

GOVERNMENT OF PAKISTAN
PLANNING COMMISSION
NATIONAL TRANSPORT RESEARCH CENTRE
ISLAMABAD

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1989

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TRAFFIC SIGNS

N-5

(Lahore - Gujranwala)

NTRC-118

BASHIR AHMED
DEPUTY CHIEF

APRIL, 1989

NATIONAL TRANSPORT RESEARCH CENTRE

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EXECUTIVE SUMMARY

Traffic signs are important components of road facilities for providing information to the road users in respect of the conditions of road ahead. Traffic signs in the country are installed by Highway Department and Municipal Authorities within their respective jurisdictions. Although the practice of installation of signs has existed in the country for quite sometime but their quality is much below the desired level. The deficiency is mainly because of three reasons. Firstly, there is a serious lack of technical know-how on the part of concerned agencies, as most of the field engineers are not well versed with this subject. The signs thus installed have non-standard shape, size and colour. Also their placement is generally incorrect. Secondly, there is total lack of competent sign manufacturing firms with adequate sign fabricating facilities, as the sign manufacturing in Pakistan is considered a cottage industry. Thirdly, material of proper quality, particularly Engineering grade reflectory sheet, which is pre-requisite for standard signs is not readily available. As a result, either simple paint or inferior quality reflective sheets

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are used. Similarly, a mild steel or galvanized iron plate is used for the sign panel instead of aluminium plate.

The National Transport Research Centre has been making concerted efforts to standardize traffic signs. A manual of uniform traffic control devices has also been prepared. To practically demonstrate the art of planning, designing, manufacturing and installing modern signs, Islamabad Highway between Zero Point and Airport turing was selected in 1981. This was the first ever attempt at signs of International standards in the country and has helped creat great deal of awareness regarding the need for proper signing. On that basis, National Highways Board approached the Centre to help install proper signs on a section of National Highway N-5 from Lahore to Gujranwala (65 kms). A contract was signed between the Centre and the National Highways Board. Besides preparing Site Plan, Signing Plan, Cost Estimates, the Centre also took the responsibilities of pre-qualifying few firms for sign manufacturing. The Centre also agreed to take the responsibility for tne supervision during manufacturing and installation of signs.

To over-come the problem of non-standardization in manufacture and to develop indeginous capability three firms namely M/s AZ Engineers, M/s Bakamal and M/s Servizioio Segnalazioni Stradali from Italy were pre-qualified in consultation with the National Highways Board and Capital

Development Authority after a country wide advertisement. Since the Italian firm had no workshop in the country, it was pre-qualified with the condition that the work would be assigned to the firm when they set up a local sign manufacturing workshop. The two local firms were, however, pre-qualified with immediate effect.

The survey of road was carried out and the signing plan was prepared in the office and was finalized after field verification. The inventories showing different types of signs to be installed on both sides of the carriage-ways were prepared. Seperate Bill of Quantities(BOQ) for each side of the carriage-ways were prepared and the work was divided among the two local contractors. M/s AZ Engineers, were entrusted with the work of Lahore - Gujranwala side while M/s Bakamal were entrusted Gujranwala - Lahore side of the road. To ensure the standardization and symmetry in the symbol/diagram of the signs, full scale paper drawings were got prepared, before contractors were given go ahead for the actual fabrication.

A total of 234 signs were installed on both the carriage-ways which included 134 Warning Type of signs, 33 number Regulatory signs and 62 number Informatory signs.

A formal un-veiling ceremony was also held on the completion of the project, which was attened by Engineers

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of Highway Departments and other concerned agencies. They also toured the section between Lahore and Gujranwala to see the installed signs.

The project was completed at a total cost of Rs. 543,727/-

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Introduction:

The project was first conceived during a discussion between Director General, National Highways Board (NHB) and the Senior Chief, NTRC on 14th October, 1985. It was agreed that NTRC would be entrusted the task of installation of standard signs on a selected portion of National Highway N-5. It was also decided that NTRC will carry out field survey of 65 kms of Highway from Lahore to Gujranwala including by-pass and prepare a complete site plan of the road indicating various features such as bridges, bends in the road, first aid station etc. On the site plan, exact location be marked of the particular type of sign to be installed at each location.

It was also agreed during the meeting that NTRC will also supervise the fabrication, manufacture and installation of traffic signs to ensure proper quality control. A lump sum fee was suggested to be paid to the NTRC for the assignment and it was decided that an agreement would be signed between DG, NHB and the Chief, NTRC.

Technical Proposal Of The Work:

Since this was the first time that such an important work like the installation of standard traffic signs on National Highways was undertaken, therefore, a lot of preparatory work was required. The following items were identified

to be done prior to the installation of signs on the highway.

- * Signing of agreement between NHB & NTRC;
- * Preparation of Site Plan of the Highway from Lahore to Gujranwala;
- * Preparation of Signing Plan;
- * Pre-qualification of firms;
- * Preparation of Cost Estimates and tender documents;
- * Award of work and installation of signs.

Signing Of Agreement:

A draft of agreement was prepared and sent to N.H.B. on 18-12-1985 for its approval. The agreement consisted of terms and conditions of work, responsibilities of the Client and Consultant, consultancy fee and mode of payment etc. A copy of the agreement is given at Annex-I.

Preparation Of Site Plan:

A Site Plan of the highway from Lahore to Gujranwala was found very essential for the work. To fully cover the details, it was felt necessary that the Site Plan be got prepared by a professional surveyor.

M/s United Survey Corporation was entrusted the work of preparation of Site Plan. Work order was issued to cover the following works:-

- * Length of road between Lahore-Gujranwala being 65 km would be surveyed.

- * The Site Plan would be prepared at a scale of Horizontal 1"=500' and Vertical 1"=20'.
- * One complete set of plan would be provided by the surveyor.
- * The work would be completed within 20 days and the total cost of survey and preparation of site plan would be Rs. 25,000/-

The survey was carried out and site plan prepared by M/s United Surveyors. A total of 13 sheets covering 5 km per sheet were prepared by the Surveyor.

