



अद्वितीय  
& Unique



Pune Municipal Corporation



# *Walk Smart*

Policy for Pedestrian Facilities and Safety in Pune City



January 2016

## **I. PREAMBLE**

All cities are facing serious traffic congestion problem. The root cause of the problem is rise in economic activity resulting in rapid increase in number of private vehicles on road. The rise in vehicle population is creating more and more problems for pedestrian movement on road, either in terms of waiting time, pollution or accidents. The mistaken belief is that the traffic problem will get solved simply by suitably increasing the road capacity by implementing measures such as road widening, building new roads, flyovers etc. However such solutions are never found to be adequate as vehicle growth keeps on happening at a much faster rate. Hence it is seen that within a short period the roads again get choked with traffic. Moreover the conditions for pedestrians drastically worsen due to all such vehicle-centric measures. Senior citizens, the infirm, those with special needs, ladies and children are the most badly hit.

The only proven sustainable solution to the traffic problem is providing a good quality public transport system as well as safe, adequate and usable facilities for pedestrians and cyclists. This will make it possible for people to commute conveniently without using own vehicles, thus reducing the number of vehicles on road. Consequently the traffic congestion problem as well as pollution problem will get progressively resolved.

The 'National Urban Transport Policy' (NUTP) and the 'Comprehensive Mobility Plan' (CMP) for Pune have rightly given top priority to public transport, walking and cycling. It is necessary that all Traffic & Transportation related policies and plans of Pune Municipal Corporation (PMC) as well as implementation of plans should have the same priorities as the NUTP and CMP.

It is to be noted that walking is a fundamental right of citizens and everyone is a pedestrian at one time or the other. There are many people who walk from start to end of the trip. Even others who use vehicles to commute (private vehicle, bus, rickshaw etc.) have to first walk up to the vehicle and then again to reach the final destination after they leave the vehicle. It is thus evident that every citizen is required to walk and cross roads routinely on a daily basis. Better pedestrian facilities will also encourage more and more people to walk and use public transport instead of travelling in private vehicles. It is hence absolutely necessary that safe, adequate and usable facilities for pedestrians should be provided on every road.

## **II. NEED FOR POLICY**

The fact is that the most endangered road users are the pedestrians. Walking on road has become very difficult and hazardous for people. The main reasons for this situation are -

- 1) Lack of safe, usable footpaths
- 2) Lack of safe pedestrian road crossings
- 3) Lack of adequate pedestrian phase in traffic signal cycle
- 4) Lack of adequate enforcement to ensure safe passage for pedestrians
- 5) Lack of proper maintenance of footpaths and pedestrian road crossings
- 6) Increased volume of traffic
- 7) Increased speed of vehicles
- 8) Wider roads
- 9) Larger junctions
- 10) One way roads
- 11) Signal free roads and junctions
- 12) Traffic indiscipline

The most serious problem faced by pedestrians is while crossing the road which has become life-threatening. Several issues are faced in the matter of pedestrian road crossings, both at grade crossings (at road level or footpath level) and grade separated crossings (at a level above or below road – FOB or subway).

#### A) At grade crossings

Road crossing at same level of road is most convenient for pedestrians of all age groups as it provides the shortest crossing path which they can cross with least effort and in less time. The design of the crossing has to be such that pedestrians can cross the road safely. However most at grade crossings in Pune are not safe.

Some of the issues frequently faced in case of at grade crossings are –

##### Infrastructure related

- 1) Proper pedestrian refuges not provided suitably on the crossing path where pedestrians can stand safely and cross the road in stages – especially important for wider roads of more than 2 lanes each way (total 4 lanes and above).
- 2) Faded zebra marking not clearly visible and hence crossing becomes unsafe for pedestrians – in such cases enforcement by Traffic police is also not possible even if vehicles encroach on the crossing path.
- 3) Access to zebra crossing from footpath blocked by parked vehicles.
- 4) No proper same level connectivity to footpath in case of raised crossing.
- 5) Approaching vehicles not visible to the pedestrians before they begin to cross the road.
- 6) Vehicles approach mid-block crossings at high speeds endangering lives of pedestrians.
- 7) Potholes, dislocated / damaged chamber covers, uneven road surface on the crossing path – pedestrians (especially senior citizens) may stumble and get injured while crossing the road. Also crossing time increased.
- 8) Street lighting inadequate or absent at road crossings – hazardous for pedestrians to walk and also pedestrians are not clearly visible to vehicle drivers when it is dark, thus increasing possibility of accidents.

