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Traffic Calming

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Urban Transportation Planning

MIT Course 1.252j/11.380j

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Why Traffic Calming?

- The faster you go, the higher the probability of an accident, as:
 - Your vision focus narrows with speed
 - For a given reaction time, distance covered is proportional to speed
 - The faster you go, the longer the stopping distance

Why Traffic Calming?

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- The faster you go, the higher the seriousness of an accident
 - For instance, the kinetic energy of an automobile (1.2 tons at 35 mph) is at least 150 times higher than the one of a pedestrian (180 pounds at 3 mph)
 - Such a collision at:
 - 20 mph, means bone fractures and concussions
 - In the range 30-40 mph, high probability of either death or permanent disability

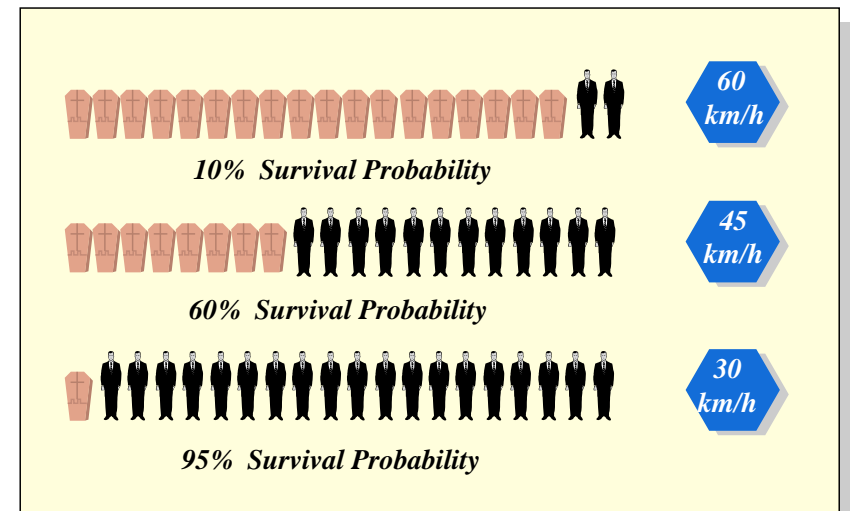


Figure by MIT OCW.

Why Traffic Calming?

- To avoid segregation of public spaces and maintain its livability
- Underpasses, skywalks and other “solutions”, do not provide “eyes on the street”



Why Traffic Calming?

- When traffic is tamed, a good walking environment results
- Walkers enjoy a wide range of sensory experiences
- When most people drive, the buildings end up lacking the detail and relief that people need and enjoy
- People attract more people

Traffic Calming: How?

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Do you think this is sufficient in spite of its strict precision in Km/hour?



Traffic Calming: How?

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- When you drive at 30 mph, you tend to focus your sight far ahead
- This means that you narrow the sight area
- You fail to see the surroundings



Traffic Calming: How?

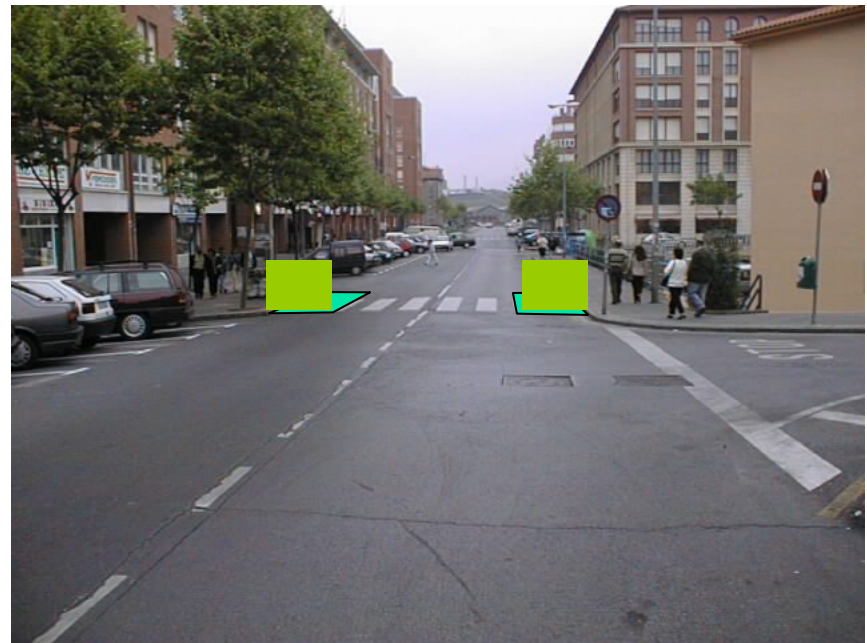
- But if you drive at 20 mph, you start to see what lies on the sides



