

**CONSUMER PROTECTION ASSOCIATION
HIMMATNAGAR
DIST. : SABARKANTHA
GUJARAT**



**Comments
On
USE OF STREET FURNITURE FOR SMALL CELL AND
AERIAL FIBER DEPLOYMENT**

Introduction :

The world has gone mobile. A Time Magazine Mobility poll found that 84 percent of smart phone users cannot imagine going more than one day without cellular service. Meanwhile, bandwidth-heavy mobile video traffic is expected to exceed 50 percent of total mobile data traffic in future. Demand for mobile broadband is driving the need for small-cell architecture to supplement the macrocellular layer of commercial cellular coverage in today's 4G networks and for eventual 5G deployments. Street furniture – utility poles, bus-stop enclosures or any other street-level infrastructure that can house wireless equipment – offers highly effective tools in the mobile carriers' toolboxes to bring their networks closer to their customers, if deployments can be done in an efficient manner. Street furniture can be used to expand the network using small cells,

Distributed Antenna Systems (DAS), backhaul and other means to transmit and increase RF coverage to augment macrocellular tower deployments. These infrastructure solutions facilitate network densification under the macrocellular layer in areas where additional capacity is required.

In order to make street furniture suitable for small-cell networks, it must be able to accommodate power, antenna and associated fiber and other cabling equipment. In addition, good design and engineering is crucial to successful small-cell deployments on street furniture.

Small cells are going to make a huge difference when it comes to 5G rollout in India. It won't just help with 5G, but also the 4G expansion. Adopting simplified and streamlined procedures for building/street furniture permits for small cells based on standardized size, installation requirements and radio characteristics is important. They will help the TSPs and Citizens by to alleviate the load on microcells by augmenting the network capacity and to provide extended coverage.

ISSUES FOR CONSULTATION :

Q.1: Is there a requirement for any modification in existing RoW Rules as notified by DoT to accommodate small cell deployment on street furniture?
If yes, please provide the hangs required.

Comments : **Yes.**

Q.2: Have the amendments issued in 2021 to RoW rules 2016 been able to take care of the needs of aerial fiber deployment? If not, what further amendments can be suggested? Please provide exact text with justification.

Comments : **Question Number – 1 & 2**

1. The present rules on the right of way are silent on small cell deployment and access to street furniture.
2. **Lack of availability of backhaul** : There is a shortage of adequate backhaul and at reasonable costs which throws up significant challenges in deployment.
3. **Lack of electrical power supply** : Permits from electricity boards are a challenge. Additionally, street furniture needs power back-ups.
4. **Non-uniform implementation of RoW rules by states and municipal bodies** : The RoW rules have yet to be implemented by all states, union territories and municipal bodies. Many of them continue to impose their own costs and approval frameworks which are on the higher side.
5. **High RoW Related Charges for using the Street Furniture, deployment of Small cells and fibre** : High restoration Charges challenging to get access to adequate street furniture for deployment.
6. **Online Portal is yet not available in all the States, leading to delays.**
7. Restrictions on the installation of towers/Small cells near educational institutes, hospitals, airports, Defense establishments, religious places etc.
8. Lack of support from enforcement agencies like police dept. in dealing with public issues including EMF.

9. Permissions from several authorities including electricity, gas, sewerage, Railways, NHAI, forest authority causing delays and cost inefficiencies.
10. Permission/ approvals are kept pending, which can result in coercive action like demolition/ sealing.
11. Many states still do not have to enable provisions for using the Street Furniture such as EB/LT Poles, Street Light Poles etc.

Q.3: What are the suggestions of stakeholders for aligning RoW policies issued by various other Central Government Bodies with existing DoT RoW policy?

Comments :

The following suggestions may be considered to facilitate the deployment of small cells in India:

1. Adopting simplified and streamlined procedures for building/street furniture permits for small cells based on standardized size, installation requirements and radio characteristics.
2. Updating the Right of Way Rules, 2016 to include deployment of small cells.
3. Ensuring uniform implementation of the Right of Way Rules, 2016 by all the states and union territories.
4. Reducing admin and other Charges for small cells deployment and for laying the fiber.
5. Designing guidelines to facilitate the acquisition of new sites and greater transparency on available assets such as towers, buildings and other structures.
6. Granting easy access to existing street furniture such as traffic lights, bus stops, street lamps, EB Power supply etc.

State electricity boards /distribution companies to ease permits for usage of their poles for deployment.

7. Exempting small cell installations from location registration requirements unless necessary for other reasons.
8. Implementing uniformity in the grant of access to public spaces/ structures for installing small cells across the state and the local bodies.
9. Facilitating the deployment of backhaul and at lower costs.
10. Ensuring access to spectrum and provision of adequate spectrum bands for backhaul with wider channel sizes in millimeter wave (e.g. E & V Band) to augment capacities and improve site planning.

Q.4: Whether it should be mandated that certain public infrastructure (municipality buildings, post offices, bus, and railway stations, etc.) be earmarked to have dedicated spaces that allow service providers to deploy macro/small cells? If yes, what are the possibilities and under what legal framework this can be done? What should be the terms and conditions of use of such infrastructure? Please provide detailed inputs with justifications.

Comments : Yes.

It will enable in-building access to the premises which were earlier not accessible/ not having essential telecom infrastructure depriving larger number of consumers to get good quality of service.

