

A STUDY ON PARKING MANAGEMENT IN ANANTAPUR TOWN

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Abstract: Parking management suggests diverse policies and experiences that results in more skilful utilization of parking resources. The parking management strategies are genuinely conceivable, ordinary, and can give various tendencies to customers and affiliations. Current parking planning practices are inefficient, achieving fiscally extraordinary parking deftly, extended vehicle traffic, and more scattered complaints, adding to various money related, social and natural issues. It investigates issues with stream parking, discusses the parking structures in Anantapur, costs of going home conditions and likely hold assets from improved affiliation, and defuses specific advanced improvement systems to leave more vehicles in less space and to lessen parking charges. Thusly, it is fundamental to comprehend the Parking choice lead and veritable interest of parking space. Over the latest thirty years, test considers have been done to evaluate parking properties, to measure the interest for Parking and on drivers nearby while picking the parking space. Financially sharp parking the heads attempts can all things considered decrease Parking necessities by 20% -40% isolated and standard arranging essentials giving distinctive money related, social and fundamental tendencies.

Index Terms - Transportation Engineering, Parking characteristics, Parking choice behaviour, Planning and management, Parking demand and capacity.

I. INTRODUCTION

Parking is an essential piece of the transportation system. A standard vehicle is left 23 hours dependably and uses a few parking spaces each week. Parking solace impacts the simplicity of showing up at battles and consequently impacts everything pondered straightforwardness.

Parking workplaces are essential cost to society, and Parking conflicts are among most standard issues facing originators, bosses, facilitators and various masters. Such issues can be portrayed either noticing deftly or to the degree the board.

Parking management proposes approaches and attempts that results in more skilful utilization of parking resources. Parking management entwines a few express techniques. Exactly when reasonably applied closure the board can be generally decreasing the proportion of parking spaces required in a particular situation, giving a grouping of money related and common central focuses. The endeavour objective are to draw in capable usage of Parking workplaces, ensure that Parking is useful for need uses and keep up Parking use at about 85%.

Voluminous appraisals have been done on Parking demands models for different conditions and various states of different metropolitan associations on the planet having planned closure social credits. The most overall saw things that have been met in the most appraisals are the expense of parking other than have been connected with this paper.

Every person who has a vehicle needs a space for parking .As the proportion of vehicles makes, need of space for parking increments. As showed up by the Ministry of Road Transport and Highways (MORT&H), India (2019), there is attempting movement in motor vehicle people of essentially 400% from 55 million of each 2001 to 253 million out of 2019 in India. From this time forward, it makes a crucial while masterminding each infrastructure.

II. PARKING SYSTEMS

2.1 On street Parking:

The word really addresses itself .On street parking initiates parking your vehicle in the city, any spot on or along the control of Streets, rather than parking it in a parking structure. In unequivocal streets you can for the most part leave your vehicle in the city, yet now and again there are objectives.

2.2 Off street Parking:

Off street parking means parking your vehicle any spot snacked in the city. These are for the most part parking workplaces like parking spaces and lots. Off street parking relatively included private parts, parking spaces and carports.

III. TYPES OF PARKING SYSTEMS

3.1 Parallel parking:

Parallel parking construes parking your vehicle as per various vehicles relating to the control, front gatekeeper to the back guard. Parallel parking when in doubt occurs for streets where there are no completion working conditions, since it leaves

acceptable space for the traffic to pass. Parallel is a test to unequivocal people, since it requires a particular technique not equivalent to pulverizing direct into a parking space.

3.2 Perpendicular parking:

Perpendicular vehicle parking suggests parking the vehicles one close to the accompanying perpendicular to a divider, control or some extraordinary alternative based on what's ordinary. You see such a parking for the most part in Parking Bays and garages, since you can leave various vehicles on confined space.

3.3 Angle parking:

Angle parking looks like perpendicular parking, close to the vehicles are changed in angle. Generally the fact of the matter is agreed with the bearing vehicles approach the parking space. It makes it without a doubt easier to drive into parking space is at a 90 degree angle. It is less difficult to stop, yet then again it's speedier and the parking spaces are more unassuming, making it possible to add likewise parking spaces in an essentially same size zone.

3.4 Double parking:

Double parking deduces that someone has left their vehicle considering a particular objective that shields another vehicle from pulling out. Double Parking can happen in different condition.

