Engineering News

A QUARTERLY JOURNAL OF THE PAKISTAN ENGINEERING CONGRESS

OCT - 98



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COVER PHOTO

Mr. Muhammad Rafiq Tarar, President of Pakistan with the Governor of Punjab, Mr. Shahid Hamid and Engr. Khalid Latif Khawaja, President, Pakistan Engineering Congress at the 67th Annual Session of the Congress.

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CHIEF EDITOR'S VIEW POINT

SELF-RELIANCE

After May (1998) detonations and imposition of sanctions, Pakistan's economy, which was already in the doldrums, has received a serious set back. Its international rating has been downgraded to triple C, one of the lowest in the world, thereby causing escalation in cost of borrowing.

In June, 1998, the Prime Minister announced his National Agenda for change, reconstruction and development, which will bring about a transformation. His Self Reliance Scheme envisages the realization that being an independent nation, we should have independent foreign and internal policies. Since the country's debt burden has assumed alarming proportions, other means need to be explored for reducing it. A few measures are suggested to put the crippled economy back on the rails:

- To employ Pakistani Engineers, Technicians and to use domestic manpower instead of foreign experts so as to save foreign currency reserves.

- To monitor manufactured products and sales besides the exploration of ways and means for modernization of the domestic plants to increase the production.

- To direct the representatives in the Foreign Embassies to search markets for domestic products.

- To make Pakistani expatriates to pay their due taxes.

- To develop small and medium enterprises which play a vital role in economic growth by providing employment opportunities and expanding exports.

- To augment exploration of labour markets abroad by activating Pakistan embassies and liberalizing deputation policies for reducing un-employment and enhancing foreign exchange earnings.

- To promote employment in private sector as the absorption capacity of the public sector is limited.

- To ensure strict and fair collection of revenues.

- To encourage the tax payer for paying taxes of his own free will.

- To prevent smuggling of all kinds and

- To import foreign technology instead of foreign products.



PRESIDENT'S ADDRESS OF WELCOME

(67TH ANNUAL SESSION)

By
Engr. Khalid Latif Khawaja, President

- **Your Excellency, Mr. Muhammad Rafiq Tarar, President Islamic Republic of Pakistan**
- **Honourable Mr. Shahid Hamid, Governor of the Punjab,**
- **Respected Mian Muhammad Shahbaz Sharif, Chief Minister of the Punjab,**
- **Distinguished Guests and fellow Engineers,**

It is a great honour for the Pakistan Engineering Congress and a proud privilege for me to welcome you all to the 67th Annual Session of the Pakistan Engineering Congress. We are specially grateful to you, Mr. President, for sparing time out of your extremely busy schedule to grace this function. This indeed is a confirmation of your deep interest in maintaining personal communication with the engineers of Pakistan. This also shows your keen interest in the promotion of science and technology for the overall development of the country. We greatly value your this opportunity of presenting our views on matters of vital national importance.

Mr. President, Sir, the Pakistan Engineering Congress, established in 1912, is the oldest professional body of the Sub-Continent. Major objectives of the Congress are development, propagation and promotion of engineering knowledge and practices for the advancement of the engineering profession. Selected technical papers of the highest standards, on different subjects of national and global importance, are presented and discussed during its annual sessions and on various other occasions. Symposia on important engineering problems are also held during the annual and the mid-term sessions and resulting recommendations are sent to the Government for consideration. A large number of papers presented at the Congress platform have won world-wide recognition and acclaim. Many major advances made in the fields of various engineering disciplines, were first presented at the platform of this Congress. Over the past 85 years as many as 682 technical papers have been presented and discussed. Annual publications of the Congress constitute a valuable store house of engineering knowledge. During this session, which you have very kindly consented to inaugurate, thirty seven technical papers are being presented covering various important subjects. A symposium on the subject of "Environmental Protection and Resource Conservation" is also being held as part of this Annual Session. Seminars on several important technical issues were held during the years 1997 and 1998. "Engineering News", a quarterly journal of the

Pakistan Engineering Congress is being regularly published since 1956. Proceeding of all the technical papers and the Quarterly Journal are distributed free of cost to various institutions, engineering universities and to the libraries, local as well as foreign to accelerate the cause of development, exchange and dissemination of available technical knowledge of a broad spectrum over the largest possible area.

Sir, "Pakistan Engineering Congress" is a non-profit and non-governmental professional organization and its activities are devoted solely to the promotion and advancement of engineering knowledge and practices. Its office holders are honorary workers.

Mr. President, Sir, let me congratulate the Government of Pakistan, the people at large and specially the engineers and scientists on the successful launching of 1500 km range, entirely indigenously developed, Ghauri missile. The successful launching of this missile is a tribute to the skill, dedication and hard work of engineers and scientists of Pakistan. Their work shows that given the right atmosphere and infrastructure headed by a professional they are capable of achieving the highest standards.

Sir, during our last Annual Session held in October 1996, we arranged a Seminar on "Impact of Power Policies on Social and Productive Sectors". It was considered expedient then and duly recommended that hydel power generation, and not the thermal one, be adopted as a long-term policy. Electricity charges have registered unprecedented high indices and are further spiralling. Mounting power bills, as a result, have adversely affected our industrial and agricultural sectors. The Government is considering ways and means to amend the Thermal Power agreements which are causing rapid escalation in the power rates. We fully support the Government in its efforts to renegotiate the provisions of these agreements and assure our full assistance in this regard. Sir, we strongly feel that there should be some sort of constitutional safeguards against signing agreements detrimental to the national interests.

Mr. President Sir, our population is growing rapidly and our needs for food and other agricultural products have increased manifolds. God has blessed Pakistan with fertile lands, large rivers, excellent climate and hard-working people yet, tragetic as it is, we continue to remain heavy importers of wheat, edible oils, tea, some times sugar and other commodities. While famine-like conditions stare us in the face, we have virtually clamped down on development of our river water resources. Within another five to ten years, shortage of canal irrigation supplies would become even more serious. Historic WATER ACCORD signed between the Provinces, way back in 1991 and aimed at rapid development of our water and power resources, still remains to be implemented. About forty million acre-feet of river water continues to go waste every year to the sea causing devastation and miseries on the way. We must harness this surplus water by constructing multi-purpose storage dams at all available sites. It would improve and increase canal irrigated areas to achieve not only autarky in food and other agricultural products, but would also generate cheap hydel-power, control devastating floods and

create millions of new jobs all over the country.

It is unfortunate that the plan for harnessing water resources, through more storage dams, has fallen a victim to political expediencies particularly "Kalabagh Dam". Construction of Kalabagh Dam is a fore-runner for many more dams. There was a complete consensus on building this technically viable dam in 1991. However, as the time passed, the issue got politicised. Sir, it no longer remains a technical much less a political issue, but has assumed proportions of such a magnitude which put our very survival at stake and brought to bear a challenge to political leadership. We urge upon and appeal the political leadership to the issue of storage dams which cannot brook any further delay as history and posterity will never forgive those responsible for the now missed opportunities.

Mr. President, the poor and sad state of our national economy and heavy reliance on debts is reflected in our national budgets. Major portion of our total revenues is eroded by foreign debt-servicing. Our foreign debts, utilized in a large number of cases for non-productive and lower-priority activities, continue mounting without suitably strengthening our repaying capacity. Engineers have time and again been expressing their apprehensions and concern to the policy framers of the dire consequences of heavy dependence on foreign loans, so-called foreign grants for policy and organizational studies, and influx of foreign consultants. Total dependence on foreign loans and expertise can hardly lead to any progress and advancement in any country. Our repeated requests, warnings, and even protests have generally invited frowns from the corridors of power, charges of inefficiency and corruption and almost complete exclusion from the closed power circles around the Chief Executives at the Center and the provinces and even from the sensitive ministries. In major technical and engineering corporations and ministries the engineers have been pushed away from top jobs. Federal and Provincial Engineering Departments have been the target of organized adverse publicity and witch-hunting. The technical organizations have virtually been left with no financial, administrative and even technical powers and freedom to manage their own affairs, and all lines of command stand annihilated.

