Keywords:

Aviation architecture, Nuri Demirağ, aircraft, Beşiktaş and Yeşilköy Nu.D. aviation facilities.

Article Information

Received:
5 December 2017
Received in revised form:
25 December 2017
Accepted:
4 January 2018
Available online:
15 January 2018

Aviation Facilities of Nuri Demirağ in Beşiktaş and Yeşilköy

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Abstract

20th century at its dawn was referred to as “age of aviation” by the invention of aircraft. Founding of aviational activities triggered growth of aviation and aircraft industry rapidly. Aviation facilities and its architecture began developing in Europe and the United States. While military aviation had a significant role in creating and developing aviation, civil and commercial aviation began to develop accordingly. As in Europe and the United States in 1920s and 1930s, there were also some important developments in the newly born Turkish Republic. Along with international civil and commercial aviation companies in Istanbul (such as Italian AEI, French CFRNA/CIDNA), national entrepreneurs established a number of facilities for providing services in civil and commercial aviation. Vecihi Hürkuş and Nuri Demirağ were among these entrepreneurs. In this article, aviation facilities of Nuri Demirağ being established in Istanbul are reviewed by tracing Prime Ministry Republic Archive (BCA) documents and by the images related to that period.

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Anahtar kelimeler:

Havacılık mimarisi, Nuri Demirağ, uçak, Beşiktaş ve Yeşilköy Nu.D. havacılık tesisleri.

Makale Bilgileri

Alındı:
5 Aralık 2017
Düzeltilmiş olarak alındı:
25 Aralık 2017
Kabul edildi
4 Ocak 2018
Çevrimiçi erişilebilir:
15 Ocak 2018

Beşiktaş ve Yeşilköy'de Nuri Demirağ'ın Havacılık Tesisleri

N. Tuba YUSUFOĞLU*

Öz

20. yy başında uçağın icadı ile 20. yy, "havacılık ve uçak çağı" olarak anılmaya başlanmıştır. Uçağın icadı, havacılığı ve uçak sanayisini hızla tetiklemiş, Avrupa ile Amerika'da havacılık yapıları ve mimarisi de gelişmeye başlamıştır. Askeri havacılık, havacılık mimarisinin oluşumunda ve gelişiminde önemli rol oynarken, paralelinde sivil ve ticari havacılık gelişmeye başlamıştır. 1920'li ve 30'lu yıllarda Avrupa ve Amerika'da olduğu gibi, Türkiye Cumhuriyeti'nde de bu alanda önemli gelişmeler olmuştur. İstanbul'da uluslar arası sivil ve ticari havacılık şirketlerinin yanı sıra (İtalyan AEI, Fransız CFRNA/CIDNA gibi), ulusal girişimciler de sivil ve ticari havacılık hizmetlerinde bulunmak için birtakım tesisler kurmuştur. Bu isimlerden birisi Vecihi Hürkuş, diğeri Nuri Demirağ'dır. Bu makalede Nuri Demirağ'ın İstanbul'da kurmuş olduğu havacılık tesisleri, Başbakanlık Cumhuriyet Arşivi (BCA) belgeleri ve dönemin ilgili görselleri eşliğinde incelenmiştir.

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Human being has been generating and developing own civilization while taking a close interest in what was happening in nature and finding several beneficial solutions; they have been influenced and inspired by animal behaviors and their abilities in particular (Artut, 2014). In this context, flying birds triggered the desire of human being about having this ability (Kansu, Şensöz, & Öztuna, 1971). This desire was mentioned in various legends and myths. Works for centuries were made in accordance with the desire of flying and required impulse was maintained with the required technology, human being took off together with motor vehicle. Together with taking off with a heavy motor vehicle under the control of Wright Brothers in 1903, 20th century began as the age of aviation and aircraft. Beginning of 20th century wars triggered the use of aircraft as new technology for the sake of discovery and surveillance, better and relatively more advanced aircraft designs could hang in the air for longer time and go far distances with *War Effort* (Kronenburg, 2002) made for winning the war. At the end of 19th century and beginning of 20th, a creative energy sparked, the cities of new order were established as "modern architecture" on one side and the era of aviation and aircraft began as an important tool in generating new balances on the other side. These processes were experienced together with considerably fast and intense developments (Yusufoğlu, 2017).

Use of technologic developments during the wars in particular applied on the aircraft as well as Europe and the United States gave importance to the aircraft which was related to the desire of traveling Far East and to colonial policies (Kronenburg, 2002; Spenser, 2008). Joseph Corn defined this phenomenon as "winged gospel"; the opinions related to aircraft and aviation were one of the results of the belief that aircraft would be a part of life in near future (Corn, 1983). Indeed, aircraft added a brand new perception, space-time experience, speed, movement, entertainment and sport to 20th century life.

The invention of aircraft generated aviation industry and this new flying machine developed architecture of aviation. Aircraft facilities as new industry branch followed basic hangar structures in order to protect aircraft from external factors (weather conditions etc.); meteorology structures and networks, airport facilities, wind tunnels required for flying became new structure types generated by this new industry. In this article, the facilities of Nuri Demirağ (his logo is the abbreviation of name and surname Nu. D.) (1886-1957) being established in Beşiktaş and Yeşilköy situated in European side of Istanbul, who followed newly established aviation industry closely in civil and commercial way, considered aircraft as the vehicle of future and realized its importance early, were reviewed together by Prime Ministry Republic Archive

(BCA) documents. The establishment process of these facilities corresponds to the period characterized as “Golden Age” of aviation (1918-1939) in the West, particularly in U.S.

In the early 20th century within a tense political atmosphere of the world, Turco-Italian war started with the Italy’s occupation of Tripolitania as the territory of the Ottoman Empire in Africa (29 September 1911). It was the first war in which aircraft was used (Kurter, 2006; Sarıgöl, Hürtürk, & Kline, 2009). The first aviation installments of the Ottoman State was at Yeşilköy (Ayastefanos) Aircraft School/Station (1912-1919)which were urgently thought and applied upon witnessing the importance of air force in this war and were tried to be completed during Balkan Wars (1912-1913). Yeşilköy Aircraft School project was generated under the presidency of Süreyya Bey (İlmen) who was assigned by Harbiye Minister Mahmut Şevket Pasha to carry out these structures. In the period following Balkan Wars, Aircraft School organization was completed by making several additions to this project (Kansu et al., 1971) (Figures 1 and 2). In addition to that; Yeşilköy Watercraft (Marine) School was also established in Yeşilköy (1914-1919) during war years (1914-1918) to support the fleet and raise marine personnel (Gülten, 2010; Yusufoğlu, 2017).