3.5 Double parking on street:

Such a double Parking is unlawful and you can get fined for it. Double parking on street infers that you leave your vehicle diverging from a vehicle that is left near the curb. Stunningly, double parking on street is particularly standard in more conspicuous metropolitan cities.

3.6 Double parking in parking garages with attendees:

In this condition, double is used to have the decision to leave regardless different vehicles as would be reasonable in the parking lots. It's a disturbing situation then again with on street, considering the way that in this condition the vehicles are left by people or valets.

IV. Methods of Payments for Parking's:

The fundamental Parking meters just apparent coins. Not with standing other portion choices are urged to a reliably developing degree. The disadvantage of paying with cash, is that you in general need to pass on save change with you. Another disadvantage is that you have to pick the degree of time you have to stop early.

4.1 Park by Disk:

On unequivocal spots where a closure time limit is set, exceptionally far is checked with the use of parking disks. The Owner of the vehicle that is left, uses this disk to show when he left his vehicle.

4.2 Pay by Coupon:

Coupon parking is a blend of disk parking pay and display parking. The vehicle owner necessities to purchase a book with coupons early. Right when he stops on a parking space with a period limit, he needs to tear coupons and fill the current date and time. By then he puts it on his dashboard so execution officers can see what time he has left the vehicle.

4.3 Pay by Phone:

This is such a parking advancement that attracts a customer to pay using a telephone or versatile application. The pay by a cell phone provider perils the customer for parking charges and reimburses the parking operator. Support experts audit by objecting to the web data bases for laid plate.

4.4 Extend by Phone:

This is used identified with pay by phone and meters to allow parkers to add time to their parking social events through phone. Conventionally, the meter will send a text message to the parker that his time will end. Parkers can add time by prompting back.

4.5 Pay by Plate:

Pay by plate is such a parking improvement that requires the customer to pay at an association authority station early. The customer enters his name number at the station and makes the spot. Fundamental position's audit by checking the remuneration station or going on the web to see a list of license plates marked as paid.

4.6 Paid by Space:

This Parking improvement requires the customer to pay at a remuneration station early. The customer picks his parking space area at a station and makes the spot. Usage pros concentrate by checking the remuneration station for a list of paid spaces.

4.7 Pay on Entry:

Pay on entry is system game-plan where the customers pays for Parking as he enters the facility. It is dependably used for events for Parking compensation on entry Systems can also be used to have customers pay a store band get some pattern of that money back on exit if there is other than one rate essentially at given time.

4.8 Pay on Foot:

Pay on foot requires a customer to pay for Parking at a pay station preceding entering the facility. Customers install their tickets into a machine and make segments and the machine re-establishes their tickets.

4.9 Pay On Exit:

This is any type of system plan where the customer pays in way while parking the facility. The spot may be made to a representative or use credit card segment at the leave way.

I. Advantages and disadvantages of parking:**Advantages.**

1. Provide for security, improvement and upgrading necessities
2. Obliges security, improvement and changing necessities at picked events while obliging completion at various events
3. All around self-supporting disturbing Parking by strategies for arranged occupants
4. Straight forward to embrace pay to oversee Operational costs not withstanding possible money can pass on for any time of Parking.
5. Control use by charging rates.

II. Disadvantages

1. Can't be finished in rush and peak events e.g.: evening and night.
2. No specific completion or time confined parking in the parking period.
3. Troubling and difficult to support.

III. Challenges:

The design and management of parking supply deftly impacts the liveability and walkability of any midtown.

Parking is more than a critical bit of more essential private or business customers. It merits thought as a verifiable land use that impact travel direct and environmental.

Really, even the precipitation of available parking can impact more choice and budgetary intensity of an area.

The basic goal of parking management is to make parking availability near affiliations and cafés with the objective that customers can certainly find the space.

