

Technical Code Programme 2020

Awareness & Adoption of Technical Codes

Radiocommunications Network Facilities - Street Furniture

MCMC MTSFB TC G026:2020

Norzalee Mohd Rozali
Expert member, Radiocommunications Network Facilities (External)
Sub Working Group (RNF-Ext SWG), MTSFB
21 October 2020



Presentation Outline

1 Introduction and Objective

2 Street Furniture Criteria and Types

3 Design Summary

4 Benefits and Implementation

5 Conclusion – Q&A

Radiocommunications Network Facilities - Street Furniture



No	Title	Technical Code number	Registration date
1.	Radiocommunications Network Facilities - Street Furniture	MCMC MTSFB TC G026:2020	20 May 2020

1

Introduction and Objective

Introduction & Objective

- Communication systems play a vital role in daily life and have become a social obligation to the people in helping to generate the economy of the country and state. The digital revolution could become one of the criteria in contributing to the growth of the Gross Domestic Product (GDP), which is derived by digital products and to ensure all government aspirations are fulfilled and aligned with Government's National agenda plan (NFCP) also known as **JENDELA**
- This Technical Code is required **to enhance the network coverage and capacity at street level, and in preparation for any future technologies.**
- The integration of street furniture with communications network facilities may address issues such of non-uniformity in design, cost efficiency and deployment speed.
- This technical code provides the general and technical requirement for installation of communication network facilities on street furniture. Continuous demands towards better experience of the communications have brought the installation of communication network facilities on street furniture into the market, with its main objective to resolve capacity and blind spot issues. With the above objective in mind, installation of communication network facilities on street furniture are expected to be in an area where typical structure for macro sites are hard to build, such as by the roadside and public spaces in urban areas.

