BRIEF SURVEY OF TRAFFIC PLANNING
IN FRENCH CITIES
"THE TRAFFIC PLANS"

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SUMMARY

ISSUES

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2. The Traffic Plan aims at three basic objectives.

3. Two kinds of improvements to insure the efficient use of existing road space.

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1. The plurality of aspects incidental to the management of an urban center must be considered.

2. First, protection of the center.

3. Secondly, promotion of access to the most dense zones of the center.

4. Organization of the trip-ends.

5. The improvement of the pedestrians security and comfort.

6. The organization alternatives for the private vehicle and mass transit traffic.
FUNCTIONAL COMPONENTS OF IMPLEMENTATION: THE P.P.S. APPLICATION

Implementation falls into '3' categories of functional components

2. Traffic flow improvements
   - Cross-roads management
   - Horizontal signalization
   - Vertical signalization
   - Traffic regulation

3. Transfer management
   - Parking on roadway
   - Public transportation stops
   - Pedestrian areas
   - Delivery points

4. Security

III. CONCLUSION: CONDITIONS FOR A SUCCESSFUL TRAFFIC PLAN

1. First, the elected officials have a fundamental part to play
2. Then, it is necessary to inform the users
3. Last, efficiency controls are indispensable
The petroleum century. But what about the 21st? We are using so much oil so fast that it is getting harder and harder to find new sources to keep ahead of future demands. It is obvious now that the days of easily found oil are over, and more and more automobiles need more and more gas and oil because...

"The importance of transportation to users of passenger service is obvious in that it enables our population to be mobile for economic, social, educational, cultural, recreational, political, or other purposes. Americans are probably the most mobile people in history. They rely heavily both on the for-hire transportation system and the private automobile for their mobility and they spend a great deal of money on passenger service. The American way of life is, in fact, so entwined with the automobile that a major reduction in the availability of that form of transportation, caused by an energy shortage or some other crisis, would alter our life styles dramatically." (1)

In the Western European countries, where the problem is more serious because of the lack of local energy sources, governments try to stop or slow down the energy drain. One of the means fairly often used, is to promote the mass transit systems and to incite people to use the public transportation. In France, two kinds of plans are already implemented:

- the "Schemas Reginaux de transports collectifs",
- regional models for the mass transit system between cities.
- the "Plans de Circulation", traffic plans within the cities.

And is a brief survey of the traffic plans as they are imple-
mentance.
I. ISSUES
The disadvantages of the actual situation in our cities need immediate solutions.

At this time in our cities, the presence of many services, places of employment, and amusement centers, offers very varied choices to citizens.

Of course, these choices are among the considerable advantages of urban life, but they also give rise to movements which in volume create nuisances well known by the man in the street: noise, pollution, danger to pedestrians and cyclists, etc.

Figure 1
"...some nuisances well known by the man in the street..."
The Traffic Plan aims at three basic objectives.

Without costly investments and difficult implementation, the Traffic Plan aims, in the first period, at a better organization of the actual traffic.

Main objectives - The cities can:

- improve the traffic conditions by allowing more fluidity and higher speeds, and therefore shorter travel time;
- reduce urban accidents especially those that injure pedestrians and cyclists;
- protect and improve the environmental conditions by reducing the traffic nuisances and creating areas propitious to human exchange.

Figure 2
"...we must create areas propitious to human exchange..."
Kinds of improvements to insure the efficient use of existing road space.

The Traffic Plan must turn the existing transportation infrastructure to the best account by applying a set of measures to improve the efficiency and productivity of the urban transportation system, and by instituting a succession of operations quickly implemented and requiring low expense.

Two kinds of means are used:

administrative means of traffic organization: channelization of traffic (exclusive bus lanes, bikeways and pedestrian paths), simplification of the traffic flows (one-way streets), management and control of parking, etc.

technical means of operations improvements: cross-roads, better signalization (danger and direction signs), timed traffic lights, parking meter regulation, bus stops and pedestrian paths management, etc.

The Traffic Plan essentially employs low intensity techniques which are very useful in urban centers, because they respect environmental constraints and avoid deep disturbance of an irreplaceable surrounding.
Figure 3 and 4. Grenoble: Bastille Crossroad

1965: BEFORE
II. THE NEEDS CENSUS

Kinds of difficulties can be identified in most cities.
Traffic flow conditions: diagnosis by air photos.

