2779

BUSWAY -

UN MODÈLE POUR L'EXPLOITATION DES AUTOBUS ET TRAMWAYS

PAR

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CONTENTS :

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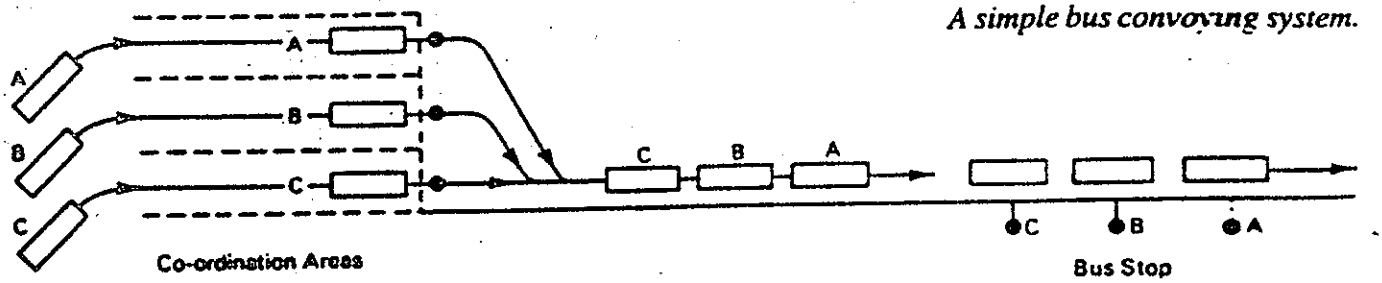
BUSWAY

