İSTANBUL AYDIN ÜNİVERSİTESİ

Turkish modernism through construction investments from the late Ottoman period to the present

Prof. Dr. Gökhan ARSLAN

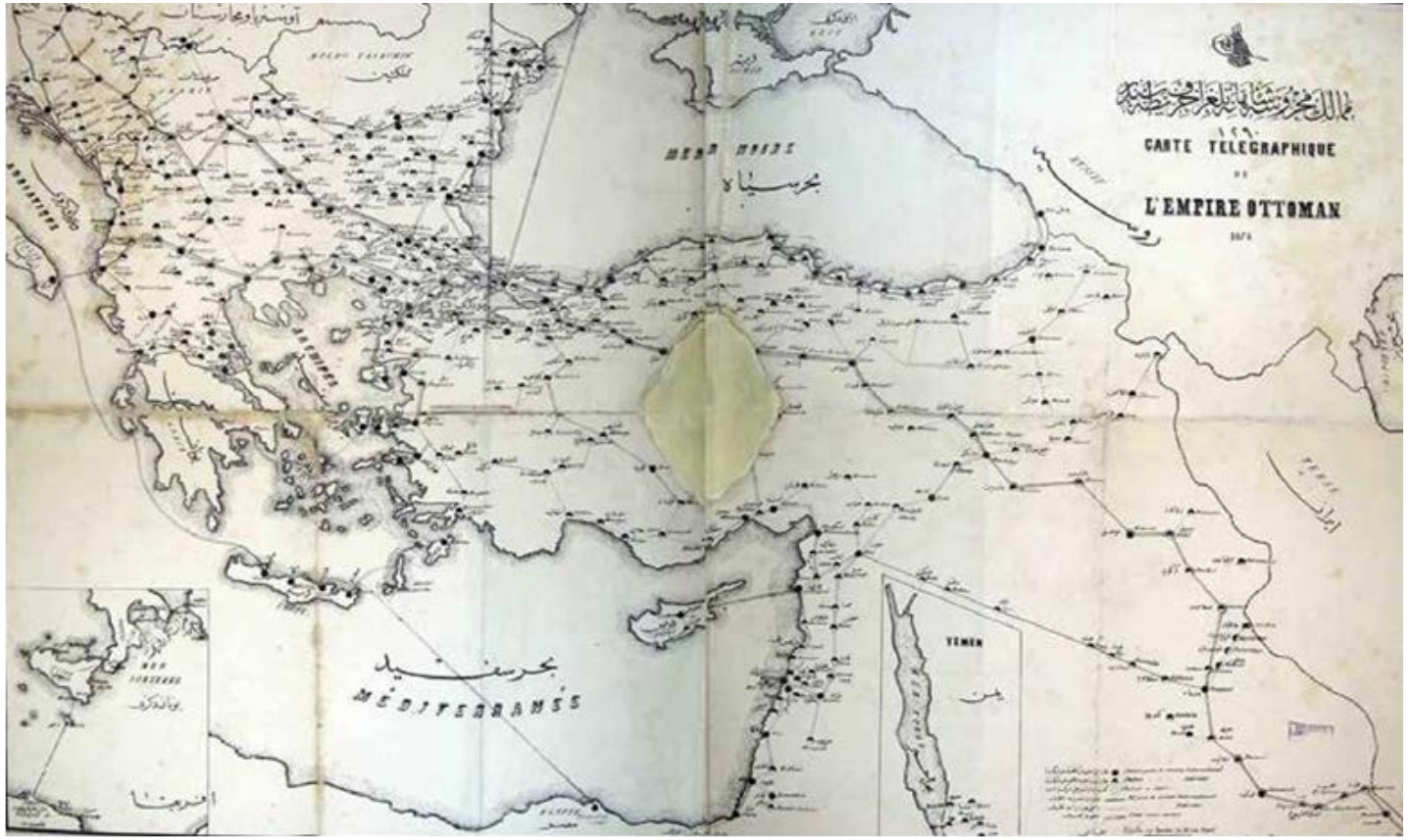
The First Sparks of Contracting in the Ottoman Empire

While the infrastructure for modern postal services was being established, a new technological development in Europe, the invention of the telegraph, opened the door to the first contracting work in the Ottoman Empire and led to the first tender.

Sultan Abdulmecid ordered the construction of a telegraph line from Istanbul to Edirne. The construction of the lines from Istanbul, Edirne, Plovdiv, Sofia and Nis to Belgrade and other branch connections from Edirne to Shumen was tendered to De La Rue and Balaque Bey in 1854. Construction began in Istanbul in January 1855.

The first telegram from Istanbul to Edirne was sent on August 19, 1855.

Ancient postal transport and Ottoman postal deliverers



Telegraph map of the Ottoman Empire, 1874

Developments in the field of education

The fact that the “Meclis-i Umur-u Nafia”, established in 1838, began operating under the Ministry of Foreign Affairs shows that Nafia was the most important part of the modernization program. In fact, the roads and bridges to be built were specified in the Tanzimat Edict, but despite this, the construction of the first roads would have to wait until the 1850s. The Mühendishane-i Berrî-i Hümayun, established in 1795, had been teaching road and bridge courses since 1847, but in 1850, when the first important road construction began, British and French engineers were working both in the “Meclis-i Umur-u Nafia” and in the road construction that had begun.

Students of the Faculty of Civil Engineering
(Hendesi Mülkiye)

• At the beginning of the administrative restructuring of the Ottoman Empire towards modernization, public works activities also included trade and even education for the public good. The separation of trade and education and the assignment of the Ministry of Public Works only to public works services took place after 1870.

The First Ways and the Responsible Work

The first roads within the scope of modernization and construction were the 34-kilometer Bursa-Mudanya, 34.5-kilometer Bursa-Gemlik and 314-kilometer Trabzon-Erzurum roads.

The construction of the first two roads, totaling 68.5 kilometers, took fifteen years, while the construction of the 314-kilometer Trabzon-Erzurum road took exactly twenty-two years and was completed in 1872. A new organizational effort was initiated to overcome some of the difficulties that arose during the road construction work. The first practice that emerged from this effort was the taxpayer tax practice, which was initiated with the “General Instructions for the Construction and Administration of the Turuk-u Maâbirin in Memalik-i Mahruse-i Şahane” published in 1856 and continued with some changes until 1950. According to this practice, the residents of the towns where the road would pass were obliged to work on the construction of the road. This instruction provided the opportunity for some governors, and especially Mithat Pasha during his governorship of the Tuna province, to carry out important road works.

“Anatolia map prepared by the Ministry of Public Works” The red line ending in Baghdad:
“the great line whose construction is planned”

The First Civil Engineering Schools

- The developments of the period imposed on the Ottoman Empire the necessity of training its own engineers.
- The first civil engineering school, the School of Civil Engineering and Islah-ı Sanayi, was founded in 1867. The Turuk-u Maâbir School, founded in 1874, did not last long. The School of Civil Engineering and Islah-ı Sanayi continued until 1881. In 1883, the Hendese-i Mülkiye was founded under the Mühendishane-i Berrî-i Hümâyûn.
- This school, which would later be known as the School of Higher Engineering and Istanbul Technical University, would also train Turkey's first major contractors.

A World Covered with Iron Webs

- In 1856, construction of the 130-kilometer Izmir-Aydin railway line began. At this time, railway lines in Europe, excluding the Ottoman Empire and Russia, were almost complete. In 1860, the length of railways in the world exceeded 100 thousand kilometers.
- European capitalism was trying to reach raw material resources by the fastest possible routes. So much so that, as early as the late 1830s, British entrepreneurs proposed the construction of a railway line that would start from the Port of Calais in France and reach Basra.
- In infrastructure works aimed at economic growth and integration into the world economic system, the laying of telegraph lines and the construction of highways were carried out under the supervision of the state, while the construction of railway lines and ports, which began in the 1860s and 1870s, was largely carried out by foreign capital.

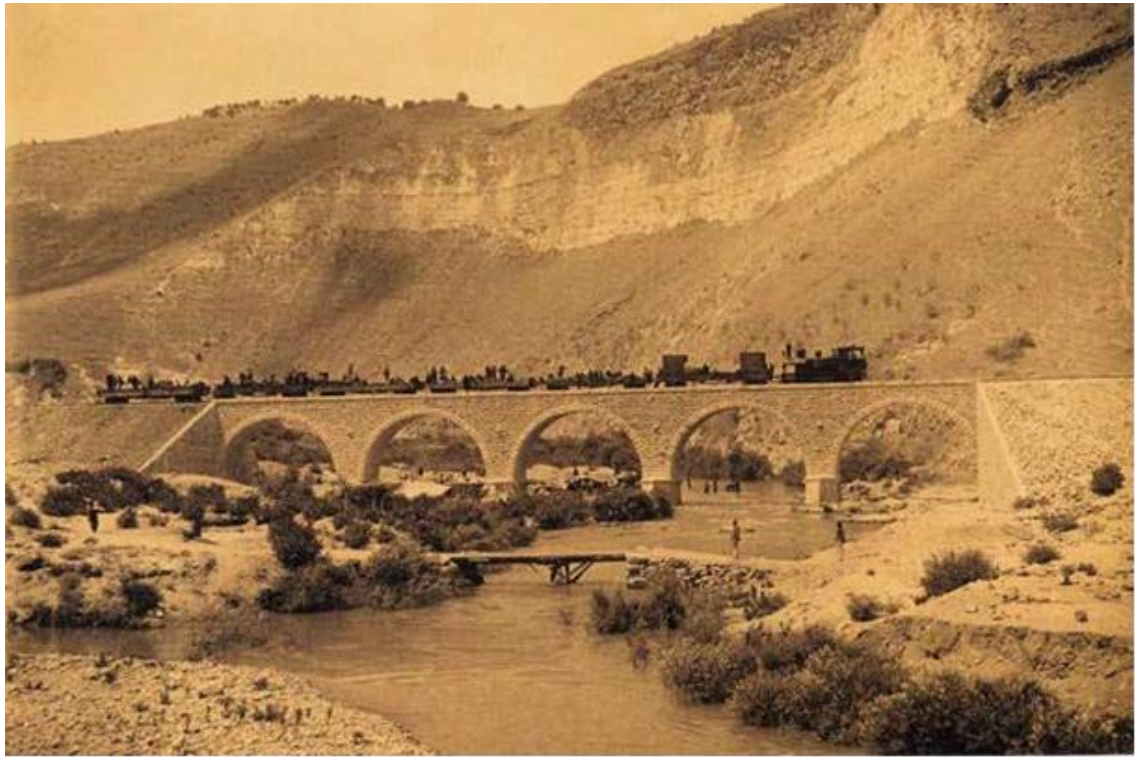
Haydarpaşa Train Station, freight train in front of grain warehouses