Preparation Of Cost Estimates:

Instead of initiating work on various activities at a time, it was proposed to carry out the work in stages. In the initial stage, a proper signing plan and cost estimate were to be prepared. A cost of Rs. 58,000 as per details given below was suggested for the preparation of signing plan and detailed cost estimates.

<u>S1.</u> <u>No.</u>	<u>Job Description</u>	<u>Amount</u>
1.	Preparation of Site Plan	Rs. 25,000
2.	Travel	Rs. 5,000
3.	Preparation of Signing Plan	Rs. 15,000
4.	Preparation of Cost Estimates	Rs. 5,000
5.	Office Over-head	Rs. 5,000
6.	Contingencies @ 5%	Rs. 2,750

	Total.....	Rs. 57,750
		Say Rs. 58,000

The cost estimate amounting to Rs. 58,000 was sent to NHB and an amount of Rs. 50,000 was initially received for the work.

Pre-qualification Of Firms.

Manufacture of traffic signs is a specialized kind of job, which not only require specific type of approved quality materials but also need proper sign fabricating facilities. With a view to over-come the problem of non-standard traffic signs manufactured by various superious firms, it was felt necessary to pre-qualify reputable firms who could fulfill the demand of signs for national and provincial highways and municipal authorities.

Firms from all over the country were invited to take part in the pre-qualification by publishing pre-qualification notice in the newspapers. The firms were requested to submit the following documents to assess their eligibility:-

- * List of jobs carried out during past five years;
- * Details of works in-hand;
- * List of technical staff employed;
- * Sign fabricating faciilities available;
- * Financial position(Bank certificate);
- * Certificate to the effect that the firm was not involved in litigation with any of their client.

A total of 11 firms applied for prequalification. To evaluate the documents received from the firms. A committee was constituted with representative from NTRC, NHB & CDA. The committee developed a criteria for the evaluation of the firms and maximum points were assigned for the different items given as under:-

<u>Sl. No.</u>	<u>Description</u>	<u>Maximum Points</u>
1.	Jobs carried out during past five years	20
2.	Details of works in-hand	5
3.	Technical staff employed	20
4.	Sign fabricating facilities available with the firm	40
5.	Financial certificate (Bank Certificate)	10
6.	No involvement in litigation with clients	5
	Total	= 100

The documents of each firm were scrutinized in detail and the following four firms scored maximum points as under:-

1.	M/s Servizio Segnalazioni Stradali	83 points
2.	M/s Tasken Limited	79 points
3.	M/s AZ Engineers	65 points
4.	M/s Bakamal	52 points

To further assess their eligibility about the manufacture, each pre-qualified firm was asked to supply one sample of each category of Warning, Informatory & Regulatory signs and quote rate for each type of sign. Specifications for manufacture and size of the signs were provided to the firms.

Only three firms namely M/s SSS, M/s AZ Engineers, and M/s Bakamal supplied the samples and quoted the rates while the fourth firm namely M/s Tasken did not provide the samples. The samples and price quotations were reviewed by the committee M/s S.S.S. being an Italian firm quoted the rate in US\$ and the price was ex-Karachi, while the other two firms quoted the rates in Pakistan Rupees.

After assessing the quality of samples and rates quoted by the firms, the committee recommended the following three firms for pre-qualification:

1. M/s AZ Engineers,
House No. 31, St.No.40,
F-7/1, Islamabad (Local)
2. M/s Bakamal,
House No. 3, St.No.28,
F-6/2, Islamabad (Local)
3. M/s Servizio Segnalazioni
Stradali, (M/s S.S.S.)
C/o 72-Khiaban-e-Soherwerdi,
Islamabad (Italian)

The committee further recommended that the task of installation of signs on Lahore-Gujranwala section be distributed

among the two local firms. This would help eliminate monopoly and encourage healthy competition. The Italian firm was pre-qualified with the condition that it would be considered for the award of work when they start local manufacture.

The names and addresses of the pre-qualified firms were sent to the Secretaries of the provincial C&W Departments and Chairmen of the Municipal Authorities with the request to procure the signs from these firms.

After negotiation, local firms agreed to supply the signs for Lahore - Gujranwala project, complete in all respect including fixing at site at the following rates:-

- | | |
|--|---------------------|
| 1. Regulatory Signs, Circular shape 36" dia-meter | Rs. 1200/- per sign |
| 2. Warning Signs, Triangular shape 36" side equilateral triangle | Rs. 1000/- per sign |
| 3. Informatory signs, rectangular in shape, 4'-0"x6'-0" size | Rs. 3650/- per sign |

Preparation of Signing Plan:

The signing plan on the site plan sheets prepared by the surveyor was first prepared in the office. Different types of Regulatory, Warning and Informatory signs were marked on the sheets. After giving a full thought and completion of signing plan in all respects in the office, it was carried out to site and each sign was physically verified on the site.

Special attention was given to the fact that whether each sign marked on the signing plan could be actually placed on the road or not, ensuring proper visibility. After complete verification on the site, the signing plan was finalized and sent to the Client i.e. National Highways Board for its approval.

Minor adjustments were pointed out by N.H.B. which were incorporated and the signing plan was finalized.

Preparation of Bill of Quantities(BOQ):

Detailed inventories of signs of both the carriage-ways i.e. Lahore-Gujranwala and Gujranwala-Lahore were prepared giving a complete list of each sign by the type, quantity and location. The summary giving category-wise signs on both carriage-ways is as under:-

SUMMARY OF SIGNS

S1. No.	Sign Type	Lahore-Gujranwala Carriage-way	Gujranwala-Lahore Carriage-way	Total
1.	Warning 36" side equilateral triangle	73	66	139
2.	Regulatory 36" diameter circle	16	17	33
3.	Informatory (All sizes)	29	33	62
T o t a l :-		118	116	234

Detailed inventories of both the carriage-ways are given at Annex-II. BOQ for each side of the carriage-ways was prepared from the inventories giving the brief nomenclature of the manufacturing and specifications of the materials.