Simulation model to :

* DESIGN BUSWAYS
* DESIGN TRAMWAYS
* COMPARE BUSWAYS + TRAMWAYS



A simple bus convoying system.

WIDE AVENUES, DENSE CORRIDORS

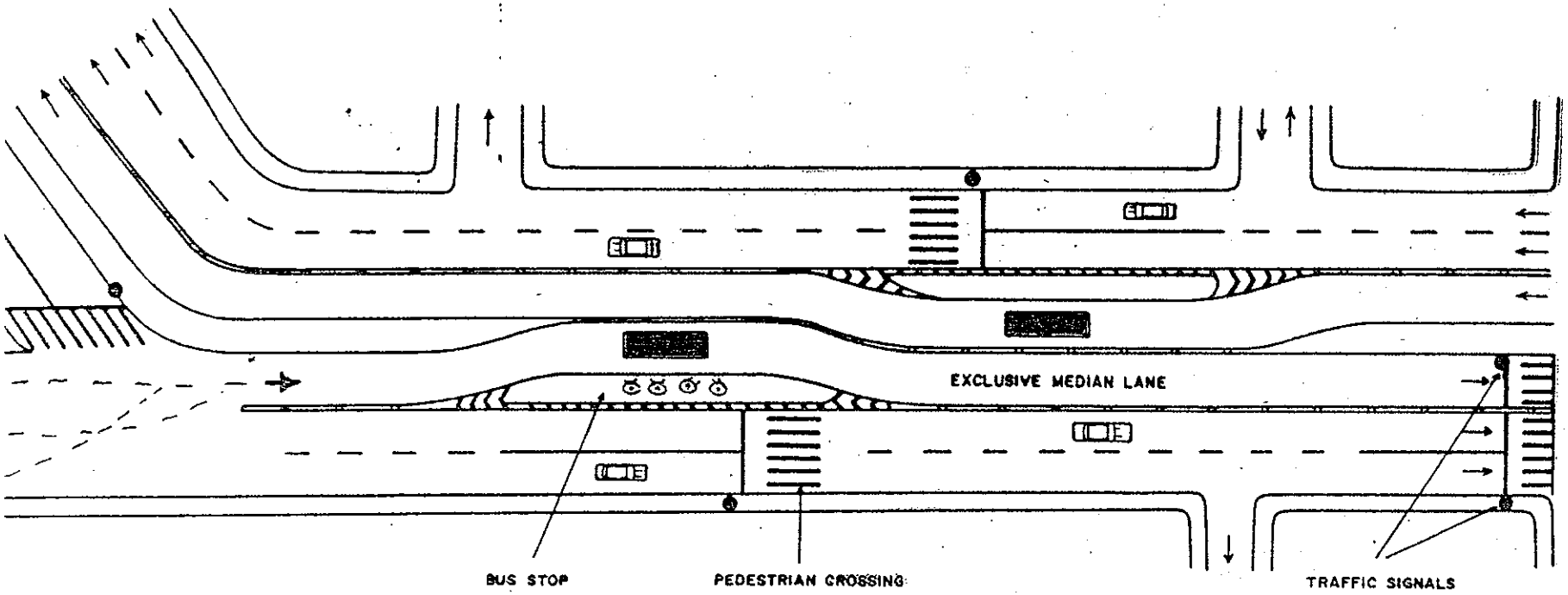
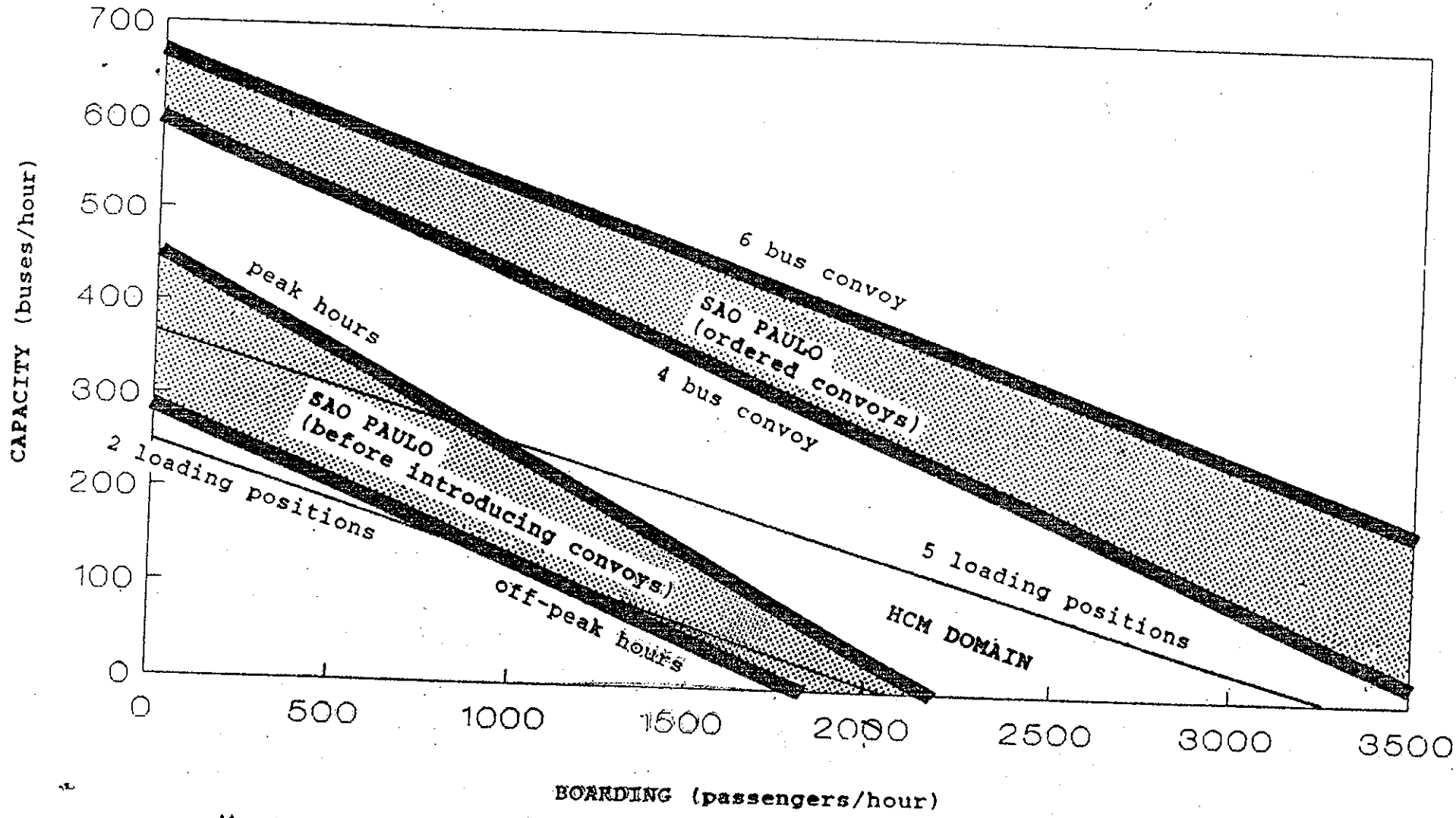