Hejaz Railway construction works, near Amman

Privileges and the First Step into the Capitalist World

- The first concessionaire for the construction of the İzmir-Aydın railway line was the English merchant Robert Wilkins. The first line, Alsancak-Buca-Gaziemir, was opened in 1860. The concessionaire group could not complete the work within three years, but after the Ottoman government saved the company, the Aydın line was opened in 1867. The concession was later expanded; the line, which was 608 kilometers long with branch lines, reached Eğridir in 1912. The start of the construction of the İzmir-Aydın Railway Line was not just a maintenance work; new railway concessions followed.
- Alexander Israel Helpland, a Marxist politician known as Parvus Efendi in Turkey, explained this situation by saying, "In no other country have railways taken on such a political form as in Turkey.«
- This situation, with the exception of the Hejaz Railway, served both to integrate Turkey into the capitalist world economy and to be one of the important tools of imperialism until the foundation of the Republic.

- The Rumelia Railway, whose project was modified due to Russian objections throughout the construction process, was completed in nineteen years, and the first train from Istanbul to Vienna departed on August 14, 1888.
- In the Ottoman Empire, the length of the railways built by British, French and German businessmen and companies through the granting of concessions had reached 8,619 kilometers; however, these railways, consisting of fragmented lines built under the control of finance capital and under the pressures of international politics, were far from the planning that would provide the market integrity that the Ottoman Empire needed.



Yarmouk Bridge on the Hejaz Railway route

Medina Train Station

Baghdad Railway

- The Baghdad Railway concession agreement was signed between the Ottoman Empire and Deutsche Bank on October 4, 1888. With this agreement, the ownership of the 93-kilometer Haydarpaşa-İzmit Line, the construction of the 486-kilometer İzmit-Ankara line with a 15,000-franc kilometer guarantee and the operating rights for ninety-nine years were given to the capital group managed by Deutsche Bank.
- The route determination works after Ankara were delayed due to the opposition of Russia. The Anatolian Railway Company, which obtained the concession of this line on March 21, 1903, transferred the concession to the Baghdad Railway Ottoman Company, which was established on April 13, 1903, and the 198-kilometer section of the line between Konya and Bulgurlu was opened on October 25, 1904.
- However, the Ottoman government was unable to find resources to support the guarantee, and the work stopped; however, the newly provided resources were allocated to reform efforts in Macedonia under pressure from England, and construction could not continue. The opposition of the English left no choice but to grant the concession of the Mesopotamian waterways to English capital so that the railway could reach Basra.

- The Berlin-Baghdad Railway meant that Germany would get closer to the Middle East and India, which disturbed England.

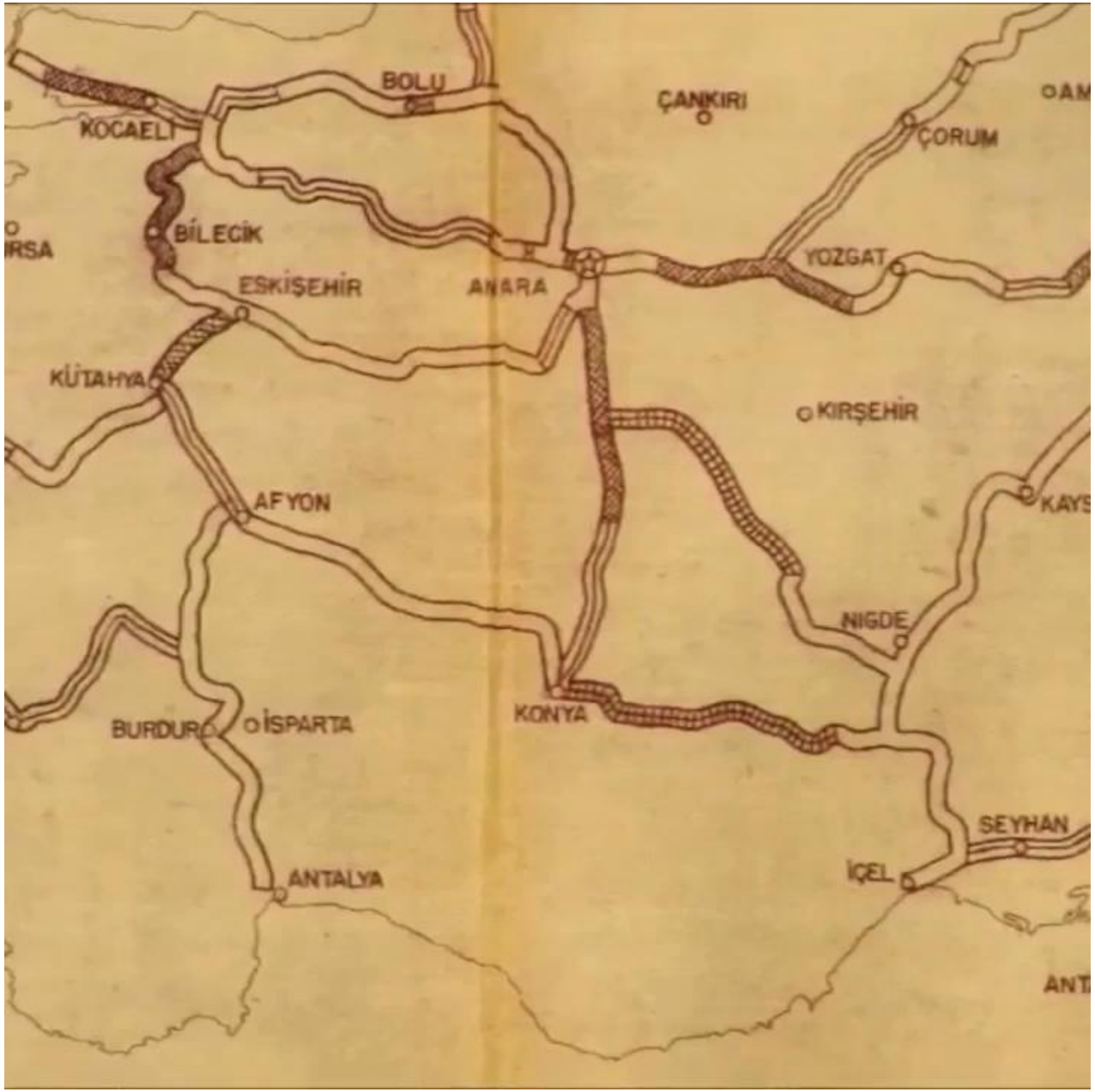
- Russia, on the other hand, was dreaming of a railway line going down to Iskenderun via the Caucasus. Alliances were formed between England and France in 1903, and between England and Russia in 1907. Germany was being surrounded, and war was rapidly approaching.

- Twenty-six years after the first 50-kilometer railway line was laid between London and Manchester in 1830, the railway adventure began in Ottoman lands with the construction of a 130-kilometer line between Izmir and Aydin.

- The first train on Ottoman soil began operating between the Alsancak-Buca-Gaziemir stations on this line. By the 1870s, the annual number of passengers on the Izmir-Aydın line had reached two million.

- One of the main targets of the imperialist policies of the great powers in Europe, the railways and mining concessions, were carried out through private companies. No matter how clear the imperialist targets were, the corruption of private entrepreneurs began to be revealed from the very beginning. The line was able to reach Aydın only after the Ottoman government saved the company.

The Ottoman Sultan of the period, Sultan II. Abdulhamid


BOLU
ÇANKIRI
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AFYON
NİĞDE
KONYA
BURDUR
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SEYHAN
İÇEL
ANTALYA

A Success Story

- Mahmud II After nearly half a century of not being able to find a single Muslim engineer to teach at the Imperial Engineering School , Abdulhamid II decided to start the construction of a 1200-kilometer line to be built with the knowledge and labor of Muslim engineers and workers and with Muslim money.
- It seemed “impossible” for the Ottoman treasury, many of whose sources of income were under the control of the Public Debt Administration, to create sources of income that could finance this project.
- The deficit in engineering knowledge and the number of engineers was also a significant obstacle to the realization of the project. The number of engineers graduating from the Hendese-i Mülkiye, which started education in 1884, did not even reach two hundred, and most of them had no experience in railway construction.

- However, the construction of the Hejaz Railway was an extremely important project for the Ottoman Empire under the rule of Abdulhamid II, primarily for religious and military reasons.

- As the construction of the Hejaz railway, which began on September 1, 1900, progressed, the thoughts of European observers who had previously "smiled and nodded" began to change.