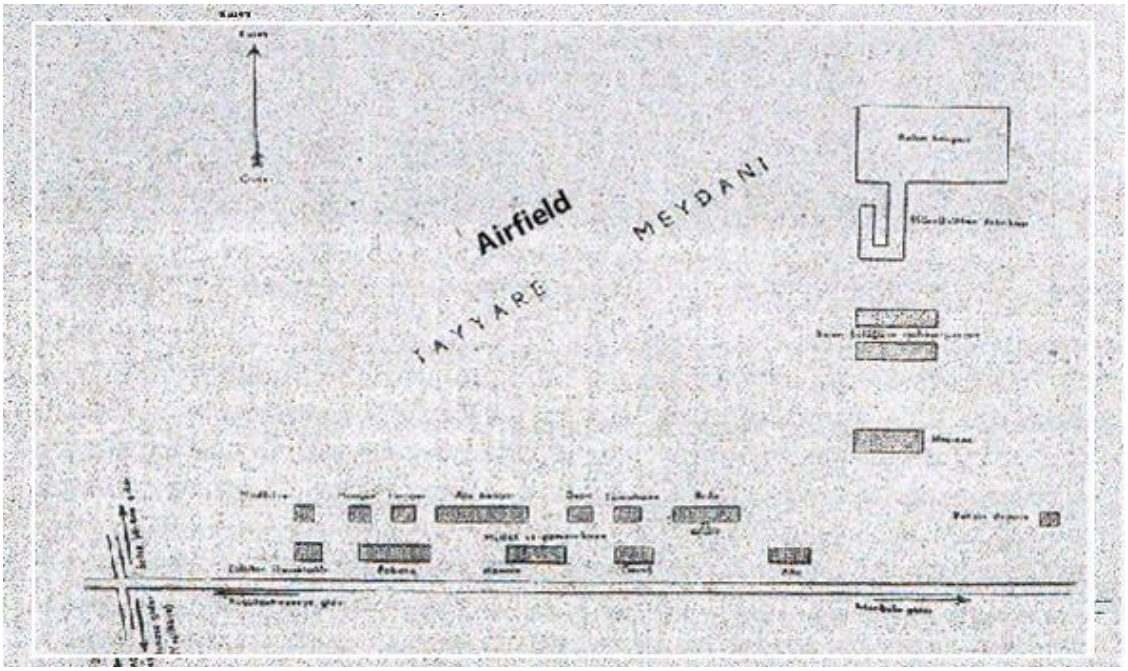

Figure 1 Aircraft School Plan, Draft
Source: İlmen, 1947, p.113.

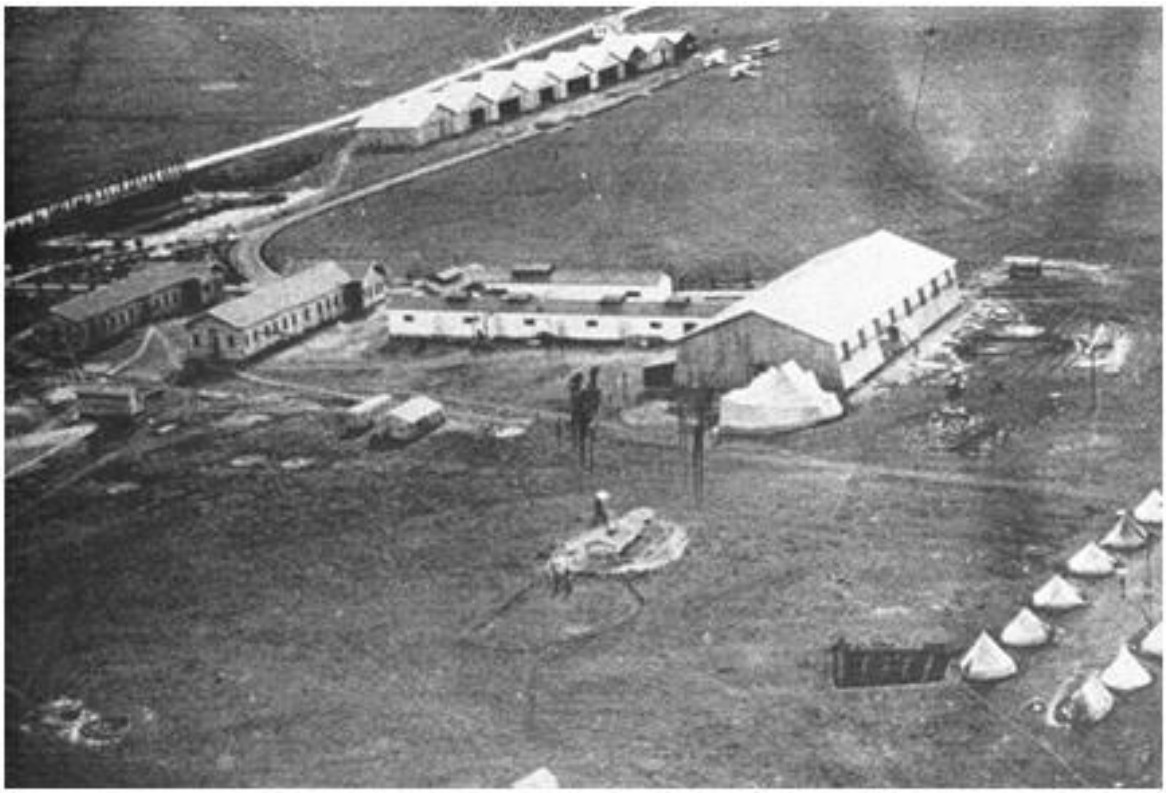

Figure 2 Aerial view of Yeşilköy Aircraft School, Istanbul, 1918
Source: Air Force Museum Archive

Following World War I (1914-1918) and Independence War (1919-1922), aviation gained an exclusive importance in the newly established Republic of Turkey. Works were initiated for providing guns and aircraft at the cutting edge to Turkish Air Forces (T.Hv.K.K.) towards developing aviation with national opportunities. These works can be summarized as establishment of Turkish Aircraft Community (T.Ta.C.) (Turkish Air Association-THK) and military, civil and commercial aviation works. As aviation is related to modernism, aircraft was considered as a symbol of modernity by itself (Yusufoğlu, 2017). In this context; interest of the society for aviation might be seen as a subject of gathering in structured environment, working, education, participation to entertainment and sport, namely participation to modern life. It must be pointed out that military and civil women aviators (Sabiha Gökçen in Turkey, Amelia Earhart in U.S.) were considerably popular in this period. While the works related to aviation industry continued, meteorology organization was established on the other side. Along with all these developments, foreign companies began requesting to provide aviational services for

postage and cargo aviation in Turkey since 1919 took steps towards establishment of aviation facilities. The remarkable one among them was the facility related to French CFRNA/CIDNA company in 1920 which was established in Yeşilköy situated in the European side of Istanbul and watercraft facility related to Italian AEI Company in 1920 which was established in Büyükdere situated again in the European side of Istanbul. With the facility related to Italian AEI company established in Istanbul, the voyages of watercraft was a new and luxury way of traveling in transportation that was not fully known in the urban history of Istanbul until 1930's (Yusufoğlu, 2017; Zelef, 2014).

Apart from foreign companies, there are two important figures being interested in civil aviation in this period. They were aviator Vecihi Bey (Hürkuş) and entrepreneur Nuri Bey (Demirağ). Having made significant contributions related to aviation since Ottoman Empire and participated personally to World War I and Independence War as aviator/pilot, Vecihi Hürkuş established a workshop and a school in Kadıköy, situated in Anatolian side of Istanbul. Hürkuş continued his civil aviation works in the Republican period and manufactured the aircrafts together with his students (Figures 3and 4). Another important figure related to aviation is Nuri Demirağ (Hürkuş, 2014; Yavuz, 2013) (Figure 5).

Figure 3 Vecihi Hürkuş and his aircraft Vecihi- XIV
Source: Air Force Museum Archive

Figure 4 The workshop of Vecihi Hürkuş in Istanbul and his aircrafts
Source: The Prime Ministry Republic Archive

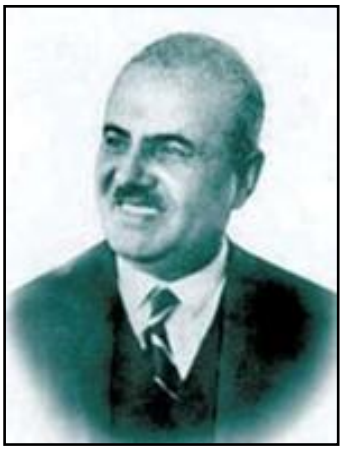

Figure 5 Nuri Demirağ
Source: Gazete Bilkent, 2014.

Having passed from being major railway constructor to aviation industry, entrepreneur Nuri Demirağ (1886-1957) had to have a number of facilities to be built which were required to start on aviation industry. In this context, having aimed to establish an aircraft facility in Beşiktaş, Nuri Demirağ investigated the facilities in the West (in Europe and U.S.) as a model. Indeed, development of aircraft facilities in the West from 19th century to the first decades of 20th

century was considerably quick. The wooden workshops of 18th century began to give place to iron and after that steel technologies enabling large spans, providing work spaces that could be encompassed without intermediary support since the mid of 19th century. At the end of 19th century and beginning of 20th, reinforced concrete came forth as another constructional material and this innovation enabled creation of new forms for facilities and hangar structures. This technology along with the developments in production technologies and scientific management (Taylorism) enabled the integration of structure with machine aesthetics internally and externally (Giedion, 1948). In a short while, the process (serial production) developed for automobile industry by Ford was adapted to aircraft production and its plants.