- 4.1 New Buildings and larger renovation projects should mandatorily be common telecom infrastructure ready.
- 4.2 The upcoming high rise residential / commercial complexes and new smart cities, integrated townships, airports, hospitals, hotels should be mandated to be common infrastructure ready at the time of completion of the construction to cater telecommunication needs of the consumers.
- 4.3 Additionally, larger infrastructure and residential projects which are due for renovation / under renovation should also mandatorily be common telecom infrastructure ready.
- 4.4 It is recommended that the in-building access solutions for telecom installation should be included in the building by-laws to ensure good coverage and capacity inside a building for telecom services on the lines of current rules mandated for fire safety, rain harvesting, electricity, water including disposal or treatment of waste water, sewage and drainage system assuring of in-building access to all TSPs.

4.5 Smart Cities should mandatorily be Common Telecom Infrastructure (CTH) ready :

The success of programs such as Digital India and Smart Cities relies heavily on the underlying telecommunication infrastructure for providing reliable and fast connectivity to devices and users. The upcoming smart cities should be mandated to be common telecom infrastructure ready at the time of completion of the construction to cater telecommunication needs of the consumers **at affordable price**. It is recommended that in-building access solutions for telecom installation should be included in the selection guidelines as one of the criteria for selection of the smart city by the

Government for financial assistance. This will act as a model for other municipalities, towns, cities, states to improvise and adopt.

4.6 Building Code:

The word 'building' denotes all public places including high rise residential/ commercial complex, Hotel, Airports, shopping malls etc. where general public visits without any restricted access and Government buildings.

It should be made mandatory in the Building Code that the new buildings should be constructed in such a way that they are 'Telecom Infrastructure deployment' ready by creation of Common telecom infrastructure includes at least in-building cabling / provision of duct/ optical fibre, pole, mast and access point(s).

It is suggested to frame criteria (like *high rise, number of people likely to be available in the building at any given point of time, location, nature of use* etc. (Not all Buildings)) and new buildings falling under the criteria should require to adhere the guidelines for installation of common telecom infrastructure.

- a. The TSPs should be given legal rights to use the common telecom infrastructure within a building and its premises with minimum charge just as other essential services like water and electricity.
- b. New buildings and the building undergoing major renovation should be given Completion Certificate only after they submit compliance on provision of Common Telecom Infrastructure.
- c. The respective circle TERM cells can be made responsible for approving the common telecom infrastructure facilities to be created within the building

and secondly, to provide the 'Telecom Infrastructure Completion Certificate' to the building.

- d. In-building architecture shall have provision of at least one spare duct / optical fibre being made available so that the same could become available in case a need arises for multiple services. Additionally antennas used in the case of in building radio services shall be of multiport type as well as devices used shall be type approved having multiport facility.
- e. Building Owner / IP / TSP to ensure that no disturbance or inconvenience is caused to people in places such as hotels, hospitals or residences etc. during the installation or maintenance of the equipment.

4.6.1. Public Buildings:

- a. For all buildings and facilities used/accessed by the public for general purposes, whether Government owned building or building based on PPP (Public Private Partnership) model, such as airports, railway stations, Central and State Government offices, Government residential housing complexes, Government hospitals, shopping complexes, it should be made mandatory to grant permission to TSPs to install in-building telecom infrastructure.
- b. A single online window to be created for the required approvals for the aforementioned public buildings.**
- c. The permission & conditions for the installation of telecom infrastructure should be granted on a non-discriminatory basis to all TSPs.
- d. The permission to install telecom infrastructure should be granted to TSPs and other service providers if needed.

- e. The permission and conditions for the installation should be granted on a nondiscriminatory basis to all TSPs and others.
- 4.7. Mandating the availability of power at the Government regulated industrial rates to avoid any arbitrariness and indulgence in anti-competitive practices by the building owners.

Building Completion Certificate :

- 4.8 Building completion certificate should include validation of in-building wiring and certification of creation of common telecom infrastructure by local development authority / municipality similar to the rules mandated for fire safety, rain harvesting, electricity, waste management. · The common telecom infrastructure shall not be exclusive right of any individual service provider (be it IP or a TSP) and shall be open to sharing by all operating TSPs on mutually decided technical and commercial arrangements. The in building access to all interested TSPs should be ensured by building owners on a nondiscriminatory basis. · The customer shall have the choice to select any service provider of his choice available in the premises.

What are the possibilities and under what legal framework this can be done?

Since the installation of in-building solutions has been facing challenges, there is an urgent need to address the issue through Government intervention. The in-building solutions compliment outdoor coverage, therefore there is a need to make policies that will facilitate the installation of in-building solutions.