A. PARKING FACILITIES**a) Parking lot:**

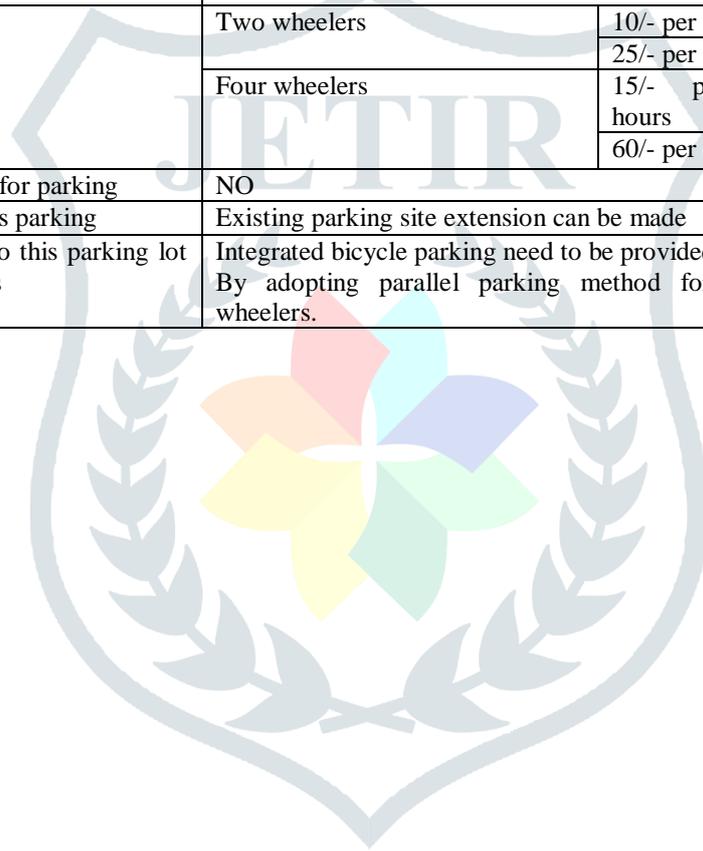
A parking lot is a zone that is picked for parking, commonly, the parking spaces are disengaged on the ground with white or yellow lines that structure squares that each fit one vehicle.

b) Details of existing parking LOT's in Anantapur

1. Parking lot at Anantapur railway station
2. Parking LOT's at APSRTC bus stand
 - i. Tejaswini parking lot
 - ii. Sri sai parking lot
 - iii. Maa keerthi parking lot
3. On – street parking lot at raghuveera towers
4. Parking lot at government hospital
5. Parking lot at municipal complex near tower clock.

i. Parking lot at Anantapur railway station

| S.no | PARAMETERS | | | |
|------|---|--|----------------------|-----|
| 1 | Type of parking lot | Off-street | | |
| 2 | Parking vehicle type | Two wheelers, four wheelers | | |
| 3 | Parking area in sq.m | Two wheelers | 826.59m ² | |
| | | Four wheelers | 182.4m ² | |
| 4 | No. of vehicles parked at | 10:00 am | Two wheelers | 285 |
| | | | Four wheelers | 10 |
| | | 11:30 am | Two wheelers | 280 |
| | | | Four wheelers | 10 |
| | | 06:00 pm | Two wheelers | 317 |
| | | | Four wheelers | 11 |
| | | 07:30 pm | Two wheelers | 296 |
| | | | Four wheelers | 9 |
| 5 | Vehicles parked on peak hours | Two wheelers | 317 | |
| | | Four wheelers | 11 | |
| 6 | Two and four wheelers are parking at an angle of | Perpendicular parking | | |
| 7 | Parking charges | Two wheelers | 10/- per 6hours | |
| | | | 25/- per day | |
| | | Four wheelers | 15/- per 6 hours | |
| | | | 60/- per day | |
| 8 | Is providing area sufficient for parking | NO | | |
| 9 | Alternate places for vehicles parking | Existing parking site extension can be made | | |
| 10 | Changes need to be done to this parking lot for advanced improvements | Integrated bicycle parking need to be provided. By adopting parallel parking method for four wheelers. | | |



ii. Tejaswini parking lot

| S.NO | PARAMETERS | | | |
|----------|---|--|----------------------|-----|
| 1 | Type of parking lot | Off-street | | |
| 2 | Parking vehicle type | Two wheelers, four wheelers | | |
| 3 | Parking area in sq.m | Two wheelers | 793.52m ² | |
| | | Four wheelers | - | |
| 4 | No. of vehicles parked at | 10:00 am | Two wheelers | 227 |
| | | | Four wheelers | - |
| | | 11:30 am | Two wheelers | 238 |
| | | | Four wheelers | - |
| | | 06:00 pm | Two wheelers | 253 |
| | | | Four wheelers | - |
| 07:30 pm | Two wheelers | 213 | | |
| | Four wheelers | - | | |
| 5 | Vehicles parked on peak hours | Two wheelers | 253 | |
| | | Four wheelers | - | |
| 6 | Two and four wheelers are parking at an angle of | Perpendicular parking | | |
| 7 | Parking charges | Two wheelers | 10/- per 6hours | |
| | | | 25/- per day | |
| | | Four wheelers | - | |
| 8 | Is providing area sufficient for parking | NO | | |
| 9 | Alternate places for vehicles parking | South west empty corner can be used for vehicle parking as additional space for parking. | | |
| 10 | Changes need to be done to this parking lot for advanced improvements | Providing bicycle trees. Using portable racks for two wheelers. | | |
| 11 | Area of importance | A.P.S.R.T.C. bus stand near is more congested with heavy traffic as is it one of the key zone of the Anantapur town. | | |
| 12 | Remarks | Parking charges are more at this place when compared with railway lot parking, maintenance in bus stand area is not appreciable. | | |

