Why is Cycling Swept Path Analysis Important?

Far more people will be cycling and walking thanks to Government plans to boost greener, active transport, launched on 9th May 2020 by Transport Secretary Grant Shapps .

Pop-up bike lanes with protected space for cycling, wider pavements, safer junctions, and cycle and bus-only corridors will be created in England within weeks as part of a £250 million emergency active travel fund - the first stage of a £2 billion investment, as part of the £5 billion in new funding announced for cycling and buses in February.

Following unprecedented levels of walking and cycling across the UK during the COVID-19 pandemic, the plans will help encourage more people to choose alternatives to public transport when they need to travel, making healthier habits easier and helping make sure the road, bus and rail networks are ready to respond to future increases in demand.

Fast-tracked statutory guidance, published on 9th May 2020 and effective immediately, will tell councils to reallocate road space for significantly-increased numbers of cyclists and pedestrians. In towns and cities, some streets could become bike and bus-only while others remain available for motorists. More side streets could be closed to through traffic, to create low-traffic neighbourhoods and reduce rat-running while maintaining access for vehicles.

Planning our streets to meet the competing needs of pedestrians, cyclists and vehicles in a restricted space is a challenge. The movement of cycles through our cities is more complex than you may appreciate; you not only need to consider the size and shape of bicycles but consider obstacles, turning circles and travelling speeds, all which impact on the safe design of cycle routes.

What is Cycling Swept Path Analysis?

Cycling Swept Path Analysis is the simulation of a bicycle moving within a digital design. Its purpose is to create designs (such as roads, driveways, developments or cycle lanes) that can accommodate different types of bicycle and vehicle needs during operation, or to ensure that specific vehicles can manoeuvre through specific routes. Although commonly referenced as ‘analysis’ or ‘checks’, swept paths simulations are a pre-cursor to many design elements and heavily inform overall geometry. For example, items such as kerb alignments, junction radii, road markings, parking spaces and loading/unloading facilities are all heavily reliant upon swept path simulations.

Who uses Cycling Swept Path Analysis Software?

Professionals with varying levels of skill and experience, who work across many different industries and company sizes, can find value in cycling swept path analysis software.

Increasingly, cycle swept paths are becoming a critical component of geometric on-street design. They can be used in many environments; such as around buildings to cater for accessibility, for planning of multi-use public spaces and even in landscape design to plot routes for bicycles around planting and other softworks areas.

What are the Benefits of Swept Path Analysis Software?

Bicycle Simulation ensures design projects provide enough space to safely and comfortably accommodate different cycle types, which is difficult, if not impossible, without the use of tailored software. Powerful design software gives designers and engineers the tools to not only portray an accurate depiction of what a project's final result will look like, but also a proposal on how the bicycle swept path scheme will be constructed. It can also help with project collaboration and make it easier to ensure that issued drawings comply with office and project standards.

When Should Cycling Swept Path Analysis be Performed?

To determine (and to justify) whether cycling swept path analysis should be performed, it is helpful to consider the following types of questions:

- Do various types of bicycles need to be accommodated on a regular basis?
- Are bicycles likely to encroach upon pedestrian space?
- Can two bicycles pass each other side by side on a curve?
- Are there multiple road users (cars, pedestrians, cyclists) using the same space at the same time?
- Do cycle lanes exist within a junction design?