**No policy for in-building deployment of sites on Government Land/
Buildings/airports shopping malls, hospitals, etc.:**

Lack of enabling policy in respect of deployment of in-building solutions in key public buildings/areas has led to coverage gaps thereby leading to incidences of poor signal quality. For this purpose :

1. DoT should advise all ministries to provide, within a stipulated time period, IBS/DAS solutions in all Central Government buildings including central PSU buildings, Airports and buildings falling under their jurisdiction & control.
2. All State Governments should be advised to provide/mandate, within a stipulated time period, IBS/DAS solutions in all buildings including hospitals **having more than 100 beds and shopping malls of more than 25,000 square feet super built area.** Though some steps are being taken by Government/DoT on these lines, more concrete plan/roadmap is required in this regard.
3. There is a need to change building by-laws for mandatory inclusion of ducts/ optical fibre with well defined access mechanisms in all upcoming office complexes, commercial spaces and residential complexes for quick and positive impact on broadband penetration.
4. By carrying out necessary amendments in the building by-laws will ensure availability of at least in-building cabling / provision of duct/ optical fibre and access point(s) under common telecom infrastructure ensuring flexibility to offer a viable multi technology multi operator service.
5. **Need for specifying the standards to install common telecom infrastructure :**

Presently, there are no specific standards / guidelines building owners to follow while making provisions for common telecom infrastructure to install in-building access solutions. There are no unique ways for implementing an in-building solution, however mechanism should be in place that would enable adherence to the need and that conforms to the technical and quality requirement. The solution should be technology agnostics, permitting multiple players to be hosted on the same platform. This becomes more critical in view of technology advances and increasing high speed data requirements.

6. We request TRAI to recommend to the Government to form an expert group under TEC to design standards / guidelines to design, install, commission and maintain in-building solutions by building owner / infrastructure provider (IP)/ telecom service provider (TSP) and **CAGs**. The infrastructure providers / vendors should be empanelled and authorized to carry out this work conforming to the standards, especially for new buildings.
7. The consultation paper has highlighted how these issues have been brought under the regulatory framework in some of the international examples like Singapore, Hong Kong, Europe, etc. by adopting uniform code of practice for creation of common telecom infrastructure in buildings / public spaces and strict adherence by building owners / state governments. These examples clearly indicate the need for similar Code of Practice for creation of common telecom infrastructure in India, which should be uniformly applicable to all the public places/ buildings covering all states. It is suggested that Expert committee / focus group should be formed under

TEC to lay down the standards/ guidelines for installation of common telecom infrastructure considering technology advances and increasing data uptake – to be followed by building owners.

8. Further, In India, building by-laws must contain a mandatory requirement to establish in building cabling / provision of duct/ optical fibre, and access point(s) ensuring flexibility to offer a viable multi technology multi operator service. Once process framework and standardization is in place, existing as well as new planned infrastructure should be notified to upgrade their facility to include in-building telecom infrastructure within a stipulated period and seek completion certificate. If such an infrastructure is not built / provisioned or a certification to this effect is not obtained from the local authority then such building shall be liable to pay an additional amount as a part of their annual commercial tax/ property tax.
9. Provision should be made in the national building code that the buildings equipped with common telecom infrastructure in accordance with the code, should be given the status of “Telecom Access ready” building and such buildings should be eligible for 1-2% discount / rebate in their local municipal taxes for first two / three years.

Terms and Conditions :

1. Sharing of in-building solutions among all available TSPs should be encouraged without any artificial hindrance. The TRAI recommendations should also state that building owner / Infrastructure provider / TSPs should meet all reasonable requests for access under fair and non-discriminatory terms and conditions, including applicable charges. This

should be codified and made part of the National Building Code of India being developed by Bureau of Indian Standards.

The Access of Services :

2. The access inside the building for sharing of common telecom infrastructure should not be denied by building owner / IP / TSP at any given point of time basis artificial barrier(s). The sharing should be made mandatory and should meet all reasonable requests for access under fair and non-discriminatory terms and conditions, including applicable charges. This will ensure level playing field among TSPs enabling open access as well as customer will have best possible telecom services from his choice of TSP at optimum price.
3. **Private Buildings:** There is no regulatory intervention required for the existing Private Buildings as TSPs have invested sufficient CAPEX/OPEX based on their business viability.
4. For sharing the infrastructure, the commercial terms and conditions for both Existing and New buildings should be left to mutual agreement as any mandate on this will increase inefficiency in the system.
 - 4.1 As pointed out earlier, it is important for telecom service providers to have mobile coverage / network presence inside big residential / commercial complexes and the sharing of the infrastructure should be encouraged among the TSPs.
 - 4.2. However, the sharing of the infrastructure in the building should be left to the mutual agreements between the TSPs as there are various

technical complexities involved in the installation of In-building infrastructure.

- 4.3. These complexities can be best dealt by having mutual agreements between TSPs for the cases wherever it is possible to share the infrastructure considering the ease, feasibility and cost of deployment.
5. The common telecom infrastructure should not be exclusive right of any individual service provider (be it IP or a TSP) and shall be open to sharing by all operating TSPs on mutually decided technical and commercial arrangements. The in building access to all interested TSPs should be ensured by building owners on a nondiscriminatory basis.
6. The customer should have the choice to select any service provider of his choice available in the premises.

Key Submissions :

1. Ensure availability of common telecom infrastructure at all public locations for all the TSPs interested in entering into the building without any discrimination at mutually agreed prices between building owner/ IP and TSP.
2. Immediate enforcement of uniform code of practice for creation of common telecom infrastructure in buildings / public spaces and strict adherence by building owners / state governments. **These suggested guidelines should be included in the “National Building Code of India” under finalization by BIS.**

3. By accepting the code of practice, building owner / RWAs or IP / TSP who has entered into an agreement should be mandated to allow in-building solution access to all interested TSPs / ISPs on a non discriminatory basis.
4. DoT should take up with Central Government (Ministry of Urban Development) to do necessary changes in existing building by-laws to include common telecom infrastructure for telecom services as a necessary requirement for issuance of NOC in addition to fire safety, waste management, rain water harvesting, gas etc.