- Pallavicini , the Austrian ambassador to Istanbul , summarized this change of thought in his 1908 report: “… we all watched with astonishment how the financial and technical difficulties were overcome one by one.”

- The Ottoman Empire realized the unbelievable and the first locomotive entered Medina Station on September 1, 1908. The cost per kilometer of the line was half that of the lines built by European companies in return for great privileges.

- The project was largely financed by domestic sources, but only 2.8% of the cost came from foreign sources, primarily donations from Muslim nations, such as India and Egypt.

Piece of train wheel with "Hijaz" written on it

Aid receipt from the Hejaz Railway Donation Commission


İstanbul
Karadeniz
İzmit
Bilecik
Ankara
Eskişehir
Kütahya
Afyonkarahisar
TÜRKİYE
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Ulukışla
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Osmaniye
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Akdeniz
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Hayfa
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Müdevvere
SUUDİ ARABİSTAN
Tebük
Medine
Kızıldeniz
Cidde
Mekke
Türkiye'yi İslam dünyasıyla kucaklaştıracak olan hızlı tren hattı için Ürdün, Suriye ve S.Arabistan ek yatırımlar yapıyor.
Türkiye hattı
Hicaz Demiryolu
S. Arabistan'daki tahrip olmuş demir yolu

- The Hejaz Railway was successful in achieving its military, religious and economic goals is an ongoing debate.

- However, the construction of the Hejaz Railway became a school for engineers who would later take on important roles in the construction of railways in the early years of the Republic.

- The assistant chief engineer, Muhtar Bey from Trabzon, was one of the important figures who was very helpful in this construction and gained serious knowledge thanks to this construction.

- Mukhtar Bey and his friends gained great experience in the Yarmouk region , which was a technically problematic area .

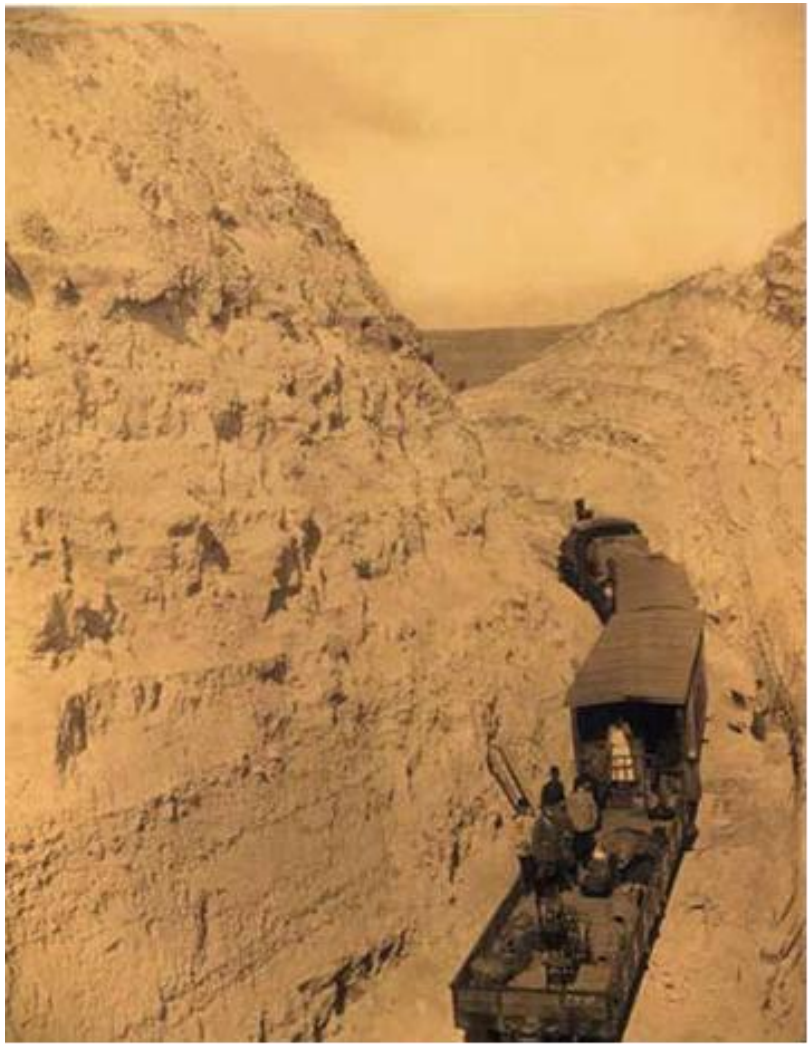
- On this line, eight tunnels, eighty-three bridges, two hundred and forty-six aqueducts, numerous culverts and viaducts were built.

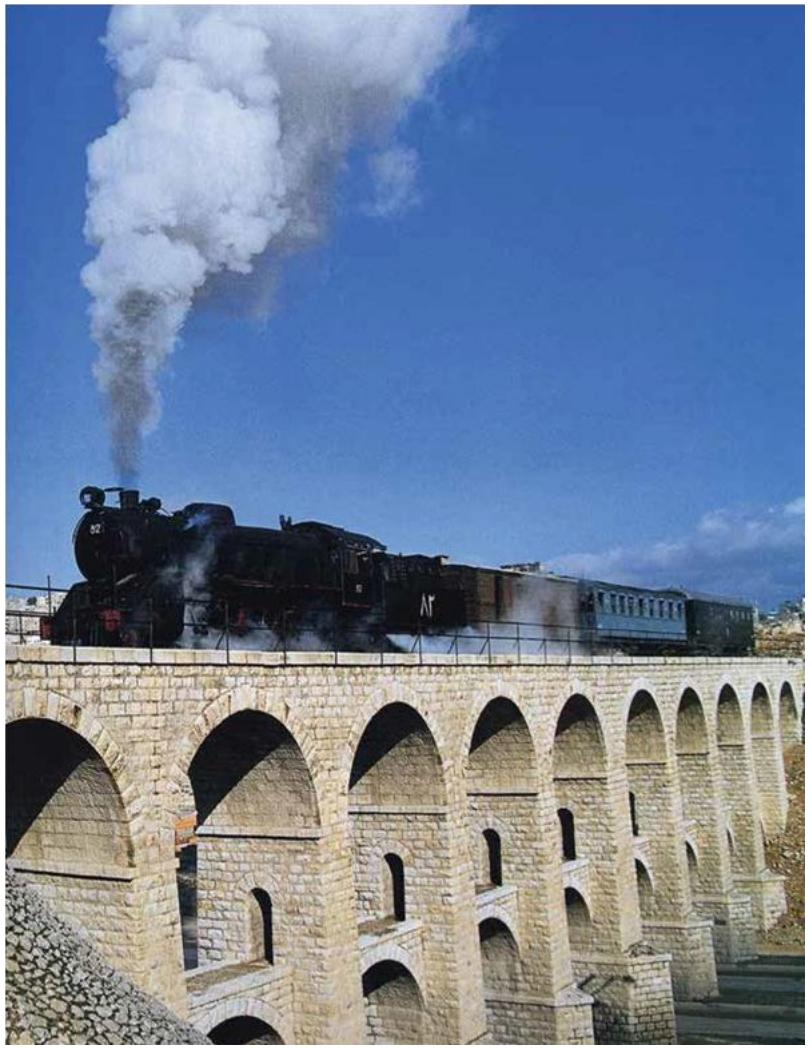
- Hejaz Railway , iron bridges were built at four places between Haifa and Daraa .

- In determining the route, which was the first job to be done in this region, the team headed by Muhtar Bey, who was 29 years old at the time, was able to work on the traditional pilgrimage route for security reasons.

- During the Hejaz Railway project, it was understood that the employment of foreign engineers was inevitable before construction began. Four months after the start of construction, German engineer Meissner took over as chief engineer. Meissner had worked on railway construction within the Ottoman Empire since 1885 and spoke Turkish well. He was appointed assistant to Muhtar Bey Meissner .

- As of 1904, there were 24 foreign and 17 Ottoman engineers working on the construction. Since the area between Al-Ula and Medina was off-limits to non-Muslims, only Muslim engineers could work on the construction of this area. For this reason, half of the 1903 Hendes -i Mülkiye graduates were assigned to work on the Hejaz railway line.





Construction work on the Cesim Bridge on the line

- The Hejaz Railway was effective in the timely and successful completion of the project. The work, which began in September 1900, progressed rapidly and an average of 161 kilometers of line was built per year, including the Haifa- Der'a branch line. By the autumn of 1907, 1,133 kilometers of railway, numerous bridges, tunnels, viaducts, water tanks, and aqueducts had been built, and al-Ula Station had been reached.

