

Recommendations for Urban Street Planning and Design Cell (SPADe)

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Recommendations for Urban Street Planning and Design Cell (SPADe)

Context

The number of fatalities due to road crashes in Delhi averages at around 2000 per year. This is amongst the highest in the world. A number of studies highlight that simple street design and planning measures can be the key to minimising these tragic deaths. These measures include speed control and segregation of vulnerable roads users. This requires careful planning and design of streets, as per known best practices and standards.

1260km of road network in Delhi is managed by Public Works Department (PWD) Delhi. This includes all roads wider than 18m ROW. These are the primary streets of Delhi accommodating majority of trips in the city. Needless to say these same streets are where majority of fatal and serious accidents occur owing to high speeds. There is thus an urgent need for re-developing these roads as per international standards in order to improve mobility, safety and accessibility of all users (including those using mass transit systems such as Metro). Re design of these streets will not only bring a positive impact to its users but will also help curb rising pollution levels in the city. This is because a well-designed street improves efficiency and driving cycle of vehicles and also ensures that loose soil which is one of the contributors of particulate matter (pm) does not exist along these roads.

Currently PWD, Delhi is purely an engineering organization with vast expertise and experience in engineering work for roads, but no capacity for planning and design for which it relies solely on external consultants. This was mainly to address the lack of infrastructure in our developing cities. Thus, there has been little attention on planning and more effort spent on implementation. This situation is fast changing. With cities running out of space and options attention is shifting to use planning and design of streets to enhance their capacity and efficiency. This means that under the current situation, PWD will have to rely on external planning and design consultants for improving their street network. In the recent past also, PWD attempted to undertake street development work on roads under it. This was executed for approximately 60km length of major roads for the Commonwealth games in 2010. This was undertaken through appointment of competent external consultants. However, such a method is likely to be both futile and ineffective for large scale development of over a 1000km street network in a relatively short period of time. This is because of three reasons.

Firstly, there are likely to be implementation delay because of lack of co-ordination and integration of ideas between the consultants, which come from planning and design background and PWD which has mainly engineering capacity. This issue was highlighted during the street re-design exercise in 2010. The development of just 60km of street network by four consultants took close to two years, with some of the streets only seeing completion post the games for which they were developed. Secondly, planning and design strategies are rarely understood well and appreciated by pure engineering based implementing agencies, leading to compromises which often render developed infrastructure unusable. This was highlighted during the street development exercise of 2010. Engineering priorities such as ease of implementation superseded design requirements, leading to compromises in levels, finishes and connectivity of bicycle infrastructure at intersections. This meant that the infrastructure was dysfunctional and most attract dismal or no use till date. Thirdly, a city-wide development of streets seeks long term commitment and continuity towards quality control and standardization, which is not possible to achieve if these are planned by separate entities, especially when the exercise is not supervised, monitored and co-ordinated at an overall planning and design level.

This leads to the conclusion that in order to vastly improve the current mobility and pollution situation in Delhi roads under PWD will have to be re-developed on an urgent basis and that

in order to be effective, this re-development will have to be undertaken and driven by a team within the department. This requires the PWD, Delhi to develop an in-house planning and design capacity. This is in line with the global best practices. Road owning agencies such as counties, in developed cities have an in-house planning department which empowered with decision making for planning and design of all roads in the city. Delhi PWD a similar capacity, will not only help improve the experience of the entire city, it will bring direct and immediate benefit to more than 75% of all commuters who use walk, cycle and public transport, in a relatively short period of time.

It is understood that developing an in-house planning capacity of PWD, requires a long and tedious administrative and legal process involving re-structuring of the organization at an institutional level. This process needs to be initiated and must be initiated urgently. However in parallel a technically capable, planning and design cell can be initiated by inducting a team of architects, planners, and designers on a contractual basis. This team may be empowered by heading it with an architect/planner with an administrative experience. This post may be defined as 'Chief Designer PWD' and shall be at par with 'Chief Engineer PWD', reporting directly to Commissioner PWD, GNCTD Delhi. To ensure adequate capacity building of the team, a group of qualified technical experts may be appointed on a retainer basis to advise and direct it on various projects for the first three years.

Presented below, objectives, vision and road map including a list of requirements for initialising and operationalising the street design cell which may be christened as 'PWD Street Planning and Design Cell' or SPADe.