FIG. 1 - A TYPICAL MEDIAN BUS LANE OF A BRAZILIAN CORRIDOR.

EXAMPLES IN BRAZIL:

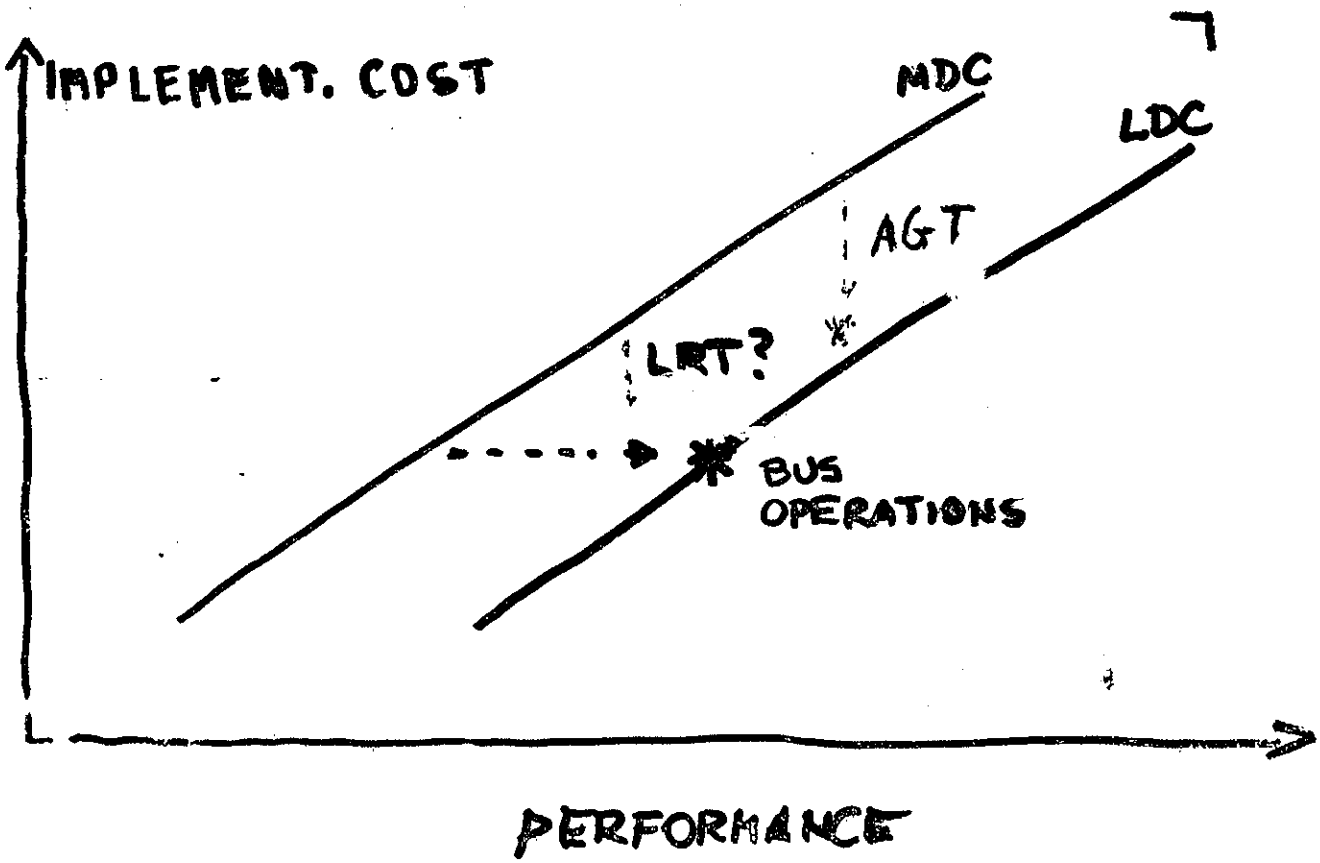
PORTO ALEGRE, CURITIBA, SÃO PAULO, GOIANIA, RECIFE

AS FUNCTION OF **BOARDING**



HCM: HIGHWAY CAPACITY MANUAL, USA (1985)

SÃO PAULO: COMPANHIA ENGENHARIA TRÁFEGO, BRASIL (1979)


IMPLEMENT. COST
MDC
LDC
AGT
LRT?
BUS
OPERATIONS
PERFORMANCE

FACTS :

- METROS ARE EXPENSIVE

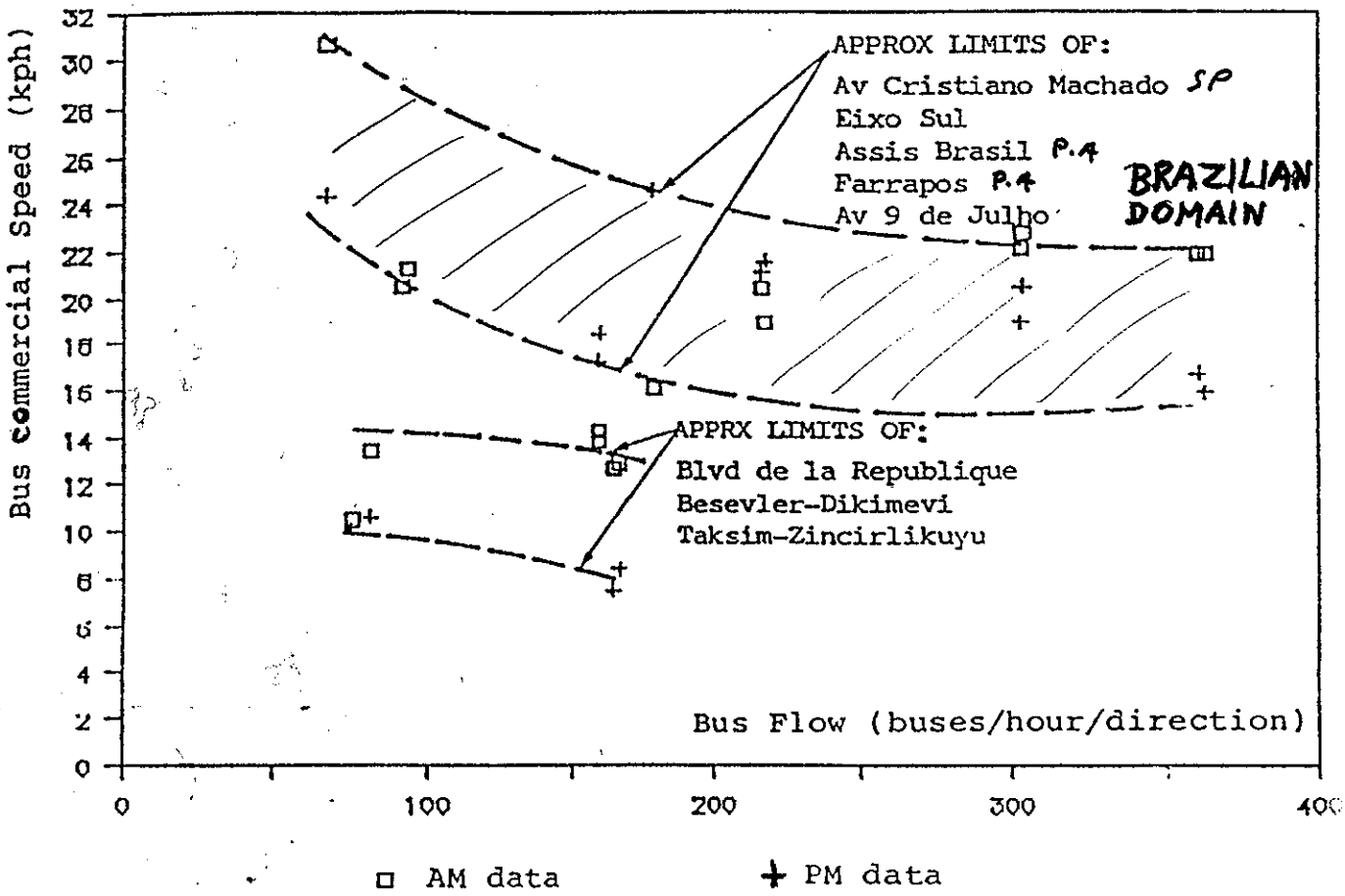
- NOT MANY CORRIDORS REQUIRE METROS CAPABLE OF TAKING UP TO 50.000 pass/h/dir.

THE CASE FOR BUSWAYS :

- 'BUSES' ARE WELL-KNOWN

- THERE IS GOOD SCOPE FOR CHEAPER-THAN-METROS TECHNOLOGIES THAT CAN TRANSPORT UP TO 30.000 pass/h/direc.