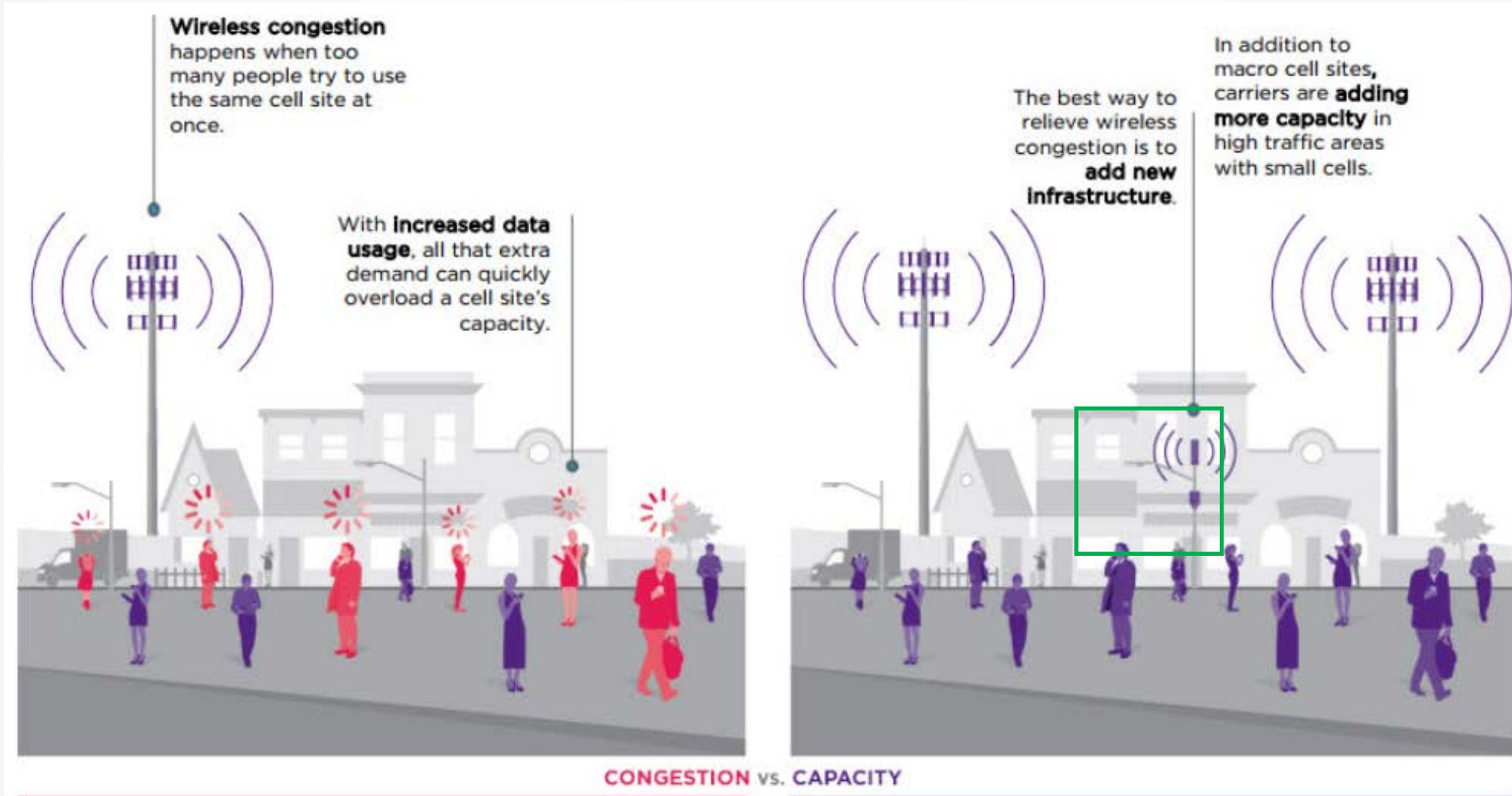
Introduction and Objective

- The objective of this technical code to be useful for the relevant organisations in:
 - i. providing the communications network facilities;
 - ii. providing the communications network services;
 - iii. facilitating the installation of street furniture and communication network facilities; and
 - iv. regulating the installation of street furniture and communication network facilities.
- This Technical Code **provides requirements for installation of communication network facilities on new, existing, and replacement of the street furniture.**
- Existing street furniture structure can be replaced with new street furniture structure if the installation of new communication network facilities does not meet the loading safety factor requirements and the design of the existing street furniture. The installation of the new street furniture is **subjected to approval by relevant authorities.**

Introduction and Objective

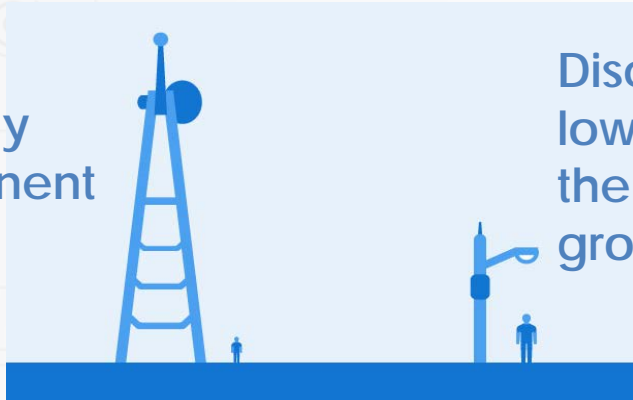
- The installation of communications network facilities on street furniture shall comply with existing relevant Malaysian laws and regulations.
- The main section in this technical code are as follows:
 - General Requirement
 1. Civil, Mechanical and Electrical (CME)
 2. Aesthetic
 3. Right of Way (RoW)
 - Technical Requirement
 1. Installation of communication network facilities
 2. Backhaul
 3. Operation and maintenance
 4. Safety and Security

Objective of Street Furniture for Communication Network



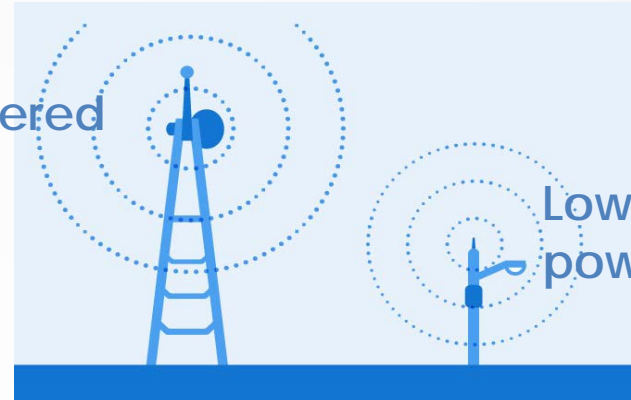
Objective of Street Furniture for Communication Network