Development of aircraft manufacturing technology inspired architecture of aviation. As larger and heavy aircrafts were developed, these designs affected the architecture of its facilities and accordingly, alternatives for production with detailed solutions were sought. When it comes to facility structures and machine aesthetics of early 20th century in the history of architecture, German Peter Behrens (1868-1940) as one of the founders of modern architecture and Walter Gropius (1883-1969) as one of the founders of Bauhaus School come to mind, yet American architect Albert Kahn (1869-1942) being contemporary of Demirağ, comes to mind when it comes to design of aircraft factories. His industrial facility designs are the important references of aviational architecture on which machine aesthetics was reflected. The factor that makes Kahn important in design of facilities is his experience on industrial buildings. He developed new systems and details in this field. Kahn reviewed the architecture of iron bridges in Europe and developed systems for roof trusses for aircraft factories and hangars. Kahn designed roof solutions having spans that encompass large spaces (Nelson, 1939). He designed airport facilities such as Willow Run bomber plant for Ford and Glenn Martin Aircraft Assembly Building devising novelties on aviation architecture in the USA. Aircraft factories were constructed along with hangars and airports (Figure 6).

Figure 6 Ford Airport and Aircraft Factory, architect: Albert Kahn, 1926-27, Dearborn, Michigan
a, terminal building; b, aircraft factory and hangars; c, general view of facilities
Source: Eggebeen, 2007, p.308.

In the period characterized as "Golden Age" of aviation in the West in 1920s and 1930s, parallel works were made in the Republic of Turkey. In this sense, the facilities constructed by Nuri Demirağ in Beşiktaş (Nu.D. Beşiktaş) and Yeşilköy (Nu.D. Yeşilköy) as two districts in Istanbul were pointed out in this article based upon the documents of Prime Ministry Republic Archive (BCA), and the written information together with the images of that period. In this context, Nu.D. Beşiktaş Aircraft Factory and Nu.D. Yeşilköy Facilities are reviewed.

Nu.D. Beşiktaş Aircraft Factory

Nuri Demirağ Beşiktaş Aircraft Factory can be reviewed in two categories as selection of location and architectural features of the premises.

Selection of Location

The first urban and architectural regulations regarding the area on which Nu.D. Beşiktaş Aircraft Factory was established were from 1911.The maps dated 1912 and 1915, 1/1000, 1/1500-scale of the area are available in Atatürk Library Map Archive. The previous functions of the area in the maps show that this area was reserved for warehouse-storehouse-market production and housing functions. The existence of various piers marks the importance of water transportation in the district (Figure 7).

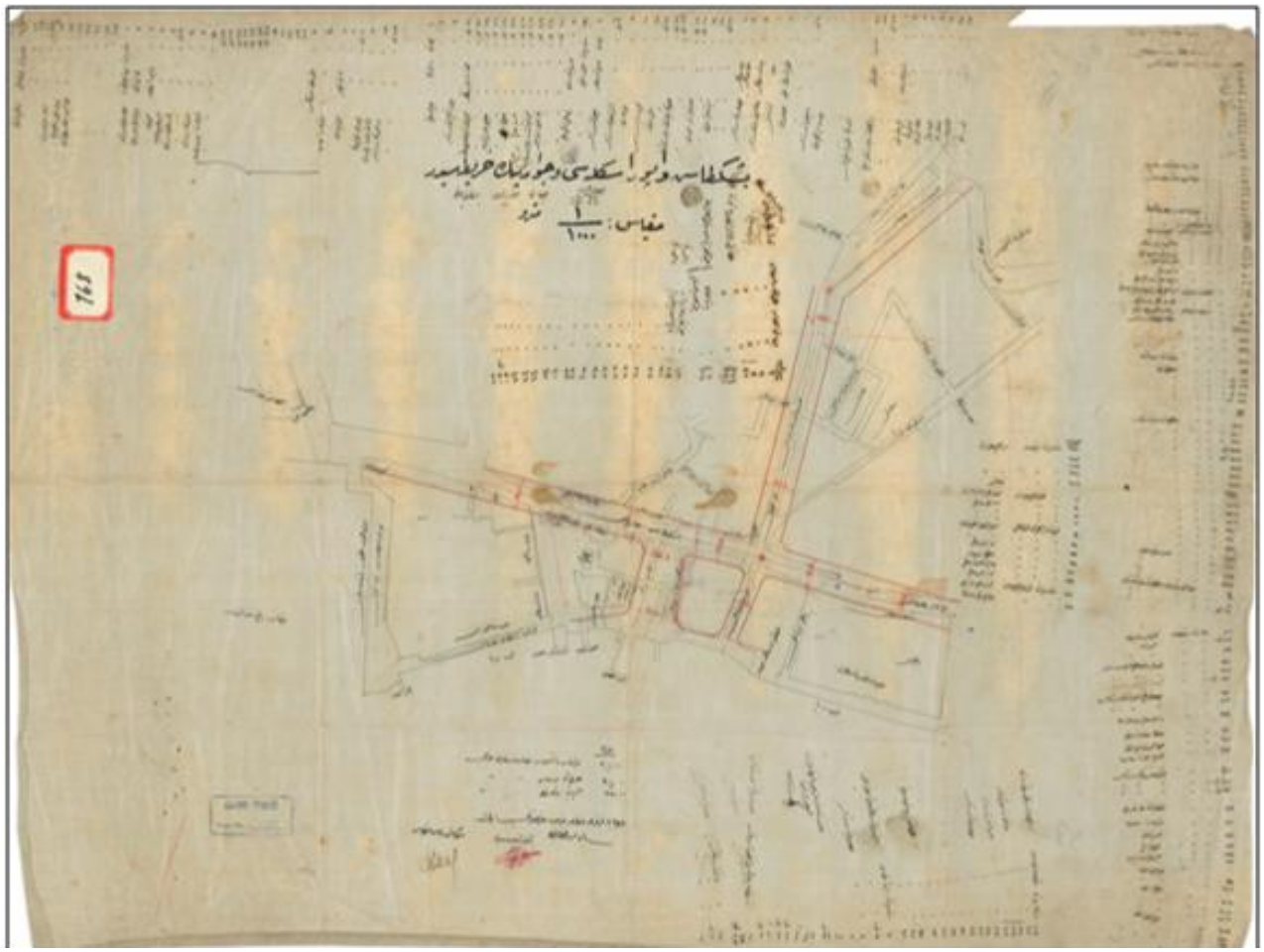

Figure 7 Beşiktaş Square Map related to 1912, scale: 1/1000
Source: Atatürk Library Map Archive, (HRT.NR. 5081)

The reason why Demirağ selected the seafront field in Beşiktaş as the establishment location of the facility could be most probably that there were iron structured facilities on the site such as Astro Tobacco Warehouse previously. On the map dated 1928 in Atatürk Library Archive, Nuri Bey's personal pier can be explicitly seen in Beşiktaş coastal side. In the document belonging to Heyeti Fenniye Istanbul, dated 17 March 1928, the area of dock drawn and specified with red line and of which reconstruction was requested, Nuri Bey's personal pier was also stated. Hayrettin Pier Street and the field in front of Hayrettin Pier were related to Austria-Turkish Tobacco Company and Astro Tobacco Warehouse Building was constructed herein one year later (Figure 8).The function of construction plot began to be shaped accordingly; it was

constructed towards warehouse-workshop/facility, material loading-discharging area in 1930s and 1940s. It must have been considered that facility site-on-sea could be advantageous for easy round trips of materials.

