## MUNICIPAL CORPORATION OF GREATER MUMBAI POLICY/CIRCULAR No: AMC/ES/6217/II dated 30.06.2014

Sub: "Pedestrian First"- Footpath Guidelines

### Preamble:

Mumbai is fast growing cosmopolitan mega city. Owing to its geographical position; it has no space to expand horizontally. It grows vertically; in the form of sky scrapers, multi-storeyed buildings; thereby increasing density of population day by day. This is leading to complex traffic scenario with rapidly multiplying surge in number of vehicles plying on road & significant rise in pedestrian population using the road. This large number of vehicles on road and the increasing number of pedestrians has forced to shift focus of attention on the need to provide safe, continuous, uninterrupted & dedicated passage for mobility of pedestrians so as to avoid conflicts between vehicular and pedestrian transportation thereby minimizing accidents and improved ways of travel.

Against this backdrop, following guidelines have been framed to bring in uniformity in construction & maintenance of footpaths in various parts of the city. These guidelines cover engineering design and planning aspects of pedestrian facilities on road sides. Pedestrian facilities at special locations like schools, parking, and transit areas are also covered

The basic principle of footpath planning is to reduce pedestrian conflicts with vehicular traffic to minimum. Efforts should be made to create such conditions that pedestrians are not forced to share the carriageway with the vehicles & walk in unsafe circumstances and that the motorists respect the position of pedestrian

Footpaths should be regarded as a part of transportation system which is connected and continuous, just like roadways and railways. They should not be intermittently placed wherever convenient; but instead should be provided consistently along the road carriageway. In order to be effective, the side- walks 0-1

should be provided on both sides of the road and above the level of the carriageway; separated by kerbs. Height of the kerb at the edge should however, not exceed the height of a standard public step/riser i.e. 150mm

### Physical characters of footpath:

The pedestrian facilities shall comply with following physical characteristics:

- Footpath surface: An even surface without cracks or bumps for comfortable walking. All surfaces should be stable, firm, and slip resistant.
- Footpath Width: The footpath should be wide enough to accommodate pedestrian flow at any given point of time.
- External utilities/Obstructions: The obstruction can be an electric pole, tree, garbage bin, post box and hoardings. The location of garbage bin, electric pole and any other feature like signage etc. should be on one side of the footpath so as to give a clear walkway to the pedestrian.
- Encroachment: The informal commercial activities on footpath are common but undesirable features of the footpath environment in Mumbai. Sometimes the extent of encroachment rises to a level that the footpath facility becomes inaccessible/ non-usable by the pedestrian. For assuring increased comfort, uninterrupted access, optimum footpath width; encroachment of all forms on footpath shall be removed.
- Potential for Vehicle Conflict: The footpaths need to be distinctly segregated from the roads, where fast moving vehicles ply. The two ways to protect the pedestrian from vehicle conflicts is; the raised footpaths and the guardrails/Railings.
- Continuity: The continuity of the pedestrian facility is very important for the pedestrian with disability and of old age. Frequent kerb cuts along a street both impede traffic flow and create more conflict points between vehicles and pedestrian, thus reducing the effectiveness of footpaths; frequent ups and downs make the footpath uncomfortable to use by the pedestrian especially the old and forces the pedestrian to share the carriageway along with the vehicles. The provision of kerb ramps is essential for continuity of the footpath.

- Width of footpath: The width of a footpath is fundamental to the effective functioning of the pedestrian system. Without an optimum width, footpath will not help move enough pedestrian and will discourage them from walking. In case of road with width less than 13.44M width or in the areas with light pedestrian traffic, a width of 1500 mm may be regarded as the minimum acceptable, giving enough space for a wheelchair user and a walker to pass each other. The full width of footpath should be maintained consistently, even behind bus shelters and in front of shop. Width of footpaths should be at least 1.8M wide for roads up to 60 feet width and minimum 3M wide for roads with 90 feet and more width. It will facilitate the ease to accommodate wheelchair users and persons with vision impairments assisted by a sighted person. It will also allow, for instance, an adult and child to walk together. Where the effective width is constricted by, for example, existing trees or walls, bottlenecks; footpaths may reduce to 1200 mm but for only short distances. If the constriction is on account of encroachment, electric poles, cabins etc; same shall be promptly removed and minimum 1800MM width footpaths shall be provided. No utility ducts, utility poles, electric, or telecom boxes signage or any kind of obstruction should be placed within the walking space of/on footpath
- Surface quality: Firm, even paved surfaces are important to people using sticks or crutches or wheelchairs, or people walking with difficulty. The removal of obstacles like potholes, tree roots will make it safe and usable. Where chamber frame and covers over storm water drains cannot be kept out of the footpath, those should be aligned and flushed to top level of footpath to prevent wheelchairs' wheels from falling through. Paving should have an even surface to prevent tripping and be laid to even cross falls to allow proper drainage and prevent the formation of puddles. The gap between paving slabs or any vertical deviation between slabs should not exceed 5 mm.
- It is routinely observed that the 60MM thick lacquer tiles fixed in footpath show localized settlements, rodent boroughs, dislodging and dislocation of tiles leading to immense hardships to walkers and making movement of wheelchairs impossible.

