

Geometric Design of Parking Facilities for Autonomous Vehicles

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Future of Autonomous Vehicles

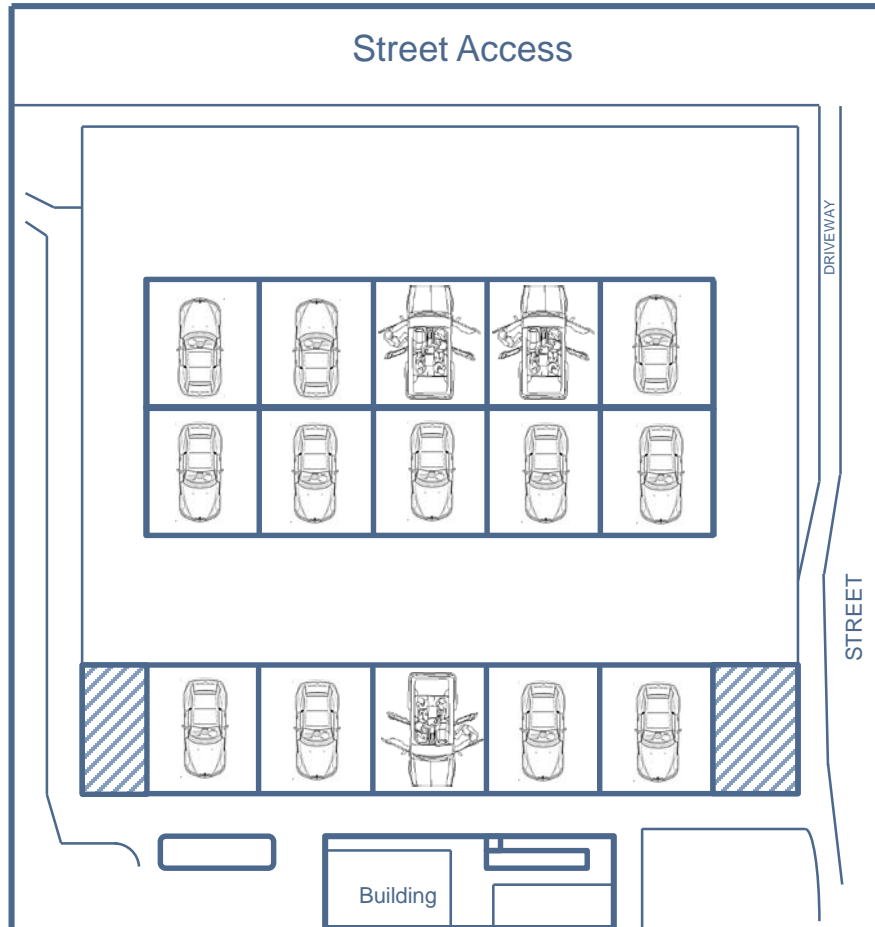


Enhanced
mobility

