “b”, “c” and “d” for respective type of flexible pavement.
- SMA finishing level should match the kerb haunching level

LTA/SDRE14/1/PAV1

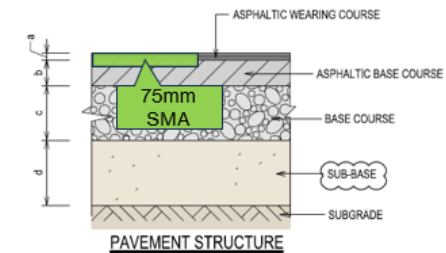


TYPE OF FLEXIBLE PAVEMENT	ROAD TYPE	THICKNESS			
		a	b	c	d
TYPE 1	EXPRESSWAY SEMI-EXPRESSWAY ARTERIAL ROAD ROAD IN INDUSTRIAL AREA	50	120	250	300
TYPE 2	PRIMARY ACCESS	40	90	200	300
TYPE 3	LOCAL ACCESS	25	75	200	200

For existing street

- To **mill away existing** 75mm thick pavement and **replace it with 75mm SMA**.
- The existing road level shall be maintained after the laying of SMA.
- QP / contractor must ensure the structural integrity of the asphaltic road base (e.g., no corrugation, cracking, rutting, etc. are observed) prior to the laying of SMA mix on site.

LTA/SDRE14/1/PAV1



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