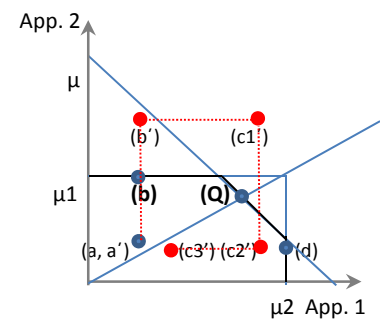
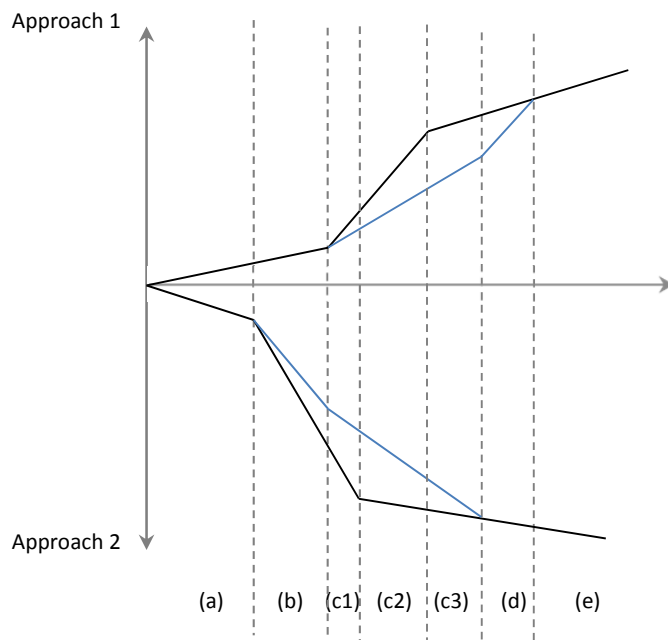


Traffic Engineering (CIV-349)

Merge Dynamics (Additional Example)

Consider a merge with a freeway capacity upstream (Appr. 1) μ_1 , ramp capacity μ_2 , and downstream equal to μ . Point Q, which represents the service rate when approaches 1 and 2 are congested has coordinates (c) , μ'_1 and μ'_2 .

Blue points show the actual departure rates (service rates) from approach 1 and 2 and red dots show the demand rates for the time periods specified in the input output diagram (left figure).



Period (a): Both approaches are uncongested. Vehicles are served at the rates they arrive.

Period (b): Approach 2 is congested (queues are developed), Approach 1 is still uncongested

Period (c1, c2, c3): Both approaches are congested and operations are at point Q of the capacity envelope

Period (d): Queues clear in Approach 2, only approach 1 is congested (service rate for 1 increases)

Period (e): Both are uncongested (serve at point c3')