Challenges :

1. The restrictive policies of local bodies that prevent development of backhaul infrastructure for extending the connectivity to the premises too need to be simplified for arriving at a holistic solution to this vexed problem.
2. Fear of EMF among the people further deters the deployment of telecom infrastructure in buildings such as residential societies.
3. The laying of cables inside the buildings becomes a challenge in absence preinstalled ducts.

Q.5: Can some of the street furniture like traffic lights, metro pillars etc be earmarked for mandatory sharing between controlling administrative authority and Telecom Service/Infrastructure providers for deployment of small cells and aerial fiber? Does existing legal framework support such mandating? What should be the terms and conditions of such sharing? Please provide details.

Comments :

Can some of the street furniture like traffic lights, metro pillars etc be earmarked for mandatory sharing between controlling administrative authority and Telecom Service/Infrastructure providers for deployment of small cells and aerial fiber?

Yes.

1. The present system is not conducive for the 5G. Even though DoT has come out with RoW (right of way) rules, TRAI need to change this. In 5G, street furniture is going to be important.
2. For the uninitiated, street furniture is a broad term for micro-level telecom infrastructure in the form of small cells, Distributed Antenna Systems (DAS), backhaul that are used to supplement the macro-level telecom towers. This wireless infrastructure expands the network coverage by going closer to the consumers.
3. "Street furniture must have a power source for the wireless equipment to function. Common examples of street furniture outfitted for small-cell networks include billboards, lamp posts, lit signage, phone booths, mailboxes, park benches, public art, utility poles, athletic field light poles, traffic signals and other structures".
6. In order to make street furniture suitable for small-cell networks, it must be able to accommodate power, antenna and associated fiber and other cabling equipment. In addition, good design and engineering is crucial to successful small-cell deployments on street furniture.

7. While there are other mechanical and electrical considerations, the vast majority of questions among wireless infrastructure stakeholders, local jurisdictions and the public regarding wireless hardware on street furniture are related to aesthetics and local approval. Each jurisdiction has a set of rules and processes associated with deployments that make each deployment unique. These disparate processes can be costly and often impact reasonable deployment schedules.
8. Approvals for infrastructure in the ROW can be as simple as consent and/or street work permits for use of the respective governmental ROW or can involve complex local access and regulatory/zoning requirements imposed through municipal legislation and codes. In some cases, these codes delegate authority to an agency, which is often the case in larger cities. In such instances, agencies often have detailed processes and guidelines for reviewing and approving franchises to gain access to the ROW for conduit or other above-ground physical infrastructure. In smaller communities, codes or laws of the respective state reserve and/or delegate authority to local elected officials in managing access to the ROW. To date, there is not a uniform method for handling the ROW process across the India, so industry has to navigate the process project by project.
9. Depending upon the state, municipalities also may negotiate various licenses, franchises or other use fees as trustees of the public's interests. Typically, state and municipal governments have had experience in the wireless context with ROW use for wireless hardware, but not every municipality has rules in place to address collocation on street furniture.

Considerations for Street Furniture Deployments :

The following guidelines can support the integration of street furniture into a municipality's infrastructure planning:

1. Talk with municipal economic development officials to explain the opportunities and benefits associated with wireless street furniture and seek support.
2. Coordinate legal franchising and permitting requirements early on to identify timing and other expectations from both municipal and infrastructure provider perspectives.
3. Identify any special local considerations (historic districts, architectural requirements, tribal approvals) that may increase the cost or extend the timeline of the deployment.
4. Realistically discuss costs and fees for access in relation to any published municipal schedule or point of view and nature of the project and seek interpretations as needed for project economic viability.
5. Be prepared to respond to standard construction and safety requirements in the municipality for access to the ROW, such as road and sidewalk work permits and insurance.

In Short :

To optimize the short- and long-term success of network densification, network deployments will be contingent on many factors; some key factors include:

- Location of sites that improve coverage, can be structurally supported and deployed at the right height;
- Cooperation with local jurisdiction;
- Ease of deployment and scalability;
- Availability of backhaul and power;
- Ease of maintenance and upkeep.

These factors directly impact the business case to deploy wireless network infrastructure. Using new and existing street furniture can augment the typically more-efficient macrocellular deployments, adding more coverage and capacity to today's mobile broadband networks, which are quickly becoming the backbone of today's connected society

Does existing legal framework support such mandating? What should be the terms and conditions of such sharing? Please provide details.

Yes.

1. As per Article 246 of the Constitution only the Central Government, can legislate on these subjects.

Subject-matter of laws made by Parliament and by the Legislatures of States. (1) Notwithstanding anything in clauses (2) and (3), Parliament has exclusive power to make laws with respect to any of the matters enumerated in **List 1 in the Seventh Schedule (in this Constitution referred to as the "Union List")**.