##### Signal related

- 9) Pedestrian crossing phase time period in the traffic signal cycle inadequate.
- 10) Where provided, the location of pedestrian signals is not suitably aligned with the walking path and pedestrian viewing zone. Hence the signals are not clearly visible to pedestrians defeating the purpose.
- 11) Where road is wide at the junction and is to be crossed in stages, pedestrian signals are provided only on footpaths at the edges of the road and not on intermediate pedestrian refuges. Thus pedestrians do not get information regarding when it is safe to cross each road segment.
- 12) No provision in the signal system for the visually impaired.
- 13) Pedestrian signals have been provided at some intermediate crossings between junctions. However these signals do not serve the desired purpose as vehicles never honor such intermediate signals in the absence of enforcement.

#### B) Grade separated crossings

Grade separated crossing at a level above or below the road are generally found to be inconvenient by pedestrians and hence not preferred by them. This has been the experience not only in Pune but in all other cities in India and also all over the world. In fact grade separated crossing means injustice for pedestrians who are put to hardships while the motorized vehicles are provided the easy way.

Some of the issues faced in case of grade separated crossings are -

- 1) Crossing involves climbing a large number of steps which needs physical effort - senior citizens and persons with temporary or permanent disabilities are unable to use such crossings
- 2) Total walking distance and time taken to cross the road increases
- 3) Lifts where provided have issues. Lift operators are not always present. It is not safe for senior citizens and children to use lifts in the absence of lift operator. Lifts become inoperative in case of power failure as backup power supply is not provided. Lifts could be out of service or become unsafe for users because of maintenance issues. Lifts are unprotected on road and are prone to pilferage and damage by anti-social elements.
- 4) Lack of security measures - senior citizens, women and children are most vulnerable
- 5) Misuse of FOBs and subways by anti-social elements
- 6) Seepage and accumulation of water causing the floor to become slippery and dangerous - especially senior citizens exposed to great risk
- 7) Cleanliness not maintained
- 8) Proper illumination not provided and maintained
- 9) No emergency lighting in case of power failure
- 10) Lack of proper ventilation in subways
- 11) Subways and FOB lifts are locked up at a particular time and hence not available for crossing till late night.

Due to such reasons FOBs and subways remain largely unused.

Other issues -

- 12) Capital cost for construction very high
- 13) High recurring cost of operation, maintenance and security
- 14) Prolonged time period for construction (especially for subways) with blockage of part of the road causing hardships to pedestrians and also traffic problems
- 15) Entrance/exit blocks space on footpath making it difficult for pedestrians to walk
- 16) Connectivity in all required directions may not be available and hence pedestrians have to cross at the road surface even when grade separated crossing is provided.
- 17) FOBs and subways cause increase in vehicle speeds as the drivers expect that there would not be any pedestrians crossing the road. This endangers lives of pedestrians who are required to cross at the surface and also affects overall traffic safety.

There has been a lack of proper, adequate, safe and usable pedestrian facilities over a prolonged period. This has forced people to walk on the carriageway of road and also cross the road any where any time, which has now become almost like a habit. This endangers their lives and also causes hindrance to traffic flow, aggravating the traffic congestion situation. A real lasting change in their behavioral pattern would be possible only when proper pedestrian facilities are provided all over the city. At the same time vehicle users also need to be disciplined and should respect the rights of pedestrians.

Presently there is no policy for pedestrian facilities and safety. Specific procedure is not followed for deciding type of pedestrian road crossing at any location. Thus there is no uniformity and consistency regarding pedestrian facilities provided in the city. Hence there was an urgent need for an appropriate policy to make it easy and safe for people to walk and cross roads. Pune Municipal Corporation has now formulated such a policy for Pedestrian safety and comfort. The policy covers mandatory features for pedestrian infrastructure and a standardized procedure for deciding the type of crossing to be provided on case to case basis as per local needs. Regular maintenance and security for the pedestrian infrastructure is also covered in the policy.