Tall, visually prominent



Discreet, lower to the ground

High powered



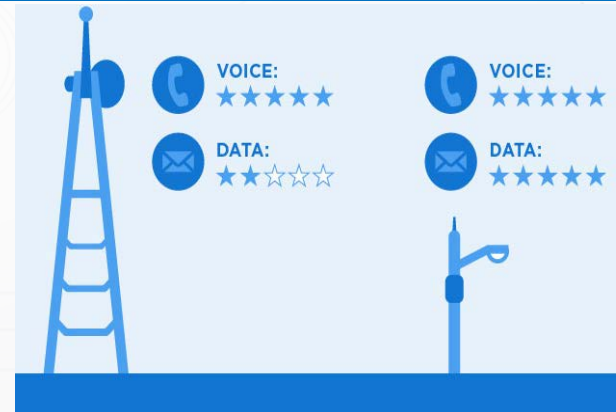
Low powered

For improvement on the existing 4G coverage with high density population and preparation of the incoming 5G coverage with connection of Internet of Thing (IoT) sensors ready

Best for mid – low density population



Good compliment for high dense area with high capacity needs



Requirement on Collaboration In Balance



Collaboration with State Government and Local Authority

Win-win collaboration | Monetize assets that generate revenue | Batch acquisition | Host IoT devices for Smart city



Environmental and Residential Friendly

Zero foot print | Minimum space foot print | Low impact equipment



Infrastructure Ready and Flexible

Fast Installation | small & light equipment | low power consumption



Improvement Coverage and Ready for Future

Improve existing capacity | Future proof for 5G technology design | IoT Connectivity

2

Street Furniture Criteria and Types

Street Furniture Criteria

- This clause details the generic design requirements for the deployment of mobile network. It is designed **to provide coverage for blind spot** (gap filler/in-fill) **that is not able to be addressed** by the conventional macro sites such as tower, monopole, lamp pole and rooftop sites.
- **Continuous demands towards better experience of the communications** have brought the installation of communications network facilities on street furniture into the market, with its main objective to resolve capacity and blind spot issues.
- The installation of communications network facilities on street furniture is expected to be in an area where normally macro sites are ideal or gap-filler/in-fill is required, such as by the roadside and public spaces in urban areas. The installation of communication network facilities on street furniture **should be aesthetically blended** into its environment. The communications network facilities on street furniture **shall co-exist with existing macro sites** and not meant to replace the macro sites.

Street Furniture Criteria

- Existing street furniture is required to be replaced with new structure if the following requirements are not complied.
 - i. The installation of communications network facilities does not meet the loading safety factor.
 - ii. The design of the existing street furniture is unable to support the communications network facilities.
- The installation of the new street furniture and communications network facilities on street furniture are **subjected to approval by the relevant authority bodies and shall comply with the Malaysian laws and regulations.**