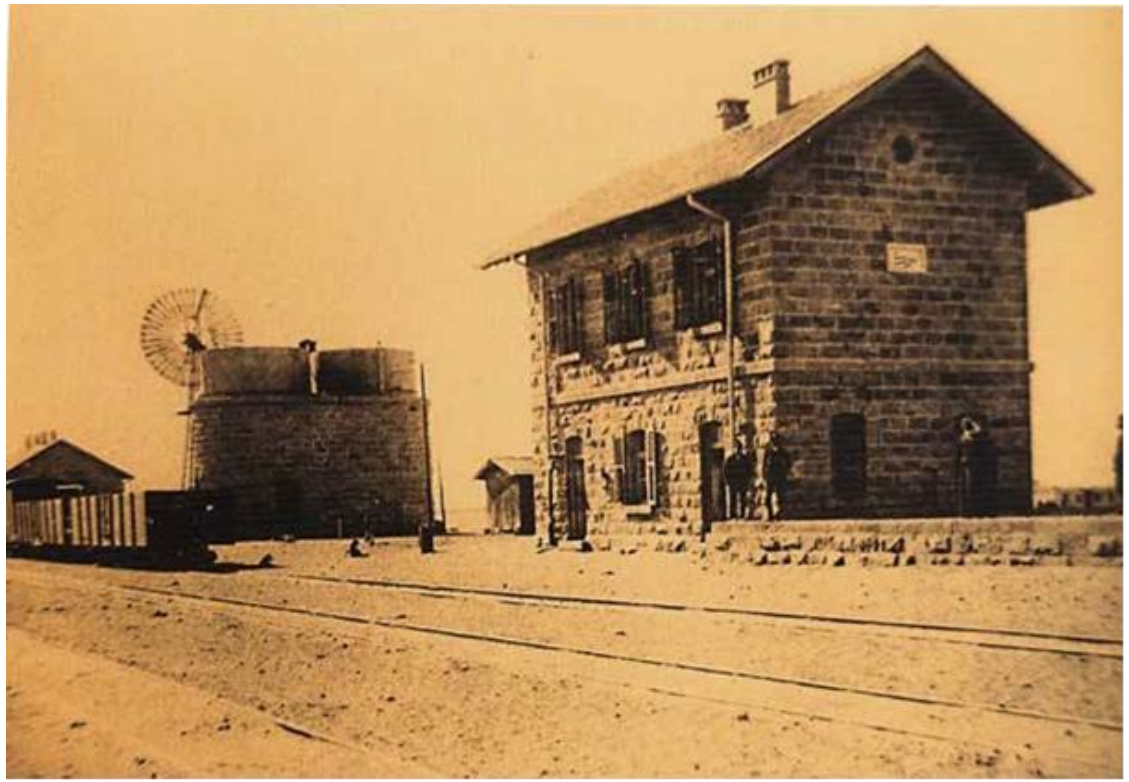
- By 1906, the main problematic sections of the line had been completed. Numerous bridges, tunnels and viaducts needed to overcome geographical obstacles had been built.

Thirst and Sandstorms

- By 1906, after Maan , an almost flat landscape began, free of such geographical obstacles; but two other and perhaps even greater problems had to be overcome: thirst and sand.
- Muhtar Bey had already predicted the water problem and the damage that sandstorms would cause to the lines in his field research in 1900. The solution found to prevent the rails from getting sand was to build barriers made of stone and clay; but water was an even more difficult problem to solve. As we moved further south, where water was becoming an increasingly greater need, natural water resources were also depleting.

- A number of methods were implemented to solve the water problem, from building cisterns to digging wells deeper than 100 meters, from carrying water with camels to creating water stations by burying barrels in the ground.

- The tragic side of the matter is that water caused great damage to the structures built in the area after Maan , where there was a water shortage. The heavy rains that started in the autumn of 1914 had washed away eighteen large and small masonry (stone) bridges, along with their foundations, on a forty-odd kilometer line between Cerdun Station on the Damascus side of Maan and three stations called Aneze and Ceruf-Dervish.



Tabuk Train Station

Beirut Train Station

- The line's arrival at al-Ula Station has a special significance in the engineering history of the Ottoman Empire and the Republic of Turkey. Meissner Pasha, whose great contribution to the successful construction of the Hejaz Railway and the experience of the Ottoman engineers in his staff cannot be denied, and the work of the few European engineers remaining in his circle ended at al-Ula Station.
- From this point on, it was the sacred lands of the Hijaz, which non-Muslims were forbidden to enter for religious reasons. Muhtar Bey was now in charge. Muhtar Bey and his friends completed the 323-kilometer section of the Hijaz Line between al-Ula and Medina within a year. This clearly showed that Ottoman engineers had gained a great deal of experience in railway construction.

Towards Mecca

- The opening ceremony of the Medina Line was held on September 1, 1908. The entire city was illuminated with electricity and Kazim Pasha and Haji Muhtar Bey were carried on shoulders. The ceremony ended on a hopeful note with the crowd shouting “Towards Mecca”.
- On September 1, 1908, Ottoman engineers were left with only the 480-kilometer line from Medina to Mecca and the 74-kilometer branch line between Mecca and Jeddah. These two lines were extremely important in terms of transporting those making the pilgrimage from Syria to Mecca safely via Medina and those coming by sea via Jeddah.

The Young Turks and the Effect of War

- But the developments did not turn out as the crowds in Medina who were shouting “Towards Mecca” with hope had wished. A few weeks before the opening of the Medina line on September 1, 1908, on July 24, 1908, the Young Turks had effectively removed Abdulhamid II from power and exiled Izzet Pasha, who had played an important role in the construction of the line.
- The successive Tripoli and Balkan wars had created major financial difficulties.
- In addition, the fierce resistance shown by the Bedouin tribes led by the emir of Mecca almost completely destroyed the possibility of continuing the work. Between 1908 and 1914, the efforts to complete the Hejaz line were prevented by the resistance of some countries. However, in these six years, the construction of five branch lines totaling 106 kilometers could be completed.

- For Muslims outside the borders of the Ottoman Empire, the Hejaz Railway project also had a special meaning. Eighty thousand pilgrims from Iran alone visited the holy cities every year, and about one-fifth of them lost their lives on the way. The round trip from Damascus to Mecca by caravan took fifty days, but the railway would reduce this time to eight days.
- The project work, which was estimated to cost four million lira, began with a one hundred thousand lira loan provided by Ziraat Bank. A significant portion of this money was used to import necessary materials. Abdulhamid II, who called on all believers inside and outside the empire to make donations, made the first donation himself. To give an idea of the size of the fifty thousand lira donated by the sultan, it will be sufficient to state that the annual salary of a captain in the Ottoman army was fifty lira, and that of a brigadier general was six hundred lira.

When the first train entered the Medina Station, it was welcomed by the people of Medina carrying Hacı Muhtar Bey on their shoulders. He was the first Minister of Public Works of the Republic and served in this position between October 30, 1923, and January 19, 1924. He is none other than Ahmet Muhtar Bey. Ahmet Muhtar Bey, one of the most prominent figures in the history of Turkish engineering, had previously served as a deputy of Trabzon in the 4th term of the Ottoman Chamber of Deputies. He later served as a deputy of Trabzon in the 2nd term of the Grand National Assembly. At the beginning of 1924, he was among the ministers from whom Prime Minister İsmet İnönü requested resignations. On November 9, 1924, Ahmet Muhtar Bey resigned from the People's Party and became one of the first MPs to do so. He later became one of the founders of the Progressive Republican Party and a member of its central committee.

Ahmet Muhtar Cilli (1871-1958)


1. BÖLÜM

Step into Modern Professional Organizations

- The Ottoman Society of Engineers and Architects, one of the first modern professional organizations of the Ottoman Empire, was founded in 1908, immediately after the declaration of the Second Constitutional Era, upon the call of Architect Kemaleddin Bey. Engineer Mehmed Hulusi Bey, Engineer Agop Boyacıyan Efendi, Architect Kemaleddin Bey, Karakaş Bey, Engineer Mehmed Refik [Fenmen] Bey, Engineer Ziya Bey and Terziyan Efendi were the first founders of the society.
- The society's founding purposes included protecting the rights of Ottoman engineers and architects, working for the development of public works and architecture in the country, protecting engineers and architects in need, conducting studies and scientific research on the field, establishing a meeting center for Ottoman engineers and architects, and introducing those who served the development of engineering and architecture to the country.

- Mostly engineers from the Ministry of Public Works, teachers from the School of Hendese-i Mülkiye, and some freelance engineers and architects became members of the society. From 1909 onwards, the monthly Ottoman Engineer and Architect Society Magazine began to be published. In addition to publishing the magazine, the society organized conferences, worked on the organization of scientific terminology, and advocated that Ottoman engineers should be given priority rather than bringing in foreign architects and engineers for engineering services.
- In the 1910s, successive wars interrupted the activities of the society. Only twelve issues were published in the journal. In 1919, some members came together again and re-established the society, and continued its activities until the end of 1922.