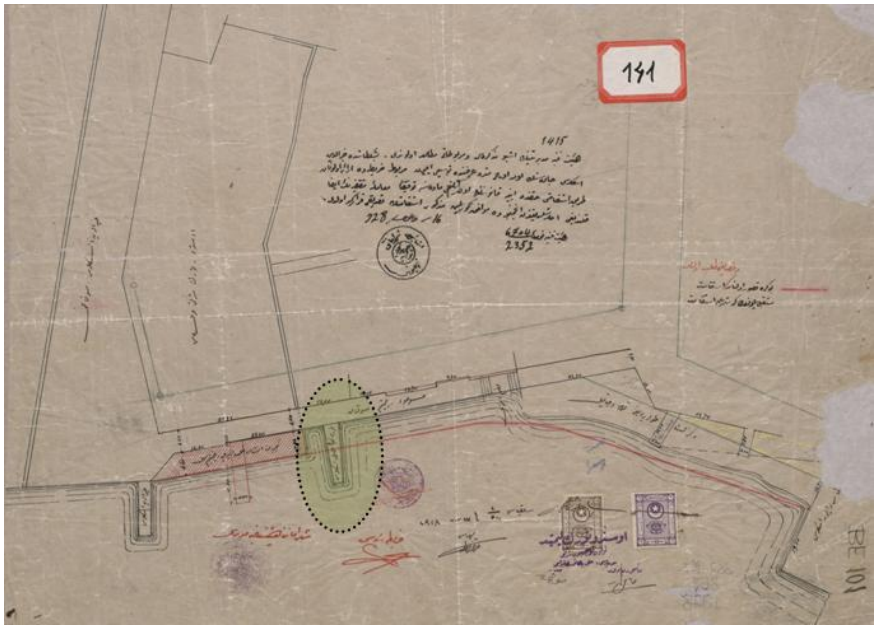

Figure 8 It is a map showing Nuri Demirağ's personal pier and extension of Beşiktaş coastal side (17 March 1928, Scale: 1/500)
Source: Atatürk Library Map Archive, (HRT_Gec_001093)

Another possibility being considered in relation to the selection of location is that starting service of watercraft trips by Italian AEI Company at Büyükdere situated in Bosporus during 1920s before Nuri Bey. It is not a clear issue whether production of watercraft/aquaplane in the workshop (hangar) of Vecihi Hürkuş at a seaside field in Kadıköy situated on Anatolian side in the beginning of 1930s affected his selection of facility on Beşiktaş coast, while establishing in 1936. This leads one to think whether Nuri Bey's next plan aimed production of watercraft as a popular luxury vehicle of that period.

Nuri Demirağ started the first foundations of aviation industry in 1936 by preparing a plan covering a 10-year period. Based on this plan, he opened Beşiktaş Aircraft Facility on 17 September 1936 in Beşiktaş near Barbaros Hayrettin Pier, in the field adjacent to the old Astro

Tobacco Warehouse which was selected with probable reasons discussed above. This facility was active until 1943.

On the other side, a wide zoning action was undertaken in the district of Beşiktaş at the end of 1930s, during the period of mayoralty of Lütfi Kırdar (8 December 1938-24 January 1949). In accordance with the governing plan prepared by French urban planner Henri Prost which was put into effect in 1939, a wide change was undertaken in the city, and Beşiktaş district was considerably affected from this transformation. The innovations in basic municipality services can be summarized as expanding and regulating existing roads, opening boulevards, creating squares, recreation areas and green areas, gaining monumental structures as symbols of the Republican ideals in the city (Akbayar, 1998).

Nu.D. Aircraft Factory Facilities: (1936-1943)

The name of the facility made by Nuri Demirağ in Beşiktaş were differently named in various documents of Prime Ministry Republic Archive (BCA); for example in the document dated 27.03.1928, it was named as "Nuri Demirağ Aircraft Factory and Beşiktaş Aircraft Workshop"; in the documents dated 27.11.1939 and 11.06.1949, it was named as "Nuri Demirağ Aircraft Factory" and in the document dated 28.06.1948, it was named as "Nuri Demirağ Aircraft Repair and Maintenance Workshop". The amount spent for this facility exceeded 10 million liras with the monetary value of the period (Deliorman, 1957; Yalçın, 2013).

In the plans of projects of the file with location no 30-10-0-0 / 59-397-6 in BCA, it is understood that the premises were consisting an assembly workshop, carpenter's shop, factory (for motor and propeller), foundry, material inspection and technical laboratory; and those premises were accommodated by both using the existing structures and by constructing new ones. The facility can be classified as preliminary buildings (on the coastal side) and assembly workshop behind. The preliminary buildings were comprised of a hangar, warehouse / storehouse and a four storey office building. It is understood from BCA documents and images of the period that a residence building on coastal side were bought and added to the facility (Figure 9). The areas of these buildings on preliminary group were approximately 2100 m² in total. Total ground floor area of the facilities including the assembly workshop behind was approximately 4110 m². There are plans, section and view/perspective from sea front in the project drawings. Furthermore, a pier related to "factory assembly location" is seen in the drawings. This pier, as mentioned

among the reasons of selecting the Beşiktaş district as seen along with old maps above, became Demirağ's private indicating the importance given to sea transportation by him (Figure 8).

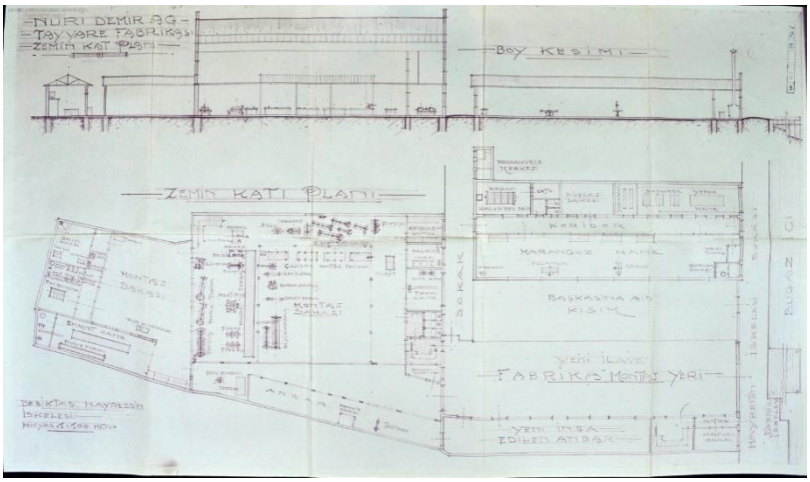

Figure 9 Nuri Demirağ Aircraft Facility, plan and section
Source: The Prime Ministry Republic Archive, Location no: 30-10-0-0 / 59-397-6

Resources state that Nuri Bey established his aircraft facility by having studies on foreign companies and by visiting them. Regarding Beşiktaş facilities, there were no company names and seals on the project of the drawings in BCA documents. Notes in Turkish written with Latin letters can be seen on the drawings. There is a ground floor plan drawing and ground section of Aircraft Facility on 16th page of the documents with location no BCA 30-10-0-0 / 59-397-6 (Figure 10). It also can be seen that the facility had a pierin the sea front for transportation and material shipment (Yusufoglu & Kara Pilehvarian, 2017; Yusufoğlu, 2017) (Figure 11). It has been stated by the people who witnessed the facility that there was a black dyed Nu.D. logo on the front that could be seen from the sea. The structure of the factory's interior and process (working order) are clearly seen in pictures (Figures 12 and 13). The situation of the factory and Beşiktaş Square in 1950s can be seen on the image found from Beşiktaş Naval Museum Archive (Figure 14).