With a view to check the defects in footpath owing to overuse of 60MM thick lacquer tiles; alternative methods will have to be tried and tested. With this vision in sight; for roads having width up to 44 feet and for the roads that pass through thickly populated slums; use of 60MM thick lacquer tiles shall be stopped immediately. The raised concrete slab over the storm water drains in suburbs and such dummy slabs in City shall act as footpath. Minimum width of 1500MM to 1800MM as is feasible on site shall be maintained by varying width of the slab. The level difference between carriageway and top of footpath slab shall be maximum 150MM. The kerbs shall be accordingly fixed and flushed with top of slab. In no case, the kerbs shall be jutting above the top level of footpath slab.

For footpaths having width 3M and more and for footpaths along the roads having width 90 feet and more, invariably shot blasted concrete paver blocks with stone finish shall be used. The thickness of cushioning below the paver blocks shall not be more than 25MM as thicker bedding course leads to uneven settlement, washing out of the sand, rodent problem etc. It shall however be noted that the heritage paver blocks, Vitrified ceramic topping paver blocks and granite paver blocks i.e. the SOR items RW-3-31 to RW-3-39 shall be used with exclusivity and only after obtaining sanction of AMC (ES).

- Cross Falls/Camber: Cross fall should be provided for quick disposal of run off and it should be 2% maximum. Steeper cross gradients tend to infuse a sense of un-comfort in the minds of pedestrians and disabled on wheelchair and hence desist them from freely using the footpath and hence are forced to share carriageway with vehicles. Hence excessive cross falls shall be avoided. On the other hand, as Mumbai falls in zone of heavy rain fall hence if cross falls are too flat, silt will accumulate after rains and cause the surface to become slippery. Puddles also form and cause the footpath to become slippery. Any break in the surface in footpath, should not be wider than 12 mm and should cross perpendicular to the direction of movement. This will prevent walking sticks and wheels getting caught in the gaps.
  - Service chamber covers: Service covers to manhole and inspection chambers should be of non-slip texture; flush with the footpath surface,

so as not to trap wheels of wheelchairs and not to trip the older and weaker pedestrians.

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- Design: The design of guard-rails should be neat & simple in appearance and as far as possible vandal/pilferage proof. Two aspects that need special attention are height of railing and obstruction to visibility. The height should be sufficient so as to deter public from climbing over it; as well as the railing should not affect visibility of the pedestrians.
- Applications: Use of pedestrian guard-rails should be considered under the following situations.
- a. Hazardous locations on straight stretches: It includes locations where roads are congested and locations where vehicles move at fast pace
- b. At Junctions and intersections
- c. Schools/Colleges.
- d. Bus stops, Railway stations etc.
- e. Overpass and Subways
- f. Central reserves: Where there is a central reserve or a median, guardrails can be erected within it to deter the pedestrian from attempting a crossing.

### Installation guidelines

- a. Guard-rails may help to improve pedestrian safety at road intersections.
- b. Occasionally, gaps in guard-rails may have to be provided, to accommodate trees, pillar boxes, sign posts, electrical control boxes etc. located near the side-walk. However, these should be suitably designed to prevent pedestrian or children from squeezing through to cross the carriageway.
- c. Railing barriers should be painted periodically, especially after the monsoon, for increased life and better appearance. Broken barriers must be promptly replaced.
- d. To be clearly detectable, guard-rails should be high enough from the kerb/median level and painted to contrast clearly with the surroundings
- e. Simple galvanized railings are not desirable unless they have contrasting markings on them.
- f. Guard-rails on the footpath should have rounded top to prevent injuries.