### **III. VISION**

Pune will be a pedestrian friendly city with dignity for pedestrians and care for their safety and wellbeing through the implementation of appropriate policies. The city will have a high quality pedestrian infrastructure with equitable allocation of road space. The roads in the city will have an environment which will make walking a pleasant experience for all, enhancing the quality of life for citizens and making Pune a liveable city.

### **IV. GOALS**

The policy aims to achieve the following goals in line with the vision.

- 1) Safety and comfort for all pedestrians irrespective of age, sex, status and special needs
- 2) Improved access and mobility for all citizens at all times as per need by providing necessary safe and usable pedestrian facilities which will be well designed and well maintained
- 3) Better road design and traffic calming to make roads safer for pedestrians and other road users also
- 4) Status, dignity and top priority to walking by changing the existing attitude and mindset of all concerned
- 5) Promotion of walking as a convenient and zero cost mode of transport
- 6) Creation of 'pedestrian only zones' in the city

### **V. GUIDING PRINCIPLES**

This section specifies the guiding principles and basic requirements that should be complied with for the planning, design, implementation and management of pedestrian infrastructure as well as roads and traffic in the city for the safety of pedestrians.

- 1) All roads shall have a designated path for walking conveniently and safely.
- 2) The entire pedestrian infrastructure on road (footpaths, road crossings etc.) shall be well designed, adequate in size and universally accessible (barrier-free) so that all persons including those with special needs, senior citizens and children would be able to walk /move on the road and cross the road safely and conveniently.
- 3) All roads shall have designated crossings for pedestrians where any person would be able to cross the road without any difficulty or exposure to any risk at any time of the day, as long as the proper rules for crossing are followed.

The rules for crossing include -

- a) Using the designated pedestrian crossing path (at grade crossing, FOB or subway as the case may be)
- b) Waiting for the 'pedestrian phase' to cross
- c) Adhering to any posted signs, directions or instructions of the Traffic police/wardens

The above rules will become applicable only when corresponding appropriate provisions and usable pedestrian facilities have been provided.

- 4) All pedestrian infrastructures (footpaths, road crossings etc.) shall be designed and constructed in conformity with the applicable codes, standards and guidelines (IRC, Street Design Guidelines, STAC etc.) or better.

- 5) In case of any conflict between provisions in various standards, priority shall be given for pedestrian safety and convenience in the design of streets and space allocation.
- 6) Design of all pedestrian facilities including road crossings shall be prepared by urban designers / experts.
- 7) Pedestrian walkways and road crossings as per the design principles and with the essential features given later in the document under Section (VI) shall be provided on all roads and at road junctions.
- 8) Roads with flyovers and vehicle underpasses shall also be provided with pedestrian infrastructure as per this policy.
- 9) In case of roads with excess ROW or varying width, the vehicle carriageway shall be designed as per actual need and with uniform width. The available surplus space should be utilized for widening the footpaths even if it be only on part of the road. Such widened footpaths should be converted to vibrant public spaces by providing amenities such as benches, shelters, waste bins, landscaping, shade giving tree plantation etc. People can come together, socially interact, sit, chat and generally spend time pleasantly in such spaces (for example, Aundh DP road). It should be ensured that any such amenities and provisions are so placed on the footpath that clear hindrance-free passage is always available for pedestrians.
- 10) Any beautification of roads, junctions, footpaths etc. (by providing fountains, landscaping, flowerbeds, murals, sculptures etc.) should not in any way reduce available walking space or cause any hindrance to smooth pedestrian movement on footpaths, road crossings, traffic islands and pedestrian refuges. Normally flowerbeds etc. which cannot be properly maintained on a sustained basis should not be provided as such provisions are then misused as waste bins causing unpleasant and unhygienic conditions.
- 11) Roads shall have designated crossing points at such intervals or locations that do not require a detour of more than 200 meters. (Reference: 'Standards for the National Mission for Sustainable Habitats' published by the Ministry of Urban Development, Govt. of India). Mid-block road crossings shall be provided as per IRC: 103-2012. (A 'detour' is defined as the extra distance a pedestrian would have to walk in order to reach his/her destination using a path that includes designated crossing points as compared to being able to cross at any point).
- 12) In case of curbside bus stop, designated crossing shall be provided with a detour of less than 50 meters, which will make it convenient for people to use public transport. For BRT bus stops at road median, the crossings shall be suitably provided as part of the BRT corridor design.
- 13) At grade pedestrian road crossings are most convenient for pedestrians and should always be preferred as the first choice. Grade separated pedestrian road crossings (FOBs, subways) should be considered only as a last resort when all attempts to provide safe at grade road crossing have failed.
- 14) Decision about grade separated road crossings at any location shall be finalized only after following a standard procedure given later in the document under Section (VII) with analysis of alternatives and scientific studies by Urban designers / Traffic experts and in consultation with Traffic police.
- 15) Traffic signal system shall have pedestrian signals with adequate pedestrian phase timing as per crossing length and necessary audible feature for the visually impaired. Free left turn for vehicles shall not be allowed to ensure safe crossing for pedestrians at the respective segment.
- 16) Traffic calming measures shall be provided prior to the mid-block crossings as required to slow down vehicles sufficiently to make the crossing safe for pedestrians.

