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Annexes

Annex 1

Questionnaire survey on pedestrian walkways in urban areas

Date ☐ Time ☐

1 Please tick the respondent category you belong to

1.1 Gender ☐☐

1.2 Age Group

15-20	21-25	26-30	31-35	36-50	Above 50

1.3 Experience as a Pedestrian ☐ Driver ☐

2 Location (City) ☐

3 Profession / Educational level ☐

4 Do you prefer to have **a separate pedestrian walkway** along the road?

Yes ☐ No ☐

5 Should there be a **visual identification** between the pedestrian walkway and vehicle path?

Yes ☐ No ☐

6 Your favourite material for a pedestrian walkway

(Place numbers 1 to 5 according to your favourite, insert 1 for the most favourite option)

6.1	Asphalt	☐
6.2	Concrete	☐
6.3	Clay Brick	☐
6.4	Soil	☐
6.5	Turf	☐

7 Do you prefer to have a separate recreational area?

Yes ☐ No ☐

8 Your favour material for recreational area

(Place number 1 to 5 according to your favourite, insert 1 for the most favourite option)

8.1	Asphalt	☐
8.2	Concrete	☐
8.3	Clay Brick	☐
8.4	Soil	☐
8.5	Turf	☐

9 Please mark the most uncomfortable time of the day on urban walkways

8.00 – 9.00 am		2.00 – 3.00 pm	
9.00 – 10.00 am		3.00 – 4.00 pm	
10.00 – 11.00 am		4.00 – 5.00 pm	
11.00 – 12.00 am		5.00 – 6.00 pm	
12.00 – 1.00 pm		6.00 – 7.00 pm	
1.00 – 2.00 pm			

Annex 2

Detail s of Existing Paving Blocks

Manufacturer					
Shape / Type					
Size in mm	length				
	width				
	thickness				
Unit price					
No of units per m^2					
Colour					
Usage	pedestrian				
	car park				
	gardening				
	other				
Strength achieved (N/mm2)					
Standard used					
Output per day					
Manufacturing method					
No of blocks per cement bag					
Demand					
Mix proportions					
Course aggregate (Chip) (Kg or cube)					
Fine aggregate (Sand) (Kg or cube)					
Cement (kg)					
Water (l)					
Admixtures					

Annex 3

Cost Analysis for mud concrete paving block

Current Price of materials

Soil

Current industry soil price	= Rs. 3500 per 3 cubes
Lose Soil density	= 1440 kg / m^3
Price of Soil	= Rs. 3500 / (3*2.83*1440)
	= Rs. 0.30 per kg

Cement

Current industry cement price	= Rs. 900.00 per bag
Price of cement	= Rs. 900/50
	= Rs. 18.00 per kg

Current labour wage

The mud concrete paving block can be produced without skilled labour because of its simple production method. Therefore, the current labour wage of unskilled labour in construction industry can be assumed at Rs. 1000.00 per 8 hr day.

Price for form work material

In the manufacturing process of this block, a well prepared steel mould with several blocks can be used. For the production of the mould, a 4 inches thick, 8 ft x 4 ft in size steel plate is used. The price of a steel plate in the current market is Rs. 12,500.00 and the production of the mould may cost Rs. 7,500.00. Therefore, the total cost of the mould will be Rs. 20,000.00. This steel plate mould can be used for 80 numbers of mud concrete paving blocks.

Cost for mud concrete paving block

Block size	= 200 mm x 100 mm x 80 mm
Volume of block	= 200 x 100 x 80 mm^3
	= 0.0016 m^3
Measured actual weight of block (average)	= 3.66 kg

According to the mix proportions

Soil = 100 kg

Cement = 22 Kg

Total weight = 122 Kg

Therefore, actual requirement for a block:

Material cost

Soil weight	= (100*3.66) / 122	= 3.0kg
Cost for soil	= Rs.0.30 * 3 kg	= Rs.0.90
Cement weight	= (22*3.66) /122	= 0.66Kg
Cost for cement	= Rs. 18.00*0.66 kg	= Rs. 12.00
Total material cost	= cost for Soil + cost for cement	
	= Rs. (12.00 + 0.90)	= Rs. 12.90

Form work cost

Assume steel mould can be used 200 times repetitively and 80 numbers of block mould can be assembled with the above mentioned size one steel plate.

Cost for use of one time	= Rs. 20 000.00 / 200
	= Rs. 100.00
Form work cost for a block	= Rs. 100.00/80
	= Rs. 1.25

Labour cost

Assume blocks can be cast four times a day with three numbers of labourers.

Nos of block cast per day	= 80 * 4
	= 320
Cot for labour for a block	= Rs. (1000.00*3) / 320
	= Rs. 9.38

Total cost for production of mud concrete block = (material cost + form work cost + labour cost)

	= Rs. 23.53
Add 25% profit	= Rs. 23.53*25%
Total cost for block	= Rs. 29.41
	= Rs. 29.40