Objectives and Approach for SPADe

There are two pronged objectives of SPADe:

1. To transform roads under PWD in to vibrant, safe and efficient streets over the next three years in a phased manner.
2. To set planning and design standards for streets in Delhi and to provide a permanent planning and design capacity to PWD Delhi. This will allow it to ensure continuous maintenance and upkeep of global standards in street design on the undertaken roads as well on any additional roads undertaken by the same.

SPADe shall approach this objective, after establishing planning and street design principles for Delhi streets. These principles shall be derived from current Indian and international policies, standards and guidelines. These include National Urban Transport Policy (NUTP) 2006, Urban Road Codes by Ministry of Urban Development (MoUD), Updated IRC guidelines, UTTIPEC street design guidelines, Planning and Design Guideline for Cycle Infrastructure by IIT Delhi, etc. In addition, international guidelines and standards such as ASVV by CROW (The Netherlands) shall be used

Broad Roadmap for Re-Developing PWD Roads using SPADe

The road map for improving PWD roads using SPADe can be divided in to four stages. These are:

- Stage 1 – Setting up of SPADe
- Stage 2 – Planning and Design of Delhi streets under PWD
- Stage 3 – Implementation and execution of proposed plans on ground.
- Stage 4 – Upkeep and Maintenance of re-developed streets.

SPADe shall be initially set up as a separate design cell under PWD, but gradually, within time frame of 1 to 2 years, integrated as an independent division within the organization. This time

frame is required for legal and administrative processes required to re-define roles and set up new positions, as well clear budgetary allocations for a smooth functioning of this new department.

Setting up of SPADe as a cell shall be undertaken after defining its roles, objectives and responsibilities in line with current national and state policies, court directives as well global best practices. Functioning of this cell shall be defined based on these roles and responsibilities and after understanding the limitations that it may face in achieving its objectives. **It is understood that to achieve its objectives, the role of this cell cannot be limited to pure planning and design of streets but will have to include packaging and marketing of ideas to make the transition of streets and their use more informed and acceptable to its users.** Additionally, the cell will have to take up the role of developing guidelines, notifications, and service manuals for the design division within PWD that shall be setup to replace this cell.

It is expected that this cell shall be setup and made operational in a time period of between 4 to 6 months and shall remain functional for 3 to 4 years. The cell shall undertake planning and design of all 1260km of streets under PWD in a phased manner. The development of these streets shall be taken up by the existing road engineering department of PWD in a similar phased manner which shall be offset by about 6 months to a year (which is the time for planning and development of tender documents). The role of the design division shall be to provide planning and design inputs in maintenance, upgradation and upkeep of these developed streets, using the guidelines and service manuals developed by the design cell. This division shall be staffed by selected people from the design cell. Figure 1 presents the estimated timeline for development of PWD roads in, Delhi.