- 17) Enforcement shall be done where necessary by posting Traffic police /wardens to ensure safe passage for pedestrians across roads, both at road junctions and at mid-block crossings.
- 18) Roads (with right of way up to 12 meters) may not have designated crossing points. Such roads shall be made safe for pedestrians to walk and cross by prohibiting entry of heavy vehicles and providing appropriate traffic calming measures as necessary. In such cases the *observed* traffic speeds should be less than 15 kmph.
- 19) Footpaths and road crossings shall be kept free of encroachments and any other obstacles (including ramps, steps, outside opening gates, garbage bins, storage of construction material, dumping of debris etc.) to ensure a clear hindrance-free passage for pedestrians.
- 20) Pedestrian infrastructure shall always be maintained in a good, clean, usable and safe condition.
- 21) Periodic audit shall be carried out to assess the efficacy of walkways and pedestrian crossings and determine measures that need to be taken to maintain the desired level of safety and convenience for pedestrians.
- 22) Adequate budgetary provision as required shall be made on annual basis for new pedestrian facilities and operation, maintenance, security of existing grade separated crossings (FOBs, subways) and other facilities.
- 23) An effective system and mechanism (cell / department ) with necessary financial provisions and dedicated manpower shall be set up as a nodal unit for addressing matters regarding availability of safe, convenient, obstacle-free and usable facilities / infrastructure on road for pedestrians (footpaths, road crossings etc.). The cell / department should review plans / drawings for pedestrian infrastructure projects and traffic plans to ensure that appropriate provisions for pedestrian safety and convenience have been incorporated. A senior PMC officer from Roads Department shall be assigned the responsibility as nodal officer for coordinating related activities with all concerned departments / persons.
- 24) Display of advertisements on either side of FOB may be permitted as per IRC guide lines to raise revenue for operation and maintenance of the pedestrian facility. Security for pedestrians should be ensured with suitable design modifications.
- 25) Shops may be permitted in the pedestrian subway as per safety norms and related policy to raise revenue for operation and maintenance of the pedestrian facility. Security and convenience for pedestrians should be ensured with suitable design modifications.
- 26) Needs of pedestrians shall be duly taken into account before taking decision about new traffic plans, modifications in existing plans, new infrastructure, any maintenance work on road etc., such as (a) making road one way (b) rotary plan (c) removal of road divider (d) sealing of punctures in road dividers (e) removal of traffic signals (f) shifting of bus stops (g) road widening (h) flyovers etc. Adequate provisions shall be made for safe passage for pedestrians (road side walkways and road crossings) before implementing any such plan as well as during execution of work.
- 27) In case of very high pedestrian volumes/activity in areas such as major markets, core city etc., suitable restrictions on vehicle movement shall be imposed, which can be for all time or day and time based.
- 28) Walking plaza plan should be implemented on roads in market areas during weekend and festive period.
- 29) Vehicle speeds in the city shall be restricted to the prescribed safe limits for respective areas. There should not be any attempt to increase the speeds by any measures (such as altering road design, traffic plan etc.) as this affects the safety of pedestrians as well as traffic safety. In some cases there may even be a need to

reduce speeds. Furthermore a pedestrian-friendly planning paradigm should focus on *accessibility* first and then *mobility*.