- Bollards: Bollards separate vehicles from pedestrians, buildings; visually or physically.
- a. Proposed bollards should be used to demarcate pedestrian and vehicular zones and mainly to restrict vehicular entry in to the identified pedestrian zone.
- b. Bollards can be used to allow selective entry to motor bikes and cycles
- c. Bollards shall be used where guard-rails/barriers with less visual presence are required
- d. Bollards shall be used to mark entry points to promenades and grounds
- e. Design of bollards and system of their placement shall be such that they harmonize with the system of guard-rails and central medians.

For design and various options of railings, bollards and other street furniture like tree guards/railings etc "Planning & Design Guidelines for Street Furniture Manual, part-I" maintained by Traffic & Coordination department shall be referred.

### Obstructions

Obstructions on the footpath surface shall be adequately distinguished by adopting Perceptible warning markings on the ground around the obstruction. The warning markings should extend over a width of at least 600mm outside the protruded area (obstacle)

## Overhanging and other obstructions:

- a. Obstacles (trees etc.) should be placed outside the path of travel or should be placed along one continuous line.
- b. Overhanging signs or vegetation should be mounted at minimum height of 2.20m.
- c. Undetectable obstacles mounted lower than 2.20 m may project a maximum distance of 100mm into the footpath
- d. Protruding elements should be avoided

#### Kerbs

a. Kerb height: Maximum height of a footpath (including kerb, walking surface, top-of-paving) shall not exceed 150 mm from the road level, which is the standard height of a public step/riser. 6

- b. Kerb ramps: Kerb ramp is useful for a smooth transition, to overcome changes in level between the footpath and the road carriageway, at each pedestrian crossing on opposite sides of the street and in the vicinity of building entrances. Absence of kerb ramps prevents persons with disabilities and reduced mobility from crossing streets.
- c. Standard kerb ramps are cut back in to the footpath (flush with roadway), at a gradient not greater than 1:12 with flared sides providing transition in three directions. At street intersection and turnings kerb ramps should be provided.
- d. Width of the kerb ramp should not be less than 1200 mm.
- e. Perceptible warning strip shall be provided on the Kerb side edge of the slope, so that persons with Vison impairment do not accidentally walk onto the road.
- Continuity and Consistency: It is mandatory for footpaths to be continuous between junctions or where grade crossing is provided. A change in colour of pavers can emphasize and highlight the crossing area to all users. Footpath interruptions must be avoided by minimizing cuts in kerbs. Every change in level of footpath (steps, kerbs or road works) should be made clearly visible through use of bright contrasting colours and perceptible pavers for persons with vision impairment. The ramps should be flared smooth into the street surface.
- Level Change: It may be possible to adjust ground levels more broadly to eliminate the need for a ramp or steps altogether. Arbitrary changes of level should be avoided. For instance, in creating a sense of importance for a building approach, a change in the quality of paving or street furniture can have the desired effect, rather than introducing a level change.
- a. A ramp or series of slopes should be integrated into the level change to facilitate wheelchair users or pram/buggies and bi-cycles
- b. The steeper the incline, ramp or steps, and the greater the change in level, the more frequent is the need for landings and resting places.

c. Where resting places are located on landings, they should be out of the way of the line of movement. A gradient less than 1:20 does not require handrails and resting places.

For better understanding the aspects and design principles of footpath with help of visios, guidelines in form of pictorial graphics released by "Institute for transportation and development Policy" are being provided with these guidelines.