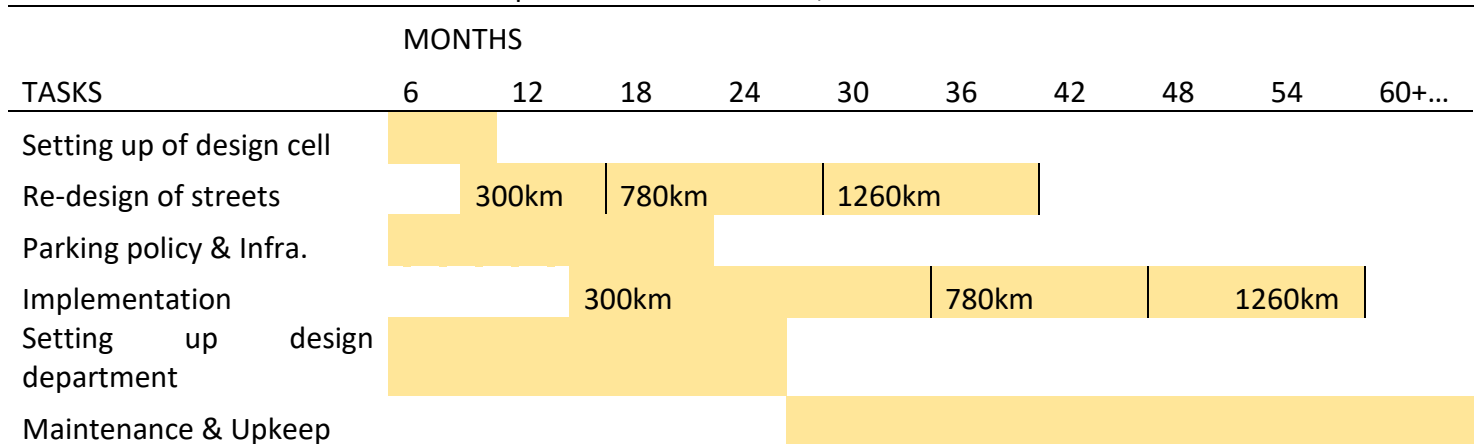


Figure 1: Timeline for re-developing roads under PWD in Delhi

Figure 1 suggests that in parallel to setting up of SPADe to other administrative and legal process need to be initiated, both of which are essential for ensuring that planned infrastructure is maintained and operated to achieve the desired results. These are initiating a city-wide robust parking policy as well infrastructure and setting up of a permanent design division within PWD. A comprehensive draft parking policy and infrastructure development plan has been drawn for Delhi by a number of agencies including Transport Department, MCDs and UTTIPEC, DDA. Effort needs to be made that these are integrated and notified in order to discourage and control on street parking on PWD streets. Re-design of PWD streets may not be possible without addressing the current and future parking demand.

It is estimated that setting up of the design division within PWD will take up to two years. A section of SPADe which would have developed relevant skills during this period shall

subsequently be transferred to this design cell and will continue to support SPADe during the next subsequent, beyond which it would achieve the role of assisting in upgradation, maintenance and operations of the developed streets. This sections shall be the one under the leadership of executive planner 3 (as discussed below).

Structure and Functioning of SPADe

SPADe shall consist of total of five sections (Figure 2). These sections and their staff strength as well as experience requirement has been drafted keeping in mind the requirement of planning and implementing at an average rate of 40km per month. These cells are:

Planning and Design Section - The primary section shall be the planning and design section, which shall be headed by two executive planners each with minimum 15 years’ experience with a degree in Architecture. Two senior designers each with a minimum experience of 7 years shall report to each of the executive planners. Each senior shall have a master’s degree each in landscape design, urban design, urban planning and transport planning in addition to a base degree in architecture. A team of eight people including five architects (with an experience of 0 to 3 years) and three draughtsmen (with an experience of 3 to 5 years). Each senior designer and his team shall be responsible for 7 to 8 PWD circles. This cell shall be assisted by a team of external consultants from the fields of plumbing, electrical and specialised design as well construction.