- 30) Traffic indiscipline in the city (all modes, including pedestrians) shall be curbed through a combination of proper and consistent road design, increasing awareness and enforcement – and that all three methods should be used simultaneously.
- 31) Traffic indiscipline (violation of standard rules of traffic) shall not be condoned under any circumstances and cannot be the basis for denying other road users their basic comfort and safety.
- 32) State of art technology should be used to identify traffic signal violators and heavy penalty should be imposed on them. The money so collected should be used for enhancement of pedestrian facilities in the city.
- 33) Awareness about road safety practices, traffic discipline and proper use of facilities provided shall be created among all road users – pedestrians, cyclists, bus commuters, private motorized vehicle users, drivers of buses, tempos, rickshaws etc.

## **VI. DESIGN PRINCIPLES**

This section specifies the design principles to be adhered to and essential features that shall be provided for pedestrian infrastructure in the city.

### **A) Footpaths / walkways**

- 1) Clear access to footpath should be ensured for easy entry and exit.
- 2) Height of footpath should be as per IRC:103 -2012 and convenient for senior citizens and children with curb ramps provided as required. Where height of the footpath is required to be greater than 150 mm due to unavoidable circumstances, step / curb ramps must be specially designed in consultation with an urban designer/ architect.
- 3) Width of footpath should be adequate for the pedestrian density in the area (considering present and future requirements) and consistently uniform over the length of footpath. Vertical clearance of at least 2.5 metres for walking should be maintained throughout the length and width of footpath.
- 4) Footpath width should be suitably increased at spots with permanent obstructions (for example trees) to ensure minimum required passage for pedestrians without the need for stepping on the road.
- 5) Level of footpath should be even throughout the length and width.
- 6) Surface of footpath should be antiskid type and of durable quality.
- 7) Railings should be provided where necessary (normally near major intersections) ensuring that usable width of footpath is not reduced.
- 8) Footpath should have continuity without any intermediate breaks.
- 9) Footpath should have suitable connectivity with subsequent section where interruptions are unavoidable.
- 10) At road junctions footpath should have full width continuity around corners which should have appropriate curvature to restrict vehicle speeds while turning. Chamfer should be avoided at corners. Footpath width should be increased at corners to compensate for the chamfer if provided.
- 11) Footpath at road junctions should have connectivity via zebra crossing and pedestrian refuges with footpath across the road.
- 12) Normally there should not be any change in level of footpath at property entrance. Suitable ramps for vehicle movement and bollards to prevent vehicle entry on to the footpath should be provided. Where level cannot be maintained, suitable treatment with gradual slope (not step) should be given to footpath at the property entrance for safe and smooth passage for pedestrians.



- 13) Barriers should be provided to prevent vehicle entry, movement and parking on footpath and at mid-block road crossing.
- 14) Road side vehicle parking shall be so permitted that there is no encroachment on footpath by any part of the vehicle.
- 15) Placement of street lights, traffic signal poles, signages and other utilities (for example MSEDCL feeder pillars) etc. should be so coordinated without any cluttering that adequate hindrance free passage (minimum 2 metre wide) should be available for pedestrians.
- 16) Advertisement boards (both permanent and temporary flex hoardings) shall be strictly disallowed on footpaths and on road crossing path including traffic islands and pedestrian refuges.
- 17) Bus stop shelters should not be located on footpath but adjacent to footpath at the road side so that clear walking space on footpath remains unaffected.
- 18) Adequate clear hindrance free passage for pedestrians (minimum 2 metre wide) should be ensured in case vending spaces are to be provided at the road side.
- 19) Access points for underground and over ground utilities should not conflict with pedestrian movement. Manhole covers should be at same level and flush with footpath surface. Manhole covers should not be of grill type, being unsafe for pedestrians.
- 20) Accumulation of storm water on footpath should be prevented and arrangement provided for proper drain off into appropriate channel.
- 21) Adequate lighting should be provided on footpaths for visibility and safety of pedestrians.
- 22) Where footpath is not possible, road side walkway should be created at the road level itself with railings or curbstones for segregation of walkway from the carriageway to prevent encroachment by vehicles.
- 23) In case of narrow roads without footpath, road side parking should normally not be allowed. If necessary it can be allowed only on one side of the road and the other side kept free as walkway for pedestrians.
- 24) Parking lane at road side need not be continuous and should be interrupted where necessary to provide space for footpath / walkway of adequate size and also to provide opening for pedestrians to reach footpath after crossing the road.
- 25) When any work on road is in progress, safe walkway for pedestrians should be created using barricades.
- 26) When work is in progress on footpath, a walkway with barricades should be created at the road side adjacent to the blocked footpath. Vehicle parking at road side should be temporarily disallowed in that stretch.