Sir, a policy decision was taken in 1989 to declare at least seven federal ministries as technical necessarily to be headed by engineers. However, the generalist bureaucracy has effectively thwarted the implementation of this decision. Technical experts have gradually been removed from the key positions. Continued appointments of non-engineers against top-engineering posts have negated the policy of supporting promotion of science and technology. Rules are being modified to accommodate non-engineers in key technical jobs. Situation in the provinces is even worse. This trend of de-professionalization of highly technical jobs in the public sector, both at the federal and provincial levels, has already lead to disastrous results. In view of the importance and sensitiveness of the matter, I take this opportunity to request Your Excellency to give this matter your gracious thought. Mr. President there may be some genuine as well as engineered charges of

inefficiency and corruption against a section of engineers but the hard fact remains that no country can develop technologically without the wholehearted and dedicated support of the engineers and scientists. It is only possible if their genuine problems are solved and they are given the right status in the society.

Mr. President Sir, we have been stressing that without a properly organized indigenous engineering consultancy and construction industry with in-built checks and balances for quality assurance, cost and time control, we will not be able to build our technological skills and construction capacity to undertake major development projects. Self-reliance is not only the demand of the engineering profession, but it is the compelling requirement for the country to develop rapidly. This can be achieved by encouraging the Pakistan construction industry in technical, managerial and financial fields. There is a need to introduce a minimum Pakistani component for any construction contract awarded to a foreign company. We are conscious of the compulsions and conditions imposed by foreign lending agencies but inspite of the imposed constraints, there is an ample room to promote self-reliance leading to a meaningfully efficient economy. Our present policies are leading to mounting debts, erosion of economy and discouragement and resultant drain of the best talent. We would respectfully submit that with your deep insight into our socio-economic and political issue in the country, you may recommend to the Government to set-up a suitable machinery to reverse the growing trend of reliance on foreign resources in consultancy and construction sectors. Construction was declared as an industry a few years ago but no follow-up decisions were taken to get this policy implemented. We request the Government that all back-up support required for any industry is made available to the construction industry as well.

Sir, a number of cadres in the Government service structure such as doctors, lecturers and some others have recently been provided with improved service structures. The engineers, however, are being denied the same. Promotions in engineering departments are blocked for many years. Graduate engineers entering the service, in Grade-17, are not promoted to next grade in most of the cases even after sixteen years of service, further purposed downsizing of the engineering departments particularly in Punjab, may increase this figure to 25 years. Finding no place, the best engineering talent is leaving Pakistan in disgust and frustration. The Pakistan Engineering Congress has been advocating for better service conditions and structure for the engineers in Government service at least at par with other services. A five-tier service structure plan was proposed by the Congress and was sent to the Government. We expect that you will impress upon the Federal and Provincial Government to implement the five tier service structure for engineers as has been done in the case of some other services.

Another important sector which requires a high national priority is the Transport and Communication Sector. The nation is happy over the golden jubilee gift given to it in the shape of the Motor-way from Lahore to Islamabad and its further extension to Peshawar which is in hand. However, Mr. President, Sir, our country has an age-old and deteriorated network of railways. As railways and highways are basically meant to serve the same purpose, there is a need to prepare a Master Plan for integrated development of the two sectors. There is a need to have better coordination between the Planning Commission, Pakistan Railways, National Highway Authority and Provincial Highways Departments. Because of the importance of better transport facilities for industrial and economic development, farm-to-market roads, inter city and inter-provincial highways and the railway should receive higher sectoral allocations in the Annual Development Programmes.

Research and Development is an other area which has been neglected for too long. We are spending hardly 0. 15% of our GDP on Research and Development whereas in developed countries, the ratio is more than 1.5 of GDP. Lack of support to Research and Development is, unfortunately, widening technological gap between the developed and developing countries. There is an urgent need to accelerate our efforts in Research & Development by extra budgetary allocations.

Sir, you may very kindly recall our meeting with your honour when a delegation of the Pakistan Engineering Congress called upon you in February this year and had briefed about the plight of unemployed engineers of the country. Number of engineers working in a country is a useful indicator of the rate of its economic growth. In Pakistan, we have one engineer for a population of over 7,000 people whereas in the developed countries the ratio is one for the two hundred. The irony of the situation is that inspite of such a low ratio in Pakistan, about 50% of the engineers, qualifying from the universities each year, remain unemployed. An unemployed engineer is not only a problem of personal inconvenience, to say it mildly, it tantamount to a national tragedy. It shows that not only considerable financial cost in educating an engineer has gone waste, but a resource potential remains unused. We know that unemployment has taken a national dimension, and to overcome, it is a matter of high priority with the present Government. As employment of an engineer adds to the national production, this issue warrants highest priority. Sir, in this context, we would request the Government to promulgate an ordinance requiring every industry, contractor and consulting firm to employ a suitable number of probationary engineers at least for one year on the pattern of house-jobs for doctors. Provision for such appointments could be made obligatory for them to quote in their bids when seeking award of local or foreign aided works.

Mr. President, Sir, I would not have liked to bring in a subject relating to tax here but availing the opportunity of your benign presence, I wish to bring to your notice that the proceeds from rented part of our building (we have one property only), are being purely utilized for the promotion of professional activities and research in national interest. Unfortunately the Pakistan Engineering Congress property is being subjected to wealth tax by the Wealth Tax Authorities. As Pakistan Engineering Congress is a non-profit and educational organization the Congress pleads with you to use your good offices to ask the concerned authorities to exempt the Congress building from levy of the tax. This exemption has already been afforded to the sister bodies like Institution of Engineers Pakistan, Pakistan Medical Association Rawalpindi and other similar Institutions.

Sir, the President of Islamic Republic of Pakistan donated computers to the Congress in July, 1994 for establishing a Computer Center. Since then the Congress, through this center, has been imparting training to young engineers, engineering students and also to the youth with general knowledge in ten different courses of two months duration during 1997 alone at nominal tuition fee, One third of that being charged by even Government institutions. The Pakistan Engineering Congress provides free accommodation and free electricity to the center. You would be happy to know that the 67th Executive Council of the Congress has decided to establish a College of Computer Sciences for teaching for BCS and MCS degrees. The Congress strongly feels that better but cheaper education is the need of the day. Through the proposed college of Computer Sciences of the Congress, we intend to impart computer education with tuition fee which would be whitin the reach of a common man and further to allow even 50% rebate on fee to poor but deserving students. The charges of these degree courses, as per our Feasibility Study, shall not be more than Rs. 8000/- per semester of four months as against Rs. 35,000/- being charged by almost all such Institutions. The Pakistan Engineering Congress intends to provide free accommodation, free electricity and major part of faculty salaries to the center.

We are fortunate to have in your person Mr. President, a God- fearing jurist, a right thinker and an intellectual endowed with the spirt for providing support to the just causes of making Pakistan a self-reliant, strong and prosperous Country, a dream of the great Quaid and father of the Nation which still remains unfulfilled.

In the end before I close my presentation, I thank you Mr. President Sir, and all other distinguished guests for joining us on this occasion and bearing with me so long.

I now request you, Mr. President to kindly inaugurate the 67th Annual Session of the Pakistan Engineering Congress.



Engr. S.N.H. Mashhadi

MEET THE NEW PRESIDIENT

Born in October, 1931, at Ferozepur, (Indian Punjab), Engr. S.N.H. Mashhadi, the newly elected President of the Pakistan Engineering Congress and Managing Partner of an internationally renowned consultancy firm (M/s National Development Consultants) engaged in rendering countrywide consultancy services in water resources development projects, graduated as a Mechanical Engineer in 1953 from the Punjab College of Engineering and Technology, Lahore and followed it up with a degree in Civil Engineering in 1954.