The work of one side of the road(Lahore-Gujranwala) was awarded to M/s AZ Engineers while the work for second side of the road (Gujranwala-Lahore) was awarded to M/s Bakamal. BOQs of the respective sections were provided to the contractors. Quantity of each category of sign i.e. Warning, Regulatory and Informatory were given in the BOQ and the contractors were supposed to fill in the rates for the complete sign including installation at the site-A. Sample BOQ is given at Annex-III

Finalization Of Contract:

Rates in the BOQ were received from both the firms. To verify the rates quoted by the contractors, a detailed study of the rates from the market was undertaken. The rates were collected from the market for individual component such as G.I. pipe, nut bolts, Aluminium sheet, Engineering grade reflectory sheet, cement concrete foundation etc. Rate analysis were prepared for each type of sign considering the actual market rates of materials and labour. After mutually agreed to, the contract was signed between NTRC and the contractors at the following rates. The rates included the cost complete sign i/c fixing at site etc.

<u>Sl. No.</u>	<u>Sign Types</u>	<u>Rate/Sign</u>
1.	Warning Signs	Rs.1,000
2.	Regulatory Signs	Rs.1,200
3.	<u>Informatory Sign</u>	
	a) 2'x1'	Rs. 336
	b) 2'x2'	Rs.1,390
	c) 24'x39'	Rs.1,240
	d) 5'x2'	Rs.3,086
	e) 5'x3'	Rs.4,415
	f) 6'x4'	Rs.3,650
	g) 6'x6'	Rs.7,513

The contract agreement drawn between the contractors and the NTRC covered the details such as method and mode of payment, responsibilities of the contractors and the Centre, maintenance after installation and release of security etc. A copy of the contract agreement is given at Annex-IV.

Manufacture of Signs:

After finalization of the contract, the contractors were asked to manufacture the signs and obtain prior approval of each graphics before the actual fabrication of the signs. Full scale paper drawings were prepared by the contractors for each type of sign and got approved from the Centre. Inspection during fabrication was also carried out to ensure that only approved graphics were utilized during manufacture.

Materials:

Following materials were used in the manufacture of signs:-

Aluminium Sheet

Sign panels for regulatory, warning and informatory signs were manufactured from Aluminium sheeting of thickness not less than 3mm. The Aluminium sheet was used for the reasons that it is not rusted and gives even surface without corrugation. To ensure the specified thickness of the Aluminium sheet, each plate was checked with the help of Standard Wire Gauge (S.W.G.). Each sheet was rolled to give a uniform dense surface free from unevenness and deflections. Rolling not only yielded a smooth surface but also improved the density of the Aluminium sheet.

Reflectory Sheeting

The approved quality reflectory sheeting used in the road signs is called Engineering Grade sheet. It consists of spherical lens elements embedded within a transparent plastic having a smooth, flat out surface with a pre-coated adhesive which should be pressure sensitive for manual application or tack free sheet for mechanical vacuum-heat application.

The reflective sheeting should be sufficiently flexible so as to permit application over and adhesion to a moderately embossed surface. The sheeting should be solvent resistant so as to be capable of withstanding cleaning with petrol, diesel fuel mineral spirits, turpentine and methanol.

The sheeting should show no cracking or reduction in reflection after being subjected to the dropping of a 25mm diameter steel ball from a height of 2 meters on to its surface.

The reflective material should be weater resistant & following cleaning, shall show no definite rading, draken- ing cracking, blastering, pelling-off when exposed to weathering for five years. FASSON, TOSHIBA and 3M are included among the approved brand of Engineering grade sheets

Sign Posts:

Galvanized iron pipes 3" diameter were used for sign posts. The core thickness of the pipe was ensured not to be less than 10: SWG. The number of sign posts were varied according to the size of the sign. For inforatory signs, centre to centre distance between the poles was ensured to be grater than 2'. The poles were thoroughly cleaned, made free from grease, scale and rust before fixing.

Nut Bolts:

All nut, bolts, washers and other parts were ho-dip galvanized before fabrication in accordance with the: re- quirements to ensure non-corrosive in exposed weathers.

Installation of Signs at Site:

After the fabrication of signs according to approved graphics, both the contractors were instructed to install the signs at site. Location of each sign was marked on the ground with the help of wooden pegs pushed in the ground. To further make visible of the location, a line with the white paint was also marked on the road surface and the head of peg was also painted. This helped quick identification of the location.

Edge Distance of Signs from the Road Edge:

As far as possible, it was ensured no sign edge fall within 6' from the road. Where the shoulder width was narrow, the sign was installed at the extreme of the shoulder so that maximum clear space could be left for traffic.

Hoisting of Sign Panels:

To ensure that holes in the sign poles and the sign panels are concentric, wooden templates were used which had holes exactly at the position as in the actual Aluminium sheet. The templates were kept in position during the setting of the concrete. The original sign panel of Aluminium sheet was fixed in position after the concrete was fully set. It was ensured that posts were fixed vertical with the help of plumb line and no post was bended or tilted in any direction.

Concrete Foundation:

Cement concrete (1:2:4) was used in the foundation. Individual foundation of the size 1½'x1½'x2' was casted in-situ for each pole.

Summary Of Signs Installed:

A total of 234 signs were installed on both the carriage-ways. The summary showing type and quantity of various signs installed on each side of carriage-way is as under:-

Sl. No.	SIGN TYPE	Lahore-Gujranwala Gujranala-Lahore		Total
		Carriage-way	Carriage-way	
<u>(A) Warning Signs</u>				
1.	U-Turn	30	28	58
2.	Advance U-Turn	30	28	58
3.	Narrow Bridge	9	8	17
4.	Level Crossing	1	1	2
5.	Round about ahead	2	-	2
6.	Left Bend	1	-	1
7.	Right Bend	-	1	1
Sub - Total (A)		73	66	139