Ottoman Society of Engineers and Architects

A NEW REPUBLIC

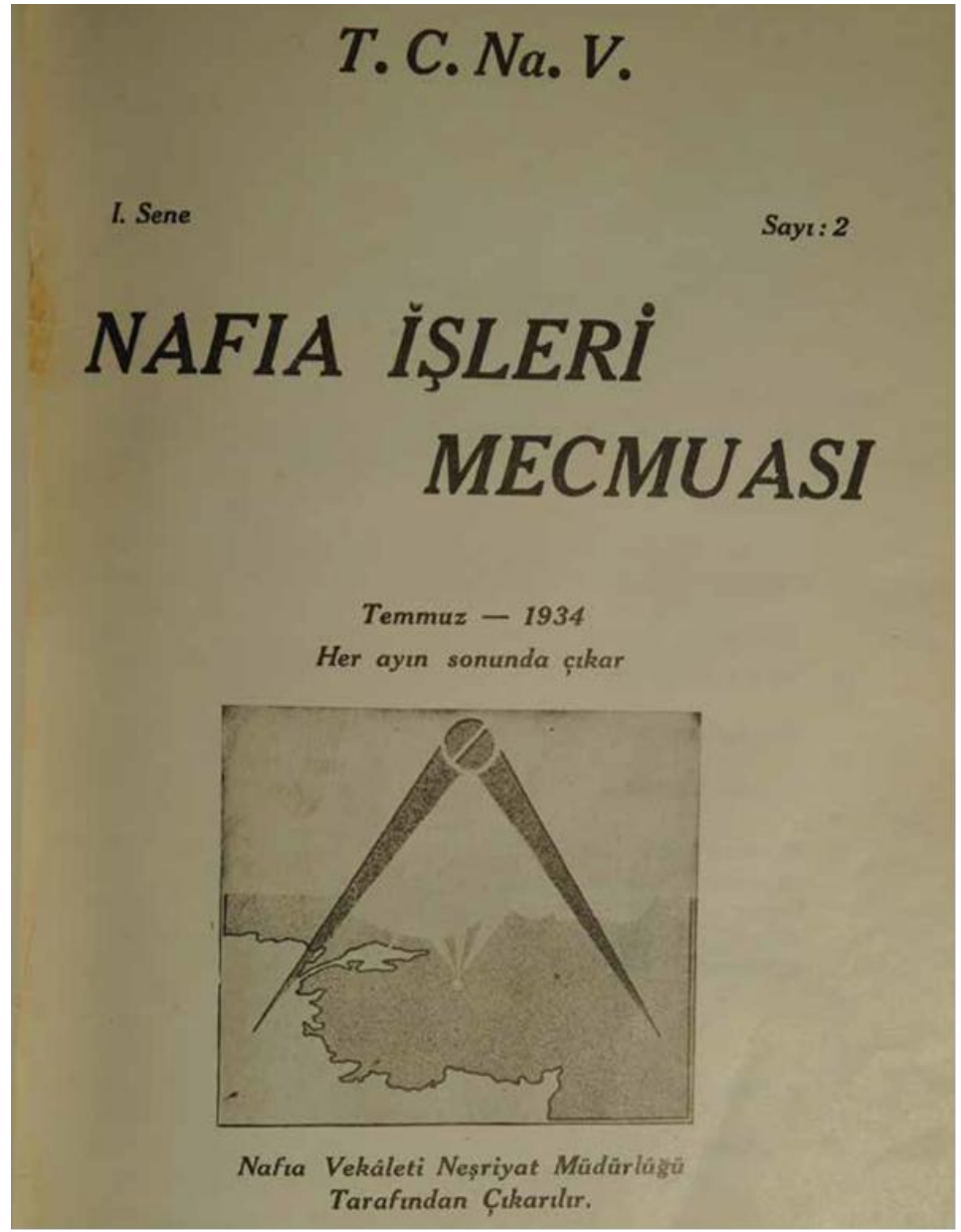
- The Grand National Assembly, which waged the War of Independence under the leadership of Mustafa Kemal in Ankara and laid the foundations of the new Turkey, was aware of the great problems that awaited it after the war. For the Grand National Assembly government, the most important issue after the war was economic development. For this, urgent infrastructure needs had to be completed quickly. From 1920 onwards, the TBMM governments, which had to allocate a large portion of their limited resources to military expenditures, gave importance to infrastructure work even under difficult conditions.
- After the National Struggle was definitively won in the autumn of 1922, peace talks began in Lausanne, Switzerland, on 11 November 1922, between representatives of the Grand National Assembly government and representatives of the Allied Powers. During the days when the Lausanne talks continued heatedly, at the Economic Congress held in İzmir between 17 February and 4 March 1923, it was emphasized that the privileges granted to foreigners would be abolished for full independence and that infrastructure investments would be accelerated for economic development; at the same time, it was declared that foreign capital was not opposed.

Mustafa Kemal Atatürk
Founder of the Republic of Türkiye

Railways of the Republic

- On October 29, 1923, the new Republic of Turkey, covering an area of 780 thousand km2, inherited from the Ottoman Empire millions of liras in foreign debt, 4,000 kilometers of railway, 13,885 kilometers of narrow highways with rough surfaces, 4,450 kilometers of dirt roads, ninety-four bridges, and unfinished work on integrating the domestic market. The first of the urgent issues was the construction of new railway lines. But even more important was the prevention of epidemics. The Turkish nation, which had lost its young population in the wars, was being destroyed by hunger and epidemics.

- Another issue that the national government gave importance to was the construction of new railways aimed at integrating the domestic market. The previous lines went from the inner regions to the ports due to the interests of the privileged country; they were not aimed at reviving the domestic market. Some lines were almost tangential to each other. Connections between the lines were not provided on purpose. On the other hand, foreign operators were applying high tariffs. For example, in June 1924, while one ton of wheat came from New York to Istanbul at a cost of 5.06 US dollars, the transportation of the same amount of wheat from Ankara to Istanbul cost 8.84 US dollars. The cadre that founded the Republic of Turkey first tried to integrate the railways into a network by establishing connecting lines between the disconnected roads built during the Ottoman period. In the mobilization spirit of railway policies, there was a political/psychological aspect as well as economic and military reasons.

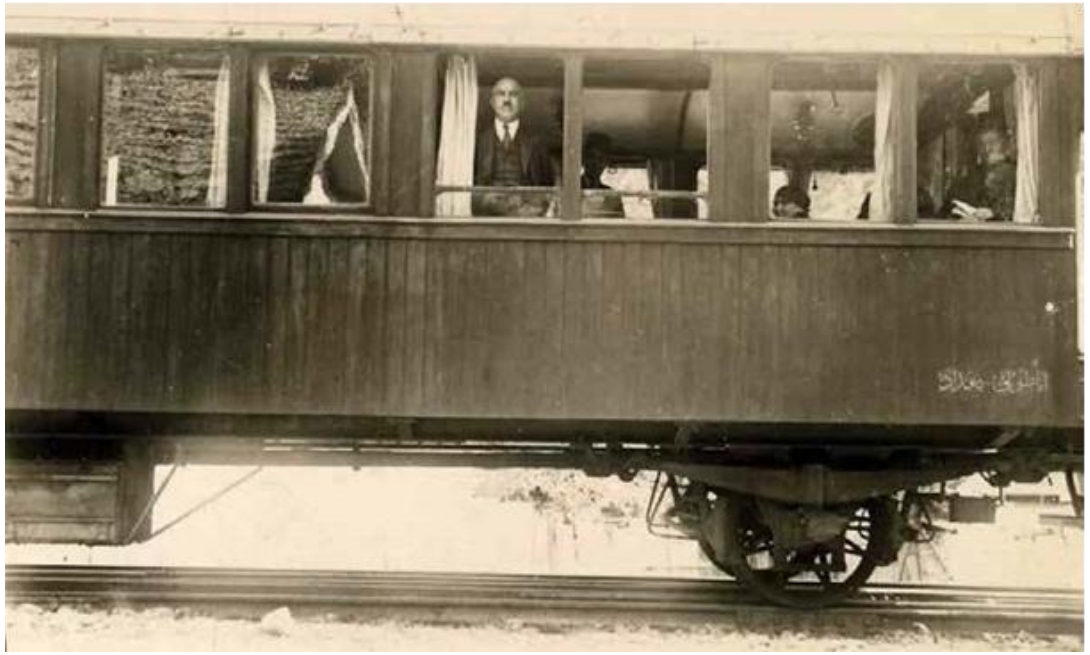


Monthly Public Works Magazine, July 1934 issue

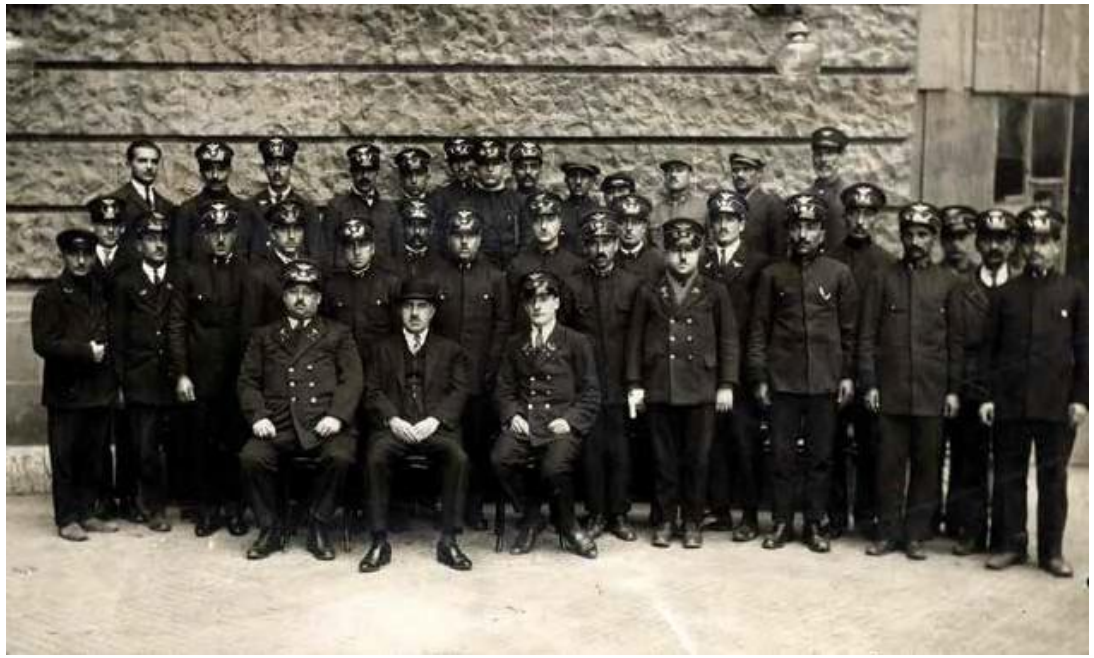
- Meanwhile, the conditions of construction contracting were regulated with the “Auctions, Negotiations and Imports to be Conducted on Behalf of the Government Law” accepted on April 19, 1925. According to this law, tenders would be by sealed bid method. However, bargaining method could also be applied in construction tenders. However, the law continued the Ottoman State’s understanding of infrastructure as a public good and excluded construction works from the scope of the general tender law. The deficiencies of this law would be attempted to be completed with the “Increase, Decrease and Tenders Law” dated 1934.
- In the early years of the Republic, the experience that young engineers gained on construction sites within the Ministry of Public Works provided a two-way advantage; organizational skills and the use of a common language. This accumulation, especially in the 1930s and 1940s, would have a significant impact on the juxtaposition of technical knowledge and skills with capital. During the same period, a decision was made to build the Bandırma Pier. Everyone thought that this job would be given to foreigners. However, Halit Köprücü, one of the legendary names of the Turkish contracting sector, undertook this job that no one else dared to do..