He started his career with the Punjab Irrigation and Power Department in 1955. That was the crucial time when India had arbitarily stopped irrigation supplies to the canals in Pakistan whose Headworks were left on the Indian side. Resultantly the Irrigation Department was seriously seized with the design and remodelling of the irrigation network to save the fertile-lands of south-eastern Punjab from turning barren.Technical progress of Engr. Mashhadi soon caught the eye of seniors and he was included in the group of talented engineers charged with the challenging design and remodelling works of irrigation system to tide over the imminent traumatic catastrophe. His dedication earned his accelerated promotion in 1962 and he was transferred to WAPDA in 1964 where he rendered commendable services in the design, contract administration and construction supervision of Taunsa-Panjnad Link, a major feeder channel as a component work of Indus Basins Project.

In 1972, he fell a prey to the political and unjustified anger of some highly influential people for not acceding to their illegal demands but when reinstated honourably he opted to leave public service. From 1972 to 1973 he worked for different organizations and in 1973 joined Noon Qayuum and Co., a Consultancy Firm. Soon after he became a Partner of another Consultancy Firm, Engineering and Technical Consultants. Not satisfied with the state of affairs obtaining there, he launched his own Firm in the name and style of National Development Consultants (Regd.) in 1977. With concerted efforts and coordinated devotion of the partners, the Firm has taken development strides to rank as one of the leading consultancy houses and has provided services to WAPDA, Provincial Governments and other Autonomous Agencies for more than 50 prestigious projects in water sector, funded interalia by Asian Development Bank, World Bank and European Community etc.

His service to Engineering Community is by no means insignificant. He has contributed about two dozen technical papers

in the Pakistan Engineering Congress Proceedings, Enginering News Journal and other local and international journals. Engr. Mashhadi has been instrumental in enhancing the image of the Engineering Congress. For over 20 years he has been organizing Engineering Congress the set up in the capacity of an Executive Council Member, twice as Secretary, once as vice President and almost in every session taking upon himself the voluntary role of acting as Convener Library and Publication Committees and Building and Fund Raising Committees. He always came up with all the resources at his command to make the Annual Sessions of the Congress a success by contributing financial and secretariat resources of his Firm.

Engr. Mashhadi has travelled widely in connection with his Consultancy Business to countries like U.S.A. U.K. Holland, Germany, France, Itlay, Spain, Portugal, Phillipines, Thailand, Hongkong, Nepal, Dubai, Saudi Arabia etc.

Simultaneously serving the engineering fraternity as Executive Council Member of Pakistan Engineering Council; Member Board of Governors, Centre of Excellence in Water Resources Engineering UET; Executive Council Member, Institution of Engineers, Pakistan, and Fellow of the American Society of Civil Engineers, his services have very aptly been acknowledged by the Congress Members by electing him as President, Pakistan Engineering Congress for 68th Session to represent the Consultants turn.

WELCOME TO NEW MEMBERS

The Executive Council of the Pakistan Engineering Congress approved membership of the following new members into the Congress fold. The Engineering News congratulates all of them and welcomes to PEC.

Members admitted on 31-08-98

S.No. Name

1. Engr. Shakil Ahmad,
   SDO, Irrigation, Lahore

2. Engr. Syed Manzar Ali
   97-Shah Jahan Road,
   Moghalpura, Lahore.

3. Engr. Khurram Ali,
   236-T. LCCHS, Lahore Cantt.

4. Engr. Mian Mudassar Jinnah,
   187-Ravi Park, Lahore.

5. Engr. Muhammad Younus
   Mian, Chief Resident
   Engineer, EGC, Lahore

6. Engr. Husnain Aman,
   33-A/L, Gulberg-III Lahore

7. Engr. Talal Ahmad Khan,
   155-A, Model Town Lahore.

8. Engr. Muhammad Iqbal Gill,
   G.M. NESPAK, Lahore.

9. Engr. Dr. Sohail Mehmood Qureshi,
   233-B, GECHS, P-III,
   Link Road, Model Town, Lahore.

10. Engr. Maqsood Ahmad
    Asst. Engineer,
    Sui Northan Gas, Lahore

11. Engr. Faisal Zafarullah Minhas
    636-B, Faizal Town, Lahore

12. Engr. Abdul Qadir Rafiq
    Sr. Engineer NESPAK, Lahore

13. Engr. Muhammad Farrukh Sharif
    426-M, Model Town
    Extention, Lahore

14. Engr. Muhammad Irshad,
    Div. Engineer, T&T, Lahore

15. Engr. Ali Mohammad,
    Asst. Engineer,
    Pakistan Railways, Lahore

16. Engr. Pazeer ul Hassan Minhas
    M.D. Universal Engineering,
    Services, Chakwal.

17. Engr. Khalid Siddique Ahmad Khan,
    Dy. Manager DESCON, Lahore.

18. Engr. Khalid Manzar,
Plot No.13, Block No. 2,
Kareem Park, Ravi Road, Lahore

19. Engr. Muhammad Aslam,
508-W, Phase-III,
LCCHS, Lahore Cantt.

20. Engr. Amjad Ali,
H.No. 1-B, Rana St. No.11,
Muhammad Pura, Ichhra, Lahore.

21. Engr. Malik Atta ur Rehman,
Officer Grade-II, IDBP, Lahore.

22. Engr. Mohammad Younas
Officer Grade-II, IDBP, Lahore.

23. Engr. Mohammad Yasin,
ADE,Irrigation & Power, Lahore.

24. Engr. Muhammad Rauf Ahmad
Asstt. Foreman,
Pakistan Railways,
Moghalpura, Lahore.

25. Engr. Faisal Mumtaz Zuberi
Manager, Structures,
Progressive Consultants, Lahore.

26. Engr. Christopher Gatton Swayne,
Chief Resident Engineer,
WAPDA, Tarbela

27. Engr. Zahir Mehmood,
Mohallah Balyah, Kotli (AJK)

28. Engr. Muhammad Inam,
H.No. 61, Dilawar St, No.7
Chah Miran, Lahore

29. Engr. Arshad Mehmood Qureshi
Instructor,
Govt. College of TECH,
Raiwind Road, Lahore.

30. Engr. Muhammad Waseem Qureshi,
Instructor,
Govt. College of TECH,
Raiwind Road, Lahore

31. Engr. Shair Ali,
SRO, Education, Deptt., Lahore.

32. Engr. Akhtar Mehmood,
H.No.4, Nanak St. No.5,
More Samanabad, Lahore.

33. Engr. Arfan ul Haq Subhani,
79-Shadman Colony,
Near Passport Office, Faisalabad.

34. Engr. Jamil Arshad,
SDO, Education Buildings,
Sheikhupura.

35. Engr. Ghulam Mustafa Mirza,
Pr. Engineer NESPAK, Lahore.

36. Engr. Shahabz Asif Kazi,
Sr. Engineer, NESPAK, Lahore.

37. Engr. Muhammad Shafiq Nadeem,
Nafees Colony,
Near Mosque Balal, Kasur

38. Engr. Muhammad Hayat Khan,
Pr. Engineer, NESPAK, Lahore.

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Pr. Engineer, NESPAK, Lahore.

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Sr. Engineer, NESPAK Lahore.

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SDO, Education Buildings,
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SDO, PHED, Lahore.

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Asstt. Commissioner,
(Income Tax),Zone-C, Lahore.

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Dy. Director, BRS,
New Campus, Lahore.

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Chief Engineer, NESPAK, Lahore.