Sl. No.	SIGN TYPE	Lahore-Gujranwala Carriage-way	Gujranwala-Lahore Carriage-way	Total
<u>(B) Regulatory Signs:</u>				
8.	Max. Speed Limit 80 km	7	7	14
9.	Max. Speed Limit 65 km	4	2	6
10.	Max Speed Limit 50 km	2	4	6
11.	Keep to the left	1	1	2
12.	No entry for animal drawn vehicles	2	1	3
13.	No. U-Turn	-	2	2
Sub - Total (B)		16	17	33
<u>(C) Informatory Signs:</u>				
14.	Filling Station	4	2	6
15.	First Aid Station	-	1	1
16.	Picnic Site	-	1	1
17.	Bus Stop	2	2	4
18.	Direction Sign	4	6	10
19.	Municipal Limits	6	6	12
20.	Distance Sign	9	9	18
21.	Advance Direction Sign	4	6	10
Sub - Total (C)		29	33	62
Grand Total A + B + C=118			116	234

Cost Of The Project:

The project was completed at a total cost of Rs. 543,727/- . The detailed cost statement is given below:-

Detailed Cost Statement

<u>Sl. No.</u>	<u>Sign Type</u>	<u>Qty.</u>	<u>Rate (Rs)</u>	<u>Amount (Rs)</u>
1.	Warning Signs	139	1,000	139,000
2.	Regulatory Signs	33	1,200	39,600
3.	<u>Informatory Signs</u>			
	a) 2'x1'	58	336	19,488
	b) 2'x2'	4	1,390	5,560
	c) 24"x39"	8	1,900	15,200
	d) 5'x2'	10	3,086	30,860
	e) 5'x3'	14	4,415	61,810
	f) 6'x4' (with 2 poles)	14	3,650	51,100
	g) 6'x4'	7	4,433	31,031
	h) 6'x6'	5	7,513	37,565

T o t a l:-		234	-	431,214

The statement showing total receipt and expenditure is as under:-

Statement of Accounts

Receipts

<u>Sl. No.</u>	<u>Date</u>	<u>Amount</u>
i)	13th February, 1986	Rs. 50,000/-
ii)	22nd Sept. 1987	Rs.420,000/-

T o t a l:-		Rs.470,000

Expenditures:

<u>Sl. No.</u>	<u>I t e m</u>	<u>Amount</u>
i)	Signing Plan	Rs. 58,000/-
ii)	Cost of Signs	Rs.431,214/-
iii)	Un-veiling Ceremony	Rs. 10,356/37
iv)	Consultancy Fee	Rs. 44,157/-
T o t a l:-		Rs.543,727/37

Covering Of Signs:

To ensure that no sign is damaged by bill sticking vandalism, scratching etc. the contractors were instructed to cover the signs with the polythene paper. The covers were to be removed before the opening ceremony.

Formal Un-veiling Ceremony:

Since this was the first time ever, that International Traffic Signs were installed on National Highways. To introduce them among all concerned, it was decided to mark the occasion in a simple manner with a formal un-veiling ceremony. Since the signs were installed in the Punjab province, therefore, Chief Minister of Punjab was requested to be the Chief Guest. The ceremony, however, could not be convened due to his heavy commitments.

Later, the un-veiling ceremony was held in a simple manner at Shahdra Lahore on 26-06-1988 which was

attended by the representatives of Punjab C&W Departments, National Highways Board, M/s KAMPSAX, Pakistan Railways & Municipal Authorities. A round from Lahore to Gujranwala was also made by the participants to see the signs.

The efforts of the Centre were appreciated and satisfaction was shown over the quality of signs. The leading step taken by the Centre in introducing the standard traffic signs in the country has also been acknowledged by the different agencies.

Photographs Of Signs Installed:

Photographs of the installed signs ere prepared for record and reference. Selected photographs of Warning, Regulatory and Informatory signs are given at the end of the report.

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ANNEXURES

CONTRACT AGREEMENT

INSTALLATION OF STANDARD TRAFFIC SIGNS
ON LAHORE - GUJRANWALA SECTION OF N-5

Agreement made this 31st day of March, 1988 between the National Highways Board, Govt. of Pakistan (hereinafter referred to as the Employer which terms shall include its successors in office and assignees) of the one part and National Transport Research Centre (hereinafter referred to as the Consultant which terms shall include its successors in office and assignees) of the other part.

Description of the Project:

The project envisages installation of Standard Traffic Signs on Lahore - Gujranwala section of National Highway N-5. Now, therefore, this agreement witnesses as follows:-

Article-1 : Consultancy Services:

The Employer engages the services of the Consultant and the consultant agrees to provide the services all in accordance with the terms and conditions of this agreement. The consultant agrees to use his best efforts to provide the services for the execution of the project.

Article-2 : Responsibilities of the Consultant:

The consultant shall in the first instance perform the following specific tasks:-

- 2.1 Site Plan: Prepare site plan of Lahore - Gujranwala section of National Highway N-5 on a scale of 1:6000.
- 2.2 Signing Plan: Prepare a detailed signing plan in accordance with the international standards and submit to the employer for approval.
- 2.3 Cost Estimates: Prepare the complete cost estimates for the approval of the employer.
- 2.4 Award of Work: Invite bids from the firms pre-qualified in consultation with the Employer & award the work to the lowest bidder.
- 2.5 Supervision: Supervise the fabrication as well as installation of signs to ensure best quality of the finished product.
- 2.6 Payment to Contractors: Scrutinize the bills of the contractors and make the payment under intimation to the employer.

Article-3 : Responsibilities of the Employer:

- 3.1 The employer reserves the right to inspect the work and reject it if it is not according to the specification.
- 3.2 The employer shall place the estimated amount at the disposal of the contractor either in Lumpsum or in installments as mutually agreed upon.

Article-4 : Payment to Consultant:

4.1 The employer will pay the following cost to consultant:-

- a) Rs. 58,000 for preparation of signing plan and cost estimate.
- b) Fee for supervision during fabrication and installation, 10% of signs cost.
- c) Signs cost including installation charges.

4.2 Any amount paid to consultant earlier regarding subject matter will be adjusted.

Article-5 : Schedule of Work:

The consultant shall endeavour to complete the job by the Middle of April, 1988.

Article-6 : Termination of Agreement:

This agreement can be terminated at any time by either party without assigning any reason by giving a written notice of 10 days in advance of the date of termination of the agreement. In such case, the employer shall pay the cost & fee due to the consultant as of the termination date and consultant will refund any amount due to employer.