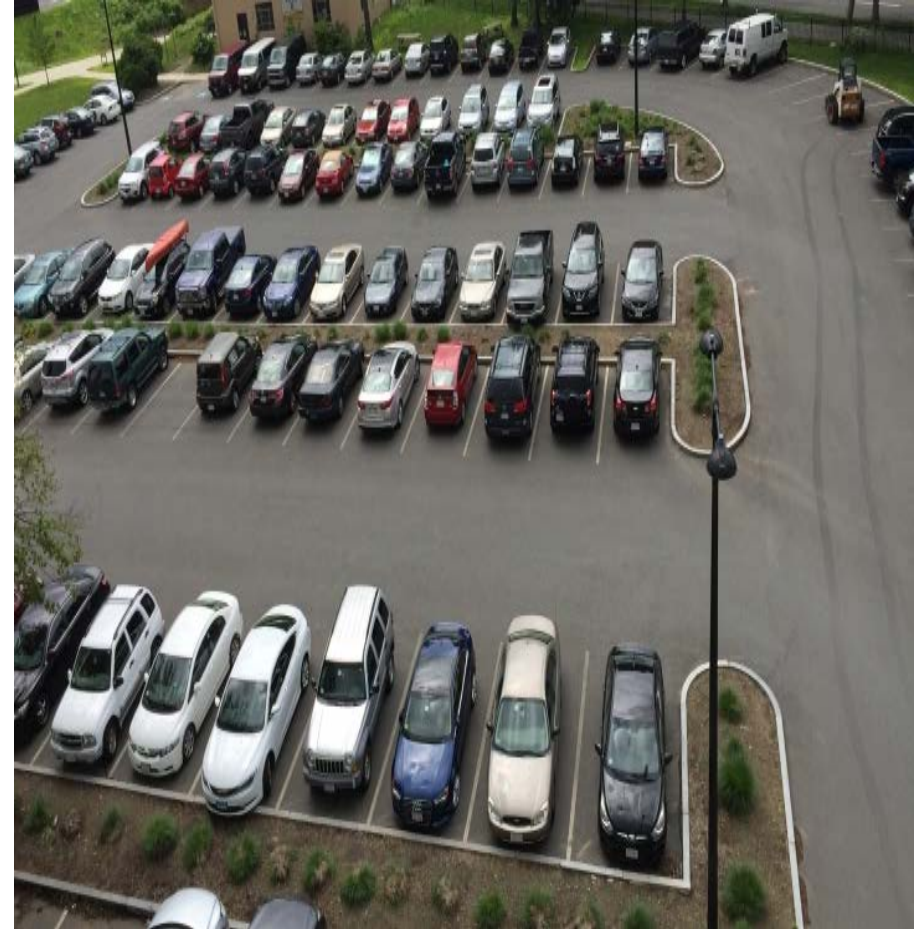
Reduction
in traffic
collisions

Lift
constraints
on parking

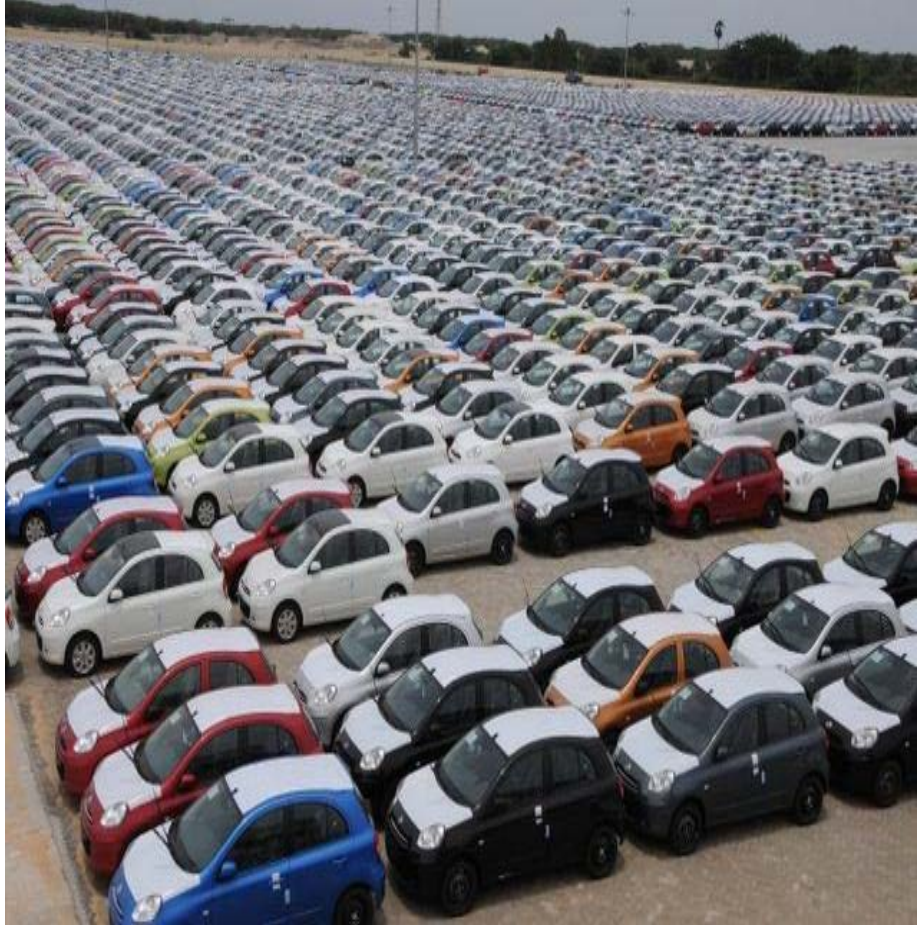
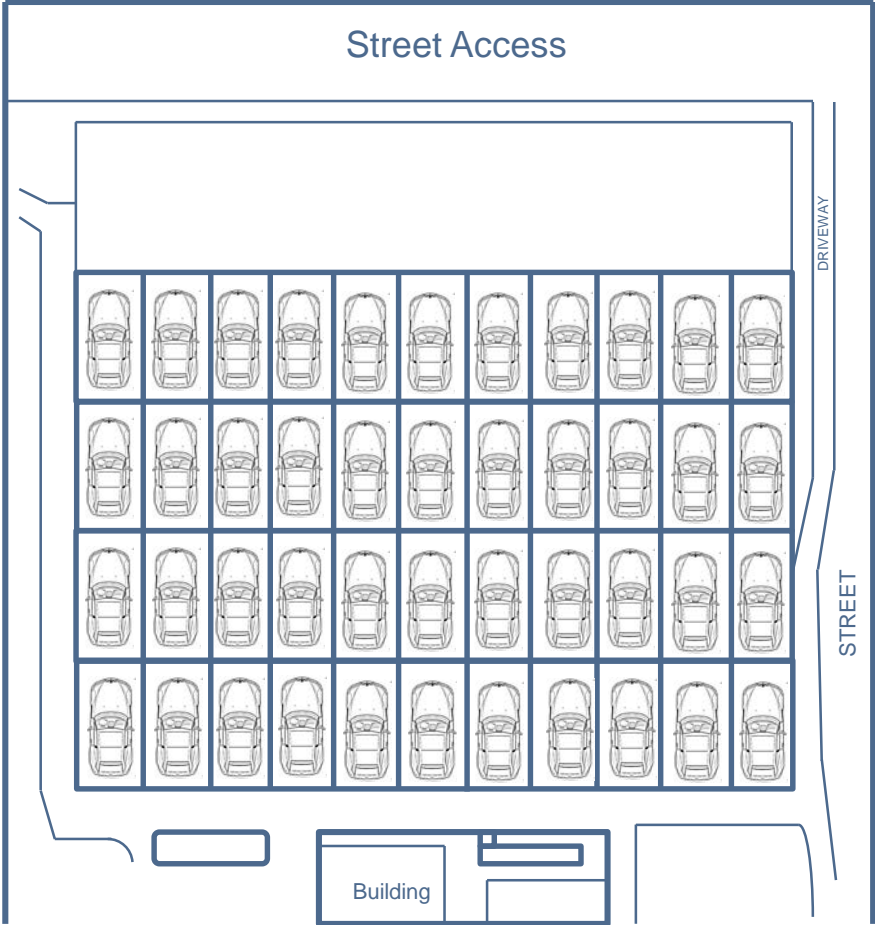
Conventional Vehicle Parking