- **Maintenance:** Regular maintenance of footpath will ensure uninterrupted accessibility. Maintenance should prevent or replace cracked and uneven paving blocks and those with loose joints, as they become tripping hazards and are difficult to walk on. They also cause puddles to form and can become slippery. The selection of paving materials should therefore be guided by the ease of repair and maintenance; this issue has been dealt with in detail in paras appearing hereinabove. These should be regularly checked before, during and after rains.
  - **Epilogue:** Given the drastically changing profile of urban traffic, the focus will have to be shifted to inclusive transportation planning. Earlier streets were designed keeping in mind the vehicular traffic. The current changed scenaric of urban traffic in view of increasing load of vehicles as well as pedestrians leads us to think of the "pedestrian first" aspect of street design. While designing street architecture; attention shall be paid to provide a safe, comfort building uninterrupted passage to the pedestrians so that they are not forced to share the carriageway with vehicles risking their lives.
  - All ward Assistant Commissioners are hereby directed to adhere to these guidelines strictly even while repairing footpaths of Mumbai

Sd/-30.06.2014 Ch E (Rds&Tr) Sd/-30.06.2014 Addl MC (ES)

### MUNICIPAL CORPORATION OF GREATER MUMBAI Policy Circular No:MCC/r/2011 dated 2 821212 and

No:MGC/F/2247/ dated 28-12.2016

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### Sub: "Pedestrian First"- Footpath.

# Ref: 1) Planning and design guidelines for street furniture manual, Part – I.

2) Footpath design released by Institute for Transportation and Development Policy.

### Preamble:

Greater Mumbai is one of the most populous cities in India with 1.25 Crore residents as per 2011 census (World's 5<sup>th</sup> largest city) and its share in Maharashtra population is about 11% or about 1% of India's population. Owing to its geographical constraints it has no space to expand horizontally. It is therefore growing vertically in the form of sky scrapers, multi-storeyed buildings; thereby increasing density of population day by day. It is a matter of fact that the density of population in MCGM area is 27,200 per sq Km and is constantly on the rise. Mumbai being the state capital and also known as economic capital of the country there is heavy floating population in the city from the neighbouring districts using public or private transport. The number of public and private vehicles in Mumbai is increasing every day at the rate of approximately 700 new vehicles registered in the city.

Motor vehicle statistics on road for the period 2001 to 2015 indicates that the total number of vehicles have increased from 1.03 million to 2.55 million which is about 2.47 times (about 6.68% CAGR). During the said period, the total number of private vehicles i.e. two wheelers and cars have increased from 0.79 million to 2.27 million which is about 2.89 times (about 7.87% CAGR). The increase in private vehicles ownership during the period 2001 to 2015 in Greater Mumbai is from 66 to 178. The total number of IPT modes (Auto and Taxi) have increased from 0.16 million to 0.19 million which is about 1.18 times (about 1.2% of CAGR). The density of population and of the vehicles is leading to complex traffic scenario where the pedestrian is forced to walk on the streets in absence of mandatory footpaths at many places. Many a place where footpath is provided is now proving to be inadequate to accommodate increased number of pedestrians who are forced to walk on the streets. It has therefore become necessary to focus attention on the need to provide safe, continuous, uninterrupted and dedicated passage for mobility of pedestrians so as to avoid conflicts between vehicular and pedestrian movement thereby minimising the risk of any untoward incidents.

Walking is fundamental to urban life. It is healthy & pollution free form of mobility & recreation. The increase in number of vehicles increases travel time rather than reducing it. Hence the commuters prefer to travel the short distance by walking. It is observed that many people prefer to travel a distance of about 1-2 KM& even more on foot rather than any transport system for fitness/ health purpose. Moreover, there is considerable contribution of senior citizens, expectant mothers & children who are using the footpath daily. The very concept of providing footpath in urban areas is to avoid conflict between motorized traffic and pedestrians with a view to provide safe passage to the walker and facilitating uninterrupted vehicular movement at the same time. However it is also a matter of fact that the cosmopolitan nature of the city is morphing in to a characteristic urbanized culture where the footpath space is more and more being shared among various activities rather than exclusively for pedestrian use.

Against this backdrop, it has become necessary to have policy guidelines to bring in uniformity in construction, maintenance and use of footpaths in various parts of the city. The guidelines include engineering design, planning aspects and use of pedestrian facilities on road sides including Pedestrian facilities at special locations like schools and transit areas.

The basic principle of footpath planning is to reduce pedestrian conflicts with vehicular traffic to minimum. Efforts need to be made to create such conditions that pedestrians are not forced to share the carriageway with the vehicles and walk in unsafe circumstances and that the motorists respect the right of pedestrians.

Footpaths are to be regarded as part of transportation system which is connected and continuous, just like roadways and railways. They should not be intermittently placed wherever convenient; but instead should be provided consistently along the road carriageway. In order to be effective, the sidewalks as far as possible and practicable should be provided on both sides of the road

above the level of the carriageway; separated by kerbs. Height of the kerb at the edge should however, not exceed the height of a standard public step/riser i.e.150mm.