iii. Sri Sai parking lot

| S.NO | PARAMETERS | | | |
|----------|---|--|----------------------|-----|
| 1 | Type of parking lot | Off-street | | |
| 2 | Parking vehicle type | Two wheelers | | |
| 3 | Parking area in sq.m | Two wheelers | 961.75m ² | |
| | | Four wheelers | - | |
| 4 | No. of vehicles parked at | 10:00 am | Two wheelers | 303 |
| | | | Four wheelers | - |
| | | 11:30 am | Two wheelers | 311 |
| | | | Four wheelers | - |
| | | 06:00 pm | Two wheelers | 326 |
| | | | Four wheelers | - |
| 07:30 pm | Two wheelers | 305 | | |
| | Four wheelers | - | | |
| 5 | Vehicles parked on peak hours | Two wheelers | 326 | |
| | | Four wheelers | - | |
| 6 | Two and four wheelers are parking at an angle of | Perpendicular parking | | |
| 7 | Parking charges | Two wheelers | 10/- per 6hours | |
| | | | 25/- per day | |
| | | Four wheelers | - | |
| 8 | Is providing area sufficient for parking | NO | | |
| 9 | Alternate places for vehicles parking | North west empty can be used for vehicle parking as additional space for parking. | | |
| 10 | Changes need to be done to this parking lot for advanced improvements | Integrated bicycle parking need to be provided. By adopting parallel parking method for four wheelers. | | |
| 11 | Area of importance | A.P.S.R.T.C. bus stand near is more congested with heavy traffic as is it one of the key zone of the Anantapur town. | | |
| 12 | Remarks | Parking charges are more at this parking lot due to demand of vehicle parking of students ,officers who works in other villages. | | |

iv. Maa keerthi parking lot

| S.NO | PARAMETERS | | | |
|----------|---|--|---------------------------------|-----|
| 1 | Type of parking lot | Off-street | | |
| 2 | Parking vehicle type | Two wheelers | | |
| 3 | Parking area in sq.m | Two wheelers | 1104m ² | |
| | | Four wheelers | - | |
| 4 | No. of vehicles parked at | 10:00 am | Two wheelers | 335 |
| | | | Four wheelers | - |
| | | 11:30 am | Two wheelers | 344 |
| | | | Four wheelers | - |
| | | 06:00 pm | Two wheelers | 356 |
| | | | Four wheelers | - |
| 07:30 pm | Two wheelers | 321 | | |
| | Four wheelers | - | | |
| 5 | Vehicles parked on peak hours | Two wheelers | 356 | |
| | | Four wheelers | - | |
| 6 | Two and four wheelers are parking at an angle of | Perpendicular parking | | |
| 7 | Parking charges | Two wheelers | 10/- per 6hours 25/- per day | |
| | | Four wheelers | - | |
| 8 | Is providing area sufficient for parking | NO | | |
| 9 | Alternate places for vehicles parking | North west empty corner can be used for vehicle parking as additional space for paring. | | |
| 10 | Changes need to be done to this parking lot for advanced improvements | Integrated bicycle parking need to be provided. By adopting parallel parking method for four wheelers. | | |
| 11 | Area of importance | A.P.S.R.T.C. bus stand near is more congested with heavy traffic as is it one of the key zone of the Anantapur town. | | |
| 12 | Remarks | Road width is very less when compared with heavy traffic at this zone, collisions and accidents are more in this area. | | |