## **B) 'At grade' pedestrian road crossings**

'At grade' crossing means a pedestrian road crossing at the same level of road or at footpath level.

- 1) Pedestrian crossing should be located at a safe, convenient location and preferably along natural walking path with shortest possible crossing distance.
- 2) Clearly visible zebra marking on road should be provided to demarcate the pedestrian crossing path.
- 3) STOP line should be provided prior to the zebra marking to designate location where vehicles should halt.
- 4) A buffer zone of 2 metres should be maintained between STOP line and zebra. This will minimize possibility of encroachment on zebra even if vehicle overshoots the STOP line.

- 5) Traffic signal pole location should be midway between STOP line and beginning of zebra marking.
- 6) Clear access for pedestrians from footpath to zebra should be ensured.
- 7) Pedestrian refuge of adequate size is required on the crossing path where pedestrians can stand safely and cross the road in stages. Pedestrian refuge should necessarily be provided at the median of road to protect pedestrians from the traffic flow and vehicles taking U-turn at the junction. Refuge should also be provided at intermediate locations for separate road segments and where length of crossing is two lanes or more. Road junction should be suitably designed for providing pedestrian refuges with required safety measures.
- 8) Traffic islands and channelizers should be coordinated with zebra crossing for use as pedestrian refuge.
- 9) In case constructed refuge/ islands / channelizers are not immediately possible, bollards should be used to create these facilities.
- 10) Footpath platform at mid-block crossings should be suitably extended into the road side parking bay to prevent vehicle parking on the zebra which blocks access to the crossing. This extended platform is also needed to improve visibility of approaching traffic for pedestrians to make the crossing safer.
- 11) Clear view of approaching traffic should be available at mid-block pedestrian refuges on road. Plantation on road-divider should be avoided in the vicinity of pedestrian crossing.
- 12) Speed breaker should be provided prior to mid-block crossing where necessary for the safety of pedestrians crossing the road. This will also have a traffic calming effect enhancing road safety.
- 13) Prominent signage should be provided to caution vehicle drivers about location of pedestrian crossing and need to slow down.
- 14) Proper street lighting should be provided at all pedestrian crossings.
- 15) Pedestrian signal should be at such location and height that it is clearly visible to pedestrians waiting at the beginning of the crossing and while they are walking on the designated crossing path.
- 16) Pedestrian signal should be provided on intermediate pedestrian refuges at road junctions for information to pedestrians as to when it is safe to cross each road segment.
- 17) Pedestrian crossing phase should be integrated into the traffic signal cycle with an 'all red' phase where necessary, such that pedestrians will get at least one opportunity during each cycle to cross the road at any arm of the junction. Pedestrian phase time period shall be decided on the basis of length of road crossing, average walking speed of 1 metre per second and reaction time of 7 seconds. Thus pedestrian phase time in seconds = length of crossing in metres + 7 second reaction time. For example, for 10 metre crossing length, pedestrian phase time shall be  $10 + 7 = 17$  seconds. Free left turn for vehicles shall not be allowed to ensure safe crossing for pedestrians at the respective segment.
- 18) For the benefit of visually impaired, pedestrian signal should have a sufficiently loud audible buzzer, which should sound continuously when the pedestrian signal is green. This will also make vehicle drivers consciously aware that the pedestrian crossing phase has begun and they should halt their vehicles.
- 19) Pedestrian signal should be provided at mid-block crossings where pedestrian movement is high. Warden should be posted at such locations as otherwise vehicle drivers do not honour the signal.
- 20) Raised platform type crossings should be provided where required with same level connectivity to footpath without any break. Bollards should be suitably provided to

prevent vehicle access to footpath. Such crossings provide easier passage for pedestrians and are expected to slow down vehicles.

