

Manoeuvring Strategies

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This preliminary material has been prepared as part of on-going research by Hunarch Consulting into the spatial correlates of wheelchair and scooter use in buildings and facilities.

It is possible to accurately model stationary occupied wheelchairs and, from the inherent geometry of wheelchair travel and manoeuvring, develop a model of travel and manoeuvring. The model can be used to determine the minimum required travel and manoeuvre space for wheelchairs. However, such determination presumes not just perfect driving control, but also strategies of manoeuvring that match the most compact ones, or the postulated most appropriate ones.

The difference in strategies is different to the unintended variation of rotational radii resulting from diminished driving skill as elsewhere discussed. The term “strategies” refers to manoeuvres that, intentionally or otherwise, are comprised of a series of separate rotations. A reversing turn is one example.

For example, to enable comparisons between actual and modelled radii, one would be reliant upon drivers performing, or would need to instruct drivers to perform single-rotational turns that match the modelled ones.

This begs a judgment: if certain turning manoeuvres are the most compact ones, should least-space formulations be based on these, or should the margins simply be based on a whatever turning manoeuvres are employed, regardless of their compactness?

It is theoretically possible, but practically impossible to prepare models of such complex manoeuvres for purposes of comparison with equivalent actual manoeuvres, and determination of margins, because the chances of someone replicating the model is virtually nil, and the ability to have someone replicate the turn would be extremely slim.

There are two ways of calculating margins for these complex turning manoeuvres: to use only the overall length and width of the space within which the turning manoeuvres occur or, calculating radial margins as if the most compact turning manoeuvres were the intended ones and the variations from them a manifestation of imperfect driving. The latter strategy is probably the most appropriate because it will typically be unknown whether an other-than compact manoeuvre was intentionally adopted, and perhaps skilfully performed, or whether it was the result of lack of driving skill. However, because it is easy to compare overall lengths and widths and to determine a margin in those terms, and to compare the results with the radial margins result, both margin types should be determined. In any case, radial margins will ultimately be used to identify overall lengths and widths of overall manoeuvring spaces.

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