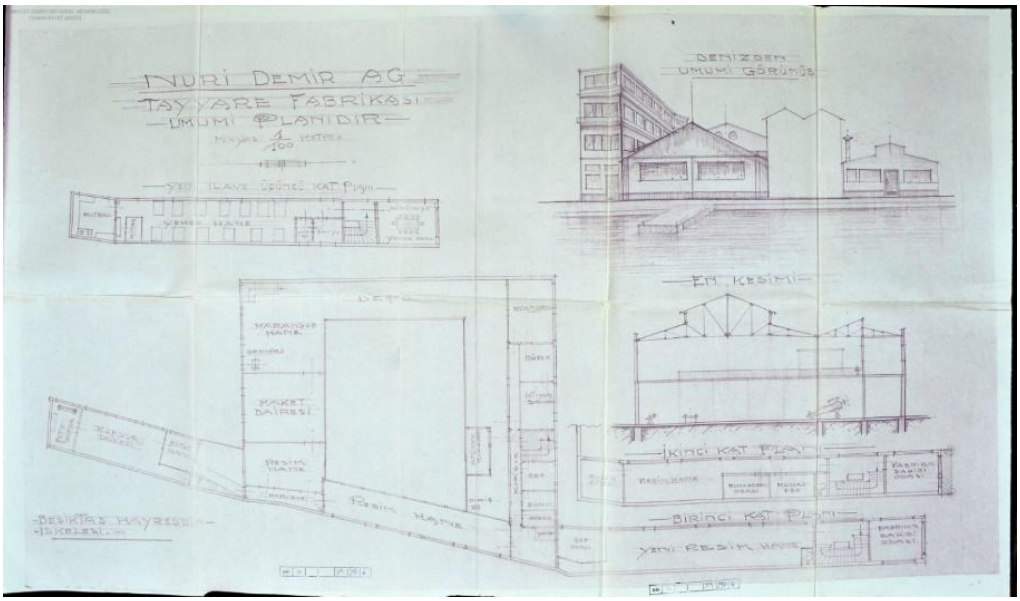

Figure 10 Nuri Demirağ Aircraft Factory, plan and section
Source: The Prime Ministry Republic Archive, Location no: 30-10-0-0 / 59-397-6

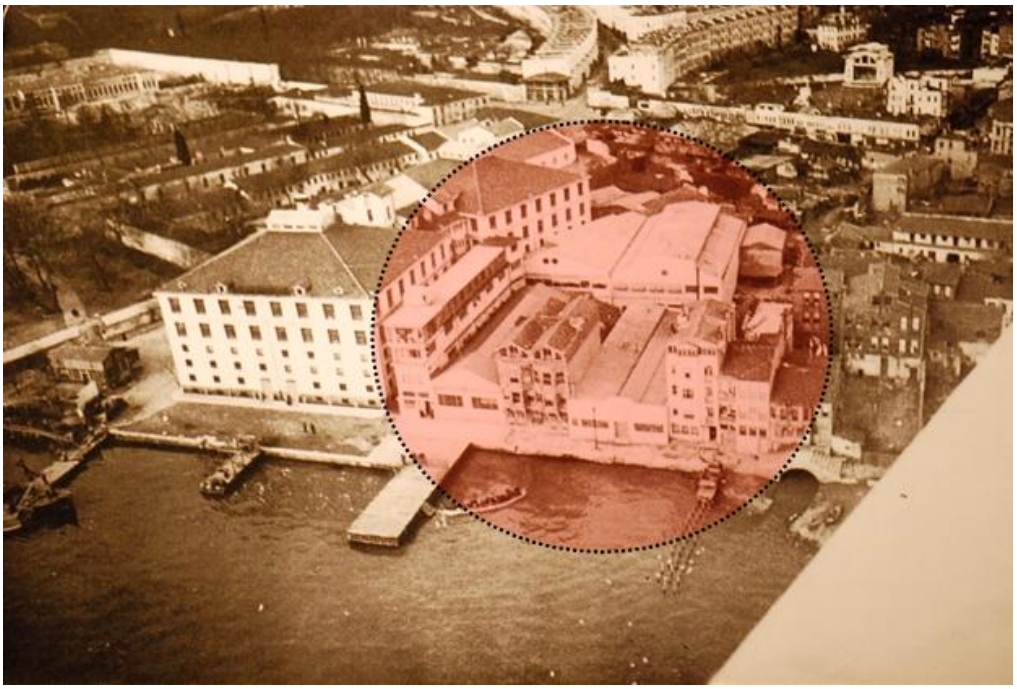

Figure 11 Beşiktaş Aircraft Facilities
Source: Beşiktaş Naval Museum Archive

Figure 12 Nuri Demirağ Beşiktaş Aircraft Factory, general view from manufacturing workshop
Source: Air Force Museum Archive

Figure 13 An inner view from Beşiktaş Aircraft Factory
Source: Nuri Demirağ, n.d.

Figure 14 The years of 1950s, Beşiktaş Square and Nuri Demirağ Aircraft Factory (the upper left)
Source: Beşiktaş Naval Museum Archive

Nu.D. Yeşilköy Facilities and Sky School:

In lieu of his achievements in the industry, Nuri Demirağ enlarged and extended his interests, which he had to, from his plant in Beşiktaş to Yeşilköy quarters where he constructed additional hangars and workshops and a Sky School in front of an airfield used but abandoned previously in the Ottoman era.

Yeşilköy Facilities and Sky School could be discussed in two parts, as selection of location and as architectural features of the premises.

Selection of Location

Along with Aircraft Facility in Beşiktaş, Nuri Demirağ selected Yeşilköy in which the foundations of aviation were laid in Late Ottoman period in order to work together with Beşiktaş factory and to construct new facilities. In the selection of area, its location close to light railway line connecting Istanbul to Edirne, aviational history of the site, facilities of foreign civil and commercial aviation companies (such as French CFRNA/CIDNA) were influential. In addition to that, this location was flat and considerably wide area. Demirağ carried out works covering other required facilities such as a runway, hangars, school, airmen's and students' dormitory for trial and test flights. For this purpose, he purchased Elmas Palas farm in Yeşilköy to make it an

aircraft station, and constructed 1000x1300-meter flat flight area/runway on a wide site with 1559 decare (approx. 400 acres).

Facilities

As in the reference of Beşiktaş factory, Nuri Demirağ plotted Yeşilköy aviation facilities again by studying foreign references and visiting them. For the drawings of facilities in Yeşilköy which were scheduled to be operated together with Beşiktaş factory, German language was used and dimensioning system was metrical. Seemingly this time drawings were made by a foreign architect (T. G. Key) and a Turkish architect working in cooperation with him.

On the 17th page of the documents with location no BCA 30-10-0-0 / 59-397-6 dated 25.9.1939, there is a 1/5000-scale map of "Nuri Demirağ Yeşilköy Aircraft Station" and the locations of the facilities. The area was selected in a location next to the structures established before as the base of military aviation in Ottoman period. Yeşilköy station close to Yeşilköy coast, military hangars, division, airway rooms, airway military shipment buildings can be seen on the map, “Yeşilköy Airway Aircraft Station” – lower part of Ayamama farm, was marked within a large area on its upper part. The area selected by Nuri Demirağ corresponds to upper left part of this airfield - the part on new farm. In a rectangle area with almost identical size, hangars (part of repair, assembly part specified), runway, shelter, gas tanks, macadam roads, roads and light railway lines can be read. Personal signs were specified on the legend on right edge of the layout: Border of square, railway, building, hangar, trail, macadam road, road and light railway line, altitude were stated in the legend (Figure 15).