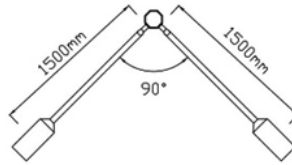
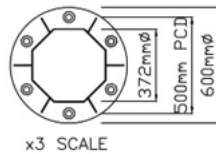
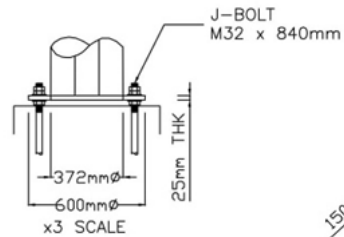
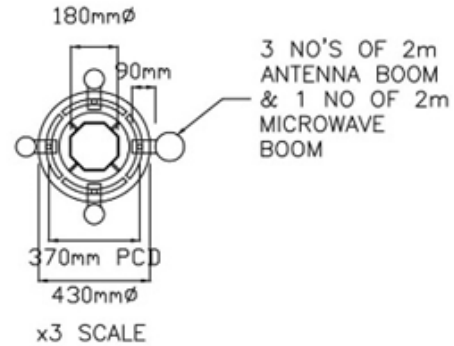
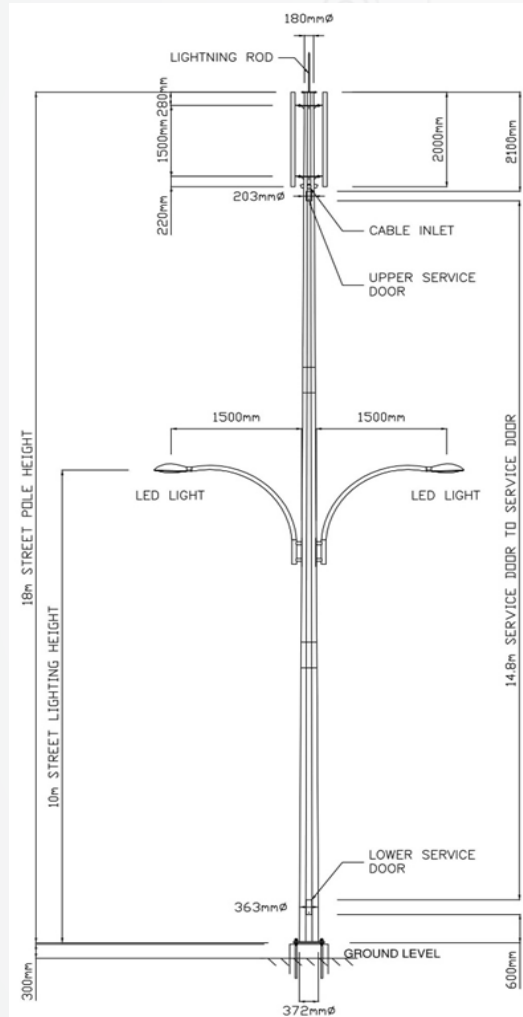
Street Furniture Types

- Street Lighting Pole

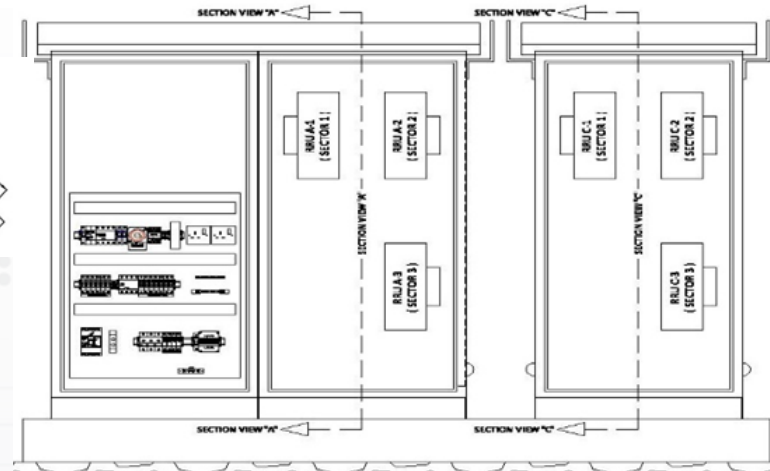
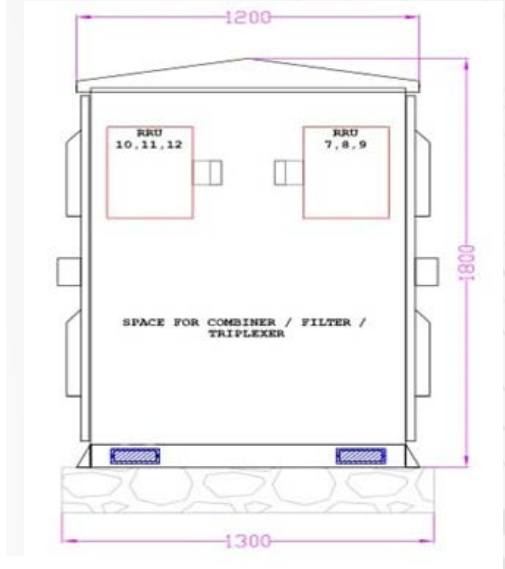
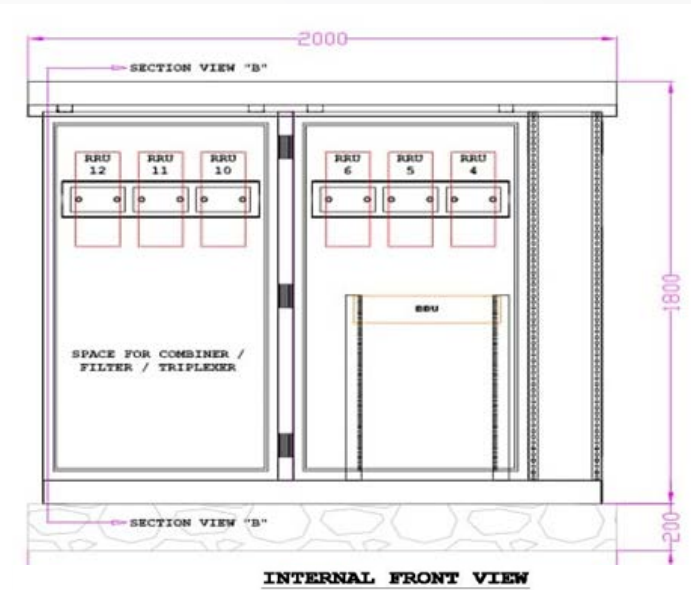
Type of coverage	Type of street lighting pole	Cabinet dimension (H x W x D) (mm)	Pole height (m)	Pole diameter (mm)
Macro	A1: Street lighting pole with cabinet on ground.	1 800 x 2 000 x 1 400	15 to 18	a) Top section is 180 b) Bottom section is 400
	A2: Street lighting pole with equipment inside the pole.	-	15 to 18	a) Top section is 180 Bottom section is 600
Micro	A3: Street lighting pole with equipment cabinet mounted on pole.	2 600 x 1 600 x 580	10 to 18	a) Top section is 180 b) Bottom section is 400
	A4: Street lighting pole with equipment inside the pole.	-	10 to 18	a) Top section is 180 b) Bottom section is 500