### Policy Guidelines:

### Physical characteristics of footpaths

The pedestrian facilities shall comply with following physical characteristics:

- Footpath surface: An even surface without cracks or bumps for comfortable walking. All surfaces should be stable, firm, and slip resistant.
- Footpath Width: The footpath should be wide enough to accommodate pedestrian flow at any given point of time.
- External utilities/Obstructions: The obstruction can be an electric pole, tree, garbage bin, post box and hoardings. The location of garbage bin, electric pole and any other feature like signage etc. should be on one side of the footpath so as to give a clear walkway to the pedestrian.
- Encroachment: The informal commercial activities such as vending stalls, hawkers, feeder pillar boxes of electricity & telephone utilities etc. and parking of vehicles are common but undesirable features existing on the footpaths in Mumbai. Sometimes the extent of such activities rise to a level that the footpath facility becomes inaccessible/ non-usable by the pedestrian. For assuring increased comfort, uninterrupted access, optimum footpath width; encroachment of all forms on footpath shall be removed by following due process of Law. Parking fundamentally includes division of footpath which is dangerous for the pedestrian because of

vehicular movement, hence the license/ permission granted for parking permitted on footpath shall not be renewed hereafter except in isolated and rare cases where the permit may be renewed for maximum 15 days after recording the reasons in writing with prior approval of concerned Addl MC by retaining the minimum required width of 1.2M for pedestrian zone. No temporary permission shall be granted to erect any structure on footpaths henceforth without the prior approval of concerned Addl M.C./ M.C by retaining the minimum required width of 1.5M for pedestrian zone.

- Potential for Vehicle Conflict: The footpaths need to be distinctly segregated from the roads, where fast moving vehicles ply. The two ways to protect the pedestrian from vehicle conflicts is; the raised footpaths and the guardrails/Railings.
- Continuity: The continuity of the pedestrian facility is very important for the differently abled pedestrian as well as senior citizens. Frequent kerb cuts along a street both impede traffic flow and create more conflict points between vehicles and pedestrian, thus reducing the effectiveness of footpaths; frequent undulations make the footpath uncomfortable to use by the pedestrian especially the old, forcing them to share the carriageway along with the vehicles. The provision of kerb ramps is essential for continuity of the footpath.

### Width of footpath:

The width of a footpath is fundamental to the effective functioning of the pedestrian system. Without optimum width footpaths will not help move enough pedestrians and will discourage them from walking. Keeping in view the fact that uninterrupted safe passage is provided for the walker and the pedestrian is not forced to share the carriageway with moving traffic, as the pedestrian has the first right on the walkway i.e. the footpath. At the same time it is a fact that electric DP boxes, electricity poles, fire hydrants, telecommunications/piped gas, raised inspection boxes, stalls allotted to differently abled or to others by Government or MCGM under various schemes, licensed street hawkers etc have become inherent character and integral part of urban living which are installed on public spaces. These structures are existing on the footpath for several numbers of years and are declared as tolerated/protected by the policy of state government. In addition to this certain streets may have to be declared as vending zones in compliance of court orders. In such cases there is a need to shift them on one strip of the footpath in such a manner that safe continuous passage of adequate width is available for pedestrian movement.

As a broad principle, the footpath width shall be divided in three distinct zones, i.e. a dead zone of 0.5 M adjacent to the property/shop line, second is pedestrian zone and third furniture zone.