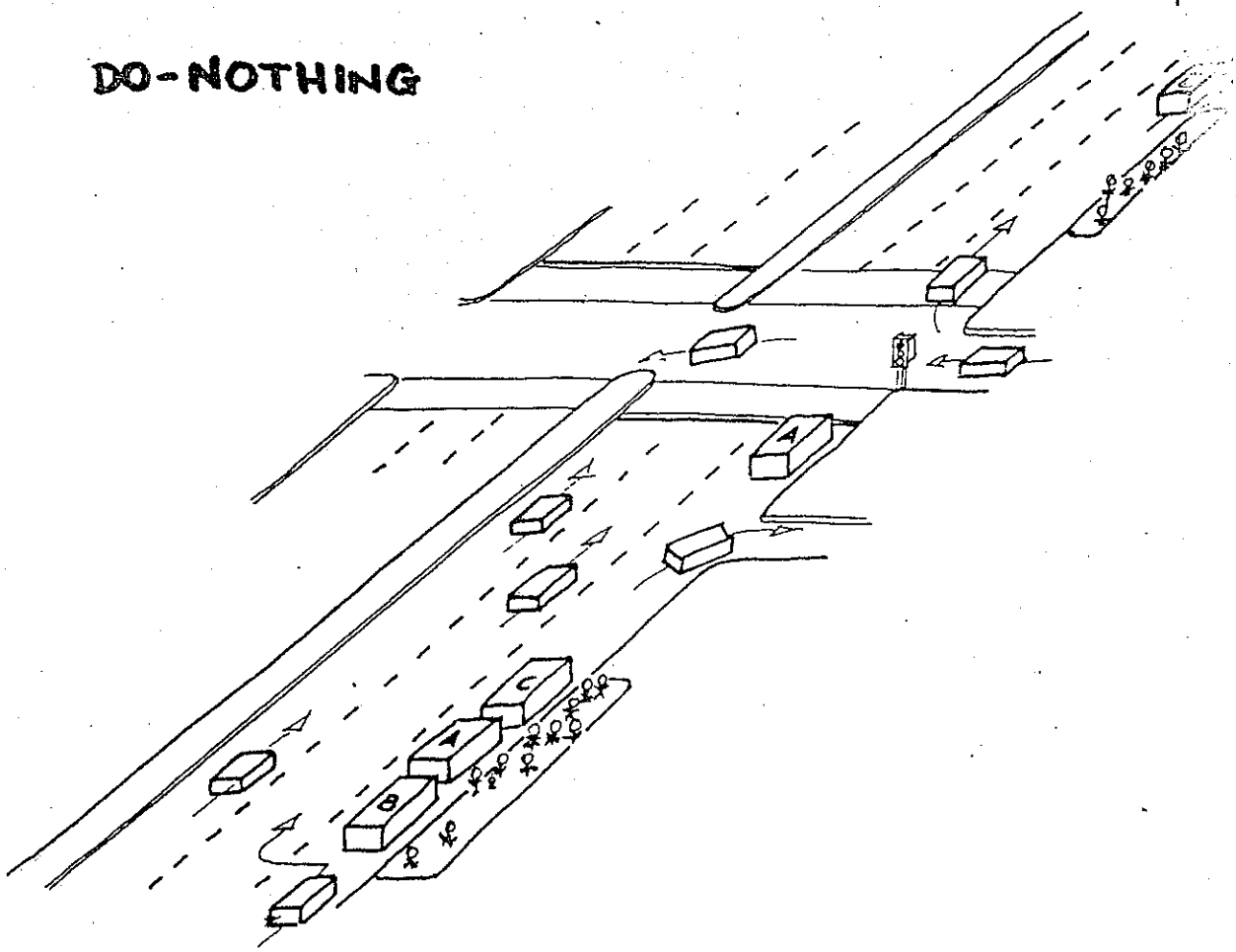
RELATIONSHIP BETWEEN AVERAGE BUS COMMERCIAL SPEED AND BUS FLOW



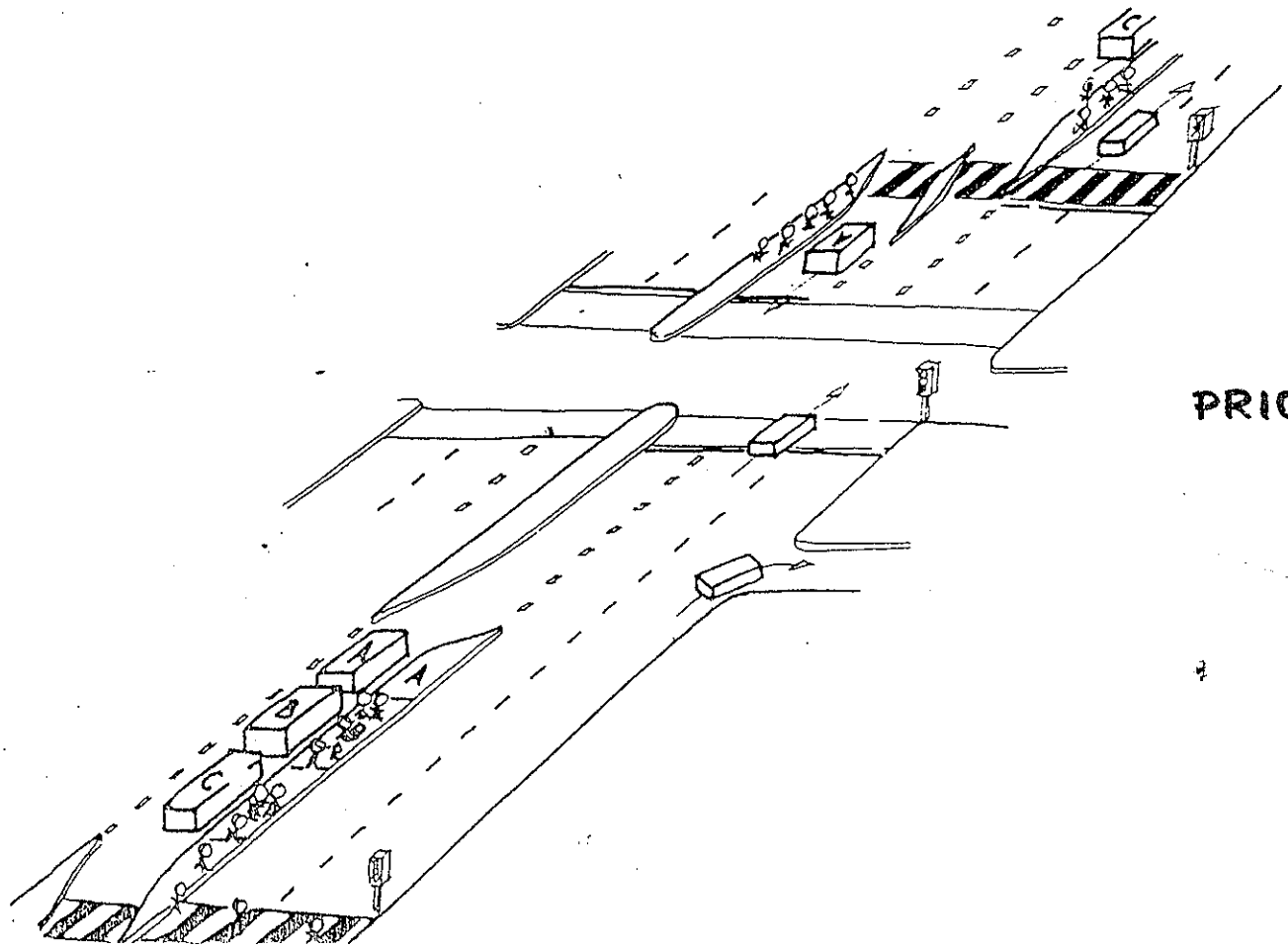
	pass./peak hour/direction	speeds (km/h)	relative costs
BUSWAY	20-25.000	20	1 X
TRAMWAY	< 15.000	15	6 X