(a)



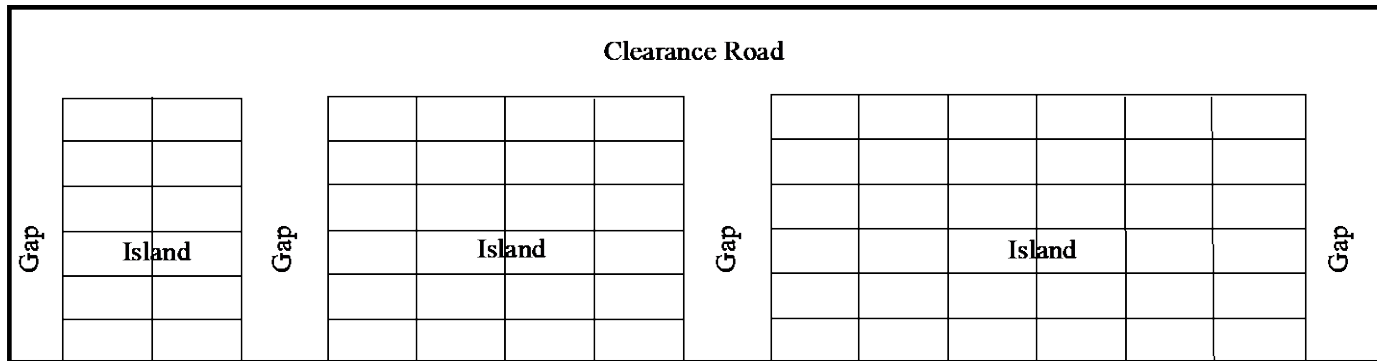
Autonomous Vehicle Parking

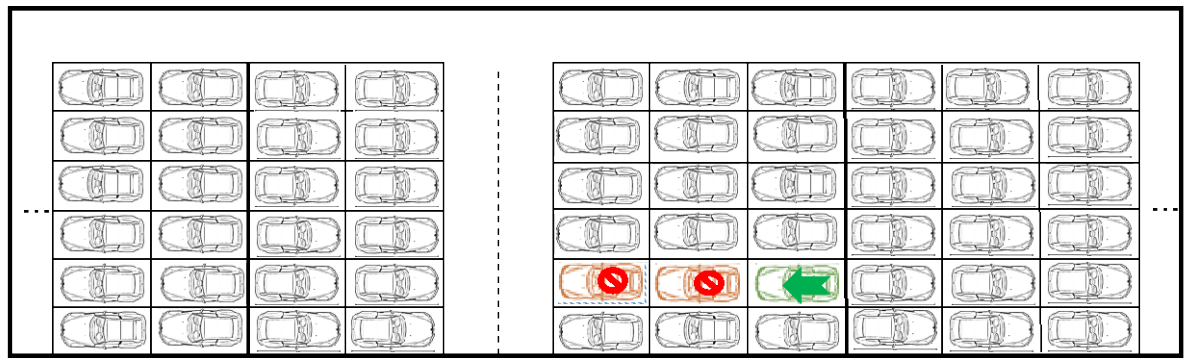


(b)