- The pedestrian zone: It shall be minimum is 1.50M horizontal and 2.20M vertical clear dedicated space for the safe passage of pedestrians. No objects i.e. branches of trees, shop awnings, weather shed etc. shall obstruct the pedestrian space. As a rule, the pedestrian zone of minimum width 1.50 M shall be provided. However, there may be some restrictive and compelling cases, in such cases, pedestrian zone of less than 1.5M may have to be provided as per site conditions. Similarly width of foot paths leading to major rail way and bus stations need to be increased suitably in order to cater to the heavy pedestrian movement especially during peak hours.
- The full width of footpath shall be maintained consistently, even behind bus shelters and in front of shops to have free movement of wheel chairs/accompany of assistants for the use of differently abled persons. Where the effective width is constricted by, for example, existing trees or walls, bottlenecks; footpaths may reduce to 1.2 M but for only short distances. If the constriction is on account of encroachment, electric poles, cabins etc; same shall be promptly removed and minimum 1.8M width footpaths shall be provided. No utility ducts, utility poles, electric, or telecom boxes signage or any kind of obstruction shall be placed within the walking space and same shall be promptly removed to furniture zone.
- **Furniture zone**: All the street furniture, fire hydrants, electricity boxes, light poles, trees, utility poles, telecom boxes, various sign and signage, dustbins for the moving pedestrians etc shall be placed along this 1.0 M wide furniture zone. The hawkers too in the vending zones shall be accommodated in the furniture zone. After exploring all the options if it is noticed that a there is no space to construct a public toilet except than on footpath then in such case by retaining minimum clear width of 1.2M for pedestrian zone, the toilet may be allowed on footpath with approval of Municipal Commissioner. Considering the three zones to be provided on footpath, total width of footpath in ideal circumstances and along all the roads having width 90 feet and more shall be minimum 3.3 M. On all the roads having width less than 60 feet, minimum pedestrian zone of 1.5 M shall be provided. Roads having width of footpath shall be worked out. For a fair idea on the three zones on footpath, sketch from IRC 103/2012 is enclosed.

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- Surface quality: Firm, even paved surfaces are important to people using sticks or crutches or wheelchairs, or people walking with difficulty. Therefore chamber frames and covers over storm water drains that cannot be kept out of the footpath, should be aligned in such a manner that it merges at par with the surface of footpath. Paving shall have an even surface to prevent tripping and be laid to even cross falls to allow proper drainage and prevent the formation of puddles. The gap between paving slabs or any vertical deviation between slabs should not exceed 5mm.
- The level difference between carriageway and top of footpath slab shall be maximum 150MM. The kerbs shall be accordingly fixed and flushed with top of slab. In no case, the kerbs shall be jutting above the top level of footpath slab.
- Cross Falls/Camber: Cross fall shall be provided for quick disposal of runoff and it should be 2% maximum. Any break in the surface in footpath, should not be wider than 12 mm and should cross perpendicular to the direction of movement.
- Service chamber covers: Service covers to manhole and inspection chambers should be of non-slip texture; flush with the footpath surface.
- Design: The design of guard-rails shall be neat and simple in appearance and as far as possible vandal/pilferage proof. Two aspects that need special attention are height of railing and obstruction to visibility. The height should be sufficient so as to deter public from climbing over it; as well as the railing should not affect visibility of the pedestrians.
- Applications: Use of pedestrian guard-rails shall be considered under the following situations.
- a. Hazardous locations on straight stretches: It includes locations where roads are congested and locations where vehicular movement is at fast pace.
- b. At Junctions and intersections
- c. Schools/Colleges.
- d. Bus stops, Railway stationed.
- e. Overpass and Subways
- f. Central reserves: Where there is a central reserve or median, guard- rails

may be erected within it to deter the pedestrian from attempting a crossing.

### Installation guidelines

- a. Guard-rails shall help to improve pedestrian safety at road intersections.
- b. Occasionally, gaps in guard-rails may have to be provided to accommodate trees, pillar boxes, sign posts, electrical control boxes etc. located near the side-walk. However, these shall be suitably designed to prevent pedestrian or children from squeezing through to cross the carriageway.
- c. Railing barriers shall be painted periodically, especially after the monsoon, for increased life and better appearance. Broken barriers must be promptly replaced.
- d. To be clearly detectable, guard-rails shall be high enough from the kerb/median level and painted to contrast clearly with the surroundings
- e. Simple galvanized railings are not desirable unless they have contrasting markings on them.
- f. Guard-rails on the footpath should have rounded top to prevent injuries.
  - Bollards: Bollards are useful to separate vehicles from pedestrians, buildings; visually or physically.
  - a. Proposed bollards should be used to demarcate pedestrian and vehicular zones and mainly to restrict vehicular entry in to the identified pedestrian zone.
  - b. Bollards may be used to allow selective entry to motor bikes and cycles
  - Bollards shall be used where guard-rails/barriers with less visual presence are required.
  - d. Bollards shall be used to mark entry points to promenades and grounds
  - e. Design of bollards and system of their placement shall be such that they harmonize with the system of guard-rails and central medians.

