

## Developments of shared walking-cycling infrastructure in Singapore

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### ABSTRACT

Cycling was a popular transport mode in post-World War II Singapore but bicycle usage had dropped drastically since the 1970s [1, 2]. The road infrastructure had been focused on motorised transport that transformed Singapore into a highly-urbanised car-centric island nation. Revival of cycling began in the 1990s, mainly as recreational cycling, and to date, there are over 200km round-island park connectors. In recent years, utilitarian cycling is seeing a huge resurgence, starting from a very low base for Singapore's case. The tight lane-arrangement on road carriage coupled with large speed differential between motorised traffic and vulnerable cyclists result in many cyclists riding on pedestrian side-walks, and cross-walks at signalised junctions. This provides strong impetus to develop serviceability standards to give guidance on developing shared/co-located walking/cycling facilities in accommodating the increasing number of cyclists.

Two set of standards based on human-centred approach were developed in this study, one for side-walk, the other for cross-walk. For developing serviceability standard, pedestrians gave their ratings of acceptability level as they walked in mixed pedestrian-cyclist stream along observation segments (side-walk or cross-walk); for the same segment, pedestrian and cyclist movements were video-recorded to obtain pedestrian as well as cyclist flow rates. The pedestrian ratings together with flow rates of pedestrians and cyclists were integrated to produce serviceability (acceptability) standards for a range of pedestrian-cum-cyclist trafficking level. All in all, serviceability rating and traffic flow data were collected from a series of sites over a wide geographical area that included 10 stretches of side-walks (and 679 respondents) near to transit stations, and 17 cross-walks (and 893 respondents). The application of the serviceability standards is illustrated. The serviceability standards are shown to be useful for auditing the adequacy of existing facilities or when designing new integrated (shared) facilities for cyclists and pedestrians. [295 words]

**Keywords:** shared walking-cycling facility, user-centric serviceability/acceptability schematics.

### REFERENCES

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