Traffic Calming: How?

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- The basic idea is to change the perceptions of the driver through the introduction of new physical features
- These **self-enforcing** features tend to break the infinite continuity that encourages speed with or without speed warnings



Traffic Calming: How?

- Raised crosswalks
- Narrower pavement widths
- Chicanes with urban furniture or parking
- Changes in the pavement texture
- Mini-roundabouts
- Cul-de-sacs
- Eliminating some movements
- *Civilized* green waves
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Traffic Calming: How? Raised crosswalks

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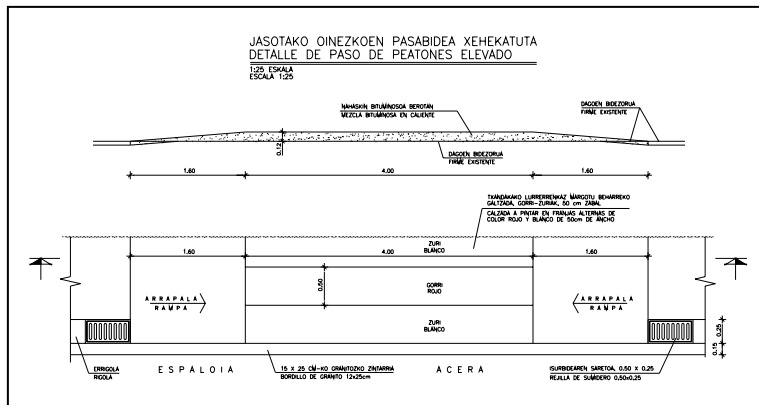
- Double function: good for pedestrians... and cars
- You accommodate to gradient:
 - 7% for 40-45 km/hr
 - 10% for 30 km/hr
 - 12% for 25 km/hr or less
- Every 60-100 meters plus proper warning
- The top table needs a minimum width, specially for buses
- Automatic balancing of the car-pedestrian relationship





Traffic Calming: How? Raised crosswalks

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Traffic Calming: How? Raised intersections

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- The automobile finds itself in neutral grounds...



Traffic Calming: How? Bulb-outs

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- Pros:
 - Decrease exposure
 - Higher visibility specially for children
 - Easy implementation