In case of termination of agreement, the consultant shall take immediate steps to bring the services to a close in a prompt and orderly manner and shall deliver to the Employer all reports, designs and other documents elaborated upto that date.

Article-7 : Ownership of Design:

All notes, designs, drawings, documents and other technical data in connection with the work shall become the property of the Employer after completion of termination of work under this agreement.

Article 8 : Arbitration:

Any dispute arising out in connection with the agreement shall be settled amicably between the parties. In default of amicable agreement, the dispute shall be finally resolved by the tribunal consisting one nominee each of Employer and the Consultant.

Article-9 : Services of Notices:

Official notices to the Employer shall be addressed to:-

The Director General,
National Highways Board,
P.O.Box No. 1205,
ISLAMABAD

Official notices to the Consultant shall be addressed to:-

The Chief,
National Transport Research Centre,
Planning & Development Division,
Block 4-B, Markaz F-7,
ISLAMABAD

The notices to be given under the terms of this agreement shall be served by sending the same in person or

through registered post..

(DIRECTOR GENERAL)
National Highways Board
P.O.Box No. 1205
ISLAMAB AD

(CHIEF, NTRC)
Planning Commission
Block 4-B, Markaz F-7
ISLAMABAD

Witness:

Witness:












(PROJECT DIRECTOR-TCPP)
National Highways Board
ISLAMAB AD

(DEPUTY CHIEF)
NTRC, Planning Commission,
Block 4-B, Markaz F-7
ISLAMABAD

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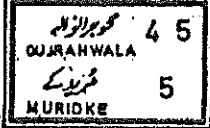

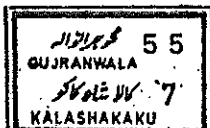
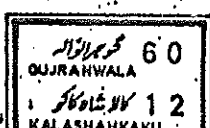
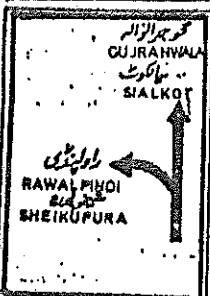
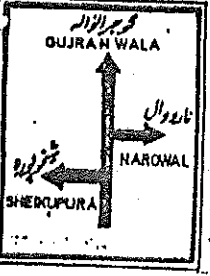
INVENTORY OF TRAFFIC SIGNS ON N-5
(LAHORE-GUJANWALA SECTION)

TRAFFIC SIGN INVENTORY

SIGN	SIDE	TYPE	MAP NUMBER/QUANTITY													TOTAL
			3	4	5	6	7	8	9	10	11	12	12A	12B		
			5	2	7	3	6	3	2	4	2	2	-	-	30	
			5	2	7	3	6	3	2	4	2	2	-	-	30	
			-	-	-	-	2	-	2	2	3	-	-	-	9	
			-	-	-	-	-	-	-	-	-	1	-	-	1	
			1	-	-	-	-	-	-	-	-	-	-	-	2	
			-	-	-	-	-	1	-	-	-	-	-	-	1	
			-	-	-	-	-	-	-	-	-	-	-	-	1	
			-	-	1	-	-	-	-	-	-	1	-	-	2	
			1	-	1	-	-	-	1	-	-	1	-	-	4	
			1	1	-	1	1	1	-	1	1	1	-	-	8	
			-	-	1	-	-	-	-	-	-	1	-	-	2	

INSTALLATION OF TRAFFIC SIGNS ON N-5
(LAHORE-GUJRANWALA SECTION)

TRAFFIC SIGN INVENTORY

SHAPE	SIZE	TYPE	MAP NUMBER/QUANTITY												Total	
			3	4	5	6	7	8	9	10	11	12	12A	12B		
	35		-	-	-	-	-	1	-	-	-	-	-	-	-	1
	17		-	-	-	-	-	-	1	-	-	-	-	-	-	1
	45		-	-	-	-	-	-	1	-	-	-	-	-	-	1
	5		-	-	-	-	-	-	-	1	-	-	-	-	-	1
	50		-	-	-	-	-	-	-	1	-	-	-	-	-	1
	2		-	-	-	-	-	-	-	-	1	-	-	-	-	1
	55		-	-	-	-	-	-	-	-	-	-	-	-	-	1
	7		-	-	-	-	-	-	-	-	-	-	-	-	-	1
	60		-	-	-	-	-	-	-	-	-	-	1	-	-	1
	12		-	-	-	-	-	-	-	-	-	-	-	1	-	1
			1	-	-	-	-	-	-	-	-	-	-	-	-	1
			-	-	-	-	-	-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	1	-	-	-	-	-	-	1
			-	-	-	-	-	-	-	1	-	-	-	-	-	1

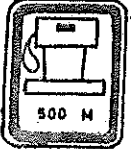






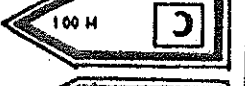


INSTALLATION OF TRAFFIC SIGNS ON N-5
(LAHORE-GUJRANWALA SECTION)

TRAFFIC SIGN INVENTORY

GROUP	SIZE	TYPE	MAP NUMBER/QUANTITY													Total		
			3	4	5	6	7	8	9	10	11	12	12A	12B				
TOTAL			17	6	7	10	16	11	10	15	9	13	1	4				119

INSTALLATION OF TRAFFIC SIGNS ON N-5
(GUJRANWALA-LAHORE SECTION)

TRAFFIC SIGN INVENTORY

TRAFFIC SIGN SHAPE	SIZE	TYPE	MAP NUMBER/QUANTITY												TOTAL	
			1	4	5	6	7	8	9	10	11	12	13A	13B		
	500 M		-	1	-	1	-	-	-	-	-	-	-	-	-	1
	500 M		1	-	-	-	-	-	1	-	-	-	-	-	-	2
	500 M		-	-	-	-	-	-	-	-	-	-	1	-	-	1
	500 M		-	-	-	1	-	-	-	-	-	-	-	-	-	1
			1	-	-	-	-	-	-	-	-	-	-	-	-	1
	100 M		-	-	-	1	-	-	-	-	-	-	-	-	-	1
	500 M		-	-	-	-	-	-	-	1	-	-	-	-	-	1
	100 M		-	-	-	-	-	-	-	-	-	-	1	-	-	1
			-	-	-	-	-	-	-	-	-	-	-	1	-	1
			-	-	-	-	-	-	-	-	-	-	-	1	-	1