2. Entry No.31 in List 1 (Union List) of the Seventh Schedule to the Constitution of India covers **"Posts and telegraphs, telephones, wireless, broadcasting and other like forms of communication"**.
3. No. 32 : Property of the Union and the revenue there from, but as regards property situated in a State subject to legislation by the State, save in so far as Parliament by law otherwise provides.
4. Section 4 of the Indian Telegraph Act, 1885 reads as under:- “ 4. Exclusive privilege in respect of telegraphs, and power to grant licenses.—
 - (1) Within India, the Central Government shall have exclusive privilege of establishing, maintaining and working telegraphs: Provided that the Central Government may grant a license, on such conditions and in consideration of such payments as it thinks fit, to any person to establish, maintain or work a telegraph within any part of India: Provided further that the Central Government may, by rules made under this Act and published in the Official Gazette, permit, subject to such restrictions and conditions as it thinks fit, the establishment, maintenance and working—
 - (a) of wireless telegraphs on ships within Indian territorial waters and on aircraft within or above India, or Indian territorial waters, and
 - (b) of telegraphs other than wireless telegraphs within any part of India.

Regulatory Authority of India established under sub-section (1) of section 3 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997).

- (2) The Central Government may, by notification in the Official Gazette, delegate to the telegraph authority all or any of its powers under the first proviso to sub-section (1). The exercise by the telegraph authority of any power so delegated shall be subject to such restrictions and conditions as the Central Government may, by the notification, think fit to impose.”

The Grant of Permission Agreements for establishment, maintenance and operation of uplinking hub (teleport) under the Guidelines for Uplinking from India provide, inter alia, as under:- “5. Application of the Indian Telegraph Act and other Laws 5.1 The Permission shall be governed by the provisions of the Telecom Regulatory Authority of India Act, 1997, Indian Telegraph Act, 1885 and Indian Wireless Telegraphy Act, 1933 as amended from time to time and any other law as applicable to broadcasting which has or may come into force.”

5. State governments actually have no power to refuse the implementation of a central law that is in the Union List,
6. The topics listed in the Union List under the Seventh Schedule of the Constitution of India are matters in which only the central legislature has the exclusive power to frame laws, which include matters of Telecommunication and Broadcasting.

7. However, since implementation in states of any central law requires the cooperation of the state administration, the most they can do is delay the implementation process or implement it badly, with intentional flaws.

8. Provisions for the relation of the Centre and the State :

8.1 The Federal Relation between the Centre and the State is stipulated under the various provisions of the Constitution of India. The provisions details the relation and the jurisdictional power of the Central and State governments. The Federal relation of the Centre and the State is highlighted through the below stated provisions.

8.1.1 Legislative Relations:

Article 245-255 stated under Part XI- some of the important provisions are:

In territorial jurisdiction the Centre holds a wider importance. The authority of the State is limited to the territorial boundary. The State's power is confined within the circumscribing limit of the state territory. While, the Parliament holds 'extraterritorial legislative power. The power of the Centre extends up to the entire nation and not only a particular limited territory. It even legislates the territories of particular states as and when required. This is explained under Article 245.

8.1.2 The Subjects of legislation have been adopted in a three-fold distributive power legislation.

(i) The Union List,

- (ii) The State List and
- (iii) The Concurrent List.

8.1.3 The Union List with 99 items enumerates the subjects under complete jurisdiction of the Centre

8.1.4 The State List with 61 subjects enlists the subjects under clear jurisdiction of the State Legislature.

8.1.5 The Concurrent List with 52 subjects details the common subjects of both Centre and the State.

8.1.6 However, in the case of overlapping between the jurisdiction of the Union and the State list, the power of the Union Legislature shall prevail. This highlights the supreme power of the Centre as against the State jurisdiction as given under Article 246.

8.1.7 As per the Residuary powers- Article 248, the Parliament has the command to make legislations in consideration to the subjects not mentioned under the State or the Concurrent List.

8.2 The power of the Union over the administration of the State legislature also extends in cases of:

National Interest- Article 249

Emergency Proclamation- Article 250

Agreement between the States-Article 252

Legislation for International Agreements- Article 253.

8.3 The Administrative Relations between the Centre and the State are stipulated under Article 256-263. Certain important provisions laying down the relation between the Centre and the State are:

8.3.1 The dominion of the State executive depends upon its compliance over the laws made by the Parliament. On the other hand, the Central government has the obligation to direct the State government as when and necessary through laws and provisions as given in Article 256.

8.3.2 Article 258A postulates the power of the Governor of the State government to entrust certain functions to the Central Government. The power extends to any matter under the jurisdiction. The State Governor has the power to recommend the Central government under the consent of the Government of India. The provision of the State's power over the Union was thrust in the constitution through Seventh Constitutional Amendment, 1956.

8.3.3 In case of *Tamil Nadu v. State of Karnataka*, 1991[5], it was held that when the disputes between two states in concern to water distribution are recommended by the Central Government to a tribunal, in such cases the Supreme Court has no authoritative appeal. Through this the Central government finally resolved the long running Cauvery water dispute between the government of Tamil Nadu and the government of Karnataka.

8.3.4 The President may form an inter-state council to serve the public interest- Article 263.

8.3.5 The Sarkaria Commission recommended and thereby laid the foundation of a permanent inter- state council in 1990. It comprises six union ministers of the Cabinet along with the Chief Ministers of all the states. The Council was reconstituted in 2019. The position of the chairperson of the Inter-State council was held by the Prime Minister of India.

8.3.6 State of Karnataka vs. Union of India, 1977[8]- The Supreme Court Bench held defined the Constitutional power of the Central Government in issuing orders to the State governments. It observed and concluded that the Central government has the jurisdiction to issue orders to the State government not as a geographical or territorial unit but rather as a Constitutionally defined power and authority. The relation of the Centre and the State is constitutionally defined where the State government has to adhere to the orders and directives of the Centre government.