There are several methods which allow an evaluation of traffic difficulties. One of them is to take a series of photographs from the air of the city during peak hours and to record the points which are very congested. Air photography quickly discloses:

- road sections nearly congested or very congested
- critical and congested cross-roads

Taken with a time lapse of a few seconds, two photos allow an evaluation of the speeds on each road section, and times passed at intersections. Therefore, air photography allows us to perform a diagnosis of cities' traffic flow and to determine the relative priority of areas which need improvements. Most air photos taken in France show a rather unfavorable situation which needs immediate solution.
<table>
<thead>
<tr>
<th>Indicators</th>
<th>Caen</th>
<th>Nancy</th>
<th>Soissons</th>
<th>Clermont Ferrand</th>
<th>Cherbourg</th>
<th>Strasbourg</th>
<th>Grenoble</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of movement time</td>
<td>63</td>
<td>65</td>
<td>82</td>
<td>60</td>
<td>66</td>
<td>54</td>
<td>61</td>
</tr>
<tr>
<td>Percent of stopping time</td>
<td>37</td>
<td>35</td>
<td>18</td>
<td>40</td>
<td>34</td>
<td>46</td>
<td>39</td>
</tr>
<tr>
<td>Middle Speed in Km/h</td>
<td>17</td>
<td>21</td>
<td>16</td>
<td>14</td>
<td>17</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>in m/h</td>
<td>10.6</td>
<td>13</td>
<td>10</td>
<td>8.7</td>
<td>10.6</td>
<td>10</td>
<td>10.6</td>
</tr>
</tbody>
</table>
Dijon: air photo taken 2,000 meter up
6,600 feet up
allow us to draw up maps which inform us of the traffic on road sections and at cross roads.

Figure 7
Middle speed on road sections

Figure 8
Congestion at cross roads.
Precarious security conditions.

Security factors, without any doubt, are among those to which citizens and local authorities are the most sensitive. If we analyze road security statistics, we find that more than 60% of accidents take place in the city and that a third of those fatally injured are killed in urban accidents. The numbers recorded during the last five years reveal, in the total towns observed, a problematical situation. The majority of these victims are pedestrians who would profit by minimal protection improvements and cyclists, the outcasts of the urban traffic. Putting into effect a good Traffic Plan, and using adapted equipment, the number of victims can be decreased and the critical elements (cross-roads, narrow side-walks, etc.) considered carefully.

Figure 9

<table>
<thead>
<tr>
<th>Fallen in Cities</th>
<th>Accidents in Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Private vehicles, trucks, buses</strong></td>
<td><strong>Cyclists</strong></td>
</tr>
<tr>
<td><strong>Pedestrians</strong></td>
<td><strong>Cyclists</strong></td>
</tr>
</tbody>
</table>

Amount: 6,300

<table>
<thead>
<tr>
<th>Cyclists</th>
<th>Pedestrians</th>
<th>Buses</th>
</tr>
</thead>
</table>

Amount: 242,000
- The accident growth in cities of population greater than 5,000.

<table>
<thead>
<tr>
<th>Year</th>
<th>Accidents Number</th>
<th>Fatally Injured Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968</td>
<td>125,000</td>
<td>68</td>
</tr>
<tr>
<td>1969</td>
<td>130,000</td>
<td>69</td>
</tr>
<tr>
<td>1970</td>
<td>135,000</td>
<td>70</td>
</tr>
<tr>
<td>1971</td>
<td>140,000</td>
<td>71</td>
</tr>
<tr>
<td>1972</td>
<td>145,000</td>
<td>72</td>
</tr>
</tbody>
</table>

- A not very encouraging evaluation.

<table>
<thead>
<tr>
<th>Year</th>
<th>Economic evaluation of accidents in urban areas (10^3 F(2))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967</td>
<td>2.86</td>
</tr>
<tr>
<td>1969</td>
<td>3.05</td>
</tr>
<tr>
<td>1970</td>
<td>3.22</td>
</tr>
<tr>
<td>1971</td>
<td>3.49</td>
</tr>
<tr>
<td>1972</td>
<td>3.78</td>
</tr>
</tbody>
</table>

Calculated in multiplying - the accidents number by 4,000 F
- the fallen number by 230,000 F
- the injured number by 10,000 F

$1 = 4.30 \text{ FF (January 1979)} \rightarrow 1 \text{ FF } = 0.25$
an increasingly threatened environment for living.