INSTALLATION OF TRAFFIC SIGNS ON N-5
(GUJRANWALA-LAHORE SECTION)

TRAFFIC SIGN INVENTORY

TRAFFIC SIGN SHAPE	SIGN TYPE	MAP NUMBER/QUANTITY												TOTAL		
		1	2	3	4	5	6	7	8	9	10	11	12		13	14
		-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
		-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
		-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
		-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
		-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
		-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
TOTAL		16	7	7	14	16	9	9	15	5	12	5	-	-	115	

INSTALLATION OF STANDARD TRAFFIC SIGNS ON N-5

Annex- III

BILL OF QUANTITIES

		(Lahore - Gujranwala section)					
Sl. No.	Sign Type	Description	Qty	Rate (Rs)	Amount (Rs)	Unit	Remarks
1.	36" dia. Circular	Complete sign with message using Engineering grade sheet, fixing with one, 3" dia G.I. pipe in 1:2:4 concrete 1'-6" x 1'x6" x 2'-0" complete as already approved.	17	1,200		each	Rate already agreed
2.	36" side Triangle	Complete sign with message using Engineering grade sheet, fixing with one 3" dia G.I. pipe in 1:2:4 concrete 1'-6" x 1'-6" x 2'-0" as already approved	73	1,000		each	Rate already agreed
3.	6'x4' Information Sign.	Complete sign with message using Engineering grade sheet, fixing with two, 3" dia G.I. pipes in 1:2:4 concrete 1'-6" x 1'-6" x 2'-0" complete as already approved	9	3,650		each	Rate already agreed
4.	2'x1' Information Sign	Sign Plate with message (Blue back ground and white message) using Engineering grade sheet i/c cost of fixing under U-Turn sign.	30			each	Rate to be quoted
5.	24"x30" Information Sign	Complete sign with message using Engineering grade sheet, fixing with one, 3" dia G.I. pipe in 1:2:4 concrete 1'-6" x 1'-6" x 2'-0" complete	4			each	Rate to be quoted
6.	24"x24" Information sign	Complete sign with message using Engineering grade sheet, fixing with one, 3" dia G.I. pipe in 1:2:4 concrete 1'-6" x 1'-6" x 2'-0" complete	2			each	Rate to be quoted

Annex-III (Contd.)

Sl. No.	Sign Type	Description	Qty	Rate (Rs)	Unit	Amount (Rs)	Remarks
1.	2.	3.	4.	5.	6.	7.	8.
7.	5'x2' Arrow Plate	Complete arrow sign with message using Engineering grade sheet, fixing with two, 3" dia G.I. pipes in 1:2:4 concrete 1'-6" x 1'-6" x 2'-0" complete.	4		each		Rate to be quoted
8.	5'x3' Information Sign	Complete sign with message, using Engineering grade sheet, fixing with three, 3" dia G.I. pipes in 1:2:4 concrete 1'-6" x 1'-6" x 2'-0" complete.	6		each		Rate to be quoted
9.	6'x6' Information sign.	Complete sign with message using Engineering grade sheet fixing with three, 3" dia G.I. pipes in 1:2:4 concrete 1'-6" x 1'-6" x 2'-0" complete.	4		each		Rate to be quoted
10.	-	The cost of relocation of per pole of signs complete in all respect as directed by Engineer Incharge.	-		each		Rate to be quoted
11.	-	The cost of one, 3" dia G.I. pipe 12' long (average) and concrete foundation 1'-6" x 1'-6" x 2'-0" excavation, backfill and curing complete.	-		each		Rate to be quoted

Name of Work : INSTALLATION OF STANDARD TRAFFIC SIGNS
ON NATIONAL HIGHWAY N-5.

CONDITIONS FOR THE CONTRACT

1 : Mobilization Advance.

A maximum of 20% of the contract amount shall be payable as mobilization advance on the written request of the contractor. The mobilization advance shall be recovered from the running account bills paid to the contractor.

2 : Completion Time.

The completion time of the project is three months from the date of actual commencement of order. If the contractor shall desire an extension of time in the completion of the work on the grounds of his having been unavoidably hindered in its execution he will apply in writing to the Engineer Incharge of the hinderence on account of which he desires such extension and if found reasonable grounds, Engineer Incharge may extend the period of completion.

3 : Security Deposit.

The 10% security shall be recovered from the running bills of the contractor and this security shall be

CONTRACTOR

ENGINEER INCHARGE

payable after six months of the successful completion of the project. The Engineer Incharge on the completion of the project will finalize the payment of the work and shall issue a certificate to this effect that the work has been completed. From the date of completion, security shall retained for a period of six months. During the period of retention of the security deposit, the contractor shall be responsible for making good of all kinds of defects which are due to manufacture, workmanship or material like dis-colouring, peeling-off reflectory sheet, air bubbles in pasting etc. Any damage due to road side accident causing defacing and theft shall not be covered under this clause.

4 : Mode of Payment.

The running account bills shall be paid for the completely installed signs. The contractor shall submit his bill in writting which shall be paid after verification. The final payment shall be made after the work is completed in all respects and Engineer Incharge has issued a certificate to this effect.

5 : Prior Approval of Graphics/Message.

The contractor shall get prior approval of the graphic design/message of each sign from Chief, NTRC and no sign shall be installed at the site without the approval of Chief. In case any change is desired in approved

graphics design/message, the cost mutually agreed shall be paid to the contractor.

6 : Use of Approved Quality Material.

The contractor shall use approved quality material in manufacture of signs and especially same Engineering grade sheet as supplied in the sample already approved by the NTRC.

7 : Relocation of Signs.