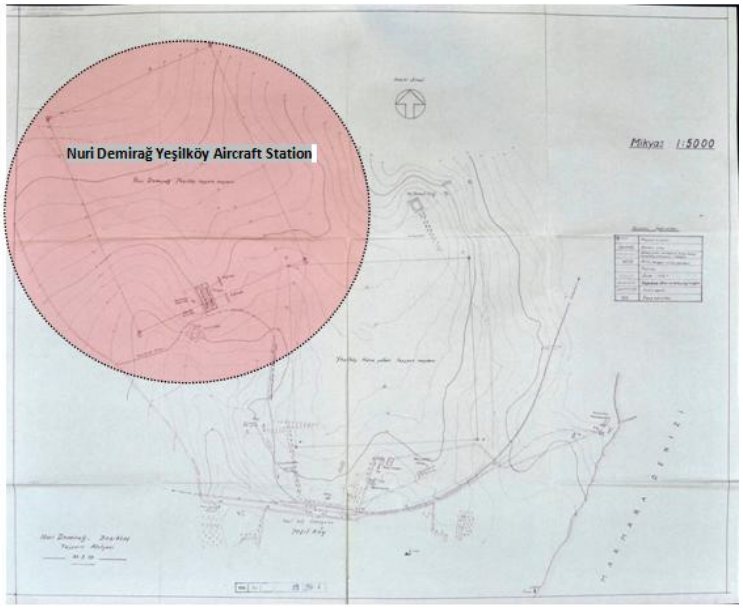

Figure 15 Map of Nuri Demirağ showing 1/5000-scale Yeşilköy Aircraft Station
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6

Demirağ made an aircraft repair workshop and hangars built on the station. 33th and 34th page of the documents with location no BCA 30-10-0-0 / 59-397-6 comprises the drawings of Aircraft Hangar in Yeşilköy and ordered to Germany. The modern/rationalist style of the era can be seen in the project drawings. The drawing contains a plan, section and views. While the area with large spans in the central part of the ground floor plan is “assembly location” (there are two different sized versions of the same building as 2940 m² and 1470 m²- only the sizes of assembly location area in the center is different), the adjacent areas are planned as atelier, storehouse, health care department (including doctor room, infirmary, pharmacy), pay-office, workers' waiting room, doorman, entrance hall and toilet. Mezzanine plan comprises of workshop, drawing office and offices. The smaller version of the building has sizes of 42 m x 82 m x 9 m (h). The center line of inner steel column is 7 m and net size of inner height of the building is 7 m. In addition, there is steel roof truss system with 7-m height, roof windows, mezzanine and other details. In the elevation, there are doors with the sizes of 2.5 m x 3 m (h), a rhythmic front with windows having sizes of 2.5 m x 1.5 m (h) plus roof windows. This hangar was ordered, yet it is not certain whether the hangar was constructed or being matched with this drawing, as it is not available today (Figures 16, 17, and 18).

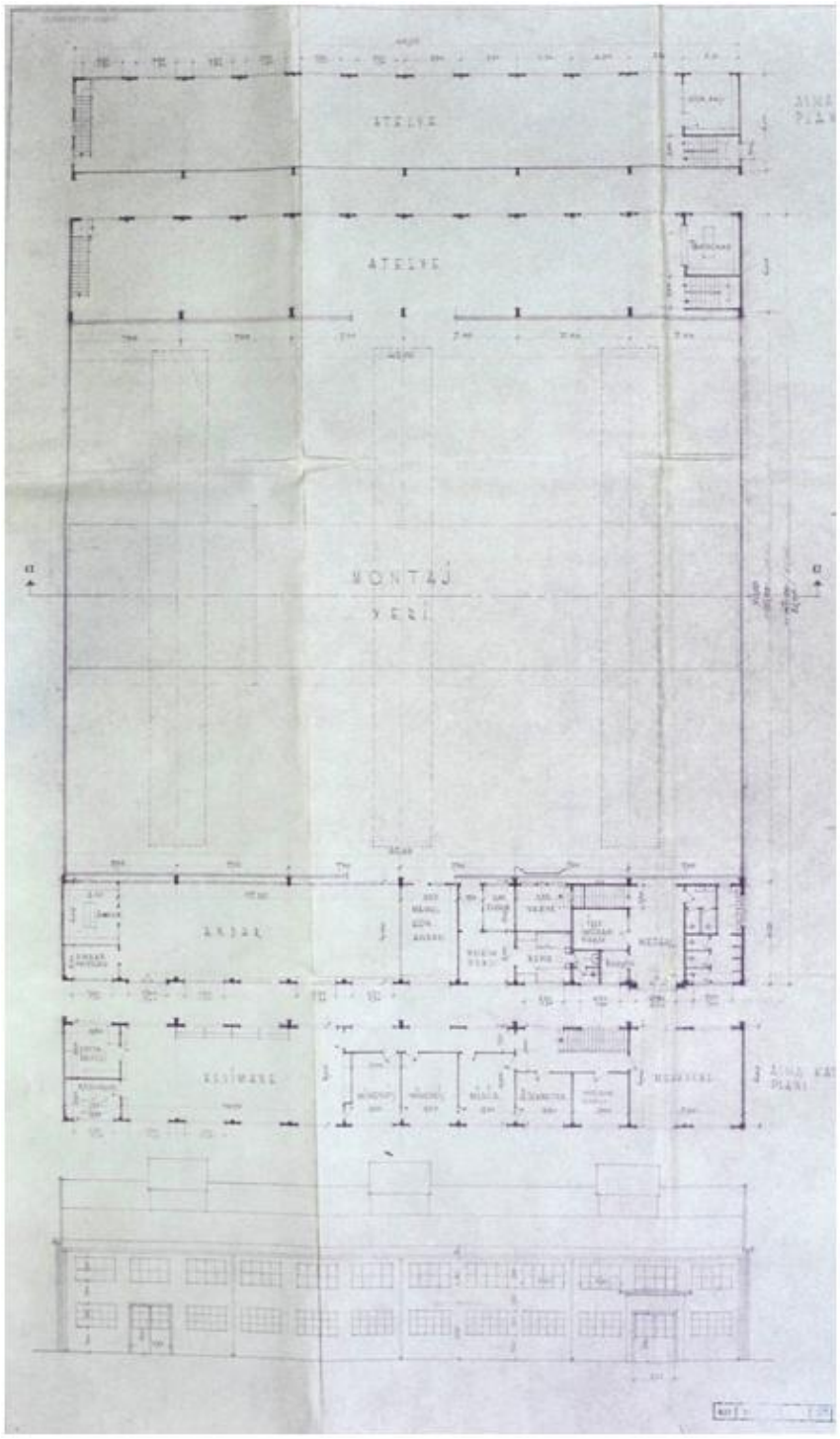

Figure 16 Aircraft Hangar ordered to Germany, plan drawing
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6

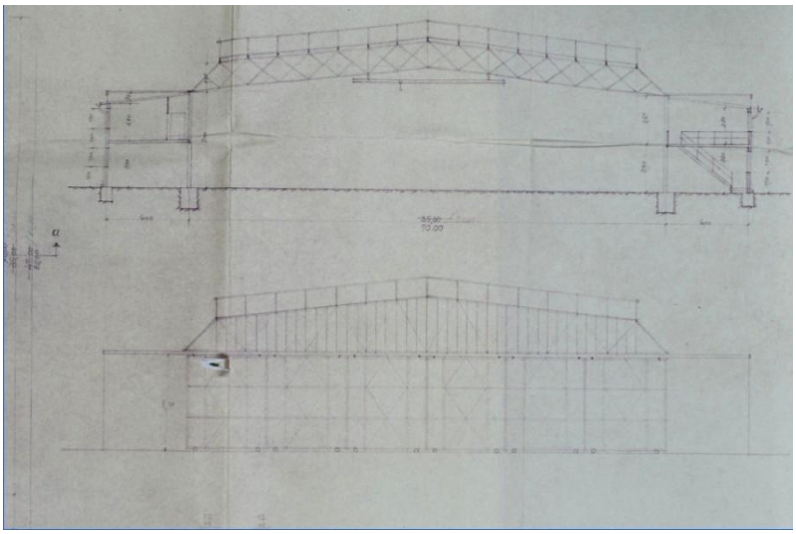

Figure 17 Aircraft Hangar section drawing ordered to Germany
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6