Street Furniture Types

- Street Lighting Pole Type A1 - Macro



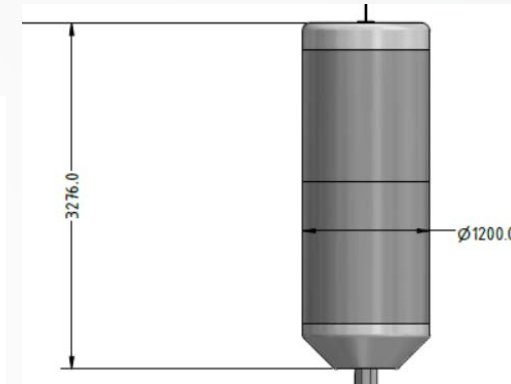
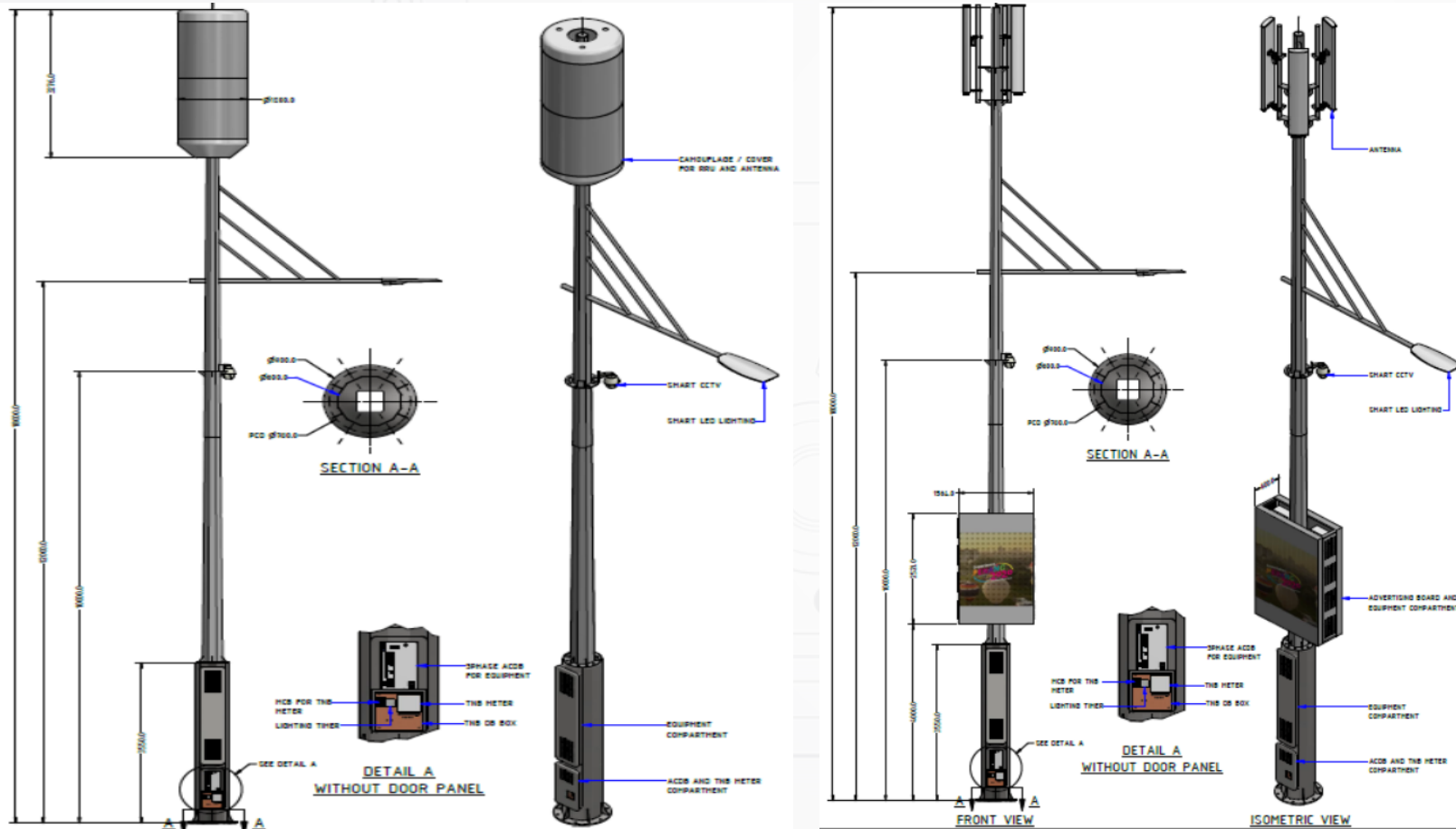
Street Lighting Pole Type A1 Details



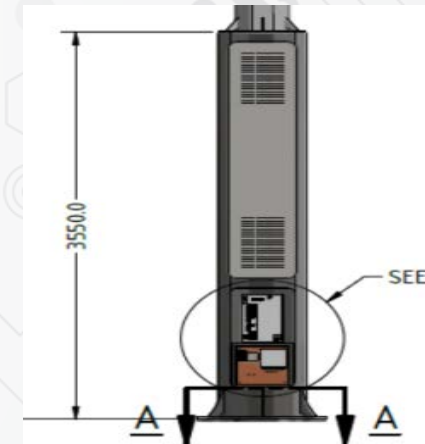
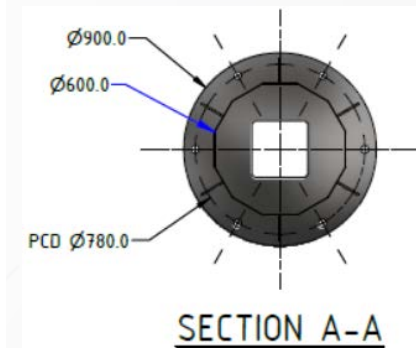
Cabinet Details