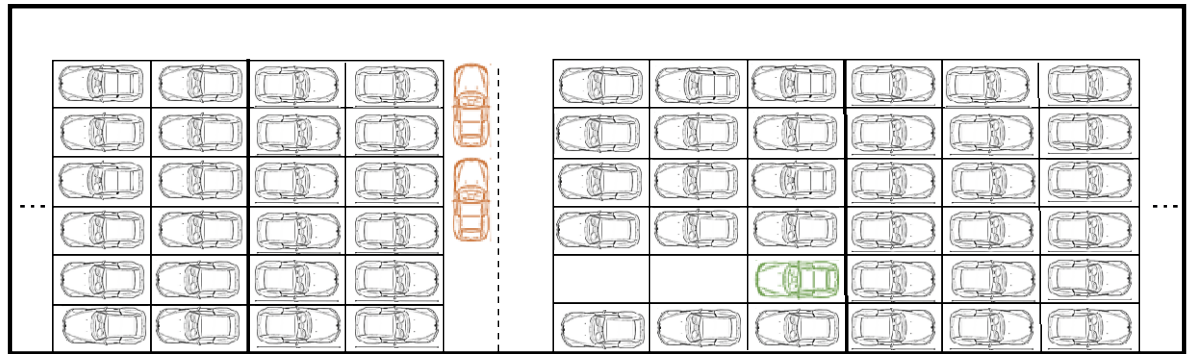
Optimal Parking Facility Geometry

- 1- Design Demand
- 2- Plot Dimensions

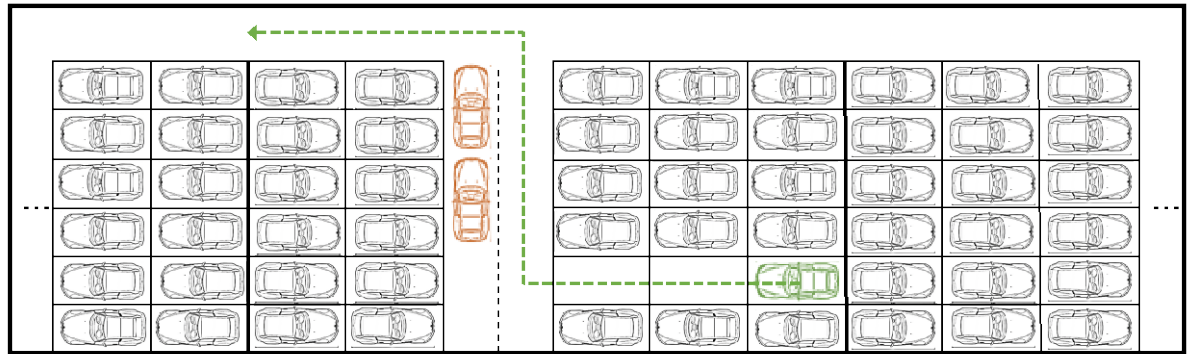




(a)



(b)