3. On – street parking lot at raghuveera towers

| S.NO | PARAMETERS | | | |
|----------|---|--|-------------------|-------|
| 1 | Type of parking lot | Off-street | | |
| 2 | Parking vehicle type | Two wheelers | | |
| 3 | Parking area in sq.m | Two wheelers | 162m ² | |
| | | Four wheelers | -- | |
| 4 | No. of vehicles parked at | 10:00 am | Two wheelers | 236 |
| | | | Four wheelers | 10 -- |
| | | 11:30 am | Two wheelers | 45 |
| | | | Four wheelers | -- |
| | | 06:00 pm | Two wheelers | 59 |
| | | | Four wheelers | -- |
| 07:30 pm | Two wheelers | 51 | | |
| | Four wheelers | -- | | |
| 5 | Vehicles parked on peak hours | Two wheelers | 59 | |
| | | Four wheelers | -- | |
| 6 | Two and four wheelers are parking at an angle of | Perpendicular parking | | |
| 7 | Parking charges | Two wheelers | -- | |
| | | | -- | |
| | | Four wheelers | -- | |
| 8 | Is providing area sufficient for parking | NO | | |
| 9 | Alternate places for vehicles parking | Applying various advanced techniques to existing parking lot is the only solution for this lot. No alternative places are available at this place. | | |
| 10 | Changes need to be done to this parking lot for advanced improvements | Laying suitable boundary lines prevents collision and confusion in parking vehicles. Integrated bicycle parking need to be provided. | | |
| 11 | Area importance | It is one of the best area for commercial goods, book binding, and printing press and Xerox shops. | | |
| 12 | Remarks | Plain parking area is provided without any roofing structures to parked vehicles, this area is often shivered during riots. | | |

4. Parking lot at government hospital

| S.NO | PARAMETERS | | | |
|------|---|--|---------------------|-----|
| 1 | Type of parking lot | Off-street | | |
| 2 | Parking vehicle type | Two wheelers, four wheelers | | |
| 3 | Parking area in sq.m | Two wheelers | 882.7m ² | |
| | | Four wheelers | 259m ² | |
| 4 | No. of vehicles parked at | 10:00 am | Two wheelers | 186 |
| | | | Four wheelers | 13 |
| | | 11:30 am | Two wheelers | 235 |
| | | | Four wheelers | 16 |
| | | 06:00 pm | Two wheelers | 288 |
| | | | Four wheelers | 15 |
| | | 07:30 pm | Two wheelers | 140 |
| | | | Four wheelers | 15 |
| 5 | Vehicles parked on peak hours | Two wheelers | 288 | |
| | | Four wheelers | 15 | |
| 6 | Two and four wheelers are parking at an angle of | Perpendicular parking | | |
| 7 | Parking charges | Two wheelers | 10/- per 6hours | |
| | | | 25/- per day | |
| | | Four wheelers | 15/- per 6 hours | |
| | | | 60/- per day | |
| 8 | Is providing area sufficient for parking | YES | | |
| 9 | Alternate places for vehicles parking | Not necessary. | | |
| 10 | Changes need to be done to this parking lot for advanced improvements | Integrated bicycle parking need to be provided. By adopting parallel parking method for four wheelers. | | |
| 11 | Area importance | Majority of the poor people from entire Anantapur district come to this hospital for cure from various diseases and accidents. | | |
| 12 | Remarks | Noise and air pollution is more in this busy area. Animals wandering on the roads causes major disturbances and accidents to road users. | | |

5. Parking lot at municipal complex near tower clock:

| S.NO | PARAMETERS | | | |
|----------|---|--|-------------------|------|
| 1 | Type of parking lot | Off-street | | |
| 2 | Parking vehicle type | Two wheelers, four wheelers | | |
| 3 | Parking area in sq.m | Two wheelers | 432m ² | |
| | | Four wheelers | 216m ² | |
| 4 | No. of vehicles parked at | 10:00 am | Two wheelers | 88 |
| | | | Four wheelers | 7 |
| | | 11:30 am | Two wheelers | 9780 |
| | | | Four wheelers | 11 |
| | | 06:00 pm | Two wheelers | 1397 |
| | | | Four wheelers | 16 |
| 07:30 pm | Two wheelers | 1076 | | |
| | Four wheelers | 10 | | |
| 5 | Vehicles parked on peak hours | Two wheelers | 1397 | |
| | | Four wheelers | 16 | |
| 6 | Two and four wheelers are parking at an angle of | Perpendicular parking | | |
| 7 | Parking charges | Two wheelers | 25/- per day | |
| | | | 700/- per month | |
| | | Four wheelers | 80/- per 6 hours | |
| | | | 2200/- per month | |
| 8 | Is providing area sufficient for parking | NO | | |
| 9 | Alternate places for vehicles parking | Existing parking site extension can be made | | |
| 10 | Changes need to be done to this parking lot for advanced improvements | Integrated bicycle parking need to be provided. By adopting parallel parking method for four wheelers. | | |
| 11 | Area importance | Clock tower was built in Jawaharlal Nehru's period. Its acts as a centre to Anantapur. Lepakshi emporium, over bridge, theatre and some other shops are located. | | |
| 12 | Remarks | Heavy traffic in this area, road gets shortages due to occupancy by fruit sellers and auto rickshaws. | | |