EXISTING SYSTEMS

DO-NOTHING



PRIORITY



DESIGN ELEMENTS

layout
location

PEDESTRIAN
CROSSINGS

INTERSECTIONS

BUS
STOPS

BUSWAY

FEATURES :

* MICROSCOPIC MODEL
  every bus/tram

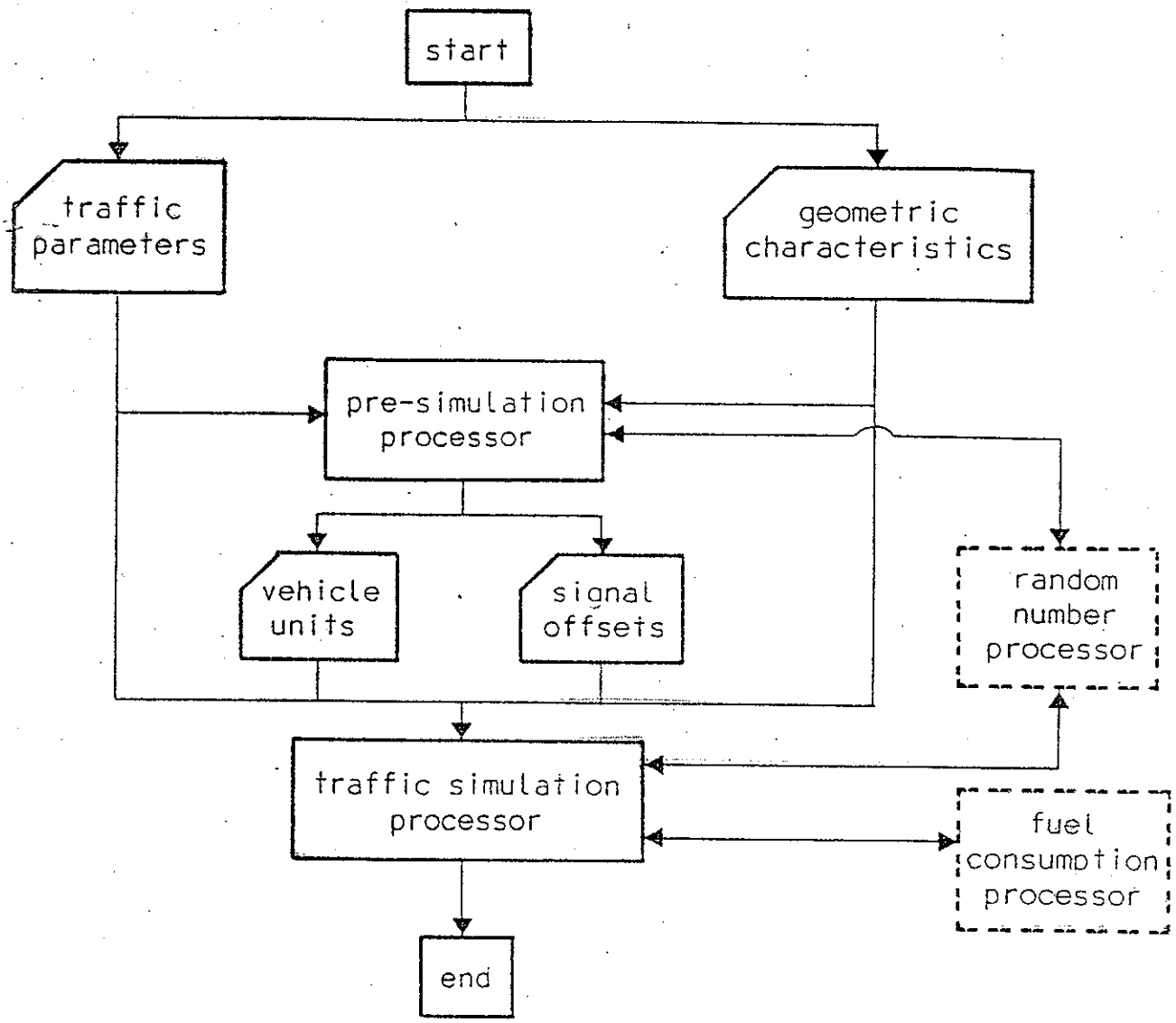
* MICROCOMPUTER IBM-PC LIKE
  AT, 386, etc