The contractor shall be responsible for relocation of signs, if relocation is required after installation. In such cases, cost of relocation shall be paid on the basis of number of poles of relocated sign. The actual cost of relocation per pole quoted by contractor shall be considered for this purpose.

8 : Damage/Loss.

Any damage of equipment, labour loss or any other type of accident which may occur during the execution of the project causing any type of losses are to be borne by the contractor.

9 : Unforeseen Works.

In case any type of services like sewerage, water supply, telephone, electricity etc. are encountered

CONTRACTOR

ENGINEER INCHARGE

during the execution of the project, the contractor shall notify to the Engineer Incharge who shall take measure for either relocation of the sign(s) or shall arrange the shifting of such services with the department concerned.

10 : Taxes, Tolls etc.

All taxes, duties, royalties and tolls of any type which may be payable to any agency or authority during the course of completion of the project are to be paid by the contractor.

11 : Arbitration.

In case any anomaly is occurred; Chief, NTRC and contractor or his authorised representative shall jointly resolve such anomaly and Chief, NTRC shall act an Arbitrator during the execution of this project.

CONTRACTOR

ENGINEER INCHARGE

P H O T O G R A P H S

WARNING SIGNS



U-Turn Sign

WARNING SIGNS

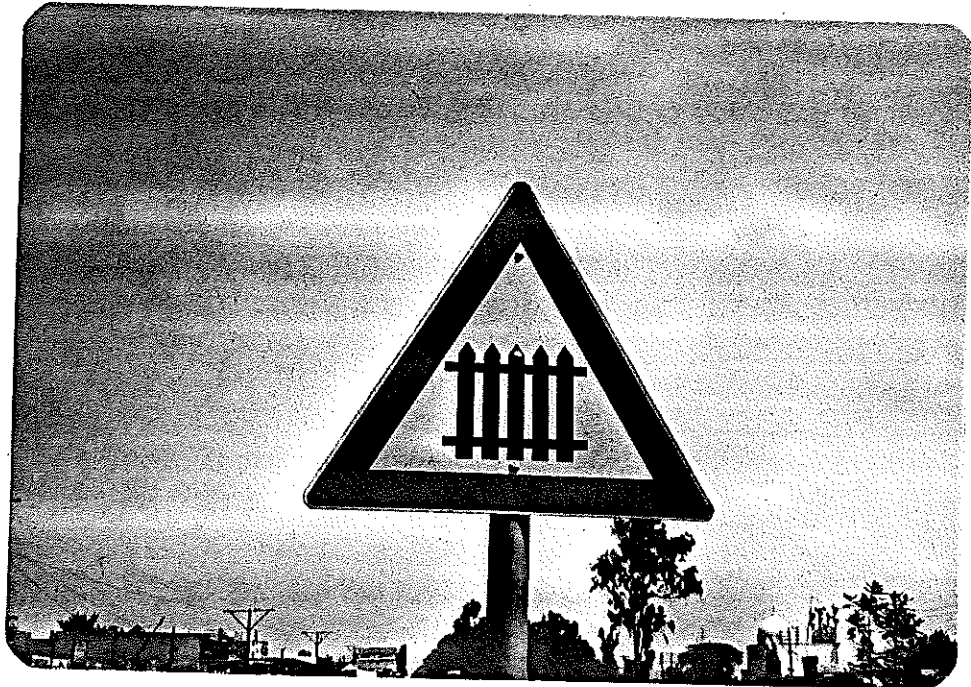


Advance U-Turn Sign

WARNING SIGNS



Narrow Bridge Sign



Railway Crossing with Gates

REGULATORY SIGNS



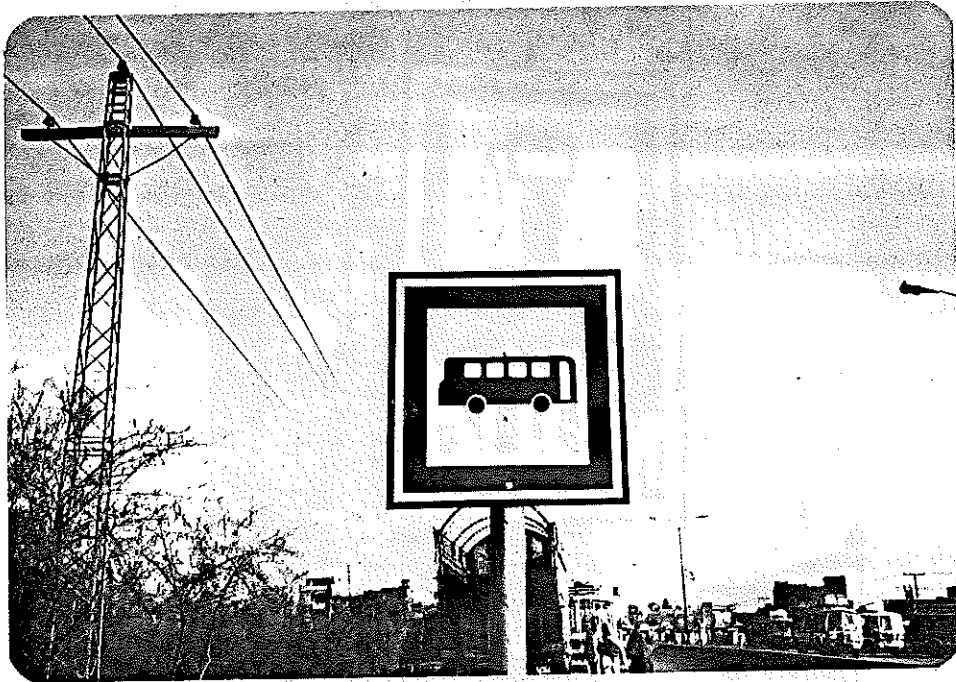
Maximum Speed Limit Signs

REGULATORY SIGNS



No Entry For Animal Drawn Vehicles

INFORMATORY SIGNS



Bus Stop Sign

INFORMATORY SIGNS

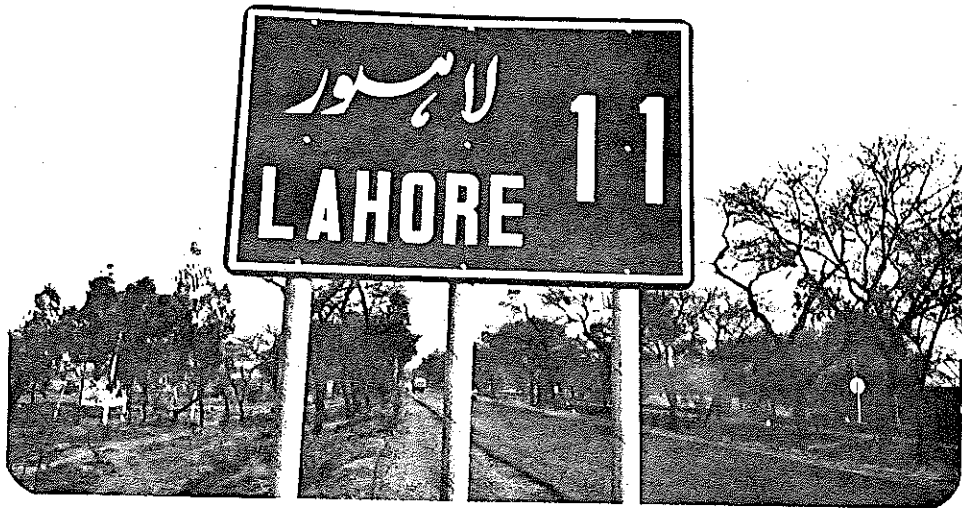


Built-up Area Limit Starts Sign



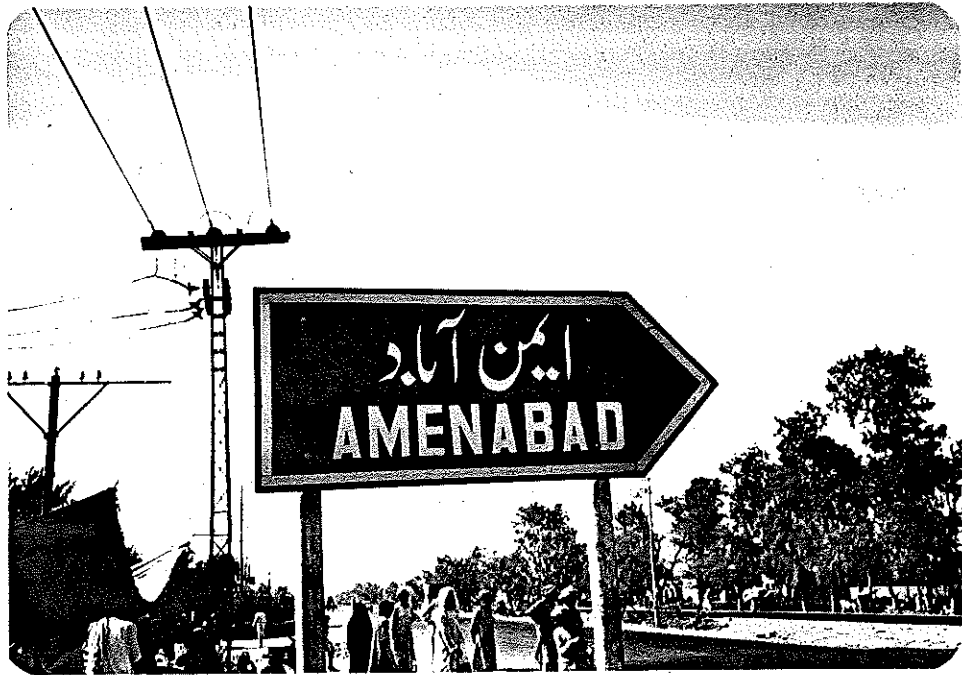
Built-up Area Limit Ends Sign

INFORMATORY SIGNS



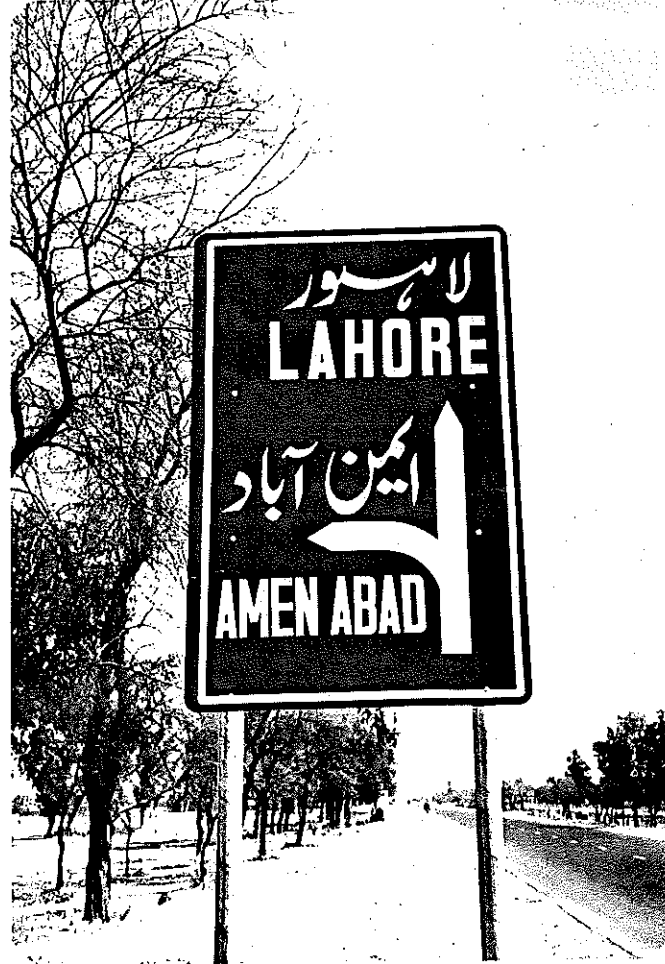
Distance Signs

INFORMATORY SIGNS



Directional Signs

INFORMATORY SIGNS



Advance Directional Sign

INFORMATORY SIGNS



Advance Directional Sign