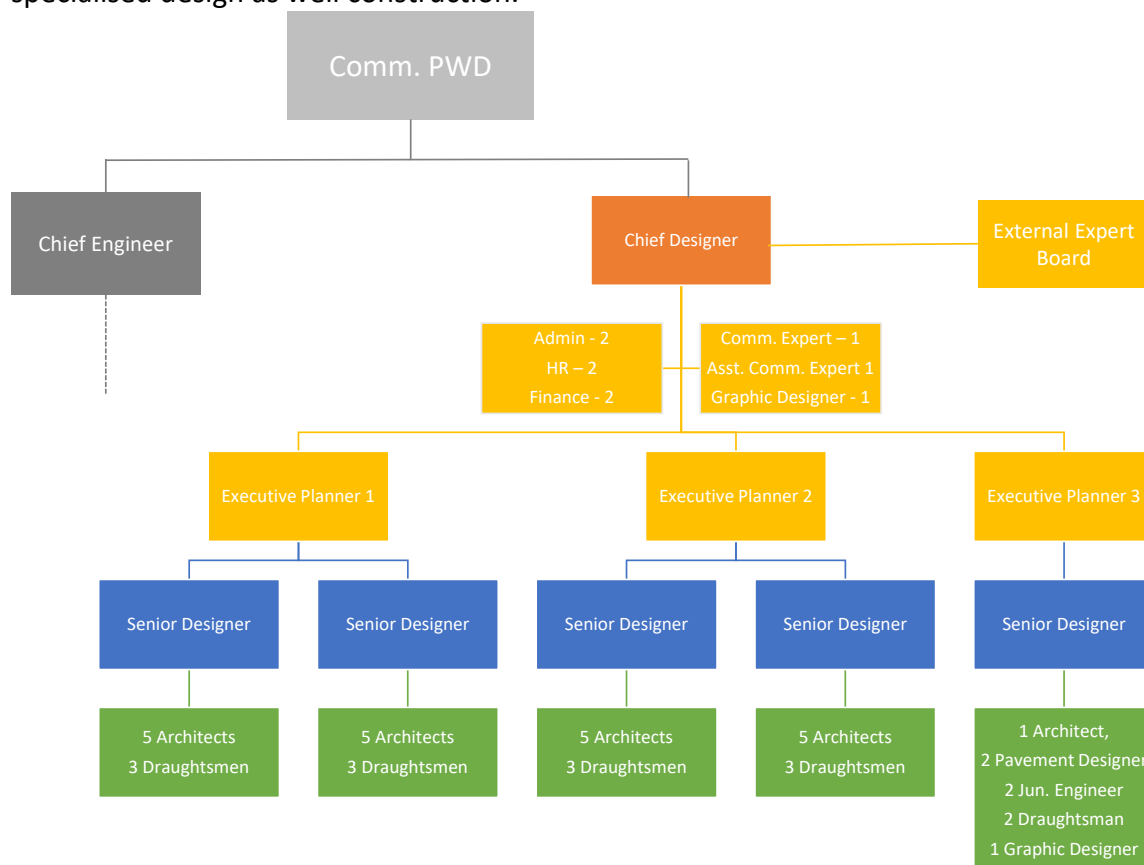


Figure 2: Organizational structure of SPADe

Tender Development and Service Manual Section – Planning and design section shall be supported by a tender development section which shall assist each team in finalizing the working drawings including pavement profile drawings. This team shall be headed by an executive planner (minimum 15 years’ experience and a degree in architecture) and senior designer (with minimum 10 years’ experience, a master degree and a base degree in

architecture), with a team of eight including an architect with an experience of 0 to 3 years, 2 pavement designers with an experience of 3 to 5 years, 2 junior civil engineers with an experience of 2 to 3 years, 2 draughtsmen with an experience of 3 to 5 years and 1 graphic designer with a minimum experience of 5 years. This team shall also prepare bill of quantities and specifications to be included in the tender document. Tenders shall be prepared and bid process managed under the Superintendent Engineer of each section. Relevant teams shall continue to provide periodic supervision and drawing improvement support for each engineering circle. In addition to providing tender development support, this section shall convert the developed working in to PWD street design standards and include the same in-service manuals for the design division. Graphic designer included in this cell shall also support the planning and design team in developing signages and street graphics.

PR and Communication Section – All development work on streets need to be communicated to the end user in advance. This shall be achieved through a well organised and sustained PR and communication effort. This effort shall be led by a Communication expert with a minimum experience of 20 years in PR and communication in public domain. This person shall be assisted by 1 assistant communications expert with a minimum experience of 10 years in PR and communications as well media development strategies. This section shall be supported by two external agencies, one each for communication and media development. Together the team shall be responsible for strategizing media reports and communication material in electronic, print and online (including social media) format.

Administration Cell – This cell shall consist of one senior and one junior manager each with minimum 13 and 7 years' experience each in administration, HR and finance.

External Expert Board – Planning and design process of streets shall be guided and assisted by experienced experts in the field. A total six experts shall constitute a board which shall review all plans and advise each senior designer and executive designer. Of these six experts, four shall be permanent and contractual for three years while two shall be honorary experts. Each of the experts shall have a minimum professional experience of 15 years in street development and transport infrastructure planning and design. In addition, the four contractual professionals shall provide active support in training and sensitising different cells on the issues and hand, global best practices, successful contextual solutions and required planning and design processes. This capacity building may also be undertaken by professional staff exchange between SPADe and individual organizations which each of the experts represent.

All five cells shall be headed by the Chief designer who shall hold a permanent or a deputation post within PWD, equivalent to Chief Engineer PWD. The chief designer shall directly report to commissioner transport. The chief designer shall have a minimum relevant professional and administrative experience of 20 years.

[Budgetary Allocation for SPADe](#)

It is estimated that to setup and operate SPADe for three years and to deliver the desired results with the desired quality in a time bound manner, a total budget of 38 crores is required. This budget has been worked out based on the estimated manpower and experience requirement as well the current estimated market rates (for such requirements). The budget also includes initial capital investment and cost for using the services of external consultants, service suppliers and expert board. This includes all marketing and communication cost (excluding the cost of buying media space). Table 1 presents a breakup of budgetary allocation for SPADe. This breakup of annual required funds accounts for

approximately 12% increase in annual cost to account price rise and expected increase in salaries, fees, etc.