Environmental conditions too need solutions. Noise, especially annoying for the residents, must be reduced on the most used road sections. In this field, the reading of a noise map allows us to register the most harmful road sections and to research adapted solutions: traffic diversion, timed traffic signal (in French, "green lightwave"), avoiding stop and go traffic. Atmospheric pollution and visual degradation brought by excessive concentrations of vehicles too, must be strongly reduced.

The visual aspect of roads, the enhancement of the historical heritage, and the preservation of pedestrian bustle in streets, must finally be the focus of specific studies intended to make the town more pleasant.

Figure 12 - Table of noise levels from varied sound sources.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>dB</th>
<th>FELT NOISE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet engine (330 feet)</td>
<td>120</td>
<td>Painful</td>
</tr>
<tr>
<td>Boiler-making</td>
<td>110</td>
<td>Deafening</td>
</tr>
<tr>
<td>Orchestra, 75 performers (80 feet)</td>
<td>100</td>
<td>Intense</td>
</tr>
<tr>
<td>Pneumatic drill (some feet)</td>
<td>90</td>
<td>Very noisy</td>
</tr>
<tr>
<td>Speeding car (33 feet)</td>
<td>85</td>
<td>Noisy</td>
</tr>
<tr>
<td>Earthwork, very mechanized (100 feet)</td>
<td>80</td>
<td>Very strong</td>
</tr>
<tr>
<td>Inside of a train</td>
<td>75</td>
<td>Strong</td>
</tr>
<tr>
<td>Vacuum cleaner (10 feet) sounded shop</td>
<td>70</td>
<td>Very annoying</td>
</tr>
<tr>
<td>Typist Pool - lively restaurant</td>
<td>65</td>
<td>Rather annoying</td>
</tr>
<tr>
<td>Lively talk</td>
<td>60</td>
<td>Annoying</td>
</tr>
<tr>
<td>Traditional shop</td>
<td>55</td>
<td>Moderate</td>
</tr>
<tr>
<td>Study room</td>
<td>50</td>
<td>Rather moderate</td>
</tr>
<tr>
<td>Cool talk</td>
<td>45</td>
<td>Very moderate</td>
</tr>
<tr>
<td>Open country, during the day</td>
<td>40</td>
<td>Rather faint</td>
</tr>
<tr>
<td>Open country, during the night</td>
<td>30</td>
<td>Faint</td>
</tr>
<tr>
<td>Recording studio</td>
<td>20</td>
<td>Very faint</td>
</tr>
<tr>
<td>Foliage, murmuring</td>
<td>10</td>
<td>Noiseless</td>
</tr>
</tbody>
</table>
III. INSTITUTIONAL SETTING
The interministerial memorandums and the program implementation.

The Traffic Plans programs started with an interministerial memorandum (4/16/71), signed by the Secretary of Public Works and the Home Secretary.

This memorandum, which briefly recalls the emergency and the justification of the Traffic Plans, also defines their objectives, specifies the procedures and their implementation conditions, and at last states the methods of financing.

* The memorandum under date of the 16th of May, 1972, signed by the General Director of Local Communities and by the Director of Roads and Road Traffic, applies to the program of 1972; during this year Traffic Plans entered an active period after a study period in 1971. It mentions all the requirements to comply with for the presentation of the subsidy requests, for preliminary studies and for works, with a procedure in two steps:
  - first phase: Registration Application
  - second phase: Preliminary Plan Applications (one for each specific process)

* The memorandum under date of the 15th of March, 1973, renews for 1973 the implementation methods of the 1972 program and mentions the pilot applications prepared by SETRA (1) with a view toward allowing:

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(1) SETRA: National Study Office for Traffic.
a) studies
   . existing situation analysis
   . aggregate studies of traffic organization and of
     intermediate transfer
   . equipment studies
b) corresponding credits
   . studies credits
   . equipment credits.