Pioneers of the Republican Era

- Behiç Erkin, who has an exceptional place in Turkey's railway adventure, graduated from the Military Academy. He took part in the Battle of Gallipoli as a young officer. He served as the inspector of the Junction Line Guard Forces established to protect the railways. He was assigned as a railway military commissioner between 1910-1912. He compiled his observations and studies during these duties in a book titled "History of Railways from a Military Perspective, Employment Organization" (1914). In 1920, he became the first general manager of the Anatolian and Baghdad Railways General Directorate, the predecessor of today's TCDD. He played a very important role in the transfer of soldiers via railways during the National Struggle. He served as the deputy of the provincial administration between 1926-1928.
- The cadres trained during the Ottoman modernization period played a leading role in the public works services in the early years of the Republic. In 1911, graduates of the Public Works Science School worked as technical staff in railway construction. The engineers were trained in the road and railway engineering department, one of the three departments of the Higher Engineering School, originally known as Hendese-i Mülkiye. For example, the first public works deputy of the Republic was Chief Engineer Ahmet Muhtar Cilli, who made great efforts in the construction of the Hejaz Railway line.



Behiç Erkin



Behiç Erkin and Haydarpaşa station staff

- Again, young railwaymen who were trained in railway schools opened during the reign of Sultan Abdulhamid II and the Union and Progress Party played an important role in the construction of new lines. Especially during the War of Independence, under the management of the legendary railwayman Behiç Erkin, they made significant contributions to the achievement of independence by ensuring the operation and maintenance of the railways.
- The devoted railwaymen of Behiç Erkin, who requested to be buried at the Eskişehir-İstanbul-Kütahya railway junction near Eskişehir when he passed away, also built new narrow-gauge lines during the War of Independence.

- By the end of the 1930s, large Turkish engineering and contracting companies seemed to have gained enough knowledge and experience to undertake all kinds of construction projects. This knowledge and experience, which was achieved with great difficulties and extremely limited resources, unfortunately could not be utilized in railway construction with the change in transportation policies from the end of the 1940s onwards.
- During the first four years of the Republic, the Minister of Public Works changed six times. Recep Peker Bey, who assumed this duty between 1927 and 1930, would become the architect of the ‘Public Works Program’ that left its mark on the period leading up to the multi-party era.

“The victory of the railway is the victory of the Turkish worker, the Turkish engineer and the Turkish capital.”

- One year and forty-one days after the declaration of the Republic, on December 10, 1924, the foundation of the Ankara-Yahşihan line, the beginning of the road connecting Ankara to the east, was laid by President Mustafa Kemal Atatürk; six and a half years later, on August 30, 1930, the “Black Train” reached Sivas. The goal now was to extend the line first to Erzincan and Erzurum, and then to Kars.
- There were serious problems during the construction of the railway connecting Ankara to Erzincan via Kayseri-Sivas. The tender for the Sivas-Erzincan line was won by the legendary entrepreneur Nuri Demirağ. The biggest problem was the lack of equipment. One hundred and thirty-eight tunnels had to be opened in the impassable mountains in the east of Anatolia. However, digging the rocks with human power to open the tunnel took a very long time.

Railway works in the early Republican period

Railway construction work

The train enters Elazığ

- The idea of connecting Istanbul to the easternmost tip of Anatolia via Ankara by railway had been voiced many times since Sultan Abdulmecid. However, this idea could not be put into practice due to lack of capital and knowledge. Attempts to build a railway by granting privileges to foreign capital also failed due to the conflicts of interest between Russia, England and France.
- The efforts to establish modern infrastructure, which had been ongoing since the last period of the Ottoman Empire, became the most important goal of the Republic of Turkey. However, during this period, although the knowledge and skills for railway construction had been partially acquired, the resource shortage had increased since the country had just emerged from the war.

- Until 1930, Swedish, Danish and Belgian companies built lines such as Kütahya-Tavşanlı, Değirmisaz-Balıkesir, Irmak-Çankırı, Malatya-Fırat, Gölbaşı-Malatya, Niğde-Ulukışla, Irmak-Zonguldak/Filyos.
- Before 1930, inexperienced Turkish contractors and contracting firms gained experience by working as subcontractors for foreign firms. The Ergani-Diyarbakır line, which opened in 1935, was the last railway line built by a foreign firm. The lines east of Ankara in particular were built mostly by local contractors.

- The law on "Auctions, Deals and Imports to be Made on Behalf of the Government", that is, the law on increases, decreases and tenders, which was accepted on April 19, 1925, was trying to encourage the development of large-scale construction contracting, which was attempted to be established during the Union and Progress period.
- The Public Works Program of 1929, prepared by the Ministry of Public Works during Recep Peker’s term as minister, was not a plan that only envisaged the construction of a railway. Unfortunately, the goals of the plan, of which no example has survived to the present day, were not fully achieved, just as they were in the last period of the Ottoman Empire.

- One of the important entrepreneurs of the period, Nuri Demirağ, successfully completed the Samsun-Havza-Amasya, Amasya-Zile-Kunduz lines. With the 221 km Kayseri-Şarkışla-Sivas line, the construction of which was undertaken by contractor Emin Sazak, Ankara was connected to Sivas by railway on August 30, 1930. Thirty-six tunnels were opened on the 602 km line, which cost 41 million 200 thousand liras. Three months after Sivas, the Diyarbakır-Fevzipaşa-Malatya line and a year later, the 372 km Samsun-Sivas line were put into operation.
- On April 23, 1932, the Kütahya-Balıkesir line was opened by the Speaker of the Grand National Assembly of Turkey, Kazım Özalp. With this line, the distance between Balıkesir and Ankara was reduced from 954 km to 592 km. On October 20, 1932, the first train departing from Mersin reached Samsun. The Mediterranean-Black Sea connection established by caravan routes during the Seljuk period was now provided by railway. The “mourning” Mediterranean and the “struggling” Black Sea were reunited by railway.

SAYI
126 — 127
On birinci yıl

DEMİRYOLLAR DERGİSİ

AĞUSTOS — EYLÜL
1935
On birinci cilt

Adres: Ankara Devlet Demiryolları ve Limanları yönetgesi Dergi Direktörlüğü

Devlet Demiryolları ve Limanları İşletme Genel Direktörlüğü tarafından her ay çıkarılır fenni dergidir.

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Dış memleketler için 3 Türk lirasıdır.

Bayındırlık bakanımızın doğu illerindeki etüd gezisi

Bayındırlık Bakanı B. Ali Çetinkaya 4 Eylûl sabalı saat 9,5 da Kayseri trenine takılan özel bir vagonla doğu gezisine çıkmıştır. Bunun beraberinde, Devlet Demir yolları Genel Direktörü B. Baybora; Yol Direktörü B. Fuad, Cer Direktörü B Sedad, Sağlık Başkanı B. Vehbi ve özel büro direktörü B. Nejad vardır. Bakanı; Ankara durağında, birçok saylavlarla bakanlık ileri gelenleri uğurlamışlardır.

Bayındırlık Bakanımız Ankara durağında.

Nerelerde etüd yapılacak?

Gezinin Ankara'dan Sıvas'a kadar olan kısmı şimendüferle ve ilerisi otomobile yapılacaktır. Sıvas'tan sonra Erzincan, Erzurum, Sarıkamış ve Kars illerile bu çevre içinde geziye devam edilecektir. Bakan, gidiş veya dönüşünde, Erzurum'dan Trabzona kadar olan bölgeyi de dolaşacaktır. Dönüş aynı yoldan ve Kars — Sarıkamış — Erzincan — Erzurum— Sıvas yönetinden olacaktır.

Devletin, doğu illerinde geniş ölçüde bir yeğritim plânının esaslarını saptadığı bu sıralarda Bayındırlık Bakanının bu gezisine özel bir önem verilmektedir. Doğu illerinde yapılacak bayındırlık işlerinin esaslarını ve genel hatlarını saptayacak olan bu etüd yolculuğnun konularından bazılarını öğrenmiş bulunuyoruz:

Erzurum - Kars yolu

Erzurum'la Kars arasında işlemekte olan ve büyük harpta yapılan demiryolunun işleme kapasitesi ve bugünkü durumu üzerinde etüdler yapılacaktır. Yurdun doğusundaki geniş bir bölgeyi batıya bağlayan bu hat üzerinde gerekli yenilikler ve düzenlemeler yapılarak iyi bir işletmeye kavuşması sağlanacaktır.

Bu hatta bir çok traversler yenilenecek ve duraklarla hatboyu; ihtiyaçları karşılıyacak bir hale getirilecektir. Başka bir sistemde yapılmış olan bu hattın devlet demiryolları sistemine çevrilmesi üzerinde incelemeler yapılacaktır. Hatta randımanı fazlalaştırmak için fazla yük taşıma kudreti verilecektir.