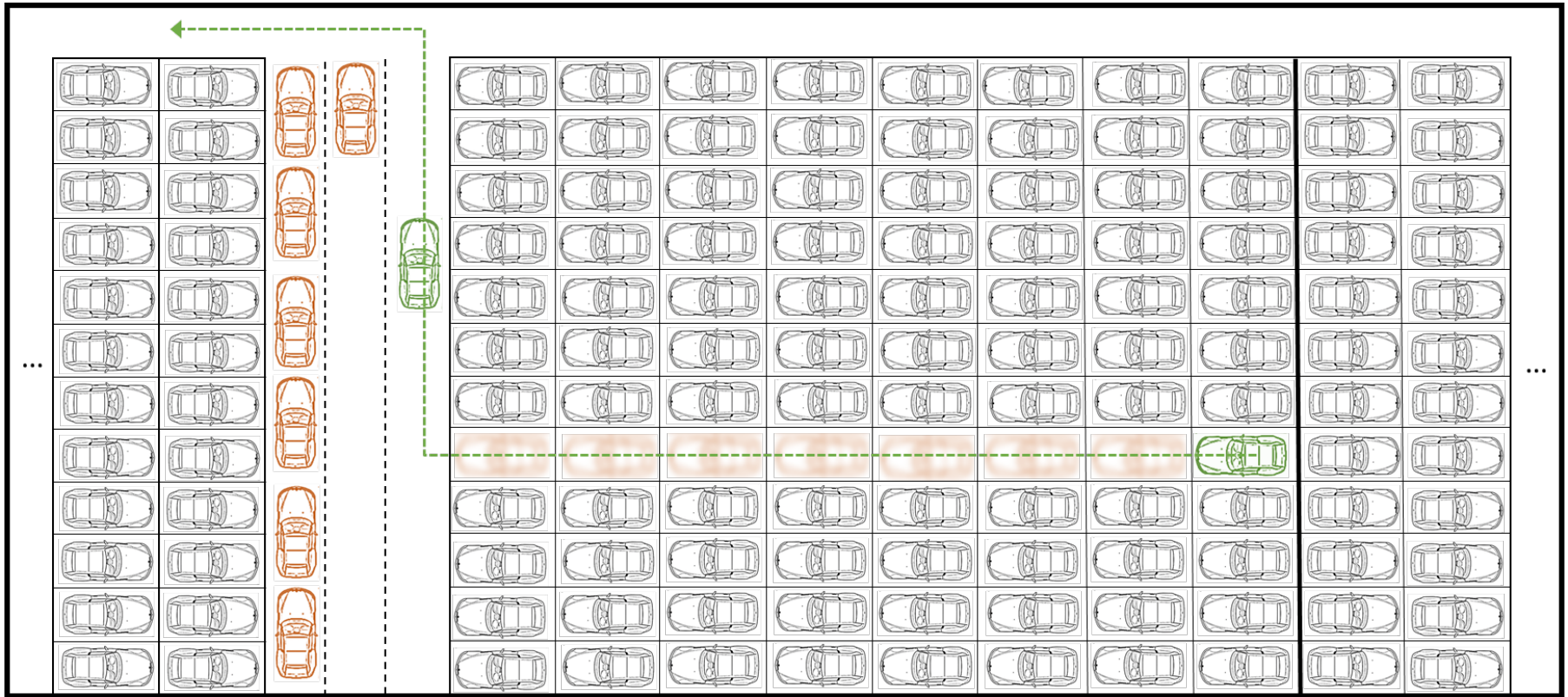


(c)

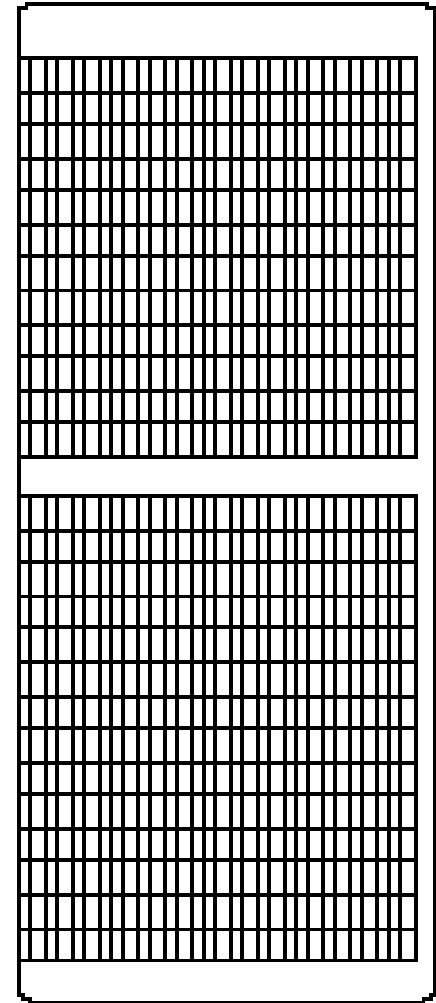
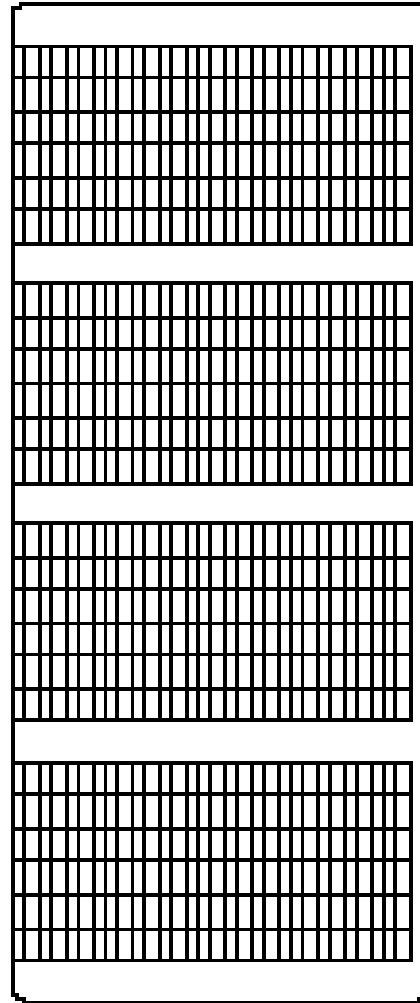
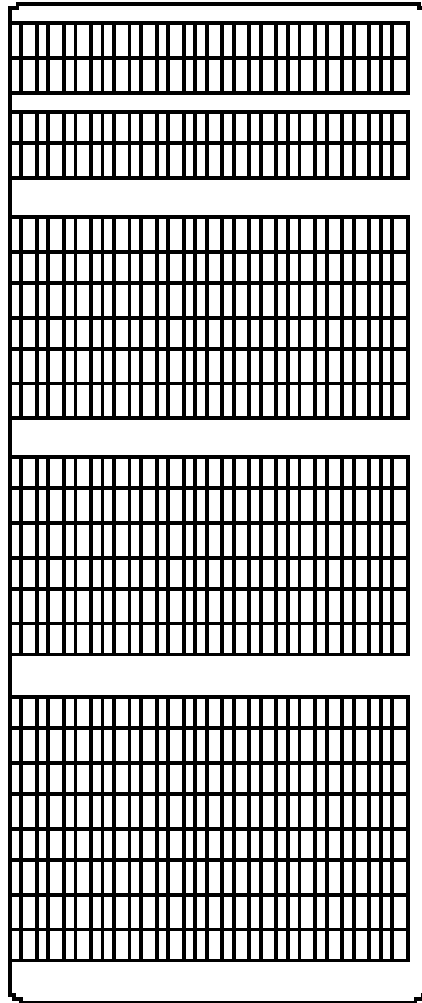
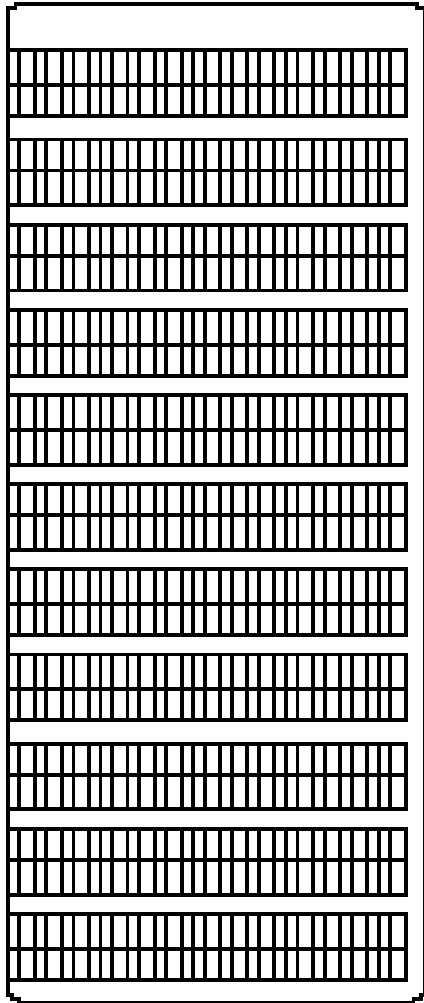
Relocation Policy