The memorandum under date of the 8th of May, 1974, relating to
1974 and 1975 programs, concerns the communities which have to
establish their technical equipment preliminary plans. It
designates two cases:

first case: implementation of Traffic Plans in communities
    which have deposited their records before 12/1/1973

second case: preparation of the Traffic Plan records for the
    VIIth Plan (1976-1980)(1), according to the
    requirements stipulated in the interministerial
    memorandum no. 73-169 under date of the 25th of

(1) Plan de Developpement Economique et Social
   National plan for five years. Prepared by a number of ad hoc
   Commissions, approved by the Government and adopted by the Parliament.
   Instrument for the orientation of the economy, social progress, and
   modernization of the physical plant of the country. Establishes
   levels of economic production suggested and levels of public expenditure
   to guide fiscal year budgets.
   First Plan, named Monnet Plan, 1946-53 -- basic sectors;
   Second Plan, 1954-1957 -- basic action;
   Fourth Plan, 1962-1965 -- social investment and public community amenities;
   Fifth Plan, 1965-1970 -- regionalization and programming by value;
also must mention the memorandums under date of the 18th of March, 1975, the 20th of August, 1975, the 9th of August, 1976, and the 24th of August, 1976, relating to Traffic Plans.
The methods of financing.

The communities which have decided to implement a Traffic Plan receive double national aid:

* a third of the expenditure is taken over by the Secretary of Public Works;
* a third is taken over by the Home Secretary.

The expenditure taken into account relates, at one and the same time, to the studies and the equipment which are part of the framework of the preliminary aggregate studies. Some planned developments assigned to promote public transit may be credited with particular subsidies from the Secretary of Transportation (Department of Land Transport).

For your guidance, the amount of study credits is established as follows:

- about 2F/citizen for (50 cents) the registration application
- about 5F/citizen ($1.25) for preliminary plan applications

Thus, a total of about 7F/citizen for study credits are granted to communities which settled their whole Traffic Plans before 1976 and 2F/citizen to those which are now preparing their Registration Application for implementation during the VIIth Plan (1976-1980).
procedure for considering applications is made up of three essential phases.

The Registration Application and the Aggregate Studies.

a) Study credits requested by the Community。(1)

The Community, after resolution, undertakes to finance its part.

The Prefect (2) must express his opinion for this request.

b) Implementation of studies.

(1) Community (Commune)

Basic unit of municipal government. The whole national territory incorporated into one of the "communes". There is no unincorporated territory. "Communes" are administered by the municipal council, which has delerative legislative powers, and the Mayor, who has executive powers. This administrative structure, uniform for all France, is inherited from the Revolution and Napoleon. There were 37,708 communes in France in 1968. Of these, 34,450 "communes" have less than 2,000 inhabitants. The average population of all "communes", including the large cities, is 1,300. Only 37 "communes" have more than 100,000 inhabitants.

Prefect (Prefet)

Chief executive appointed by the Minister of the Interior in each "departement," on a rotation basis, acts as executive for the "Conseil general" and chief delegate of the National Government and of each minister to the department. The prefect of the department, due to its hierarchical level, has important supervisory powers over the administration of the commune ("Tutelle").

Regional Prefect (Prefet de Region)

Prefect assigned to one of the 22 "regions" in France. His responsibilities (which he has in addition to his normal duties as "prefet de departement," except for Paris Region) consists of implementing the government's policy for regional development and the objectives established by the region by the national "CGP" (National Planning Authority). He supervises and coordinates the numerous field services of the national administration, operating either on the regional or departmental level.
The Community chooses the entity which will make the studies. Then, in order to indicate the end of aggregate studies, a Registration Application is developed in which an expenditure estimation for implementation appears.

c) Sending of the Registration Application to be considered by Administration. The expenditure estimation which appears on this application does not commit the Community or the Administration. It is useful, at the national level, for fixing the total financial framework for all Traffic Plans. The resolution of the Community and the Prefect's opinion must be attached to the Registration Application.

**Equipment Studies: The "Avant - Projet Sommaire" (The Pre-Project Summary)**

a) The Pre-Project Summary (PPS) fixes in detail the nature, the number, and the location of the developments to be implemented. It also fixes the years when the different phases of work will be undertaken.

b) The PPS application goes with the Community's resolution and the Prefect's opinion, and is submitted for the Administration's approval.