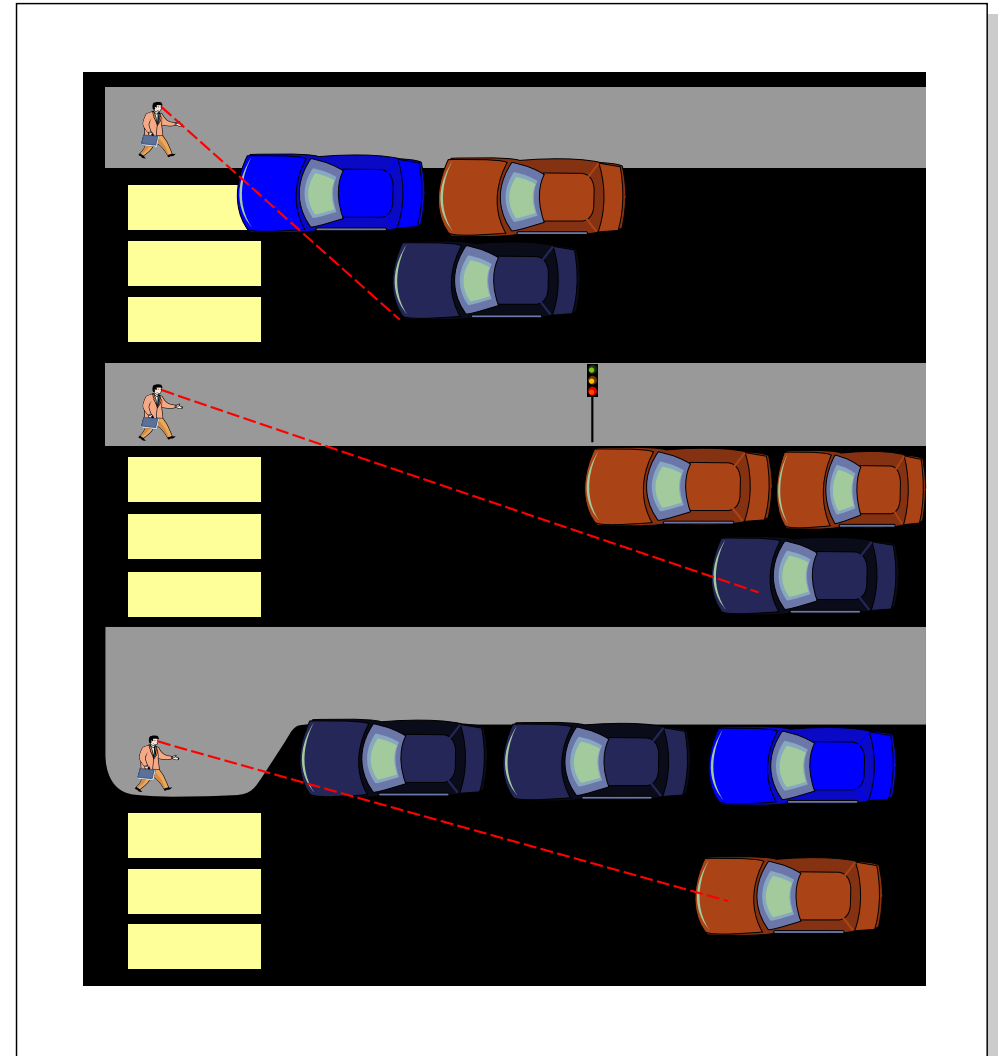


Figure by MIT OCW.