57. Engr. Muhammad Saeed,
Pr. Engineer, NESPAK, Lahore.

58. Engr. Imran Gulzar,
176-Zeenat Block,
Iqbal Town, Lahore.

59. Engr. Mohammad Saleem Sheikh,
XEN, Buildings, Rawalpindi.

60. Engr. Ahmad Ali,
5-Greenwood Market,
4-Civic Centre,
New Garden Town, Lahore.

61. Engr. Syed Qamar Abbas Shad Naqvi,
Sr. Engineer, IAC,
Syed Maratab Ali Road, Lahore.

62. Engr. Mirza Asif Baig,
Pr. Engineer NESPAK, Lahore.

63. Engr. Shabbir Ahmed,
Sr. Engineer, WAPDA,
89-S, Model Town, Lahore.

64. Engr. Rana Muhammad Anwar,
Sr. Engineer WAPDA,
89-S, Model Town,
Lahore.

65. Engr, Tila Muhammad Khan,
Dy. Director, WAPDA,
Faisal Town, Lahore.

66. Engr. Syed Sajid Hussain Rizvi,
ADE, Irrigation,
Multan Zone, Multan.

Members admitted on 19-10-1998

S.No. Name and Address

1. Engr. M. Shahid Nazir Khan,
XEN, Highway Division, Narrowal.

2. Engr. Muhammad Munawar Ahmad,
XEN (H/Q), 2nd
Prov. Building Circle, Lahore.

3. Engr. Muhammad Shariq Ahmad,
Site Engineer, Army Housing
R-53, U.E.T, Lahore.

4. Engr. Muhammad Ayub,
ADH (Works) Askari Housing Complex,
Walton Airport, Lahore, Cantt.

5. Engr. Rizwan Khan,
Civil Engineer, ASKRO
Engineering House No. 182,
St. No. 18, F-10/2, Islamabad.

6. Engr. Muhammad Faheen Anwar Khan,
Junior Engineer MM Pakistan,
17-A/I, Zafar Road, Lahore Cantt.

7. Engr. Javaid Iqbal Awan,
Deputy Project Manager,
NDC (Regd.) Mardan.

8. Engr. Muhammad Zubair Ahmad
Senior Engineer, NDC, (Regd)
62-M, Gulberg-III, Lahore.

9. Engr. Zafar Iqbal Wattoo,
Junior Engineer, Design, NDC,
CRBIP-III, D.I.Khan,

10. Engr. Muhammad Riaz,
Junior Engineer, NDC, (Regd)
PHLC Consultants, Tarbela.

11. Engr. Taj Din,
Quality Engineer, NDC, (Regd) Lahore.

12. Engr. Aziz-ur-Rahman,
Principal Design Engineer,
NDC(Regd.) 62-M, Gulberg-3, Lahore.

13. Engr. Ahmad Arsalan,
SDO, Education Building,
12-Kamran Block,
Allama Iqbal Town, Lahore.

14. Engr. Imtiaz Ahmad,
XEN Irrigation, Jhang.

15. Engr. Saqib Rahim,
SDO, Edu. Building, Lahore.

16. Engr. Muhammad Ashraf Shad,
Pr. Engineer, NDC, (Regd) Lahore.

17. Engr. Haroon Sheikh,
Senior Design Engineer, NDC (Regd)
Lahore.

18. Engr. Muhammad Saeed Akbar Khan
Pr. Engineer, NDC, (Regd) Lahore.

19. Engr. Shamshad A. Qamar,
Pr. Engineer, NDC, (Regd.) D.I.Khan.

20. Engr. Hanif-ullah
Pr. Engineer, NDC, (Regd) D.I. Khan.

21. Engr. Muhammad Bakhsh Baloch,
Hydraulic Design Engineer,
NDC, (Regd) Peshawar.

22. Engr. Syed Shams-ul-Qamar,
Quality Control Engineer,
NDC, (Regd) Tarbella.

23. Engr. Muhammad Ishaq Khan Niazi,
Pr. Engineer, NDC, (Regd) D.I.Khan.

24. Engr. Syed Naseer-ud-din Hashmi,
Pr. Engineer, NDC, (Regd) D.I.Khan.

25. Engr. Imran Ahmad,
Junior Engineer, NDC, (Regd) Lahore.

26. Engr. Faisal Ashraf Warriech,
Junior Engineer. NDC, (Regd)
Lahore.

27. Engr. Navid Ahmad Malik,
436-K, Model Town, Lahore.

28. Engr. Arshad Mahmood,
Govt. College of Tech.
Raiwind Road, Lahore.



PEC opposes amendment in LDA Act '75

By Our Staff Reporter

LAHORE–Pakistan Engineering Congress (PEC) has taken a strong exception to the proposed amendment in LDA Act 1975 empowering the competent authority to retire or remove any official from service.

This was stated by Engineer S.N.H. Mashahidi, Chairman PEC while presiding over an emergent meeting of the Executive Council here on Wednesday. He criticised the proposed amendment which will deprive employees of LDA and WASA of their basic right of service security. He said that the proposed action would create panic and insecurity among all other government employees which will further demoralise the already frustrated technocrats of the country.

The PEC Council members termed the step as injustice as the provision cannot be implemented in true sense and will amount only to victimisation of employees particularly the engineers.

The PEC Council members said that PEC fully supports the government to purge the society of rampant corruption but will never compromise on the usurpation of basic human rights of individuals.

THE NEWS INTERNATIONAL

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September 3, 1998

C opposes amend
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Pakistan Engineering
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ORDER REPORT
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PEC president nominates
its office bearers

LAHORE: The Executive Comm
cil of Pakistan Engineering Congress
at a meeting held here Thursday with
president Engr. S.N.H. Mashhadi,
minated Engr. S.M.A. Zaidi, as

cil also nominated Engr.
Jamil Shah as joint
Khuda Yar as
Latif as

include Engr. S.N.H. Mashhadi, An-
nual Session ; Engr. Ijaz Ah-
Cheema, Public Relations;
Ali Rizwan, Publica
hrary; Engr. Ch. Ghu
Symposium; Capt. M. G
Welfare of Engineers; Eng
mad Siddiq Charla, Buil
Fund-Raising; Engr Jaw

The Nation

SATURDAY, JULY 11, 1998

Concern over
engineer's
manhandling

LAHORE (PR)-Pakistan Engineer-
ing Congress (PEC) has expressed
concern over the manhandling of an
Executive Engineer of Irrigation De-
partment in Sheikhupura by an influ-
ential political person and his account-
plices on the alleged transfer of a Ca-
nal Patwari and the subsequent can-
cellation orders.
The President of PEC, Engr S.N.H
Mashhadi, in a Press statement i
here on Friday said that it is
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BUSINESS
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Wednesday, September 16,

PEC calls
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LAHORE: The Pakistan En
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BUSINESS MANAGER'S REPORT FOR THE 67th SESSION

As reported by the Secretary in his annual report, this session was full of activities which included technical lectures, visits to various sites of works, annual dinner and cultural show followed by an extensive annual visit programme.

Lectures

During the session six lectures were arranged on various important subjects. These lectures were very well attended. As the Congress does not have a hall of its own, the Institution of Engineers extended the facility of its hall to the Congress for the lectures for which Congress is thankful to the Institution of Engineers, Pakistan.

Visits

Seven visits were organized during the session to important projects and research centers. The visits proved very useful.

Both these events had been reported by the Secretary in his annual report.

Annual dinner

The annual dinner was held at Pearl Continental Hotel Lahore. It was attended by about 500 members and guests. The dinner was followed by a cultural programme which was attended by the members and their families. The dinner and the cultural programme elicited a lot of enthusiasm by the members, their families and guests.

Chief Guest was Dr. Mubashir Hasan, former president of the Congress and former Finance Minister of Pakistan.

Annual Session

The annual session was held at Pearl Continental Hotel Lahore from 12th May to 15th May 1998. The session was inaugurated by the President of Pakistan.

Annual Tour

The annual tour included visits to Islamabad, Peshawar, Taxila and Ghazi Barotha. It was spread over five days from 17th May to 21st May 1998.

The tour was arranged and conducted by Engr. S.N.H Mashhadi, on behalf of Engr. Iftikhar-ul-Haq, Business Manager. A skyways 30 seater air-conditioned bus was hired at Rs. 9,000 per day inclusive of P.O.L and toll Tax etc.

The chronological order of events of the tour is as below:

17-05-1998 (Sunday)

- The delegates, thirty three in number, assembled in the Pakistan Engineering Congress office and were scheduled to leave at 09:00 A.M. However, due to some technical problem in the AC of the Bus, it was decided to leave for Islamabad after the lunch.
- The delegates were served a sumptuous lunch in the XINHUA Chinese Restaurant near the Congress Office.
- Since the number of the delegates was more than the capacity of the Bus, Engr. S.N.H Mashhadi decided to take his personal car to accommodate three additional delegates.
- The delegation started journey for Islamabad via motor way at 15:00 hours.
- On their way the delegates stopped at Lilla interchange to take snacks and the snaps of the Kalarkahar lake nearby. Thus the entire Lahore Islamabad Motor - way was visited by the delegates.