It is only with the presentation of the PPS application that the Administration's subsidies are delivered.

**The "Avant - Project detaille!" (Pre-Project Detailed)**

It cannot be undertaken until the subsidies are granted.
Figure

After the Community's Resolution to undertake a Traffic Plan...
IV. THE AGGREGATE STUDIES.

THE REGISTRATION APPLICATION
A plurality of aspects incidental to the management of an urban environment must be considered.

Different measures for management of downtown roads must be developed in an aggregate manner. Users' needs, often conflicting, have to be integrated in a coherent whole, if possible. Obviously, compromises must be made. The important points are:

- to consider the plurality of aspects incidental to the management of an urban center (environment, accessibility...)
- to study without exception every transportation mode, line haul systems as well as the means of distribution from them to final destination (automobiles, mass transit, bicycle, walking)
- and to analyze the whole system of road infrastructure which provides access to and circulation within the city heart, as well as by-pass roads.

Rehensive studies of the types described above can be used to whiten the choices; these choices essentially relate to four kinds measures which will be detailed.

In practice, all these measures, considered as a whole, constitute a Comprehensive Studies Application, a kind of "purpose application" to which is attached an estimation of the expenditure required for the implementation.
First, protection of the center...

...then, promotion of access possibilities...

...at last, management of the transfer and promotion of the pedestrians comfort by creating reserved areas.
First, protection of the center.

The goal is to divert away from the center all the users in transit, and to allow those who wish to go to the center to enter it at the last moment and if possible close by their place of destination. For this, the important by-pass roads close by the city's heart and able to carry the traffic between districts must be cleared and managed.

To be adequately attractive, these important roads must be not too distant from the center. Fairly often, the management of the boulevards along the ancient ramparts of the city will insure efficient protection. If, in spite of considered organization efforts, some critical cross-roads are still congested, it is possible to have recourse to the implementation of grade separated intersections to remedy these most difficult situations.
Figure
Exclusive lane for buses.

Figure
Occupation census of parking places by air-photography.

STRASBOURG 78
Recensement du Stationnement
Taux de congestion

Figure
Parking Census - map - congestion rate.
Secondly, promotion of access to the most dense zones of the center.

While it is useful to divert the users whose final destinations are not the center, nevertheless we must allow all the others to have best possible access to the center. It is possible, thanks to the management of the access ways to the city heart.

In order to increase the capacity of these roads, it is necessary to simplify the traffic flows at the congested cross-roads, by establishing one-way traffic, for example. Such traffic management techniques results in a reduction of the number of cross-roads equipped with traffic lights.

We must also reserve lanes (and even streets) for the exclusive use of mass transit vehicles while taking into consideration the space constraints which are present in the city's center.

Moreover, the Traffic Plan study must be the occasion to undertake a real restructuring of the mass transit systems in order to increase their attraction. Finally, even if the implementation of bikeways is difficult in the older centers, nevertheless it is necessary to study the cyclist traffic, especially to insure their security.
Figure

First goal: priority given to buses.
Figure examples of dynamic equipment giving the priority to the buses at cross-roads.
Every motorized movement requires a final phase which is accomplished by walking.

Whatever the transport mode used, one of the chief contributors to the user's comfort is the reduction of the walking trip-ends. Thus, it is appropriate to study with care the location of mass transit stops in order to serve the most attractive zones of the city center. It is fitting too, to study in the aggregate the parking problem. The activity level of the center is closely related to the ease with which shopping, visits, business appointments, etc. can be assessed. This demands that parking places, to be best located with regard to the center, must be occupied all day by working people. The "blue zone"(1) has not been the efficient means it was hoped to be in most cities. Consequently, we have recourse to paid parking which speeds up the vehicles turn around. However, the regulatory measures and the parking rates do not exclude necessity for studying the creation of parking lots. Moreover the aim is to coordinate the respective costs of parking in lots and paid parking on the roadway in order to clear to a maximum this roadway.

Finally, we must not forget bike-parking, for which a study can reveal useful locations in the center city.

Special traffic signal which limits the parking-time.
Figure cross-roads management
5. The improvement of the pedestrians' security and comfort.