Traffic Calming: How? Narrower pavement widths

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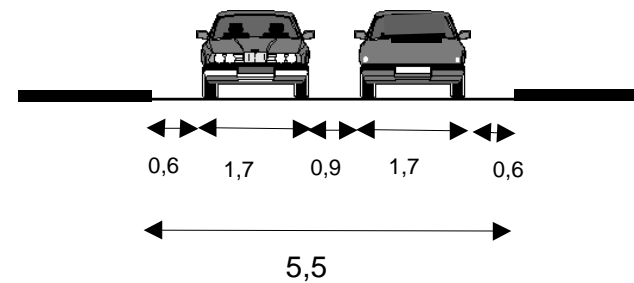
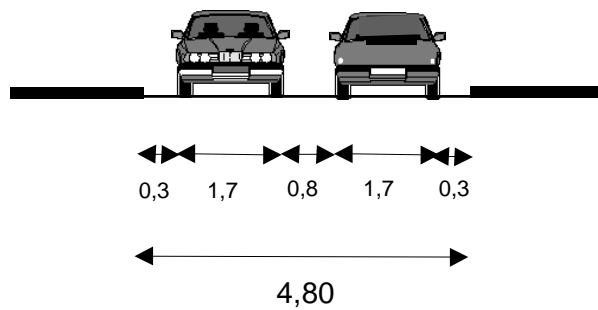
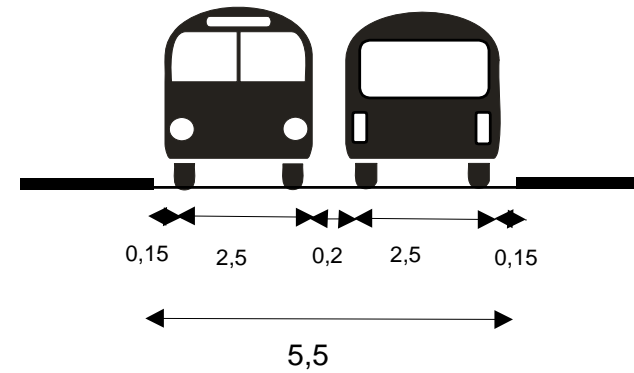
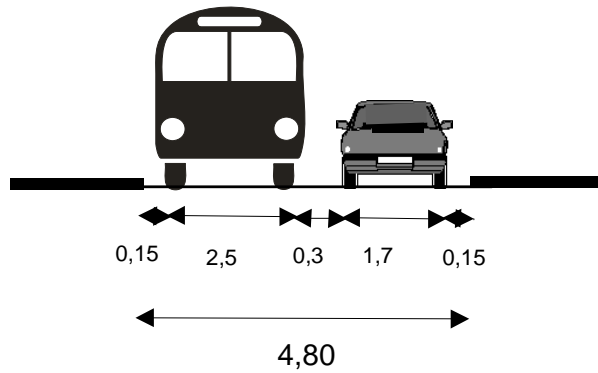
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Traffic Calming: How? Narrower pavement widths

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Traffic Calming: How? Narrower pavement widths

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Nothing like a
bucket of paint

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Traffic Calming: How? Narrowing the pavement

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You could rearrange parking



Traffic Calming: How? Eliminating road lanes

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Traffic Calming: How? Eliminating road lanes

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From cages to family outings



Traffic Calming: How? Mini-roundabouts

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They work!
...even for high flows



Traffic Calming: How? Or all of the above

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Traffic Calming: How? Eliminating some movements (i.e. in a roundabout)

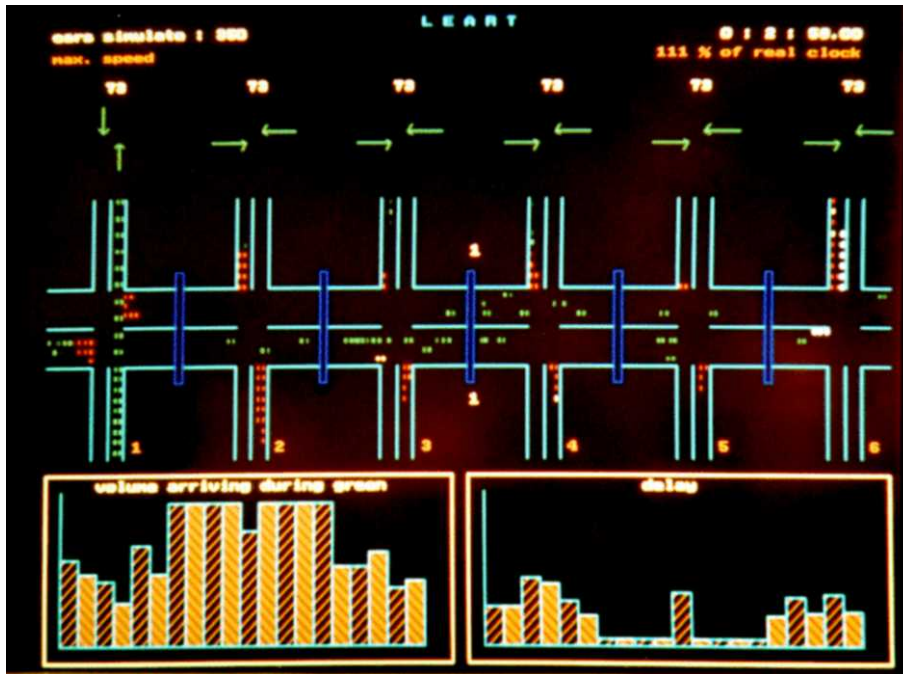
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Traffic Calming: How? Civilized Green Waves