- 21) Road junctions should be designed to provide safe and convenient crossing paths for pedestrians across all segments with minimum crossing distance, adequate time period for crossing in the signal cycle, reduced vehicle speeds and other means as necessary.

### **C) Foot over bridge (FOB)**

Foot over bridge is a 'grade separated' pedestrian road crossing at a specified height above the road with vehicles passing below the bridge at road level. Access to the FOB is by climbing a number of steps or by lift if provided.

- 1) Footpath should be wide enough to ensure clear walkway of minimum 2 metres beyond the entrance steps / ramp and lift for FOB.
- 2) Steps and floor of FOB should have anti-skid surface of durable quality.
- 3) Lift should be provided for use of senior citizens, persons with special needs and others who are unable to climb steps.
- 4) Lift should be operational for minimum 16 hours (7 am to 11 pm) on all days. Two lift operators should be deployed in two shifts and they should also be assigned the responsibility of security.
- 5) Proper lighting should be provided with emergency lighting.
- 6) CCTV surveillance should be provided.
- 7) Backup power system should be provided for contingency of power failure.
- 8) Where advertisements are to be permitted as per IRC code and policy, the design of FOB should be such that the size and placement of the advertisement is restricted within a specific slot so as to ensure clear visibility of the interior of FOB from the road level. Pedestrians using the FOB should also get a clear view of the road from within the FOB. This is absolutely necessary for the purpose of security for pedestrians.
- 9) Cleanliness should be maintained on a regular basis.
- 10) Proper system should be set up and Ward officer should be made responsible for cleanliness, usability, maintenance, security and safety. The Ward officer should coordinate with all concerned departments / persons as required for related activities such as deployment of lift operators/ security guards, maintenance of lifts, lighting, CCTV, payment of electricity bills etc.
- 11) Prominent board should be displayed at all entry / exit points giving name, designation, office address and phone numbers of officer responsible. Emergency phone numbers for Police and Fire brigade should also be given.

### **D) Pedestrian subway**

Pedestrian subway is a 'grade separated' pedestrian road crossing at a specified level below the road. Access to the subway is by using steps or ramp. The road above for vehicles can be level or with a suitable hump to reduce the number of steps to the subway.

- 1) Footpath should be wide enough to ensure clear walkway of minimum 2 metres beyond the entrance to the subway.
- 2) Subway should normally be hump type to reduce number of steps to minimum possible.
- 3) Subway should have 'open to sky' design in the central portion wherever possible. (An example - Garware subway in Deccan Gymkhana area.)
- 4) Subway should have suitable ramp adjacent to steps for wheelchair access at every entry / exit.

- 5) Steps and floor of subway should have anti-skid surface of durable quality.
- 6) Prominent signages should be provided to direct pedestrians to the subway.
- 7) Proper lighting should be provided inside the subway with emergency lighting.
- 8) Proper ventilation should be provided to avoid stale air inside the subway with exhaust fans as necessary.
- 9) CCTV surveillance should be provided in the subway.
- 10) Backup power system should be provided for contingency of power failure.
- 11) Proper waterproofing should be done to prevent water seepage.
- 12) Water drainage arrangement should be provided and floor always maintained in a dry state.
- 13) Subway should have necessary provision for dewatering in case of heavy water ingress.
- 14) Cleanliness should be maintained on a regular basis.
- 15) Subway should be kept open for minimum 16 hours (7 am to 11 pm) on all days.
- 16) Security guards should be deployed in two shifts and be stationed inside the subway.
- 17) Where shops are to be permitted, design of subway should be suitably modified to ensure safety and adequate convenient passage for pedestrians. Number and size of shops should be restricted considering factors such as area and size of subway, adequate circulation space for pedestrians / shoppers, ventilation, goods storage and display, emergency evacuation etc. Cooking of food items, preparation of tea, coffee etc. and use of LPG, kerosene etc. should be strictly prohibited. Adequate fire-fighting provisions should be made inside the subway.
- 18) Proper system should be set up and Ward officer should be made responsible for cleanliness, usability, maintenance, security and safety. The Ward officer should coordinate with all concerned departments / persons as required for related activities such as deployment of security guards, maintenance of lighting, CCTV, payment of electricity bills etc.
- 19) Prominent board should be displayed at all entry / exit points giving name, designation, office address and phone numbers of officer responsible. Emergency phone numbers for Police and Fire brigade should also be given.