Any vehicle can be discharged as any given point in time

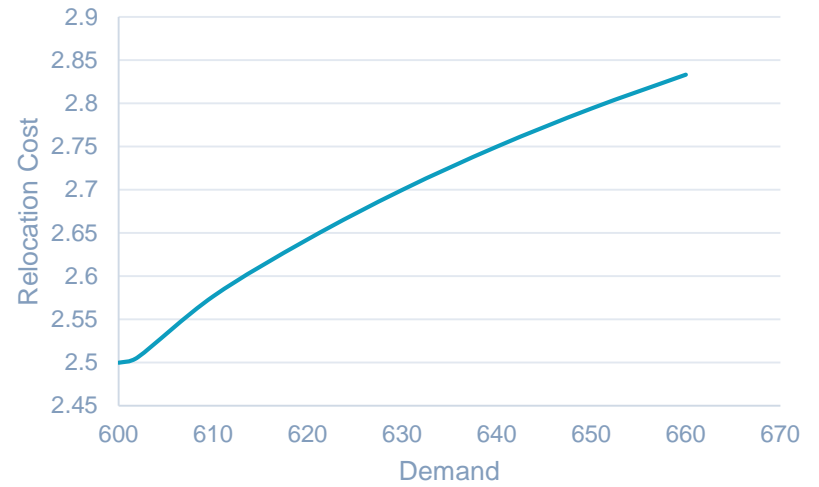
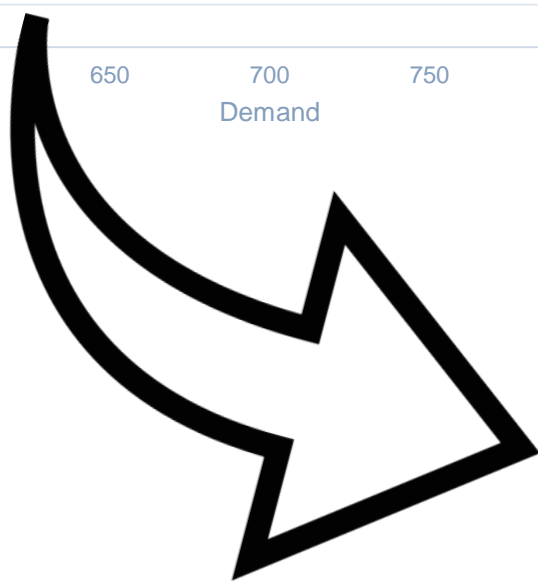
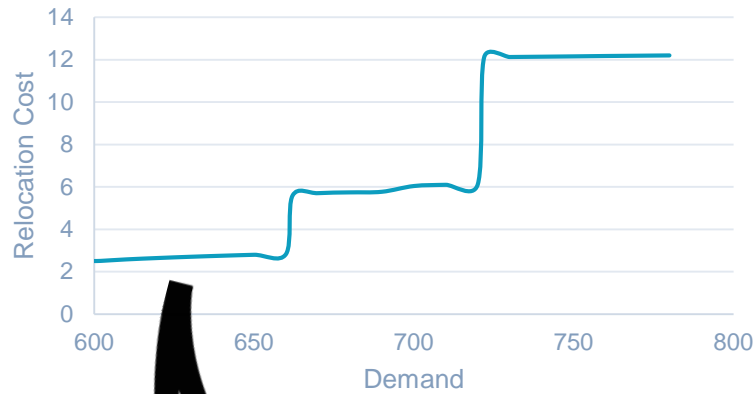
Vehicle Relocation in Larger Islands