NEWS IN PICTURES



The President of Pakistan Mr. Muhammad Rafiq Tarar is decorating Engr. Ch. Javid Akhtar, Ex-Member (Power) WAPDA with Gold Medal for his best paper in Symposium at the 67th Annual Session of the Congress held at Lahore on 12.5.1998.



The President of Pakistan Mr. Muhammad Rafiq Tarar is decorating Dr. A.Q. Khan with Gold Medal on successful launching of the Ghauri Missile at the 67th Annual Session of the Congress held at Lahore on 12.5.1998.



Group Photograph of the Executive Council of 67th Session with the President of Pakistan, Mr. Muhammad Rafiq Tarar at Lahore on 12.5.1998.



Engr. Khalid Latif Khawaja, Out-going President, and Engr. S.N.H. Mashhadi, the In-coming President, Pakistan Engineering Congress on the eve of 67th Annual Session held at P.C. Hotel, Lahore from 12-15/5/98.

- The delegates reached Pearl Continental Hotel Rawalpindi at 19:00 hours. All were accommodated in single rooms at pre-arranged concessional rate of Rs. 1200/- inclusive of all taxes and break fast per room.

18.5.1998 (Monday)

- The delegates visited Carrier Telephones Industries at 10:30 hours where delegates were received by Managing Director Engr. Khalid Habib (also one of the Vice-President of Pakistan Engineering Congress).
- Briefing was done by Engr. Muhammad Hussain, Director Mechanical and Mr. Shah Hassan, Director Commercial. The delegates were then taken around the C.T.I factories in two groups which evinced keen interest among the delegates. Thereafter a question - answer session was held. The delegates were treated to a sumptuous lunch courtesy Managing Director, Engr. Khalid Habib.
- Later in the A/N a telephone call was received from Dr. Abdul Qadeer Khan Laboratories to inform that delegates would be shown the KRL. For this purpose the Protocol Officer of KRL came to P.C. with a coach and guided the delegates to KRL Rawalpindi. A briefing was arranged in the Auditorium by Dr. Nazir Ahmad and Engr. Miss Humma.
- After this Dr. Abdul Qadir Khan had invited the delegates for a cup of tea but unfortunately due to urgent meeting with Defence Officials, he could not participate personally. However, the delegates were served with a Lavish tea and brochures of the KRL were distributed amongst the delegates. The out going President, thanked the officers of the KRL for their hospitality and presented them the sets of Engineering Congress Proceedings. The delegates returned to the Hotel in the evening.
- The delegation was served a dinner by Engr. Ch. Muhammad Ismail Superintending Engineer Highways in Holiday inn, Islamabad.

19-5-1998 (Tuesday)

- After the breakfast, the Delegates left P.C. Rawalpindi for Tarbela via N-5 and Lawrencepur Tarbela Road. Some more delegates had joined the entourage.
- At Tarbela the delegates were received by Engr. Amjad Agha, Chief Executive Pakistan Hydro Consultants. Engr. Muhammad Hayat Chaddu, General Manager Ghazi Barotha, Malik A. Ghaffar Chief Engineer, Ghazi Barotha and Engr. Muhammad Aslam Chohan, Advisor M/s SKB (one of the Contractors). The delegates were briefed by Engr. Amjad Agha and Engr. Muhammad Hayat Chaddu personally.
- The delegates were then taken to Contractors Camp Ghazi and served with a delicious Italian cum Pakistani Lunch, Courtesy M/s SKB.
- Then the delegates were taken to Ghazi Barrage and the Power Channel where they evinced keen interest. The briefing was done there by Italian Resident Engineer who then took around the delegates to various components of the Barrage under construction.
- After this the delegates were taken to Tarbela Dam for brief visit.
- The delegates were then taken to the tail of Power Channel at km 52, where they saw the lining machine being assembled and tested for operation.

- Due to paucity of time the delegations could not go to the Power Site under construction.
- Then the delegates thanked the hosts and informed them they would like to see the Project in more detail some time in late September or October when the work would be in more advanced stage.
- The delegates thereafter moved on to Peshawar and checked in PC Hotel at about 09:00 P.M. where a courtesy dinner arranged by Engr. Raquib Ahmed Paracha, Vice President Pakistan Engineering Congress, courtesy Engr. Ali Muhammad Khan, Managing Director M/s Khyber Engineering Consultants was waiting for them. Some very Senior Engineers like Engr. Shah Nawaz Khan Retd Chairman, WAPDA had also been invited there.
- M/s Pearl Continental Hotel charged the delegates special concessional rates for single at Rs. 1,500/- for single rooms and Rs. 1,650/- for double room inclusive of breakfast and tea.

20-5-1998 (Wednesday)

- After leaving P.C. after the breakfast, the delegation reached SWABI SCARP office Mardan where they were welcomed by Engr. Sarzeem Khan P.D./ Chief Engineer, SWABI SCARP and PHLCP. Mr. M.Dolandson, Project Manager, SWABI SCARP and Engr. Riaz Nazir Tarar, Acting Project Manager, PHLC briefed delegation about the ongoing Projects.
- Thereafter the delegates reached Amandara Head Works seeing on their way the bifurcator the old Benton Tunnel undergoing rendered nominated repairs and the new Auxiliary Tunnel opened to supplement the old Benton Tunnel irrigation water supply. They also visited upper Swat Canal which has been lined throughout.
- At Amandara the delegation was served a lavish lunch by joint Venture SWABI SCARP Consultants comprising Binnie and Partners U.K., Laymeyer, NDC and BAK. In the evening the delegation returned to PC Peshawar and took dinner at the Hotel.

21-05-1998 (Thursday)

- The delegation checked out after breakfast and left to visit Tarbela Dam Power House reaching there at 12:30. The delegation was received by General Manager (Power) WAPDA Engr. Afzal Latif Puri, Acting Project Manager, PHLC Engr. Riaz Nazir Tarar and Chief Engineer Niaz Ahmad, Power House NO. 1. The delegation were served with refreshments and thereafter were briefed by Engr. Abdul Latif Puri, General Manager (Power) Tarbela. Before refreshments Engr. Niaz Ahmed had shown the delegates the model of the Power House.
- Although the delegation was shown round the ground floor of the Power House but for want of time they could not be taken below to shown them the turbines working. Irrigation Tunnel No. 4 otherwise inoperative was specially put in operation for the visit of the delegates. Engr. Haider Shah gave a detailed briefing about Design and Construction about Tarbela Dam in the briefing Hall at Tarbela.
- The delegation thereafter made for home reaching Lahore via motor way at 21:30 hours.

BUSINESS MANAGER'S REPORT ON MID-TERM VISIT TO ENGINEERING WORKS 1998 (68TH SESSION)

9TH OCTOBER TO 11TH OCTOBER

Introduction

Keeping with the age-old traditions of Pakistan Engineering Congress, a Mid-term visit to Engineering works comprising Chashma Barrage and under construction Chashma Hydropower Project alongwith Chashma Right Bank Irrigation Project Stage-III was proposed by the President. Chashma Hydropower and Chashma Right Bank Irrigation Project Stage-III are both being constructed with the financial assistance of Asian Development Bank in collaboration/Co-financiership with other agencies like KFW etc and supervised by Joint Ventures of Expatriate and local Consultants.

President, Pakistan Engineering Congress approached Engr. Mushtaq Ahmad, Chief Engineer, Dams, WAPDA for supporting the visit who not only acceded to this request, he also obtained the formal approval from Member (Water), WAPDA.