Trabzon - İran otobüs seferleri:

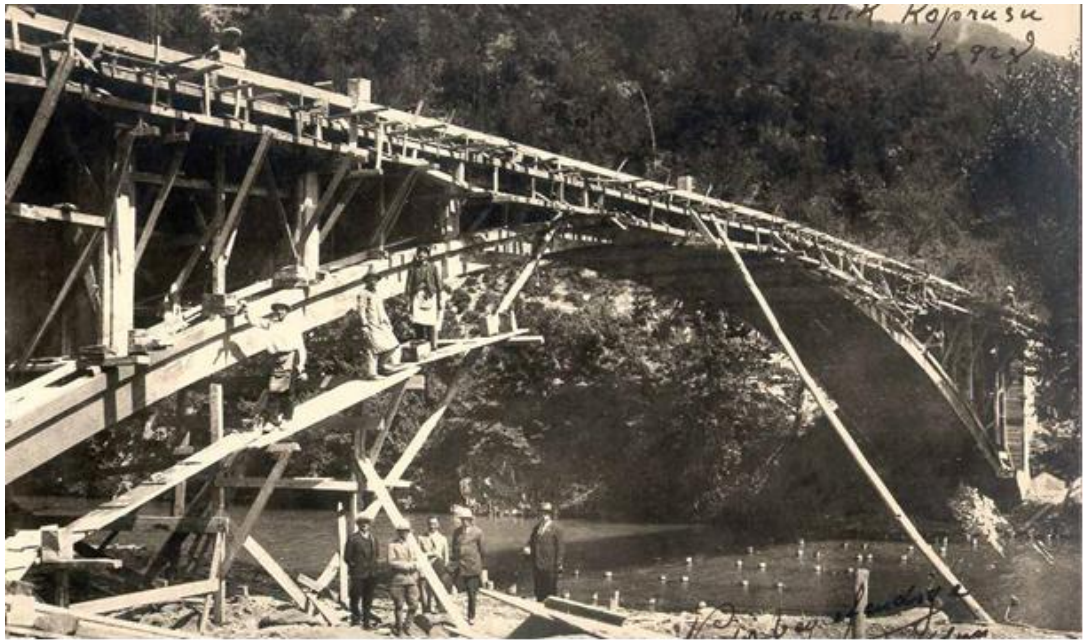
Üzerinde etüd yapılacak önemli işler arasında Trabzon'dan İran sınırına kadar gidecek ve Erzurumdan geçecek otobüs seferleri kurul-

Railways Magazine, August-September 1935

HIGHWAYS AND IRRIGATION DURING THE REPUBLIC PERIOD

- During the Ottoman modernization period, stone-paved roads called macadam began to be built in the 1860s. Statesmen such as Sivas Governor Halil Rıfat Pasha, Bursa Governor Ahmed Vefik Pasha, and Mithat Pasha, who served as governors in Tuna, Izmir, and Baghdad, implemented important highway projects.
- When the Republic of Turkey was founded, there were 18,335 kilometers of narrow, rough-surfaced roads in the country. These roads were unusable because sufficient maintenance and repair work could not be done. It was not possible to reach many cities and districts of the country in all four seasons.

- The first highway project of the republican government is the Artvin-Borçka-Hopa highway. There are roads built during the Russian occupation in the Eastern Black Sea region, especially in the Eastern Anatolia region, but these roads lead to Russia. The construction of the Artvin-Borçka-Hopa highway began in 1924. However, due to the harsh natural conditions, the work progressed very slowly. Moreover, there was no construction equipment to be used in the construction of the road; construction was carried out entirely by manpower. On the other hand, the technical knowledge to build roads on steep terrain was extremely limited.



Bartın, Kirazlık Bridge construction, 1928

Beysehir Lake

- The governments of the Republic were determined to finish the road, the construction of which had begun in 1924. The section of the line between Borçka and Hopa was put out to tender again in 1932; a French road engineer was put in charge of the work. Finally, this road was opened to traffic in 1938; simultaneously, a port and pier were built in Hopa.
- The first important law regarding highways in the Republican era was the Highways and Bridges Law No. 1525 dated June 2, 1929. The law was enacted to ensure the implementation of the targets determined in the "Umur-u Nafia" program prepared by the Minister of Public Works Recep Peker. With this law, roads were divided into "national roads" and "provincial roads"; the programming and construction of national roads were left to the central administration, while the provincial roads were left to the governorships, subject to approval from the Ministry of Public Works.

Application of Taxpayer Work

- The obligation to work in road construction, which began with the “Regulation on Roads and Bridges” issued in 1869 and was implemented with some changes, continued during the Republic period. The Law on Amele-i Mükellefiye was re-arranged in 1925. This law was later added to the Highways and Bridges Law No. 1525 dated June 2, 1929. According to the law, men between the ages of eighteen and sixty were obliged to pay 8 liras of road tax per year. Those who could not or did not want to pay had to work at the nearest road construction site. The implementation of road taxes, whether in cash or in kind, was occasionally the subject of complaints; government officials used force against those who did not fulfill their road obligations, whether in cash or in kind, as they did against heads of families who did not send their children to school.

Atatürk at Çubuk Dam

POST WORLD WAR I AND THE DEMOCRATIC PARTY PERIOD

- Adnan Menderes, who formed his first government on May 22, 1950 and has an important place in our public works history, emphasized that as the DP, they believed that rubber-powered vehicles brought speed, convenience and cheapness to transportation; therefore, they would give importance to highways in particular. He also stated that the transportation system consisting of land, sea and railways would be developed in a harmonious and complementary manner. On the other hand, he claimed that resources were spent on inefficient works during the single-party period, that irrigation investments in particular were exaggerated, and that they would build smaller ones instead of large water structures.

Asphalt paving work

Opening of Seyhan Dam, Adana, 1956

NATO, OECD and Türkiye

- The Western wing of the new bipolar world order after World War II established the North Atlantic Treaty Organization (NATO) in 1949 against the “Soviet threat.” Although Turkey applied to join NATO without wasting any time, it did not receive the response it expected as quickly.
- Turkey also wanted to become a member of the Organization for European Economic Cooperation, which was established in 1960 under the name OECD to assist in the distribution of aid provided by the USA within the framework of the Marshall Plan for the repair of the devastated Western European economies after the war and to liberalize and develop trade among the Western bloc countries. There were two reasons for this. The first was the threat of Soviet Russia; the second was the desire to benefit from the technical, military and financial aid that the USA would provide for the reconstruction of Europe. The fact that it could not demobilize its army due to the threat of Soviet Russia was a great economic burden for Turkey. In addition, Türkiye could not use its stock of gold and foreign exchange of 245 million dollars in those years, considering the possibility of a war with the Soviet Union.

- In order to participate in the European Reconstruction Program, the CHP government submitted a “nafia” report to the European Economic Cooperation Committee. The report envisaged an investment of 3 billion 729 million liras. Transportation followed agriculture in the investment ranking. These were followed by energy, iron and steel, cement, mines and industry. In the 1930s, highway construction along with railways in developed countries made significant progress; there were serious increases in the number of rubber-tired vehicles. In Turkey, 3,645 kilometers of railways were built from 1923 to the end of 1949, and the west and east of the country, and the north and south were connected by railways. However, it was not possible to reach everywhere by railway.
- The CHP government sent two Turkish engineers, Vecdi Diker and Vehbi Ekesan, to the US in 1945 to conduct research and examination. Vecdi Diker, who had previously studied road engineering in the US, completed his research and examination and returned home to begin constructing a stabilized road. The government also requested assistance from American technical staff. One of these was Hilts, the second in command of the Public Road Administration. Hilts came to Turkey and prepared a report.

- Turkey’s request to benefit from Marshall Aid was accepted by the agreement made between Turkey and the USA in Ankara on July 12, 1947. The total amount of military American aid given to Turkey between 1947 and 1951 was around 400 million dollars. Turkey felt stronger against the Soviet Russia threat with the cash aid and military equipment aid coming from the USA. It became possible to spend more of its own resources on construction investments. Turkey wanted to build modern highways and even asphalt roads, but it had to comply with the demands of the lending country in determining the routes.

Davutoğlan Bridge on the Beypazarı-Nallıhan road (built in 1956)

- Students were sent from Turkey to America to receive education upon an agreement with the American Highway Administration. Highway specialist engineers also came from America and contributed to the training of Turkish engineers. Before the establishment of the General Directorate of Highways, in 1946, there were five hundred and ninety-four personnel, two hundred and fourteen trucks and machinery in the Roads and Bridges Department of the Ministry of Public Works, and by 1950, there were four thousand three hundred and sixteen personnel, two thousand eight hundred and seventy-four trucks and machinery. A large portion of the machinery fleet, which had increased more than tenfold, came with American aid.

General Directorate of Highways and State Hydraulic Works

- The public works program of the second Menderes government, which took office on March 9, 1951, announced the start of the second major construction campaign in Turkey and created a new wave of excitement. Adnan Menderes emphasized that priority would be given to agriculture, that highways would be brought into line with the times, and that every village should be reached by a macadam road.
- The CHP's application for membership in NATO in 1949 was accepted in 1951 and Turkey officially joined the organization on February 18, 1952. Turkey's NATO membership greatly contributed to the development of contracting services by accelerating the construction of military facilities. Before NATO tenders became widespread, the government made an important legal regulation and the "Foreign Capital Encouragement Law" was accepted on August 1, 1951.