Q.6: How can infrastructure mutualization and infrastructure collaboration be ensured to avoid exclusive rights of way? What legal provisions can support mandating these? Provide full details.

Comments :

Mentioned Above.

Q.7: Should there be permission exemption for deploying certain categories of small cells at all places or all categories of small cells at certain places (Like apartments etc.)? What legal framework will support such exemptions?

Comments : Mentioned Above.

Q.8: What should be the criterion/ conditions (like power, height etc.) and administrative procedure for implementing such exemptions? Please provide exact text with detailed justifications.

Comments : Mentioned Above and elsewhere.

Q.9: For Small Cells that do not fall under the exemption category, should there be a simplified administrative approval process (like bulk approvals etc.) for deployment? If yes, what should be the suggested process? If not, what should be the alternative approach?

Comments : Mentioned Above.

Q.10: What power related problems are envisaged in deploying small cells on street furniture? Please provide full details.

Comments :

1. Power is another thing. It's not just about taking permissions but (getting) the required amount of power. In many cases, Telecom Service Providers will be required to put generator sets, and for that, many state electricity law permissions have to be required," TRAI should prepare a model city that can handle the existing structures for taking 5G and fixed lines. This model city can develop protocols which would likely be part of state and central laws.
2. The classical 2G/3G/4G way of putting telecom infrastructure will move to hyper-distributed manner because of the low-latency and high bandwidth requirements. In order to enable street furniture, we need power, and that is going to be the biggest challenge that the country will face in 5G deployment.

Q.11: What viable solutions are suggested to address these problems? Please provide full details.

Comments :

Base Transceiver Stations are the piece of equipment that connects the mobile device to the mobile network and are an integral part of both macrocellular towers and small-cell deployments. Historically, BTS deployments have necessitated the use of high power/high voltage DC power plants. Traditional macrocells have operated on +24 or -48 volt Direct Current (VDC) with power output levels as high as 6 kilowatts (kW) or more. They have been designed to be adaptable for input voltage so that they may be used internationally. While

some small cells, particularly lower power examples, are moving to eliminate the need for external power conditioning and distribution, in most cases an AC-to-DC conversion is a basic power requirement. Original Equipment Manufacturers (OEMs) also are starting to use flexible systems that include AC power options.

1. DC power providers are producing power systems that can supply small cells using smaller versions of the existing OEM product lines. These miniaturized DC-power systems are modular designs that offer flexible power-distribution options. They can support larger batteries for longer back-up power periods. The controllers that provide remote monitoring of the power system and the back-up batteries also are contiguous with their larger power-system counterparts.

However, these back-up power units are not always physically or aesthetically viable in public areas, including on light poles and standards and some other structures. Weight and weather exposure can make larger power plants impractical.

2. A second type of unit has been developed as a response to these concerns. The “pole/wall mount” category of power systems are all-in-one systems; however, they usually have less configuration flexibility and more limited back-up battery options. They are smaller and lighter, more aesthetically pleasing, simpler and less expensive to implement. They offer a reasonable power output range for a variety of base-station applications.

3. Heat Dissipation Considerations

Heat dissipation is also a factor in deployments. Traditional BTS shelters for macrocellular towers typically are climate controlled with air-conditioning systems, but street furniture small-cell power systems often rely on fans or

convection cooling and often are engineered for them. Power conversion efficiency also must be a factor in design of small-cell power systems.

4. Back-up Battery Requirements :

Back-up battery requirements are another factor in the location of small-cell power systems on street furniture. Larger DC power system cabinets typically can be used if the time frame for back-up is longer than two hours. Internet connectivity is necessary to remotely monitor and control the back-up system. A wide range of power output options are necessary in both types of DC power supplies due to the wide range of transmitter power levels in different small-cell platforms, which can range anywhere from 50 watts or less to 1 kilowatt.

All of these factors come into consideration when designing power systems for small cells on street furniture. Since it is rare for small-cell deployments to be identical, this can make design and selection more time- and labor-intensive.

5. **POWER SUPPLY AND BATTERY BACKUP REQUIREMENTS** Street furniture assets to be used in a Small Cell network should have power supply and it should consume low power. In addition to the conventional power supply system (A.C / D.C sources), the Small cell site should have a fall back mechanism to work on battery backup (preferably Liion)/ suitable solar based power solution in the absence of conventional AC supply. There should be proper arrangements for cooling and heat dissipation requirements.

6. Both Radio and Baseband require DC -48V supply. Hence Battery and Power-plant will be required to convert from AC supply. Indoor/Outdoor Power Pack (PP) and Batteries (preferably Li-ion) can be used as per site requirements.

Q.12: Is there a need for standardizing the equipment or installation practices for next generation small cell deployment on street furniture? If yes, what are the suggested standards and what should be the institutional mechanisms for defining, and complying to them?

Comments : Yes.