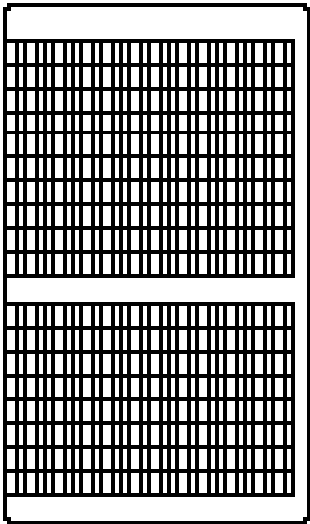
Impact of Demand on Optimal Layout



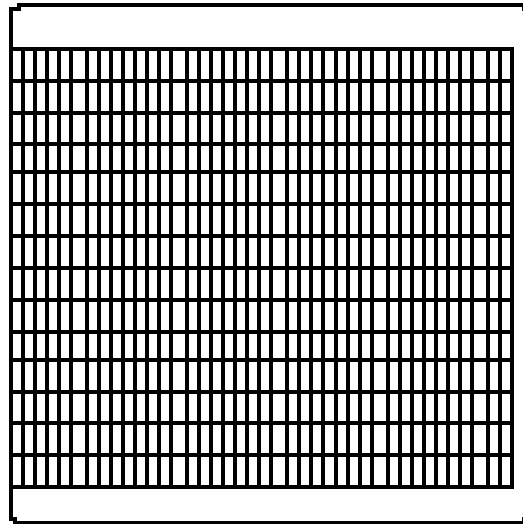
Relocation Cost Increases With Demand



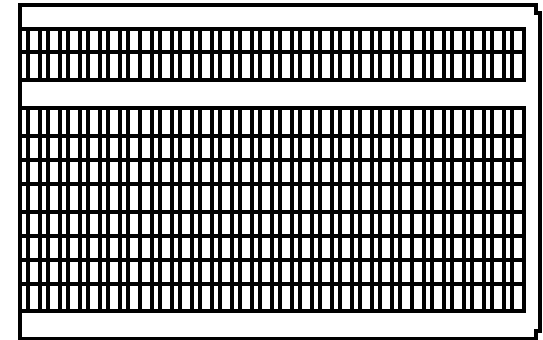
Plot Shape Analysis



Capacity
540

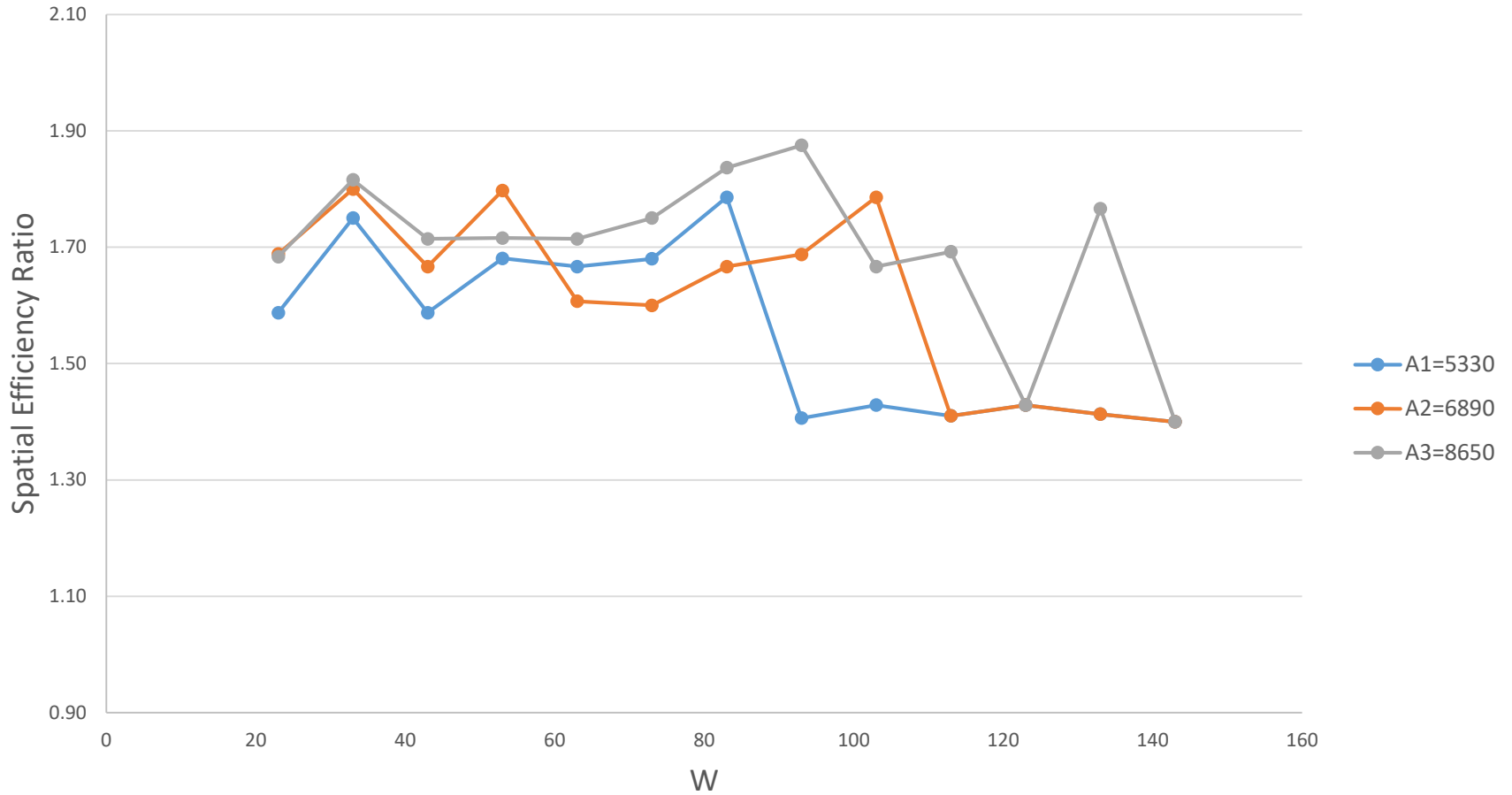


