General Causes of tfc Related Problems

External factors (geometric factors)

road intersection/junction
railway crossing
narrow road/br/culverts
inconsistent rdway width
poor turning radius
side friction : *scattered parking, rd side NM activities, frequent access, illegal or improper bus stop / parking, uncoordinated public wk etc.*
poor rdway environment : *poor rd discipline, uncontrolled ped crossing, poor rd surface condition, speed breaker, poor sight dist, poor lighting, poor drainage facilities etc.*

Internal factors

heterogeneous tfc stream
high vol of tfc

Possible Approaches to Solve Tn Prob

- Investment on new highway projects.
- Traffic system management (TSM) which include supply and demand managements

Traffic system management (TSM)

- **Traffic system management (TSM)** is the pseudo science of optimizing output (ensure safety, improve overall roadway capacity and environmental condition) of existing facilities through improved management, improved technology and operation of traffic, vehicles and the roadway, without any significant investments.
- Effective management reduces fuel consumptions, congestions and emissions by idling vehicles.
- **TSM includes both supply side management and demand side management**.

Supply Management Measures

- Supply management measures (managing transportation supply) deals with transportation facilities and operation to improve the roadway capacity, safety and aesthetic.

- Supply management techniques or measures include
  - physical measures
    - Low cost measures
    - Expensive measures
  - regulatory measures and
  - technological measures.

- All these measures can significantly increase the roadway capacity but their implementation need a well planned and well developed road network, corruption free, efficient and committed policy makers and executives and above all healthy financial back up and mass people participation.

Low Cost Physical Supply Management Measures

- ✓ correcting/improving roadway geometry and surface condition
- ✓ channelization
- ✓ flaring
- ✓ exclusive lane marking
- ✓ provision of improved signs
- ✓ introduction of median barrier
- ✓ pedestrian guard rail
- ✓ controlled road crossing,
- ✓ street lighting,
- ✓ improved traffic control system
- ✓ traffic calming measures
- ✓ bus lay by etc.

Expensive Physical Supply Management Measures

- ✓ widening of intersection/ junctions
- ✓ grade separation at junctions/level crossing, segregated transit facilities as elevated bus way, underground rail
- ✓ pedestrianisation /pedestrian mall
- ✓ construction of new links/road
- ✓ construction of off street parking lots
- ✓ construction of terminals etc.

Regulatory Supply Management Measures

- provision of clear ways
- banning right or U turn
- entry restriction for particular vehicle to city center
- access control from side roads
- banning/restricting freight vehicle
- one way operation
- tidal flow operation
- parking control
- use of terminal facilities
- restriction over speed, weight, overtaking
- provision of auto free zone etc.

Technological Supply Management Measures

- Int/automated highway/veh
- Advance tfc info system
  - Dvr- route guidance/navgation system
  - Users- uptodate travel info system
- Advance tfc control and mgt system
  - Use of VMS or dynamic sign
  - Auto surveillance system
  - Active marking/headlight
  - Adaptive tfc signal control

Implementation of various technological measures demands for modern information infrastructure, monitoring system, modern equipment and efficient technical personnel

Transportation Demand Management (TDM)

TDM measures that result in more efficient use of existing roadway capacity can support economic, social and environmental objectives simultaneously, by increasing overall transport system efficiency, reducing congestion and improving access at lower cost to society.

TDM measures consist of restrictive measures and strategic measures.

Restrictive measures

- ✓fiscal measures as road pricing, increasing fuel price/tax
- ✓parking control
- ✓control over vehicle ownership etc.
- ✓***Access control***
- ✓***Turning control***

Strategic measures

- ✓ increasing vehicle occupancy
- ✓ providing improved alternatives modes
- ✓ introducing staggered/ flexible office hours
- ✓ strict land use planning and control
- ✓ introducing one stop services
- ✓ using improved telecommunication and IT facilities
- ✓ introducing IT enabled services etc.
- ✓ Tidal flow operation

Parking Management

Parking to be Prohibited at:

Intersection
Narrow street
Driveway
Ped crossing
Hor curvature and Ver grade
Br and tunnels
Heavy ped concentration areas
Priority locations etc.

Benefits of Parking Control:

Obj of Strict Parking Control:

- ✓ Reduce side frictions
- ✓ Bring rd way discipline and parking culture
- ✓ Use rd space more efficiently and increase productivity
- ✓ Encourage mass public tpt system
- ✓ Encourage use of bicycle
- ✓ Improve safety, reduce congestion

Ways of Parking Control:

- ✓ Parking prohibition policy
- ✓ Parking charge
- ✓ Duration of parking time

Park and Ride facility:

It is traffic control system in which motorists are encouraged /sometimes forced to park their car at selected locations usually at the periphery of the central area and then use the public tpt to travel to their destination and come back again.
It is very effective for large city.
It has potential to make public tpt popular, to rdiuce dmd for parking space, to reduce traffic volume