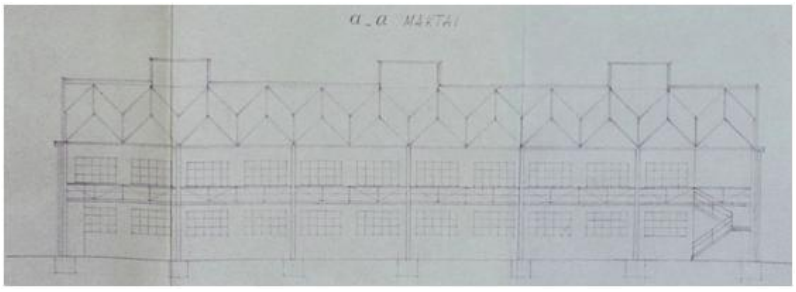

Figure 18 Aircraft Hangar ordered to Germany
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6

On the 26th and 27th pages of the documents location no BCA 30-10-0-0 / 59-397-6, there is an inscription as "Nuri Demirağ Aircraft Repair Workshop/Yeşilköy, Concept Project, 1/200 scale", dated 9.9.1939. Nuri Demirağ is written down as contractor of the building and the architect is written as T. G. Key on the layout plan. It could be deduced that there was a Turkish architect working in cooperation with T. G. Key since drawings are in Turkish (location names and metrical dimensioning system). In the concept project, there are system plan, façade, lateral façade, roof truss sections and drawings of shelter shields for 50 persons (each 1/200 scale). Steel roof solution with diagonal spacers reminds the roof structure in Sümerbank factory, a popular solution of the era. Net internal height of the building with the sizes of 82 m x 42 m x

13.5 m (h) is 10 m. The roof windows with considerably basic arrangement are designed in order to receive maximum daylight (Figures 19 and 20).

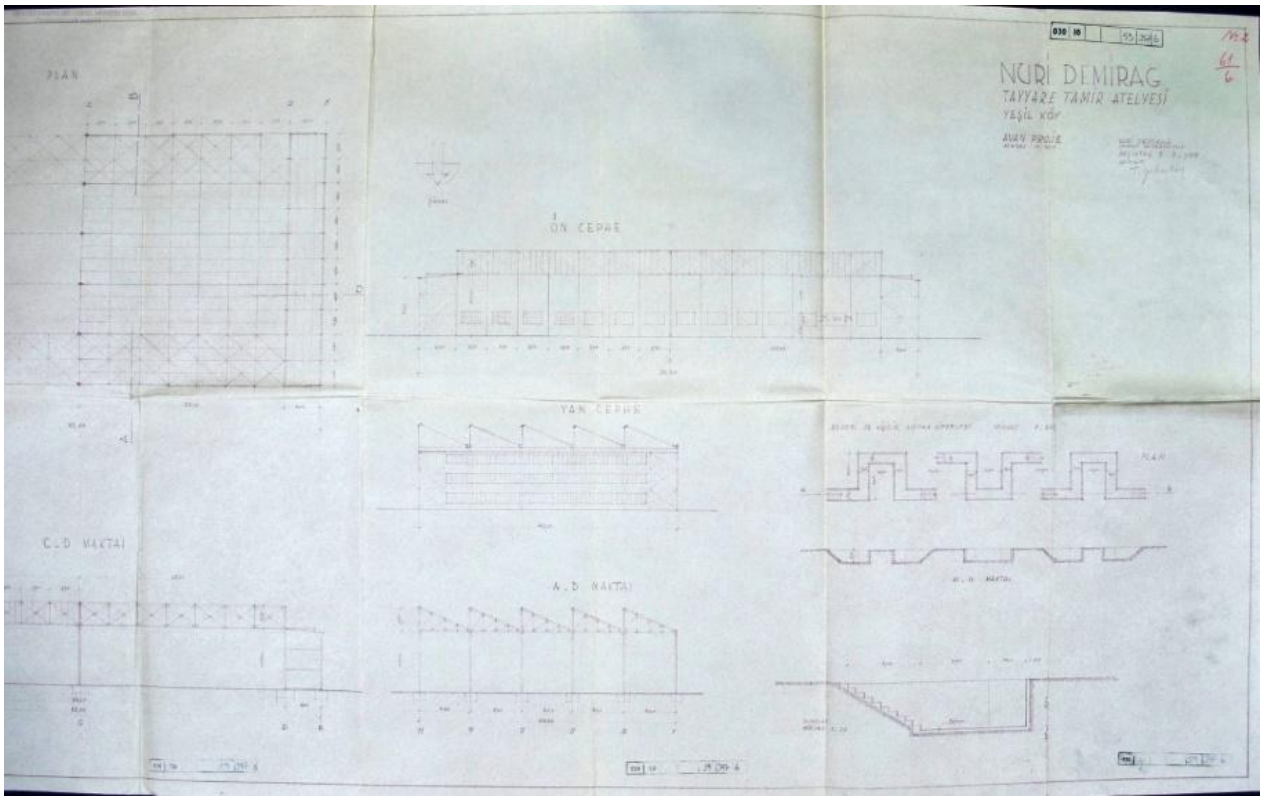

Figure 19 Nu.D. Aircraft Repair Workshop- Yeşilköy
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6, p.27

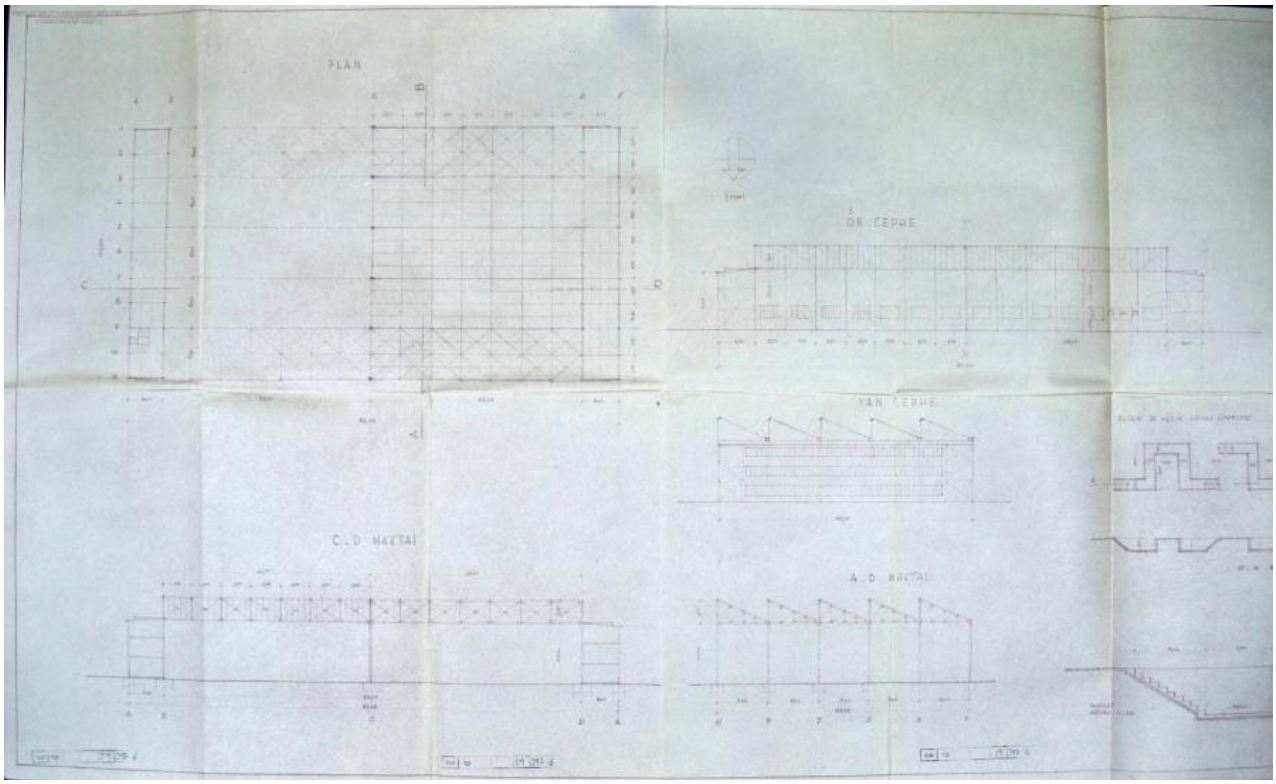

Figure 20 Nu.D. Aircraft Repair Workshop – Yeşilköy
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6, p.26

The 22nd, 23rd and 24th pages of drawings in the same file are the drawings of "motor vehicle storehouse/warehouse" (kraftwagenschuppen) and connected to hangar no: 1 and hangar no: 2. The L-shape plan has sizes of 42.90 m x 110.30 m. There are the roof plan and bearing system, sections and views in the document. Inner height is 4.70 m. The elevation shows window openings, folding door opening and detail. The roof window solutions can be seen, the statements are in German language and sizes are metrical (Figures 21, 22 and 23).