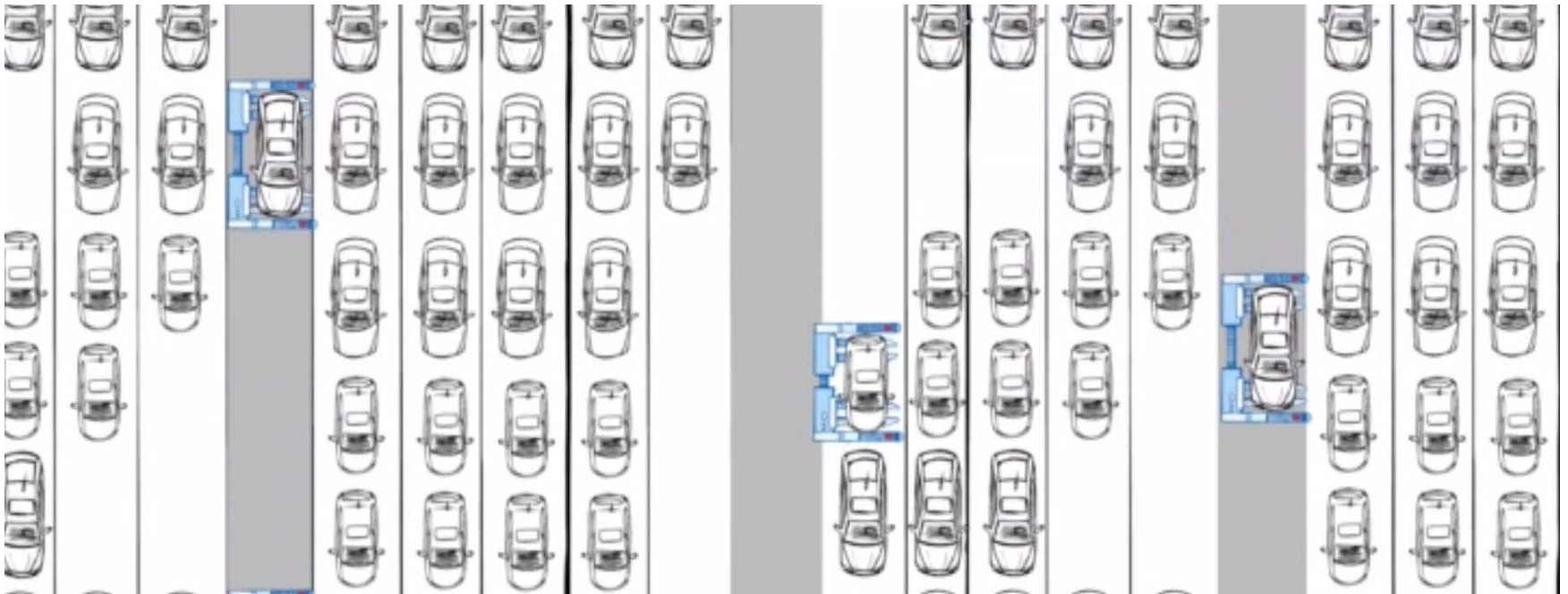
Capacity
560



Capacity
500

Land Utilization





Future Work

- **Modelling other plot geometries**
- **Impact of knowing vehicle departure times**
- **Impact of AV parking on real-estate**

Questions!