Street Furniture Types

- Street Lighting Pole Type A2 - Macro



Antenna Camouflage

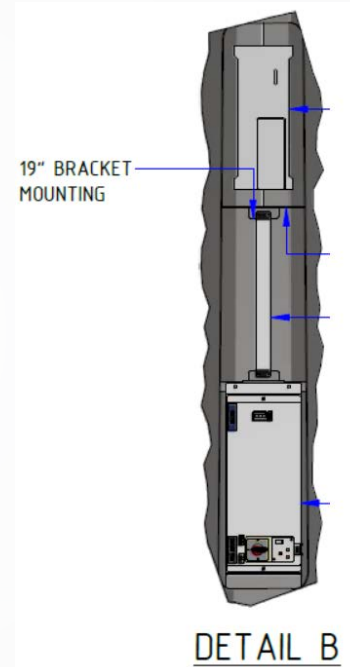
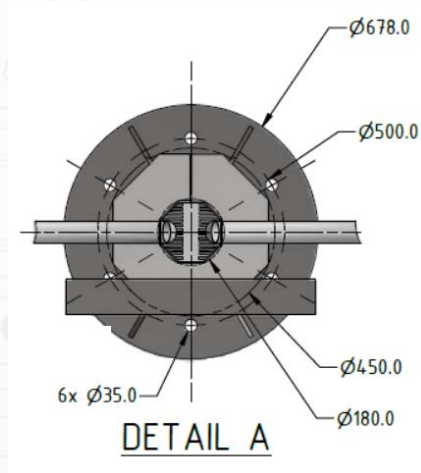
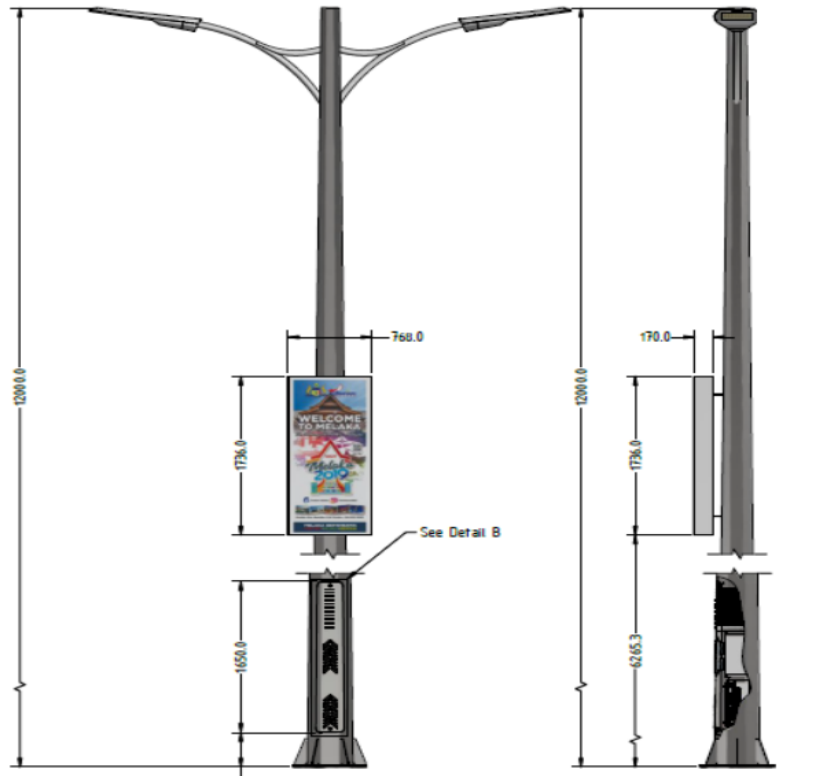
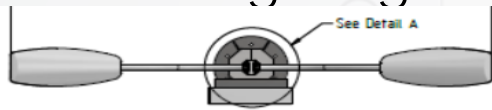