The Programme

All the Members of the Pakistan Engineering Congress were informed of the tour programme on 29-09-1998 through a formal letter, inviting their intent for participation and indicating that the selection of the delegates would be done on first-come-first-served basis. The Members were also requested to send in their intent by 5 October 1998 at the latest to enable the Congress Office to make necessary arrangements.

Two Air-Conditioned Coasters were arranged by the *Business Manager* for the trip. The group was to leave at 14.30 Hours on 9th October 1998 from the Congress Office in Liberty Market, Gulberg-III Lahore.

The visit

A brief account of the events during this visit is presented chronologically in the following paragraphs:-

i) First/Departure day - October 9, 1998 (Friday).

25 delegates including the President, the Secretary and Business Manager assembled at the Congress premises where the transport was already parked, and the Congress staff was present to receive and arrange for embarkation of the delegates. The group started with the last delegate arriving at about 14.45 hours. The delegation drove along the Motorway from Niaz Beg to Balkasar and then followed Talagang, Mianwali and Kundian route to reach Chashma Colony at about 22.30 hours. On the way, the delegates had the opportunity of looking into the quality of construction and service performance of the Motorway crest which

they found to have developed rutting in several reaches. The Senior Members in both the coaches explained the technical aspects of the Motorway to the younger delegates and reasonable amount of discussion also took place. Several reasons for this abnormal behaviour of the Motorway crest so soon after completion were discussed, the major ones being:

a) Inadequate drainage.

b) Inadequate or inappropriate compaction.

c) Use of unsuitable grade of bitumen

d) Over-loading

The last reason was somehow rejected by all the delegates who had the view that the loading on Pakistan roads has not increased suddenly, it was similar when Motorway was under-design and the designers should have taken due cognizance of the traffic and axle loads.

Almost all the delegates were critical of the virtual blocking of canal inspection roads and the depressed under-passes for rural traffic which definitely become unuseable during rains.

The delegates stopped for a short-while at Bhera Service Ares for some snacks and stretching their legs.

On arrival at WAPDA Lodge Chashma Barrage, the delegates were received by Engr. Saeed Ahmad Khan the Project Director Chashma Barrage, who also delivered a short briefing about the salient features of the Chashma Complex. The delegates were accommodated for the night in WAPDA Lodges of the Chashma Barrage and Chashma Hydro-power Project. The Barrage authorities served the delegates with a delicious dinner which the delegates had deserved well after a long drive of over 8 hours.

ii) Second day-October 10, 1998 (Saturday)

After an over-night stay in the WAPDA Lodges and a breakfast, (courtesy Barrage Authorities), Engr. Saeed Ahmad Khan Project Director Chashma Barrage conducted the delegation to the Barrage and gave an on-site briefing and also answered the questions raised by some of the delegates who were impressed by the quality of construction and standard of maintenance.

The delegation visited the offices of Chashma Hydro-Consultants where they were briefed by Engr. Ch. Muhammad Ishaq Deputy Project Manager Chashma Hydro-Consultants about the civil engineering aspects of the project. The briefing about the recently developed Bulb-Turbines, and other mechanical works was given by a German Mechanical Engineer of the Consultants Team. This briefing generated a lively interest and discussions as a result of very pertinent questions by the delegates. The delegates while appreciating the efforts of the Consultants, were unhappy to know that the project machinery is lying in Karachi Docks for a long time due to some financial problems regarding duties, taxes and wharfage charges which in fact would have been only an adjustment within the Government heads of expenditure, but has delayed the Project and

also accrual of its benefits. The delegates were served with tea during the course of briefing.

After the briefing the delegates were shown around the various component works of Chashma Hydro-Power Project. The delegates showed keen interest in learning about the various features specially the role of dredger, geo-textile filter under the stone pitching, the flexible cut-off (diaphragm) wall and the power house structure. Reasonable level of discussion took place. While the delegates did not seem to agree with the provision of geo-textile filter under stone pitching as the same is not only more expensive, but also requires foreign exchange for procurement, while the rock filter already used on I.B.P. Barrages is cheap, equally effective, is available for local currency and also provides employment to substantial number of labours who are needed for manufacture of this filter. The delegates were however appreciative of the general quality of concrete and stone work. The quality & design of scaffolding and shuttering was also appreciated.

After the lunch hosted by the Project Director Chashma Barrage, the Secretary, Pakistan Engineering Congress thanked the WAPDA Authorities for making the very good arrangements for tour and generous hospitality on behalf of the delegates and the Congress. The delegation left Chashma Barrage for D.I. Khan along the Chashma Right Bank Canal. On the way Chief Engineer/Project Director CRBIC Engr. Muhammad Ishaq Khan and Engr. Bashir Ahmad Khan Superintending Engineer-I received the delegates at the Combined Structure at RD. 97 $\pm$ which served function of a cross-regulator, silt ejector and escape and a cross-drainage syphon concurrently. The delegates were served with cold drinks and briefed about the structures and canal in Stage-I. The delegates again proceeded along the canal upto RD. 252 and were shown the various types of structures like bridges and syphons etc. From here the delegation took Bunnu-D.I.Khan road and reached WAPDA lodge in CRBIC Colony at 19.00 hours. The delegation was accommodated in the newly built WAPDA lodge which has well-furnished accommodation. After brief rest, Engr. Muhammad Ishaq Khan Chief Engineer / Project Driector CRBIC-III briefed the delegation about the Project. The delegates showed active interest in discussion. Briefing was followed by a sumptuous dinner with the courtsey of Chief Engineer / Project Director CRBIC-III.

ii) Third day - October 11, 1998 (Sundary)

After the breakfast hosted by Project Driector, CRBIC-III, the delegation departed WAPDA lodge CRBC Colony for visit to Chashma Right Bank Canal (CRBC) in stage-II & III. The delegates were received at RD. 286 by he Chief Engineer, CRBC. the Superintending Engineer-1 and other officers and offered snackes and cold drinks in the lawn prepared near this structure which comprises a cross regulator-cum-A.R. Bridge and off-take head-regulator. From this point the delegates

were shown the lined canal structures top to end of Stage-II (RD. 378) and Dove-Tail Contract 64 upto RD. 405 of the canal.

From here on, the Contract 65 comprising construction of main canal is being handled by M/S Teksar, an International Turkish Construction Firm. The delegates were taken to TEKSAR Camp at Rd. 408 and given a detailed briefing about the construction programme and activities by the Project Manager of the Contractor. This briefing was followed by a short discussion about various issues related to the progress and methods of construction. The delegation was then taken to the location of the newly imported canal-lining machine manufactured by M/S RAHKO (a USA Company). The delegates were shown the first jumbo of the machine (it has 4 in all) which does the final excavation and trimming/dressing of side-slopes in preparation for lining. The jumbo was shown in operation. The remaining 3 sections used for laying the filter material, the main lining, dressing, and cutting of joints are lying in the stockyard awaiting assembly. The delegates were then taken upto RD 440 and shown the structures under construction in the reach. There were short question-answer sessions at each structure. The delegates were impressed by the quality of construction, materials and special form work for concrete. From there, the delegates were brought back to the TEKSAR Camp where M/S TEKSAR hosted a nicely laid out lunch. After lunch, the Secretary Pakistan Engineering Congress thanked the WAPDA Authorities, the Consultants of CRBIP-III and TEKSAR management for their courtesy and hospitality on behalf of delegation and the Congress.

The delegates, thereafter took their way home via Dera Ismail Khan, Kotla-Jam, Trimmu Barrage and Jhang, reaching Lahore in the early hours of 12th October 1998 (the next day)

The list of delegates is attached as Appendix-A1.

The salient features of the Projects visited are appended as Appendix-A to C, while pictorial of the entire visit is appended as Appendix-D.

The entire visit came out as a very fruitful venture for the general enhancement of the technical knowledge of the participants and my thanks go to the Member (Water) WAPDA, P.Ds. Chashma Barrage, Chashma Hydropower Project, Chief Engineer / Project Director CRBIP-III and M/S TEKSAR for all their magnanimity in making this trip a success. I am also indebted to the participants for showing their patience and bearing with the management / the Clients and the Sponsors throughout their stay.