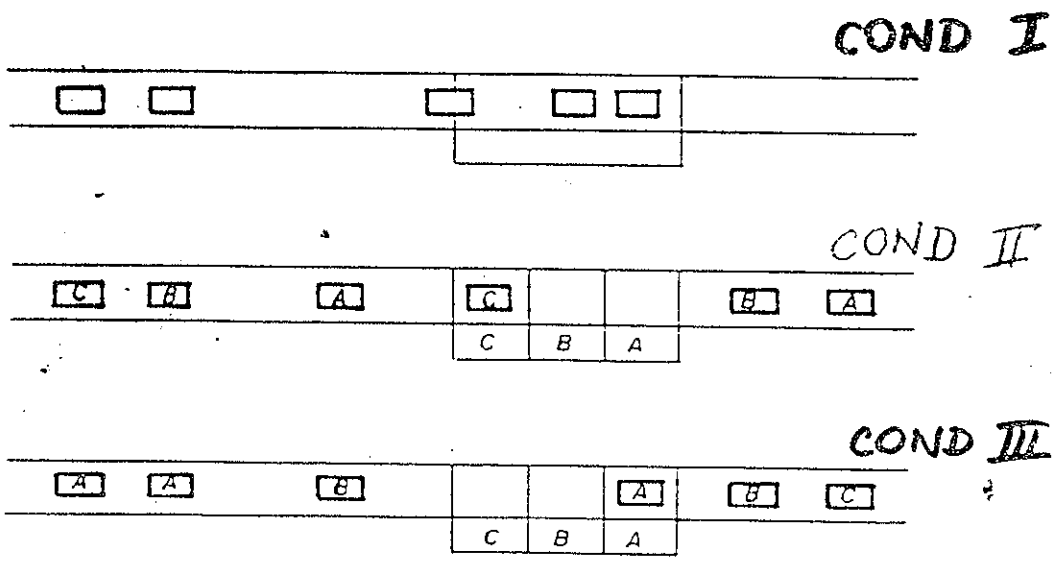
* FRIENDLY USE
  screens for :

  - INSERT DATA
  - FOLLOW VEHICLE PROGRESSION
  - CHECK PROGRESSION

* WRITTEN IN 'FORTRAN' & 'C'

BUSWAY model





BUSWAY

data input :

- simulation time
- length of busway, position of stops & signals
- cycle times and phases
- offsets
- input flows
- convoy settings
- initial accelerations, desired speeds, stopping distances (distributions)
- length of vehicles
- operation at passenger stops
- boarding times, dead times at stops
  [overtaking at stops]
- random speeds (aléatoire)
- data output requirements