Cabinet Details

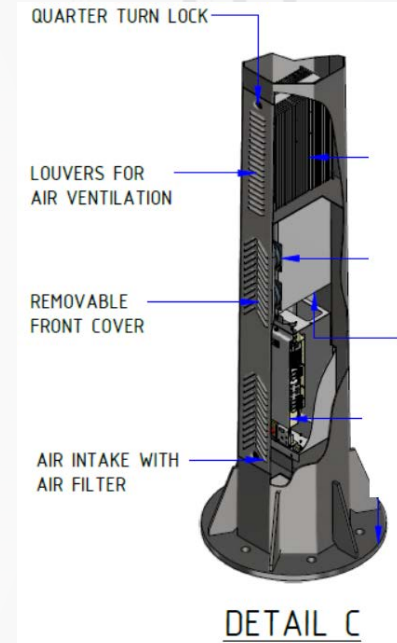
Street Lighting Pole Type A2 Details

Street Furniture Types

- Street Lighting Pole Type A4 - Micro



Equipment
Compartment



Electric Supply
Compartment

Street Lighting Pole Type A4 Details

Street Furniture Types

- Others

Type of coverage	Type of street furniture	Cabinet dimension (H x W x D) (mm)	Antenna size	Type of cable
Micro	Road signage, overhead gantry pole, flood light, traffic light or pedestrian flyover (but not limited to)	700 x 400 x 600 NOTE: Applicable for mounted cabinet only.	Sectorised antenna size less than 1 200 mm	All cables to install and conceal with proper type of material
	Taxi stand or bus stop	Requirements depend on demand and necessity		

Street Furniture Types

- Others - Micro



Installation on Gantry



Installation on Road Signage

Street Furniture Types

- Others - Micro



Installation on Street Signboard



Installation on Taxis and Bus Stand



3

Design Summary

Design Summary

- Street Furniture Lighting Pole should be mild steel polyganol type
- Maximum height of Street Lighting Pole 18 meters in height
- Not meant to replace Macro Cell sites, but to complement
- Aesthetic & safety aspects not compromised
- Follow proper site installation and maintenance procedure
- Follow local council guidelines and approval process

Design Summary

- The Street Furniture can cater the loads and wind resistance as below and the assessment need to endorse by Professional Engineer:

Loading type	Loading Dimension (m)	Weight per unit (kg)	Wind resistance area (m ²)
Solid parabolic without radome	0.3	15	0.28
Flat antenna	2.10 H x 0.5 W x 0.21 D	60	1.05
Cluster antenna + pedestal	0.36 D x 1.8 H + 0.37 D x 0.32 H	84	0.72
Small cell	0.77 H x 0.17 W x 0.15 D	17	0.13
RRU	-	30	0.32



4

Benefits and Implementation

Benefits

- The installation of communications network facilities on street furniture will provide street level coverage or "gap filler" for capacity and/or coverage for blind spot that is not able to be addressed by conventional macro sites such as tower, monopole, lamp pole or rooftop sites
- There are various types of installation can be selected to meet the requirement for each location.
- The installation of communications network facilities on street furniture will support not only 5G, but any future network and technologies.
- The integration of street furniture with communication network facilities will resolve issues on non-uniformity in design, cost efficiency and deployment speed.

Implementation

- The implementation of the technical code will need support from various stakeholders especially government agencies who regulate the installation of street furniture and the network facilities provider. Both parties need to work closely to make sure the installation of communication network facilities on street furniture can be done smoothly without any issues.



5

Challenges and Conclusion

Challenges

- The street furniture types selection will depends on the network operators planning, design and location with the availability of backhaul and power supply.
- There will be scattered street furniture with communication network installation facilities to allow the improvement of the performance of network and data throughput with the concept of “sharing the same area” by network service providers.
- The camouflage concept on the street furniture will be advised at the selected area with highly resident complaint issue and will be impacted the cost of the infrastructure

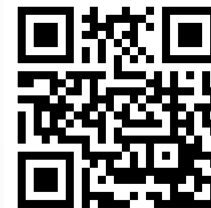
Conclusion

- The installation of communication network facilities on street furniture will act as "gap filler" for blind spot area that is not able to be addressed by conventional macro sites. The communication network facilities on the street furniture shall co-exist with existing macro sites and it's not meant to replace the macro sites. Continuous demands towards better experience of the communications have brought the installation of communication network facilities on street furniture into the market, with its main objective to resolve capacity and blind spot issues.
- This Technical Code is required to enhance the network coverage and capacity at street level, and in preparation for any future technologies.

Q&A

*Thank
You*

Let's Collaborate



MTSFB



mtsfb_cyberjaya