- NATO membership both enabled contracting companies to gain experience and some of the largest contracting companies in Turkey to emerge and grow. Construction of nearly thirty airfields was initiated within the scope of the program. For the Esenboğa and Yeşilköy airfields alone, cement equal to the annual capacity of the Eskişehir Cement Factory at that time was spent.
- With the start of work of numerous construction machines brought to the country within the scope of Marshall Aid programs, the General Directorate of Highways was established on March 1, 1950. The US highway policy had a profound effect on the work program of the General Directorate of Highways; within the scope of preparations initiated even before the establishment of the general directorate, the standard specifications applied by the US for road construction were revised and brought into a form suitable for Turkish conditions with a work that continued from 1949 to 1952.

Road works in the 1950s

In 1950, the highway; “maximum speed 40 km”

Süleyman Demirel

- The establishment of the General Directorate of Highways and the projected expenditure of 1 billion 500 million lira for the road program between 1948 and 1957 created an important opportunity for Turkish contracting firms. However, when this program began, it was thought that Turkish contractors would not be able to undertake large projects with new road construction technologies and capital intensity. Kemal Zeytinoğlu, the Minister of Public Works in the Menderes government, tried to create legislation that would make it easier for Turkish contractors to take on work.

FROM LIMITED OPPORTUNITIES TO INTERNATIONAL SUCCESS...

- After the coup of May 27, 1960, with the idea of carrying out public works and industrial investments in a balanced manner and within a certain plan, the State Planning Organization affiliated with the Prime Ministry was established in September 1960. The idea of carrying out investments in a balanced manner and within a plan, in other words, the principle of planned development, was also included in the 1961 Constitution.
- This new principle prepared the ground for the establishment of new institutions and a ministry related to village issues, and with the inauguration of the tenth İnönü government on 25 December 1963, the Ministry of Village Affairs and Cooperatives was established.

- The new ministry set out with the aim of regulating the land-human relations, which are the basic economic, social and physical infrastructure of the village, making the land and water resources useful, developing village handicrafts, facilitating settlement opportunities in the village, popularizing cooperatives, and providing roads, drinking water and electricity to the villages. The General Directorate of Roads, Water and Electricity Works (YSE) affiliated with the ministry was established on August 31, 1965. The General Directorate of Soil, Water and the General Directorate of Soil and Settlement established during the Menderes period were also affiliated with the Ministry of Village Affairs and Cooperatives.

- Meanwhile, the tender for the Keban Dam, the project of which was completed during the ninth Inonu government, was concluded on January 8, 1965, and construction of the derivation tunnel began in May of the same year. The administrators of the period were aware that industrial investments, especially heavy industrial investments, needed to be put into practice. For example, the idea of establishing a petrochemical industry was adopted in 1962, the beginning of the one and a half year plan period, and PETKIM Petrochemical Inc. was established on April 3, 1965. TPAO, which was established in 1954 during the Menderes period, played a leading role in the start of production at the PETKIM facilities.

Keban dam, Elazığ

Penstock and workers in the Keban Dam construction

- The emphasis on highway transportation continued in the 1960s. Initially left to the governorships, the construction of roads within the provincial borders was later left to the General Directorate of Highways due to the success of the organization. The construction of village roads was centralized by leaving it to the General Directorate of Highways, which was established in 1965. The General Directorate of Highways provided road, water and electricity services to tens of thousands of villages until the 1980s.

Years of Crisis

- The second half of the 1970s was marked by anarchy and government crises, and a series of groundbreaking ceremonies, many of which would never be completed. Many construction projects came to a halt due to a shortage of foreign exchange. The foreign exchange bottleneck was particularly problematic for machinery imports. In order to import construction machinery, contractors were directly requesting a state guarantee, in addition to the bank guarantee requested by the vendors. The Turkish lira equivalent to the foreign exchange allocation required for imports was deposited into the Central Bank; however, it could take two or three years to obtain the requested foreign exchange. In this case, it became necessary to obtain the foreign exchange needed to purchase the machinery from the black market. As a result, the difference between the black market and the official exchange rate and the interest losses on the Turkish lira waiting at the Central Bank could increase costs several times over.

- Despite the anarchic atmosphere and foreign exchange shortages of the 1970s, construction of the Bosphorus Bridge and the Keban Dam continued. Turkish contracting companies gained significant experience as subcontractors on these two large structures. The construction of the Keban Dam, where one of Turkey’s largest hydroelectric power plants is still built, made significant contributions to the development of the construction contracting sector, which had gained experience in large dam construction in the 1950s with the Hirfanlı and Sarıyer Dams. Similarly, it enabled advances to be made in the fields of dam engineering and engineering geology.

Turkish Contractors Abroad

- The founders of STFA, one of the most senior Turkish contracting companies, two friends who have signed many firsts in Turkish construction history, Sezai Türkeş and Feyzi Akkaya, established the first Turkish construction site outside Turkey in Libya in early 1973, and Feyzi Akkaya personally took over the management of the site.

Sezai Türkeş – Feyzi Akkaya Partnership (STFA) was established.

- The success of Sezai Türkeş and Feyzi Akkaya in Libya soon went beyond contracting and opened the door to engineering successes. The mistakes in the calculations of the British company that prepared the projects for the Tripoli Port were revealed by the events during the construction process, and it was understood after a while that the Turkish contracting company that noticed this was right. In a storm that occurred in the winter of 1981, only the Sidi Bilal Military Port planned by Temel Mühendislik AŞ did not suffer any damage.

Turgut Ozal and New Openings

- Following the September 12 Coup, the Motherland Party, led by Turgut Özal, came to power alone by receiving 45.2% of the votes in the first general elections held on November 6, 1983. With Turgut Özal's policies, a new movement began in many areas after the stagnation created by the military period. The projects of TOKİ, which was established to provide affordable housing for middle and low-income citizens, and facilities such as dams, hydroelectric power plants, tunnels, and irrigation channels built within the framework of the GAP project gave great momentum to the construction sector.
- By 1988, Turkish contractors had completed $6 billion 500 thousand of the $8 billion 500 thousand worth of work in Libya.
- However, there were not always success stories. The fact that many inexperienced, unsophisticated contractors who entered the market and aimed to make large profits in a short time left many important projects unfinished or even ran away, was the beginning of problems that would continue for many years between the two countries. On the other hand, Libya's payment problems as a result of the decline in oil prices in the second half of the 1980s put Turkish businessmen in a difficult situation.

Urfa Tunnel construction

- The 1990s were once again difficult years for Turkey. Political instability, very high interest rates and increasing current account deficits each year caused serious difficulties for construction and industrial investments. Turkey's position in international financial markets was shaky. During a period when economic and political difficulties increased, two major earthquakes occurred: Gölcük in August 1999 and Düzce in November 1999. The tens of thousands of houses and the collapsed infrastructure that were destroyed in the earthquakes, in which approximately eighteen thousand people lost their lives, were rebuilt by Turkish construction workers within a few years. In the second half of the 1990s, no major "maintenance" investments were realized, except for the Sabiha Gökçen Airport, which opened on January 8, 2001, and the modern terminal building of the Atatürk Airport, which was officially opened on January 3, 2000.

The 2000s and the Branding of the Turkish Construction Sector

- The Justice and Development Party, which came to power by receiving 34.63% of the valid votes in the general elections held on November 3, 2002, immediately started the construction of divided roads throughout Turkey, bringing new dynamism to the construction sector. In addition, with the emphasis on re-privatization, foreign investors began to enter Turkey.
- Over time, the Turkish construction sector has become a brand abroad. Now, the most important structures on a global scale have a Turkish signature. For example, TAV Holding has become a leader in airport terminal building construction and operation, leaving behind world giants. The construction of the new Abu Dhabi terminal building carried out by this company is a striking indicator of the point that Turkish contracting has reached.

From TAV's airport terminal building construction in Abu Dhabi

Beyond Imagination…

- After World War II, the CHP government applied to the European Economic Cooperation Committee, which convened in Paris in July 1947, and requested a loan of 615 million dollars. The American government, which would finance the reconstruction of Europe, rejected this request. Agricultural and industrial investments were at the forefront of the loan file. Transportation investments were at the back.
- Thereupon, Turkey prepared a new program after April 1948 and submitted it to the same committee. This time, the electric energy and industrial projects in the file were narrowed down to a great extent; the emphasis was given to transportation. 61% of the expenditures foreseen in the program were related to transportation and especially the highway program. Thus, investments were made in the areas desired by the lender.

- Adnan Menderes also asked for a loan from the USA in 1959 to industrialize and establish an industrial infrastructure, but he was told, “You are an agricultural country that meets NATO’s grain needs.” Thereupon, Menderes tried to obtain a loan from Soviet Russia, and although he came very close to achieving this, he could not realize his dream due to the coup of May 27, 1960.
- Menderes's idea was continued by Süleyman Demirel and, to some extent, Bülent Ecevit. Facilities such as Seydişehir Aluminum, İskenderun Iron and Steel Factories, Aliağa Oil Refinery, Bursa Orhaneli Thermal Power Plant were established with Russian credit and technical assistance.

Bosphorus Bridge

Fatih Sultan Mehmet Bridge

Yavuz Sultan Selim Bridge

- Türkiye is now striving to catch up with the cutting-edge technologies of the age, and for this purpose, it is seeking ways to cooperate with many countries in different geographies of the world.
- The construction sector has grown along with Turkey, has exceeded the country's borders, and has reached international dimensions. Turkey now has the knowledge and experience to carry out most of its own public works services. The Turkish contracting sector is ready to undertake larger, more qualified projects in the future.
- The public works services, which are “useful” as the meaning of their Arabic origin name, started in these lands with great difficulties, limited opportunities, extraordinary devotion and intense human labor. From now on, public works services will always continue in accordance with the requirements of the age and advanced technology and will continue to make the country prosperous…

THANK YOU FOR LISTENING.