For design and various options of railings, bollards and other street furniture like tree guards/railings etc "Planning & Design Guidelines for Street Furniture Manual, part-I" maintained by Traffic & Coordination department shall be referred.

### Obstructions

Obstructions on the footpath surface shall be adequately distinguished by adopting Perceptible warning markings on the ground around the obstruction.

The warning markings should extend over a width of at least 600mm outside the protruded area (obstacle)

### Overhanging and other obstructions:

- Obstacles (trees etc.) shall be placed outside the path of travel or be placed along one continuous line.
- b. Overhanging signs or vegetation should be mounted at minimum height of 2.20m.
- c. Undetectable obstacles mounted lower than 2.20 M may project a maximum distance of 100mm into the footpath
- d. Protruding elements shall be avoided
- <u>Kerbs</u>
- a. Kerb height: Maximum height of a footpath (including kerb, walking surface, top-of-paving) shall not exceed 150 mm from the road level, which is the standard height of a public step/riser.
- b. Kerb ramps: Kerb ramp is useful for smooth transition, to overcome changes in level between the footpath and the road carriageway, at each pedestrian crossing on opposite sides of the street and in the vicinity of building entrances.
- c. Standard kerb ramps are cut back in to the footpath (flush with roadway), at a gradient not greater than 1:12 with flared sides providing transition in three directions. At street intersection and turnings kerb ramps should be provided.
- d. Width of the kerb ramp should not be less than 1.2M.
- Perceptible warning strip shall be provided on the Kerb side edge of the slop.
- Continuity and Consistency: It is mandatory for footpaths to be continuous between junctions or where grade crossing is provided. A change in colour of pavers can emphasize and highlight the crossing area to all users. Footpath interruptions must be avoided by minimizing cuts in kerbs. Every change in level of footpath (steps, kerbs or road works) should be made clearly visible through use of bright contrasting colours and perceptible pavers for persons with vision impairment.

The ramps should be flared smooth into the street surface.

- Level Change: It may be possible to adjust ground levels more broadly to eliminate the need for a ramp or steps altogether. Arbitrary changes of level should be avoided. For instance, in creating a sense of importance for a building approach, a change in the quality of paving or street furniture can have the desired effect, rather than introducing a level change.
- a. A ramp or series of slopes shall be integrated into the level change to facilitate wheelchair users or pram/buggies and bicycles.
- b. Where resting places are located on landings, they shall be out of the way of the line of movement. A gradient less than 1:20 does not require handrails and resting places.

For better understanding the aspects and design principles of footpath with help of visions, guidelines in form of pictorial graphics released by "Institute for transportation and development Policy" are being provided with these guidelines.

- Maintenance: Regular maintenance of footpath is necessary to ensure uninterrupted accessibility. Maintenance includes preventing or replacing cracked and uneven paving blocks and those with loose joints, as they become tripping hazards and are difficult to walk on. They also cause puddles to form and can become slippery. The selection of paving materials should therefore be guided by the ease of repair and maintenance. These should be regularly checked before, during and after rains.
- Epilogue: Given the drastically changing profile of urban traffic, the focus will have to be shifted to inclusive transportation planning. Earlier streets were designed keeping in mind the vehicular traffic. The current changed scenario of urban traffic in view of increasing load of vehicles as well as pedestrians leads us to think of the "pedestrian first" aspect of street design. While designing street architecture; attention shall be paid to provide a safe, comfort building uninterrupted passage to the pedestrians so that they are not forced to share the carriageway with vehicles risking their lives.
- All ward Assistant Commissioners are hereby directed to adhere to these

guidelines strictly even while repairing footpaths. Encroachment of all kinds and parking from footpaths shall be removed by the Assistant Commissioners promptly by following due process of law.

- These are broad guidelines on construction of footpath and utilization of the space in optimized manner. For more clarification, the IRC code 103 of 2012 shall be referred.
- These guidelines shall be incorporated in all Municipal Road/ footpath constructions comprehensively and shall be strictly adhered to. These guidelines shall come in to force with immediate effect. This policy supersedes all previous circulars / guidelines issued in the matter.

Ch.Eng. (Rds. & Tr.) Addl MC (ES) Municipal Commissioner 29/12/16