IV. Details of ON-STREET Parking LOT's essentially to be provided in Anantapur

On street parking lots needed to be provided essentially in Anantapur in following areas

1. Town congregational church at saphagiri circle
2. Bridge stone tyre showroom at raju road
3. Pavitra hyper mart at ram nagar
4. Nearby kalyandurgam by-pass
5. Nearby Bellary by-pass
6. Pallavi Towers at Iron Bridge

1. Town congregational church at saphagiri circle

| | |
|----------------------------------|-----------|
| Type of Lane | Multiline |
| Number of Lanes | 4lanes |
| Width of each lane | 3.5m |
| Width of median | 0.5m |
| Total width of road way | 14.5m |
| Width of shoulders on both sides | 3m |

3m shoulders width is available nearby K.S.R GOVT junior college, which can be used for two and four wheeler vehicle parking

2. Bridge stone tyre showroom at raju road

| | |
|----------------------------------|-----------|
| Type of Lane | Multiline |
| Number of Lanes | 2lanes |
| Width of each lane | 3.8m |
| Width of median | - |
| Total width of road way | 9.6m |
| Width of shoulders on both sides | 2m |

2m shoulder width on either side of road is available in this area, which can be used for two wheeler vehicle parking

3. Pavitra Hyper Mart at Ram Nagar

| | |
|----------------------------------|-----------|
| Type of Lane | Multiline |
| Number of Lanes | 2lanes |
| Width of each lane | 3.5m |
| Width of median | - |
| Total width of road way | 7m |
| Width of shoulders on both sides | 3m |

3m shoulder width on either side of road is available in this area, which can be used for two wheeler vehicle parking

4. Nearby Kalyandurgam by-pass

| | |
|----------------------------------|-----------|
| Type of Lane | Multiline |
| Number of Lanes | 4lanes |
| Width of each lane | 3.5m |
| Width of median | 0.5m |
| Total width of road way | 18.5m |
| Width of shoulders on both sides | 2m |

Parking may be provide by the junction between kalyandurgam by pass and Bellary by pass under the fly over

5. Nearby Bellary by-pass

| | |
|----------------------------------|-----------|
| Type of Lane | Multiline |
| Number of Lanes | 2lanes |
| Width of each lane | 3.5m |
| Width of median | - |
| Total width of road way | 7m |
| Width of shoulders on both sides | 5m |

Parking may be provide by the junction between kalyandurgam by pass and Bellary by pass under the fly over

6. Pallavi Towers at Iron Bridge

| | |
|----------------------------------|-----------|
| Type of Lane | Multiline |
| Number of Lanes | 2lanes |
| Width of each lane | 3.5m |
| Width of median | 0.5m |
| Total width of road way | 7.5m |
| Width of shoulders on both sides | 3m |

3m shoulder width on either side of road is available in this area, which can be used for two wheeler vehicle parking.

v. CONCLUSION

Current parking putting together practices are inefficient achieving financially remarkable parking supply, extended vehicle traffic and brand name issues. The parking management techniques are genuinely achievable, reasonable and can give diverse central focuses to customers and affiliations.

Present planning practices rely on the doubt that parking should be abundant and given free. It is an extraordinary that parking framework should be considered as a fundamental piece of transport planning and the management. As a rule, to freeze or reduce the private vehicle traffic in metropolitan territories, vehicle kept methods and updates clearly travel have key positions.

Regardless, these structures have been executed viably in unequivocal conditions, they are not being done as much as financially kept up, on account of various institutional obstacles.

Improvement in the consummation execution and thought concerning sustainability will help transport planners to make sensible parking eco system.

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