A Standard is a document that applies collectively to codes, specifications, recommended practices, classification, test methods and guides, which have been prepared by an organization or group after due consultation and published in accordance with established procedures. Most important advantages/needs of using TEC Standards, with regard to telecom equipment/network/services, are to:

- Ensure quality and reliability
 - Comply with regulatory requirements & Improve market acceptance
 - Ensure system interoperability & facilitate interchangeability of parts
 - Comply with customer requirements & ensure safety of user
 - Achieve economies in purchase of equipment
1. The equipment should comply with TEC standard TEC 13019:2021, as may be amended from time to time.
 2. Restriction on minimum height of lowest radiating part of Antenna and minimum distance to areas accessible to general public in the main lobe direction for Low Power Base Station

3. TECHNICAL TECHNICAL SPECIFICATIONS INCLUDING PHYSICAL DIMENSIONS, WEIGHT OF DIFFERENT CONFIGURATIONS :

Typical configurations including weight, power consumption and dimensions should be standardize.

4 RF FREQUENCIES OF OPERATION Small cell facilities should only transmit or receive frequencies that are licensed/ to be licensed by the Department of Telecommunications as defined by 3GPP.

5. BACKHAUL CONNECTIVITY – OFC, MICROWAVE ETC. :

5G is expected to provide “**4A- Anytime, Anywhere, Anyone, Anything**” connectivity, which will take mobile data speeds to new limits and will support an immense increase in connections. However, a good 5G network cannot be expected unless a high capacity backhaul is in place. Any of the following backhaul connectivity shall be available for Small Cell.

6. **Antennas – Directional and Omni-directional :**

Small-cell antennas are the heart of the densification effort as they carry the RF signal. Street furniture infrastructure should support directional, omni-directional, and external antennas for flexible design.

Several factors must be considered when choosing antennas for use on street furniture. First is the RF pattern required: directional or omni-directional. A directional antenna, could be mounted atop or below the top of a street furniture structure, while an omni-directional antenna, preferably would be on the top because omni-directional antennas require 360-degree radiation patterns in most cases so there is no structural blockage of the RF emission.

To minimize the visibility of antennas, manufacturers have developed products that integrate the antenna into pole structures to make them virtually indistinguishable from poles that are not supporting small-cell structures. More RF-friendly paint and fabric radome covers and structures are making it easier to match building faces and other surfaces.

7. WIND SPEED/ WIND LOAD : The street furniture as used for the placement of Small Cell, should be able to withstand a predefined applicable wind velocity in that area under maximum permissible loading.

8 NOISE : The Small Cell site shall not create noise greater than 65 dBA measured at 25 feet from the device location.

Structural Integrity :

The next factor for consideration is the structural integrity of the street furniture intended for use. Among other factors, engineers will need to address the safe weight loading capability, how much added wind force the antenna contributes and the weight loading capability for cabling internal and/or external of the structure.

Q.13: Is there a need for a specific mechanism for collaboration among local bodies /agencies for deployment of small cells and arial fiber using street furniture? If yes, what mechanisms should be put in place for collaboration among various local bodies/agencies involved in the process of permissions with TSPs/IP1s and to deal with other aspects of Small Cell deployment?

Comments : Yes. Mentioned Above.

Q.14: Kindly suggest an enabling Framework that shall include suggestions about the role of various authorities, rules of coordination among them, compliance rules and responsibilities, approval process, levies of fees/penalties, access rules etc.

Comments :

We are of the view that the Gati Shakti is a very important initiative that will help in rolling out various infrastructure projects, not only particularly for the telecom sector but also for other sectors as well.

In rolling out the telecom infrastructure permissions are generally required from various agencies such as Municipalities at the State level, Central agencies like Ministry of Forest, NHAI, MoD, AAI, Metro, railways, MoUD etc. Close coordination between various such agencies /Government departments is key to expedite the permissions and early roll-out of Infrastructure.

Q.15: How can sharing street furniture for small cell deployment be mandated or incentivized? What operational, regulatory, and licensing related issues are expected to be involved in sharing of small cells through various techniques in the Indian context and what are the suggested measures to deal with the same?

Comments : Mentioned Above.

Internationally, a lot of work is being done to address the small cell deployment-related issues and foster 5G development. Some of the best practices are as given below:

Hong Kong: As facilitating measures for 5G deployment, the Office of the Communications Authority, Hong Kong, issued guidelines on the use of street furniture such as sheltered bus stops, public payphone kiosks and smart lampposts for installation of 5G Radio Base Stations in 2019-2020.

Japan: In Japan, operators are permitted to install 5G base stations on 208,000 traffic lights across the country. Moreover, the Japanese government has proposed that the costs of using the traffic lights for 5G deployments be shared between operators and local administrations.

EU: In 2020, the EU Commission released its implementing regulation on small-area wireless access points. The Regulation provides for the following:

1. Specifies the physical and technical characteristics of small cells for 5G networks;
2. Aims to help simplify and accelerate 5G network installations, which should be facilitated through a permit-exempt deployment regime, while ensuring that national authorities keep oversight.
3. Lays out the specifications for a coherent and integrated installation, while providing national authorities with the means to oversee deployment of small cells.
4. Provides that small antenna should be exempted from any individual town planning permit or other individual prior permits.
5. Allows for broader national measures in support of straightforward small cell deployment.

Egypt: In Egypt, no building permits are required for small cell **deployments**. The only regulatory approval required after installation is the measurement of RF exposure. This occurs only once for the lifetime of the site, whereas for a macro cell, inspections are conducted at least every two years.

Singapore: The Singapore regulator Infocomm Media Development Authority (IMDA) provides a Code of Practice for Info-communications Facilities in Buildings (COPIF) specifying the duties of building owners and developers to provide adequate space, facilities, and access for telecom licensees to provide their services. These are typically the rooftop spaces reserved for telecom equipment to be provided to network operators by building developers and owners at no additional cost.