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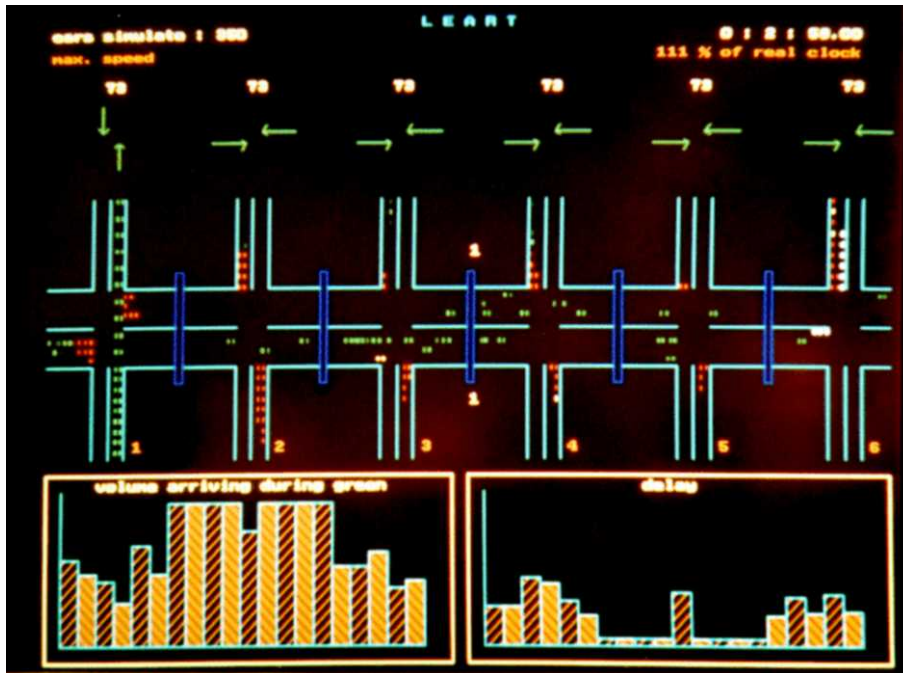


They need low cycles to avoid late-comers driving fast (at night)