Pedestrian safety is an objective which must be pursued at every point of the city by the institution of specific measures at the cross-roads (marked crossing on the pavement, underground passages, etc.) and along the roadway (widened sidewalks as far as possible). However, in the most attractive points of the city center, the importance of the pedestrians number generally justifies the reservation of one or several streets for their sole use. This measure has as a consequence not only the improvement of the security of person's movements but also the reduction of noise and pollution and the showing of the architectural richness of the center at an advantage.

The reservation of streets or places for pedestrians may be progressive and the pedestrian-only area more or less important. In the case of a broad reserved domain, the penetration of this domain by mass transit systems must be studied.
Reservation of part of a roadway for pedestrians...

...in the most attractive parts of the city center...

...in order to show the architectural richness to advantage.
The organization alternatives for the private vehicle and mass transit traffic.

At the end of the first studies, we generally succeed in identifying several alternatives which more or less meet each of these four objectives. Then, the steps are articulated as follows:

1. Examination of all the possible alternatives, especially of the organization alternatives of one-way roads, of traffic regulation, and of every measure assigned to improve the traffic-flows.

2. Comparative study of these alternatives, employing a systematic comparison of pertinent indicators relating to the roads' capacity, the anticipated security improvements, noise reduction, etc.

3. Then, selection of a solution judged acceptable.

4. Finally, thorough study of the selected alternative, with precise indication of the measures taken in the matter of cross-roads management (critical and congested cross-roads), of security provisions and of pedestrian zone management.
Figure
Comparison of two alternatives for a one-way system.
V. THE FUNCTIONAL COMPONENTS OF IMPLEMENTATION

THE P.P.S. APPLICATION
Implementation falls into three categories of functional components.

Placed in this aggregate framework, the programs selected by the Traffic Plan may be then progressively implemented without risk of incoherence. But we must not forget that the location studies must be carefully realized, because a Traffic Plan is judged on the basis of the quality of the implementation.

Implementation is classified by functional components grouped into three categories (cf figure):

-- components which improve vehicle flow (components A)
-- components which improve transfer points and trip-ends (components B)
-- components which improve road security (components C)
The Functional Components of Implementation

A. TRAFFIC

horizontal signalization
vertical signalization
Regulation

B. TRANSFER

Parking
Steps
Delivery

C. SECURITY

Emergency Posts
Lighting
Anti-skid treatments
Separation
Traffic flow improvements.

2.1 Cross-roads management

The quality of cross-roads management has a strong impact on the traffic flow. In certain cases, the management can involve an entire reorganization of a congested place. Environmental concerns (different colored pavements, plantings, lighting...) must not be neglected in the preoccupation with improvement of traffic flows.

2.2 Horizontal signalization

The pavement marking is very useful. It is indispensable for the creation of exclusive lanes for buses. But generally, it is also a better guide for street users, presignals lane changes and clearly delimits parking zones or forbidden stops. This kind of signalization is used very infrequently in the United States for traffic flow management.

2.3 Vertical signalization

The presignalization of the most important choice points must be especially reinforced. Signs directing motorists to tourist sites or other areas of local interest should be given special attention.

2.4 Traffic regulation

Timed traffic lights allow motorists to gain precious time, especially during the off-peak hours. A centralized system of traffic lights with computer control is generally the means of implementing traffic regulations. But very often, in an initial period, the implementation of simple coordination mechanisms is adequate and can be very efficient.
Figure
Horizontal signalization at a cross-road.

Figure
Horizontal signalization which improves pedestrian's security.
Figure  Vertical and horizontal signalization
Figure: Timed traffic lights plan with an indication of the green time at each intersection.
3. TRANSFER MANAGEMENT

3.1 Parking on roadway

The authorized parking areas must be precisely delineated. Clear markings of parking regulations allow the roadway aid compliance.

Figure: example of a precise delineation of authorized, regimented and toll parking areas.