Table 1: Breakup of budgetary allocation for SPADe

	Per Month/ Km Unit Cost	No. of person	1st Year		2nd Year		3rd Year	
			months /Km	1st Year Cost	Months /Km	2nd Year Cost	Months /Km	3rd Year Cost
MANPOWER								
Draughtsman	20,000	13	9	23,40,000	12	34,94,400	12	39,00,000
Architect	30,000	21	9	56,70,000	12	84,67,200	12	94,50,000
Pavement Designer	40,000	2	6	4,80,000	12	10,75,200	12	12,00,000
Junior Engineer	25,000	2	6	3,00,000	12	6,72,000	12	7,50,000
Senior Designer	70,000	5	9	31,50,000	12	47,04,000	12	52,50,000
Executive Planner	1,40,000	3	9	37,80,000	12	56,44,800	12	63,00,000
Chief Designer	3,75,000	1	9	33,75,000	12	50,40,000	12	56,25,000
Comm. Expert	3,50,000	1	9	31,50,000	12	47,04,000	12	52,50,000
Asst. Comm. Expert	1,20,000	1	9	10,80,000	12	16,12,800	12	18,00,000
Graphic Designer	90,000	2	9	16,20,000	12	24,19,200	12	27,00,000
Admin Sen. Manager	1,50,000	1	9	13,50,000	12	20,16,000	12	22,50,000
Admin Manager	90,000	1	9	8,10,000	12	12,09,600	12	13,50,000
Sen. Manager HR	1,50,000	1	9	13,50,000	12	20,16,000	12	22,50,000
Manager HR	90,000	1	9	8,10,000	12	12,09,600	12	13,50,000
Sen. Manager Fin.	1,50,000	1	9	13,50,000	12	20,16,000	12	22,50,000
Admin Manager Fin.	90,000	1	9	8,10,000	12	12,09,600	12	13,50,000
Runners/ Assistants	14,000	6	9	7,56,000	12	11,28,960	12	12,60,000
SUB TOTAL				3,21,81,000		4,86,39,360		5,42,85,000
EXPERT ADVISORY BOARD								
Contractual Experts	3,50,000	4	6	84,00,000	6	94,08,000	6	1,05,00,000
Honorary experts	4,00,000	2	1	8,00,000	1	8,96,000	1	10,00,000
Travel Board & Lodge	1,00,000		9	9,00,000	12	12,00,000	12	12,00,000
SUB TOTAL				1,01,00,000		1,15,04,000		1,27,00,000
CELL MAINTENANCE								
Transport Cost	25,000	5	9	11,25,000	12	16,80,000	12	18,75,000
Office Running Cost	1,25,000		9	11,25,000	12	16,80,000	12	18,75,000
Equipment and software	10,00,000		9	90,00,000	12	1,20,00,000	12	1,20,00,000
Conference & Workshop	1,25,000		9	11,25,000	12	16,80,000	12	18,75,000
SUB TOTAL				1,23,75,000		1,70,40,000		1,76,25,000
PR & MARKETING								
PR Creative and Media agency	5,00,000		9	45,00,000	12	67,20,000	12	75,00,000
Per km Data Cost	50,000		300	1,50,00,000	480	2,40,00,000	480	3,00,00,000
SUB TOTAL				1,95,00,000		3,07,20,000		3,75,00,000
EXTERNAL CONSULTANTS								
Plumbing, Electrical, Design	40,000		300	1,20,00,000	480	2,15,04,000	480	2,40,00,000
SUB TOTAL				1,20,00,000		2,15,04,000		2,40,00,000
CAPITAL EXPENDITURE								
Laptop, equipment, furniture	2,00,00,000			2,00,00,000		-		-
SUB TOTAL				2,00,00,000		-		-
TOTAL				10,61,56,000		12,94,07,360		14,61,10,000

The total estimated budget of 38 crores works out to be roughly three lakh per km (for 1260km of PWD roads). This translates to less than 0.5% of the expected average development cost of Rs. 7 crore per km. This cost is between 50 to 30% of the expected design consultancy fees if the same is undertaken by appointed external consultants. Thus SPADe, ensures capacity long-term commitment to the city through capacity building of PWD in a fraction of cost, which also includes public outreach and packaging of the projects along with guidance from known experts in the field.