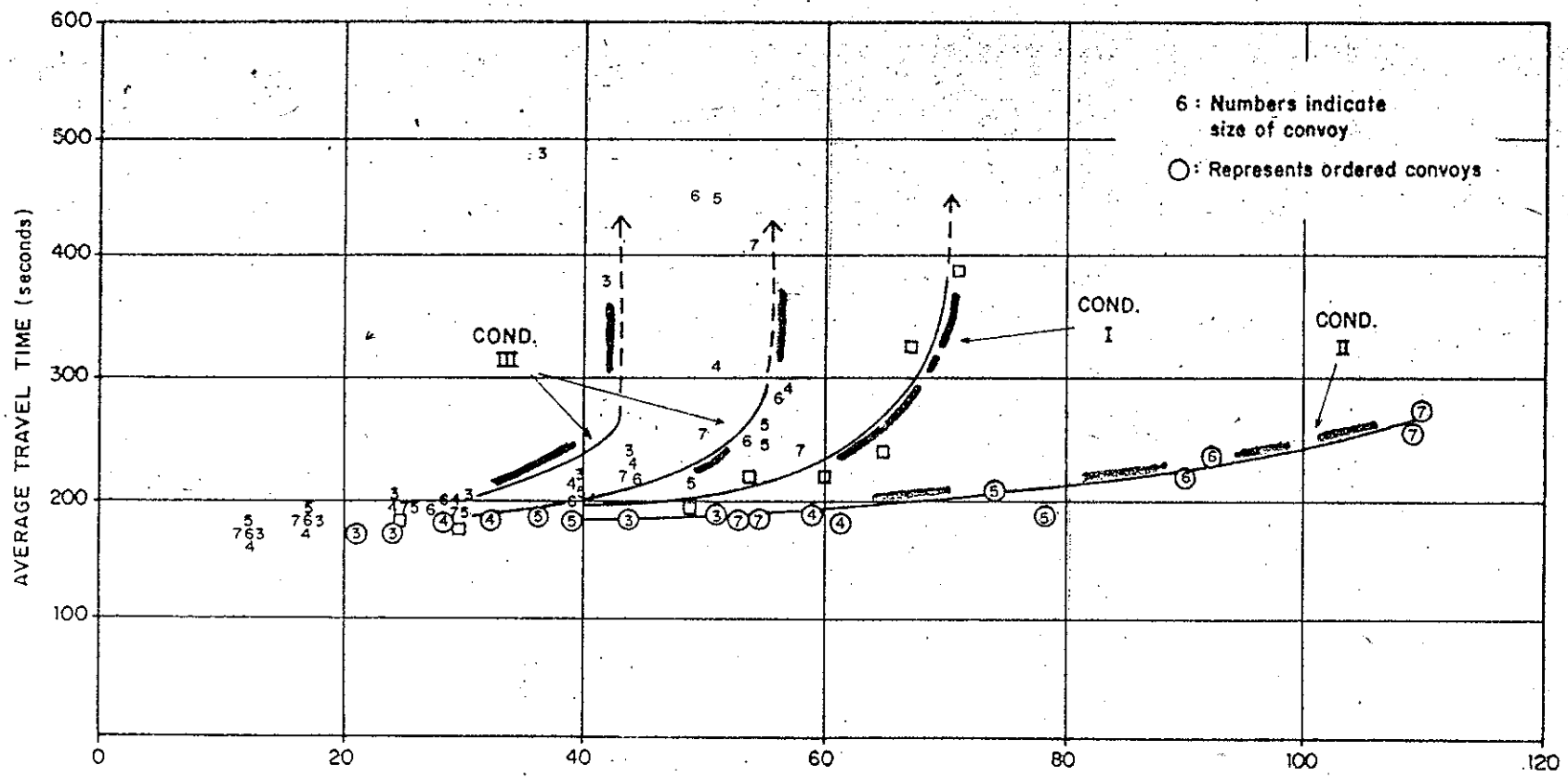


FIG. 4 - SIBULA RESULTS (BUSES).

Alternative Design of Busways

CONVOYS

vs.

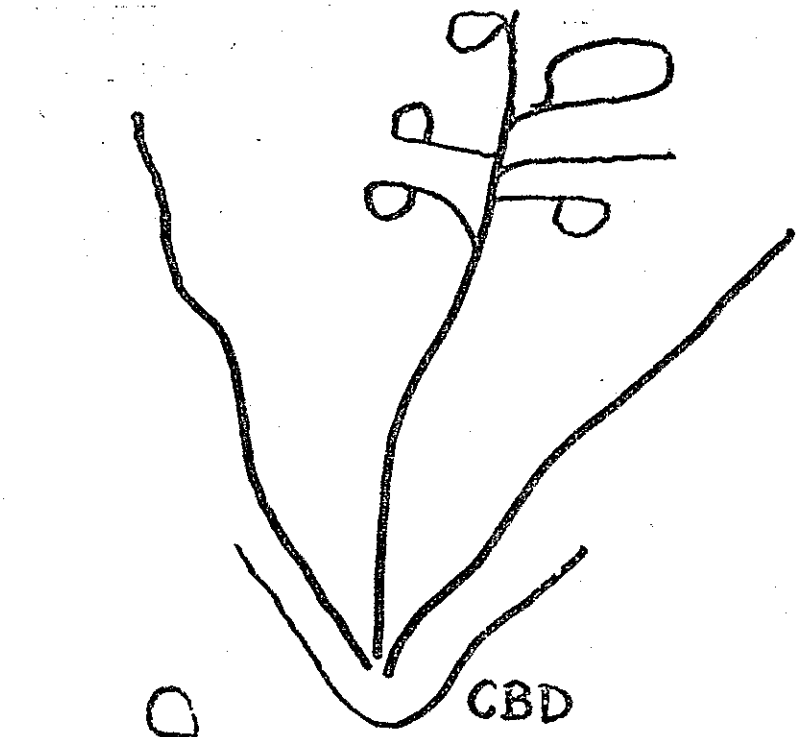
NO - CONVOYS

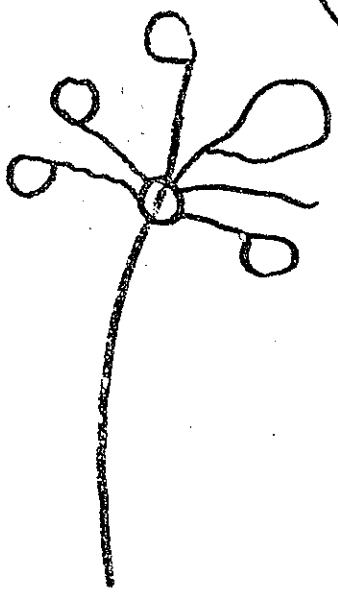
vs.

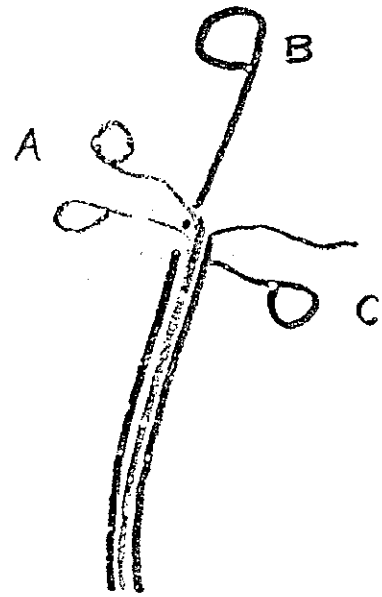
TRUNK AND FEEDING

vs

BUS OVERTAKING AT STOPS
(3 to 4 lane Busway)