3.2 Public transportation stops

The design of the main stopping points permitting the bus to pull partially out of the flow of traffic makes bus driving easier and helps to release them from the traffic congestion. The bus always has the right of way when re-entering the traffic flow. Implementation of this type of bus stop appreciated by bus riders too.
FIGURE  

Bus Stop... Very appreciated by bus riders
Pedestrian areas

The domains reserved for pedestrians provide opportunity for quality treatments: colored pavement, floral management, street furniture, lighting, music... which contribute to the creation of a welcoming setting.
Delivery points

Under the management of special parking lots, on the edges of retail areas, and in particular dense zones, the techniques of regrouping retail deliveries into smaller containers which can be transported to stores in the area in smaller trucks. These techniques offer numerous advantages. The management of specially equipped unloading points must be provided. Deliveries can also be organized in the rear of the stores in the case of centers reserved for pedestrians.
Security

For reference:
- Emergency posts
- Lighting
- Anti-skid treatments
- Separation
Figure  Model of Emergency call post

Figure  Model of Auxiliary first-aid post
Figure  Separation of the traffic flow for a better security.
VI. CONCLUSION: CONDITIONS FOR A SUCCESSFUL TRAFFIC PLAN
dependent of all these technical preoccupations, the success of a Traffic Plan depends on the attention given to three crucial factors.

First, the elected officials have a fundamental part to play.

* The political will is certainly the prime condition for success. The elected officials are supposed to know the cities very well. They know, in particular, better than anyone, how to appreciate, with the right value, the opportunities to put this or that equipment into service, or the adoption of this or that regulatory measure. We must not forget that, even if the research and calculation phases fall to the technician by right, finally the elected officials decide.

* The elected officials' role is also to know how to moderate some sort of resistance that the decision to establish a Traffic Plan can induce. In fact, the population must be convinced to have patience until the beneficial effects of the adopted measures clearly appear.

* At last, it is the elected officials too that intervene and speak to the population; their duty is to inform the citizens by clearly explaining to them the nature of the improvements that the Plan can bring.
Then, it is necessary to inform the users.

the decisions made by the elected officials until the last efficiency
controls of the Traffic Plan are implemented, the user must be widely and
objectively informed of the actions undertaken in the city.

For example, in Rouen (N.W. France on the Seine), the plan for the
traffic organization has been implemented in three steps and progressively,
more and more streets have been reserved for pedestrians. Before every
step, information was widely disseminated to the citizens through the medium
of the local press. Collaboration with the reporters was particularly
profitable and has permitted among other things:

to inform the citizens of the Municipal Committee decisions

to avoid the indignation of a population reacting to a fait accompli

which they had no participation

to bring to everybody very profitable lessons in urbanism

Several articles have been published in the newspapers with illustrations
and photo-montage of very good quality that have produced a good under-
standing among the population of the Plan.

Elected officials never had to complain about the information given
the press. Moreover it seems that, reciprocally, the reporters have
very interested by the procedure, from which they reaped a benefit
Last, efficiency controls are indispensable. Implementation of a Traffic Plan must be accompanied by a serious control of the efficiency of the recommended measures. An efficiency evaluation allows us to check the positive character of the Plan, and, if it is still possible, to improve again some of the adopted measures. Generally, this evaluation is related to three essential points:

- the traffic fluidity: measurement of the vehicles speed - measurement of waiting time at cross-roads. These measurements are made by counting or by air photography.

- the security: statistical measurement of the accidents after the implementation of the Plan.

- the environmental conditions: measurement of the noise, of the atmospheric pollution.

For example, in Rouen, we have measured vehicular speed after the implementation of a one way system on the bridges over the Seine. We have stated that, with good timed light coordination, 300,000 hours per year during the peak hours and 300,000 hours per year during the off-peak hours have been saved. This economy represents about six time the cost of the public works and we can consider that the operation was profitable after two months.

The merits of the adopted measures are also undeniable in matters of security: we have observed a diminution of 30 percent in accidents.

At the beginning of the operation, we were met with animosity and mistrust by the center retailers.

A Defense Committee was created. But the mistrust became enthusiasm and the Defense Committee was called the Animation Committee.
Traffic Plans, born in 1971, are implemented now in more than 200 cities more than 20,000 inhabitants. Conceived with the intention of making the urban traffic, pleasant and giving again to the citizens a better environment for living, the Traffic Plans have received a favorable welcome from the public. Very important effects have been produced in the area of pedestrian zones. This technique is very promising and attractive and the beneficial character of the experiences in cities where the Plans have been implemented are inducing more and more cities to act.