**NOTE :**

In case of grade-separated crossings (FOBs & subways) –

- a) The road shall be designed in the vicinity of the location where the crossing has been constructed, at least 50 meters on either side, in such a manner that an 'at grade' crossing would no longer be an option, should be discouraged by design and if necessary by enforcement.
- b) Before closing the 'at grade' option as above, it should be strictly ensured that the grade separated crossing is provided as per the norms in this policy and is made available in a safe usable state for all pedestrians (including persons with special needs and senior citizens) on a 24 X 7 basis.
- c) Whenever there is a closure of the grade separated crossing for any reason, suitable temporary provision for safe at-grade crossing shall be made during the period of closure.

## **VII. PROCEDURE FOR DECIDING TYPE OF PEDESTRIAN ROAD CROSSING**

'At grade' pedestrian road crossings are most convenient for pedestrians and should always be preferred as the first choice. Grade separated pedestrian road crossings are not pedestrian-friendly and have several issues as discussed earlier. Hence FOB or pedestrian subway should be considered only in very exceptional cases as a last resort when all attempts to provide safe 'at grade' road crossing have failed.

### **A) At road junctions**

The order of priority for road crossing design shall be as under -

- 1) 'At grade' pedestrian road crossings at non-signalized junctions with traffic calming measures as needed.
- 2) Where traffic calming measures prove to be ineffective, the junction should be signalized.
- 3) 'At grade' pedestrian road crossings at signalized junctions with pedestrian crossing phases integrated into the traffic signal cycle and an 'all red' phase once in each cycle.
- 4) Junction improvements - Where signalized junctions are found to be unsafe for pedestrians, junction improvements shall be carried out to channelize traffic flows, reduce pedestrian crossing distances, provide proper connectivity across various road segments and make 'at grade' crossing safer for pedestrians.
- 5) Grade separated pedestrian crossing can be considered as a last resort only in case of very large junctions where it has been proved to be practically impossible to provide safe 'at grade' crossings using above higher priority options.

### **B) At mid-block locations**

The order of priority for road crossing design shall be as under -

- 1) 'At grade' non-signalized crossing
- 2) 'At grade' non-signalized crossing with rumbler bump type speed breaker
- 3) 'At grade' signalized crossing with posting of traffic police / warden
- 4) Grade separated crossing can be considered only where pedestrian volume is very high and above higher priority options have been proved to be practically ineffective in providing safe passage for pedestrians with probability of accidents being high.

Only when all the higher priority measures have been implemented and there are other considerations that still make the location unsafe for pedestrians should a grade-separated crossing option be considered.

Some such considerations are -

- a) Very high traffic volumes
- b) Very wide roads
- c) Very large junctions
- d) Very high and continuous pedestrian movement such as in the vicinity of bus /metro / train stations or in large commercial areas
- e) Highway passing through urban areas

Final decision about grade separated crossing as a last option shall be based strictly on the findings of necessary scientific surveys and studies as per applicable codes and standards (such as location study, junction assessment study, traffic surveys, pedestrian count surveys, pedestrian movement studies, pedestrian behavioral pattern studies etc.) and on satisfying the stipulated warrants in the applicable codes.

## **REFERENCES**

### **A) Design Guidelines**

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- 1) IRC: 103 - 2012 – Guidelines for Pedestrian Facilities
- 2) IRC: 86 - 1983 – Geometric design standards for urban roads
- 3) IRC: 106 - 1990 – Guidelines for capacity of urban roads
- 4) IRC : 35 -1997 –Code of Practice for Road Markings
- 5) Other relevant IRC Codes and guidelines
- 6) Design of Urban Roads \_ Code of Practice - Ministry of Urban Development
- 7) Street Design Guidelines for Pune
- 8) STAC report

### **B) Policy Guidelines**

- 1) National Urban Transport Policy
  - 2) Standards for the National Mission for Sustainable Habitats
  - 3) Comprehensive Mobility Plan for Pune
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