Appendix A-I

LIST OF PARTICIPANTS

S.No.	Name	Designation
1.	Engr. S.N.H. Mashhadi	President-PEC & Managing Partner, National Development Consultants.
2.	Engr. Syed Mansbob Ali Zaidi	Secretary-PEC & Associate National Development Consultants.
3.	Engr. Abdul Rahim	(Retd.) Pakistan Commissioner for Indus Waters.
4.	Engr. Muhammad Saleem Cheema	Superintending Engineer, Irrigation.
5.	Engr. Nazir Ahmad Sheikh	Principal, GEA, Niaz Beg, Lahore.
6.	Engr. Syed Qasim Ali Shah	Assistant Professor, GEA, Niaz Beg, Lahore.
7.	Engr. Ch. Muhammad Iqbal	Superintending Engineer, Highways Sargodha.
8.	Engr. Prof Muhammad Muneer Ali	Professor, University of Engineering and Technology, Lahore.
9.	Engr. Muhammad Iqbal	Deputy Director Floods, I& P, Lahore.
10.	Engr. Muhammad Baqir Chohan	Rtd. Deputy Chief Engineer, Railway.
11.	Engr. Mukhtar Khokhar	Supertintending Engineer Highways Sargodha.
12.	Engr. Syed Saleem Akhtar	Deputy Director, WAPDA House, Lahore.
13.	Engr. Usman-e-Ghani	Member E.C., Lahore.
14.	Engr. Hafeez-ur-Rehman	Sr. Research Officer, IRI, I&P, Lahore.
15.	Engr. Tahir Anjum Qureshi	Executive Engineer, Foods, I&P
16.	Engr. Muhammad Abid	Sub Divisional Officer, Irrigation.
17.	Engr. Anjum Zafar	Member, E.C. Lahore.
18.	Engr. Liaqat Ali	Senior Engineer, DSO. WAPDA, Lahore.
19.	Engr. Khalid Siddique Ahmad Khan	Member, E.C., Lahore.
20.	Engr. Muhammad Amjad	Sub Divisional Officer Buildings, Lahore.
21.	Engr. Rana Ghulam Dastgir	Sub Divisional Officer, FEC, C&W Deptt,
22.	Engr. Ali Akhtar Khalid	Member, E.C., Lahore.
23.	Engr. Asim Masood	Member, E.C., Lahore.
24.	Engr. Faisal Javed	Jr. Engineer, NDC
25.	Engr. Zubair Latif	Sub Divisional Officer, Buildings, Business Manager, PEC

CHASHMA BARRAGE AND C.J. LINK CANAL PROJECT

(PROJECT DESCRIPTION OF CHASHMA BARRAGE)

OBJECT AND GENERAL DETAILS

Chashma Barrage is one of the six river structures provided under the Indus Basin Project. Although the barrage itself is not as long as that provided at Marala, it is the highest of the six structures and by far the most costly contract due, a great extent, to the large quantities of earthwork and stone pitching involved.

It is located on the River Indus some 35 miles downstream of the Jinnah Barrage at Kalabagh and its purpose is to supply water to the Chashma Jhelum Link canal on the left bank and to the existing Paharpur Canal (which is being enlarged) on the right bank. In addition, and unlike any of the other barrages of the Indus Basin Project, a small amount of storage is provided.

To pass the anticipated maximum flood discharge of 950,000 cusecs it has been necessary to provide fifty two openings each 60 feet wide. Of these eleven are undersluice bays.

The head- regulator for the Chashma - Jhelum- Link contains eight openings each 40 feet wide in order to pass the link canal discharge of 26,000 cusecs.

The head- regulator for the Chashma Right Bank Canal consists of two openings 40 feet wide and the control regulator on the right bank of the river near the head of the existing canal consists of there openings each 24 feet wide.

The pond at storage leval extends some 14 miles upstream of the barrage and 6.5 miles wide at the headwork.

A fish- ladder and a navigation lock are provided. The ladder is 150 feet long by 30 feet wide.

The barrage is crossed by two bridges to carry class 70 military loads and a service bridge for the operation of the gates. The regulators have similar roadway bridges but the gates of the two head regulators are operated from the top of the diaphragm wall and those of the Chashma Right Bank Canal control regulator from the Right overhead steel footbridge.

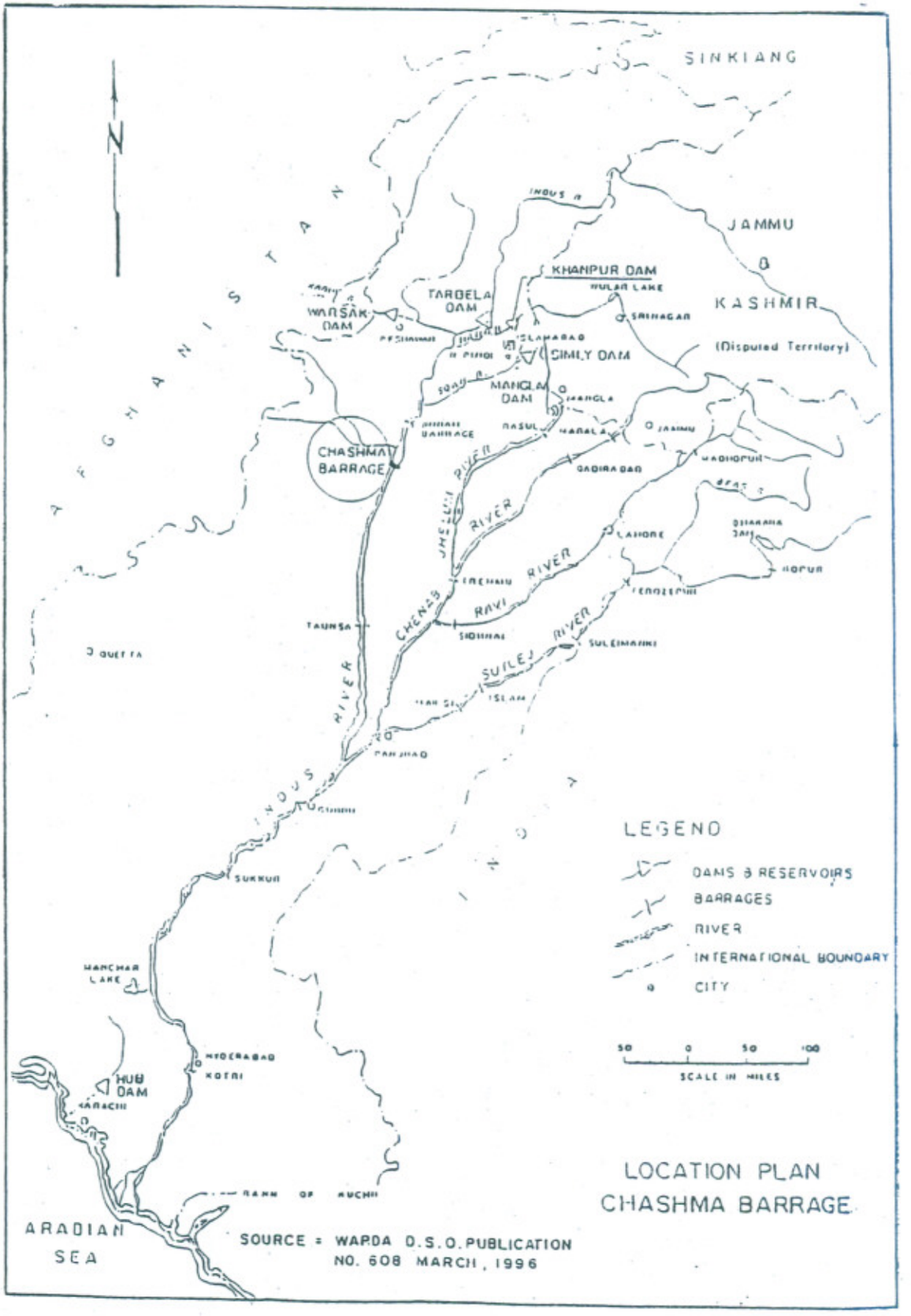
The barrage itself is approximately central in the river which is over six miles wide. The two three- mile lengths of the canals and their banks within the river were included in the barrage contract.