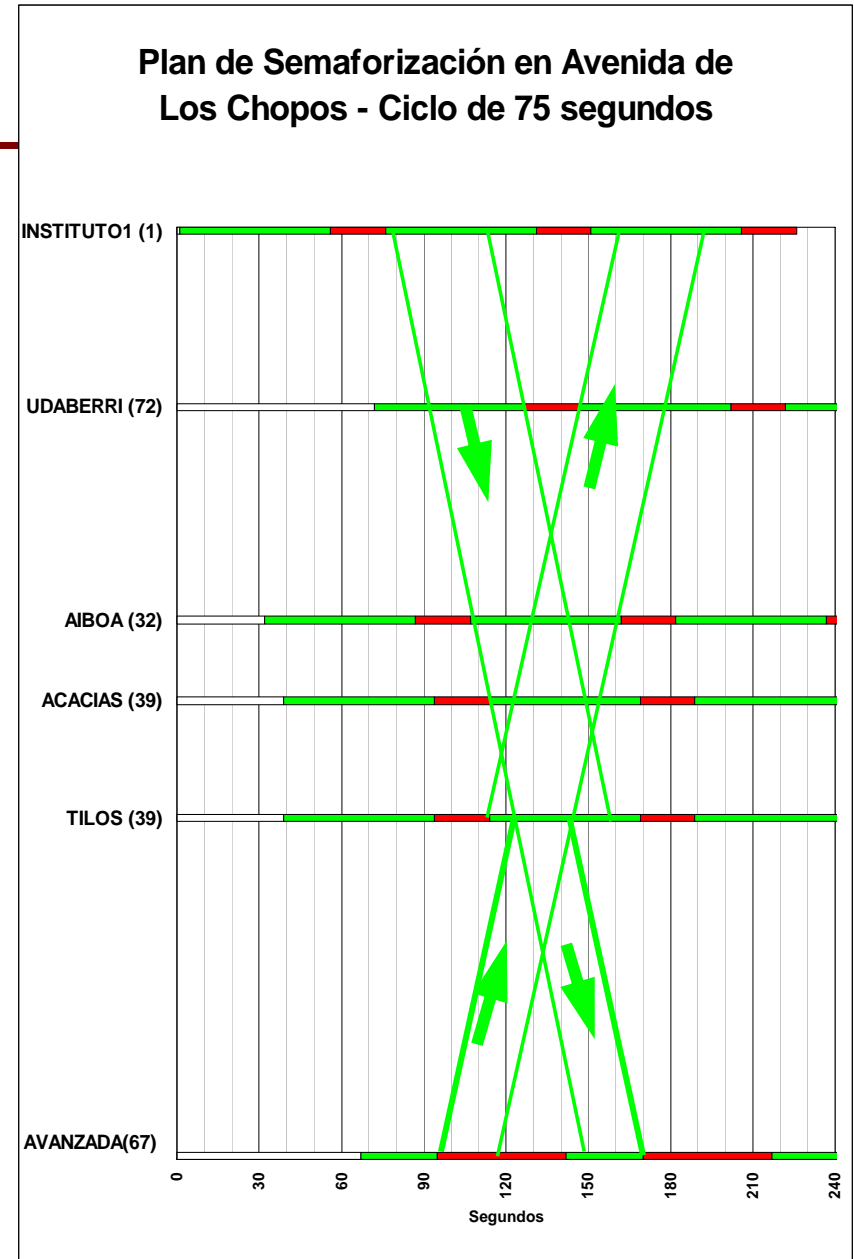
Traffic Calming: How? Civilized Green Waves

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They need low cycles
to avoid late-comers
driving fast (at night)

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Traffic Calming: How?
Civilized Green Waves

Plus often changes
in horizontal
alignment, refuge
islands, narrowing
the road width...



Traffic Calming: How?
Civilized Pedestrian signals

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- Longer phase times for pedestrians
- Lower total cycles
- Green waves for pedestrian movement



Traffic Calming: How? Narrowing the pavement

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Beyond traffic calming to improve public spaces:

- New urban furniture, including trees



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MIT Traffic Calming: How?

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- **Not an end by itself, just the means to an end**
- It must be accompanied by other measures to improve the urban environment so as to encourage more pedestrians
- ...Although the real goal is **to bring pedestrians to a stop**



- Other important issues:
 - Location
 - Self-enforcement
 - Liability
 - Reversibility
 - Public participation
 - Overall traffic scheme
 - Traffic deviated to other areas

- Sensitive areas:
 - Schools
 - Transit stations
 - Senior citizens
 - Areas with high accident rates
 - High speeds eg. transition areas from the expressway into the urban network



Some Bibliography

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- “Guide Les ralentisseurs de type dos d’ane et trapezoidal” CERTU, 1994
- “Guide Zone 30” CETUR, 1992
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- “City Routes, City Rights” Conserv Law Found, 1998
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Traffic Calming: The Process

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Look for an easy winner...



- Nothing like a school

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Once they try...

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- “Bulb-outs ”... everywhere
- Today a pedestrianized plaza

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... they will ask for more

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- There is not enough money to accommodate all the requests
- The best result is the change in behavioral patterns



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Always go easy at the beginning...

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Always go easy at the beginning...

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In a nutshell, ten rules

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1. Every change is hard to implement
2. Start by the easiest job
3. You need allies
4. You have to minimize risks
5. Technical competence a must
6. Not isolated measures, but packages
7. Short term results, a must
8. But don't forget to plant a few seeds
9. Everyone sees things differently
10. Success is hard to measure

But if you want, you can!