TRUNK
+
FEEDING
⇓
INTERCHANGE

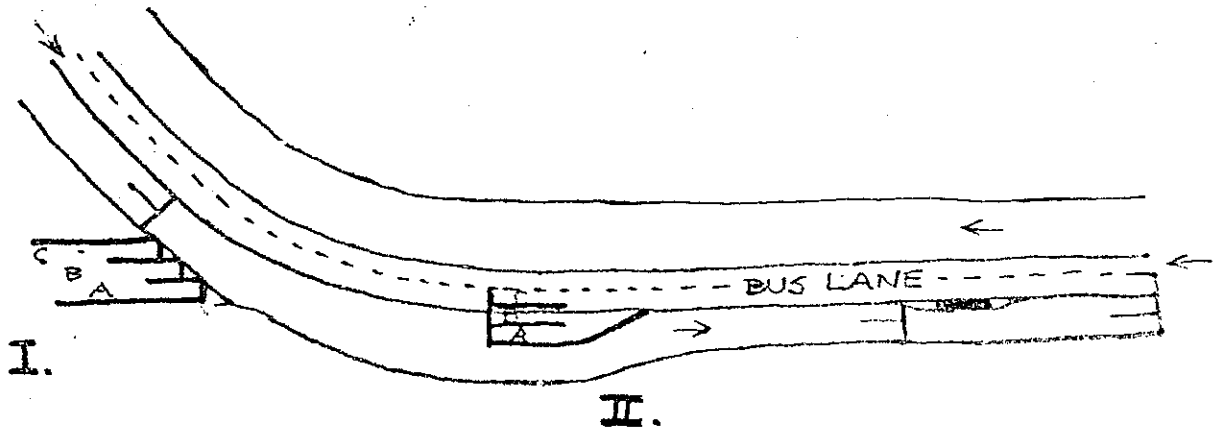
A
B
C
⇓
CONVOYS

interchange delay
+
running time

TRAVEL TIME

convoy setting delay
+
running time

CONVOY SETTING
(location & rules)



I. from side road

off peak : • first in first out at green (no convoy)

peak : • full convoys at green
• incomplete/full convoys at green

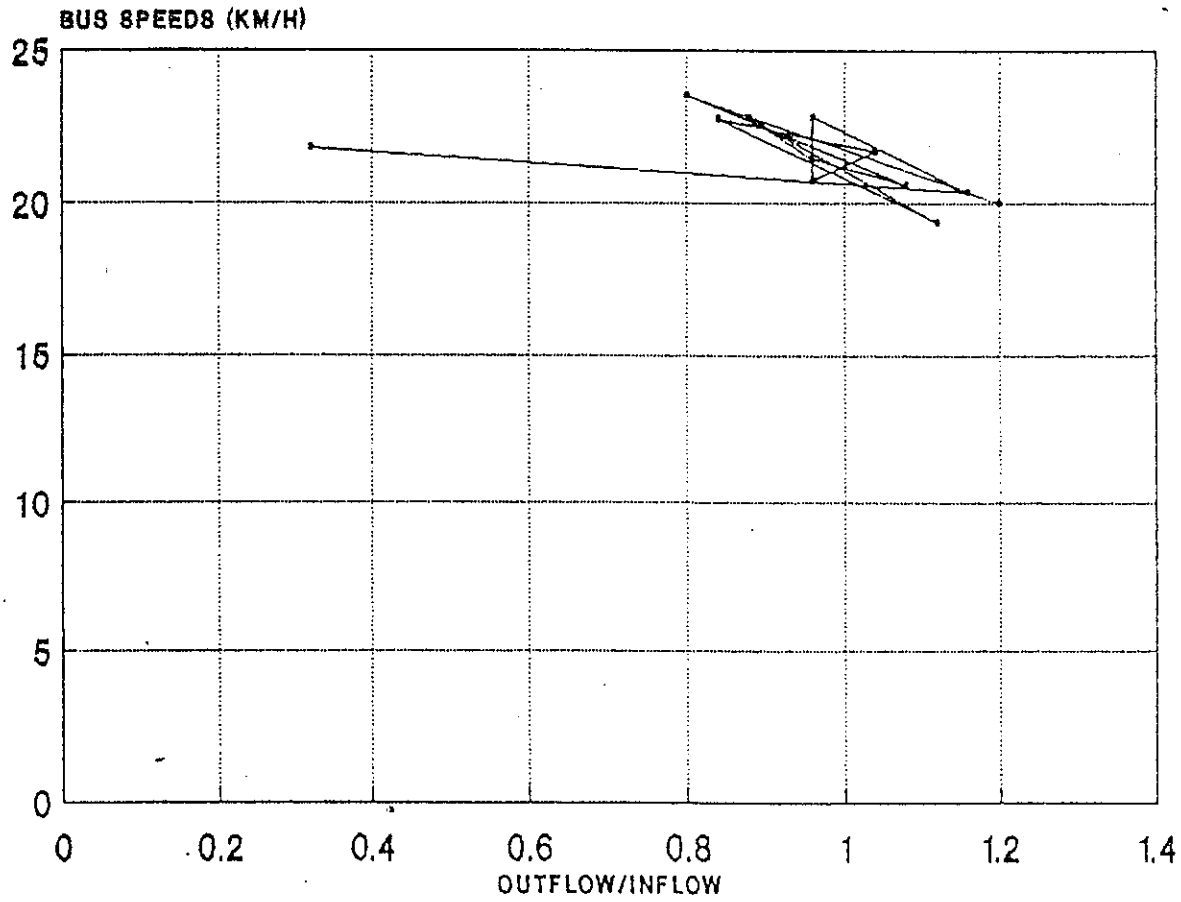
II. along main road

off-peak : • first in first out (no convoy)

peak : • full convoys
• incomplete/full convoys at maximum delay/maximum queue

NO CONVOY, NO INITIAL DELAYS

AV.SPEE= 21.3(KM/H), SD.SPEE= 6.9(KM/H)
H.FLOW = 300. (B/H), EXCLUD.= 0.(S)



4 buses being simultan. attended at stops, constant boarding time for all buses

CONVOY, ONLY WHEN FULL

AV.SPEE= 12.9(KM/H), SD.SPEE= 4.6(KM/H)
H.FLOW = 498. (B/H), EXCLUD.= 0.(S)