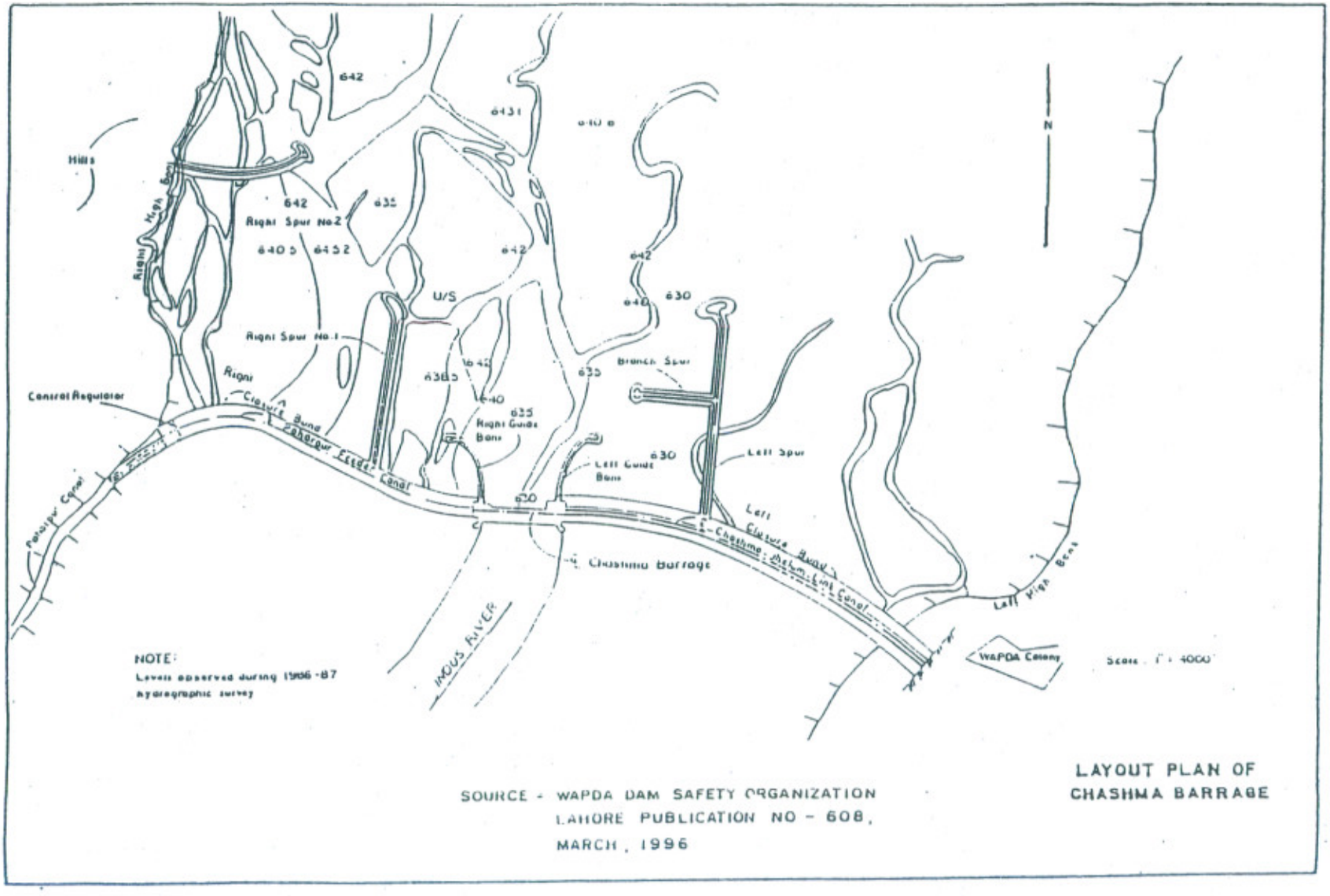
Due to the large Width of the river extensive training works in the form of spurs were required and included in the contract.

The contract for the works was awarded on 10th February 1967 to a French consortium consisting of Societe Dumez and Societe Borie and was satisfactorily completed by 25th March 1971. The total cost of the works was some Rs. 339 million to which can be added the cost of the many extraneous items such as the residential colony access land purchase and supervision.

RESERVOIR CAPACITY

The initial capacity of the reservoir was estimated at 0.870 million acre- feet. However the first


SINKIANG
AFGHANISTAN
JAMMU & KASHMIR
(Disputed Territory)
INDUS R.
KHANPUR DAM
TARBELA DAM
WANSAK DAM
SIMLY DAM
MANGLA DAM
CHASHMA BARRAGE
JHELUM RIVER
CHENAB RIVER
RAVI RIVER
SUTLEJ RIVER
INDUS RIVER
QUETTA
HUB DAM
KARACHI
ARABIAN SEA
LEGEND
DAMS & RESERVOIRS
BARRAGES
RIVER
INTERNATIONAL BOUNDARY
CITY
SCALE IN MILES
LOCATION PLAN
CHASHMA BARRAGE
SOURCE = WAPDA O.S.O. PUBLICATION
NO. 608 MARCH, 1996



SOURCE - WAPDA DAM SAFETY ORGANIZATION
LAHORE PUBLICATION NO - 608,
MARCH, 1996

LAYOUT PLAN OF
CHASHMA BARRAGE

hydrographic survey carried out in 1971-72 revealed that the actual capacity was 0.758 million acre- feet. The second hydrographic survey carried in 1981-82 assessed this capacity at 0.553 MAF. The loss of storage in the period of ten years was about 0.205 million acre feet at an annual depletion rate of 20,500 acre feet per year. The third hydrographic survey was carried out in 1986-87 assessed this capacity at 0.497 MAF. The loss of storage in the further period of five years was about 0.056 MAF at an annual depletion rate of 11.200 acre feet per year. At present the capacity of reservoir assessed in March 1991 is 0.441 MAF. The loss of storage in this period is about 0.056 MAF with an annual depletion rate of 11,200 acre- feet per year.

RIVER TRAINING WORKS

Chashma Barrage river training works comprise long earthen embankments in the form of guide banks, closure bunds and spurs for diverting the flow of the river towards the barrage and for flood protection. These embankments on the river side have a slope of 3:1 to 2 1/2:1 and have been provided with 24" thick hand packed stone pitching laid over 18"thick layer of filter material while the slopes on the opposite side have been left unprotected. The guide banks and closure bunds have stone pitching on the river side as well as at its nose, while the spurs have been provided with stone pitching at their noses and at their contract point with the closure bunds.

INSTRUMENTATION AND SEEPAGE

Pressure points have been provided under the barrage floor in sets of nine at twenty selected piers to record the uplifts pressure. In order to have a second check, , electrical piezo-meters have also been installed under seven piers at two locations. Pressure points have also been provided under the C.J. Link Head Regulator & Chashma Right Bank Canal Head Regulator. Seven piers are installed under the C.J. links Head Regulator at pier Nos. 2., 5 and under the Chashma Right Bank Canal Head Regulator at pier No. 2.

LAND ACQUISITION

The total area affected by the Chashma Barrage Project was 98,052 acres. The above mentioned area was acquired in two phases. In the 1st phase 90,432 acres of land was acquired upto EL. 650 and in the 2nd phase 7,620 acre were acquired from EL. 650 to EL. 652. An amount of Rs. 7,32,82,000/- has been paid as compensation to the effectees. Wapda leases out exposed surplus Wapda Land to Public for temporary cultivation/ cutting Kundar, Kahi etc. every two years.

CHASHMA STORAGE BENEFITS

During 24-years of the operation of Chashma Reservior from 1971-72 upto the year 1993-94, the Government of Pakistan has earned benefits to the tune of Rs. 4,110.000 million against the total releases of 21.15 million acre feet of water from Chashma storage.