UK: The UK's Electronic Communications Code facilitates operators' access to macro and small cell infrastructure on public and private land.

Australia: In Australia, the Australian Communications and Media Authority (ACMA) and the Department of Communications has put policies to facilitate small cell deployments, including reductions in planning requirements for small cell deployments in the public space and the removal of barriers between license types to facilitate the re-allocation of incumbent spectrum holders.

United States of America: In 2018, the FCC issued guidelines that covers fees, aesthetics, and shot clocks requirements etc. Under this, state/local fees was rationalised, and state and local governments have 60 days to decide applications for existing infrastructure and 90 days for all other small cell wireless applications.

Q.16: Whether there should be any specific regulatory and legal framework to enable Small Cell and Aerial Cable deployment on

- i. Bus Shelters
- ii. Billboards
- iii. Electric/Smart Poles
- iv. Traffic lights
- v. Any other street furniture

Comments : **Mentioned Above.**

Q.17: What should be the commercial arrangements between the TSP's/Infrastructure Providers and street furniture owners for the same?

Comments :

A start-up company created in 2011 in UK, they have rolled out smart benches in cities across 23 countries, but have done so with local authorities, through individual negotiations with planners.

1. In their efforts to attract interest and support from local authorities, both companies emphasize the cost effectiveness of their products, whereby borough and city councils obtain public services and infrastructure while maintenance and upkeep are subsidized by commercial advertising revenue. This can be attractive to local authorities who, financially affected by a decade of austerity and the recent Corona virus pandemic, often face an “infrastructural gap”. In the design and marketing of their products, InLinkUK and Strawberry Energy associate their products with smart cities: both represent their potential end-users as young, urban, and professional smart phone users in need of charging points or fast Internet access while on the go. However, this conceptualization contrasts with the multiple ways in which a range of other groups use these devices.

2. This can be reconfiguration of public–private partnerships (PPP) to develop, retrofit, implement, and regulate smart cities and data-driven initiatives at a local level.

3. Smart Street Furniture (SSF) can typically promotes a new, efficient, transparent and data-driven form of urban governance and management of cities, and can put forward by private corporations such as Alphabet, Cisco, and IBM etc.. Smart cities and data-driven initiatives can be inscribed in technocratic forms of governance and technological solutionism, and often feed into policy models.

4. They can also provoke concerns about intensified surveillance and privacy infringements. Data in this context can be extracted, aggregated, and analyzed using analytics and sold to third party companies, generating a new market invested in predictive analysis.

5. In this way, users of smart technologies in urban environments can become “data points,” providing a vast amount of fine-grained data in real time about their movements (through locative media apps or MAC address tracker fitted in SSF) or their browsing habits (through public Wi-Fi) So far, it is the data harvesting dimension of smart kiosks that has received the most attention by academic and social commentary.

6. More recently, smart cities’ discourses have put citizens and communities at the center of their development and making (Joss et al., 2017; Cowley et al., 2018; Cardullo and Kitchin, 2019). However, this vision has largely remained unrealized with only limited citizen participation in existing smart cities’ developments. This shifting rhetoric remains rooted in a conceptualization of citizens as primarily consumers and data points or entrepreneurs in market-led forms of participation, limiting civic and collective engagement. As citizens have become more central to the discourse of smart cities, the rationale for smart

urban initiatives has focused on solving long-standing issues of unequal access to communication services.

7. For city councils, the idea of a privately funded rollout of city-wide connectivity services can be an attractive selling point, and compatible with their goals of digital and social inclusion. At the same time, questions of the efficacy of these “technological fixes” and whether private investors are well placed to address these needs, are raised alongside debates about the data processes underlying the connectivity they offer.

8. Southwark has undertaken work to identify priority areas for improved digital infrastructure in order to eliminate “not spots” and areas of low broadband speeds. To do so, the council aims to develop commercial partnerships to widen Wi-Fi provision and support the use of smart street assets such as smart benches and billboards (Southwark Council, 2016: 12–13).

Other Issues :

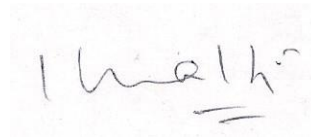
1. What Will Be the Impact of the EMF Exposure Due to the Deployment of the Small Cells?

Typically, small cells have a relatively small coverage footprint and operate with aggressive interference management and energy-saving mechanisms (e.g. putting idle small cells to sleep). All these factors mean that small cells usually operate well below their peak transmit powers. Therefore, RM-EMF compliance boundaries typically evaluated based on peak transmit powers create overly conservative RF-EMF limits that constrain the density of small cell deployments. For facilitating the network densification, we suggest that the EMF exposure levels recently reviewed and issued by ICNIRP in 2020 be adopted in India.

Ensuring Compliance with EMR guidelines Conservative RF-EMF Exposure Limits:

The requirement for compliance assessment of small cells in terms of RF-EMF exposure limits may present one of the most significant barriers for rapid and sustainable network densification. This is due to the relatively larger number of small cell sites (both outdoor and indoor) that may need to undergo the assessment.

Yours faithfully,

A handwritten signature in black ink, appearing to read "Kashyapnath", with a horizontal line underneath the name.

(Dr. Kashyapnath)
President