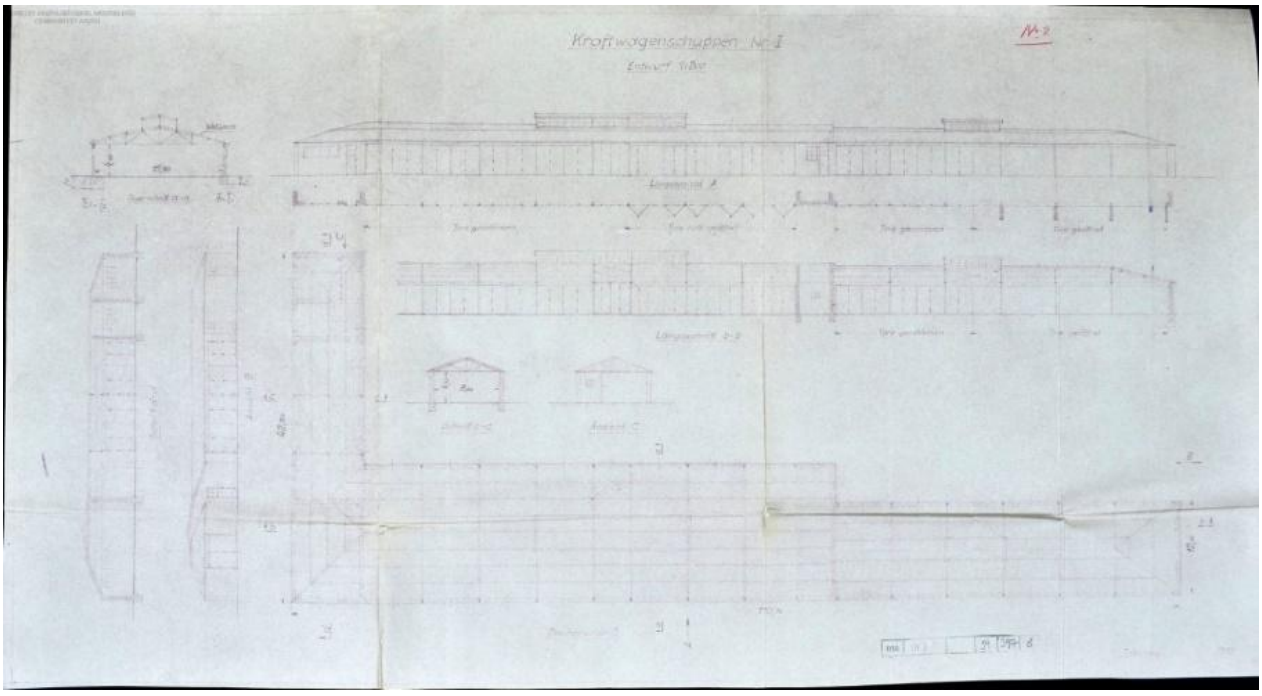

Figure 21 Motor vehicle storehouse/hangar, no: 1
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6, p.22

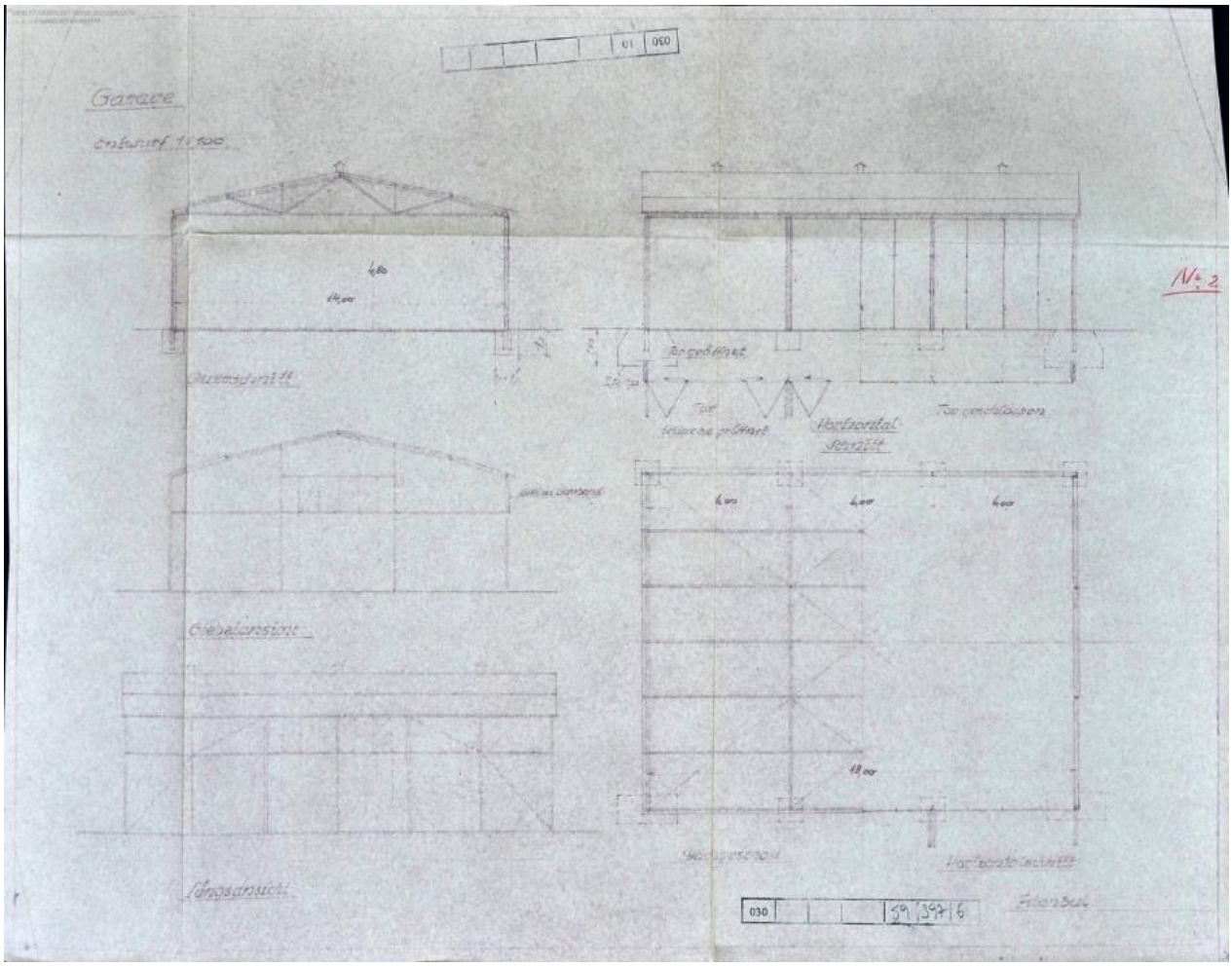

Figure 22 Motor vehicle storehouse/hangar, no: 1
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6, p.23

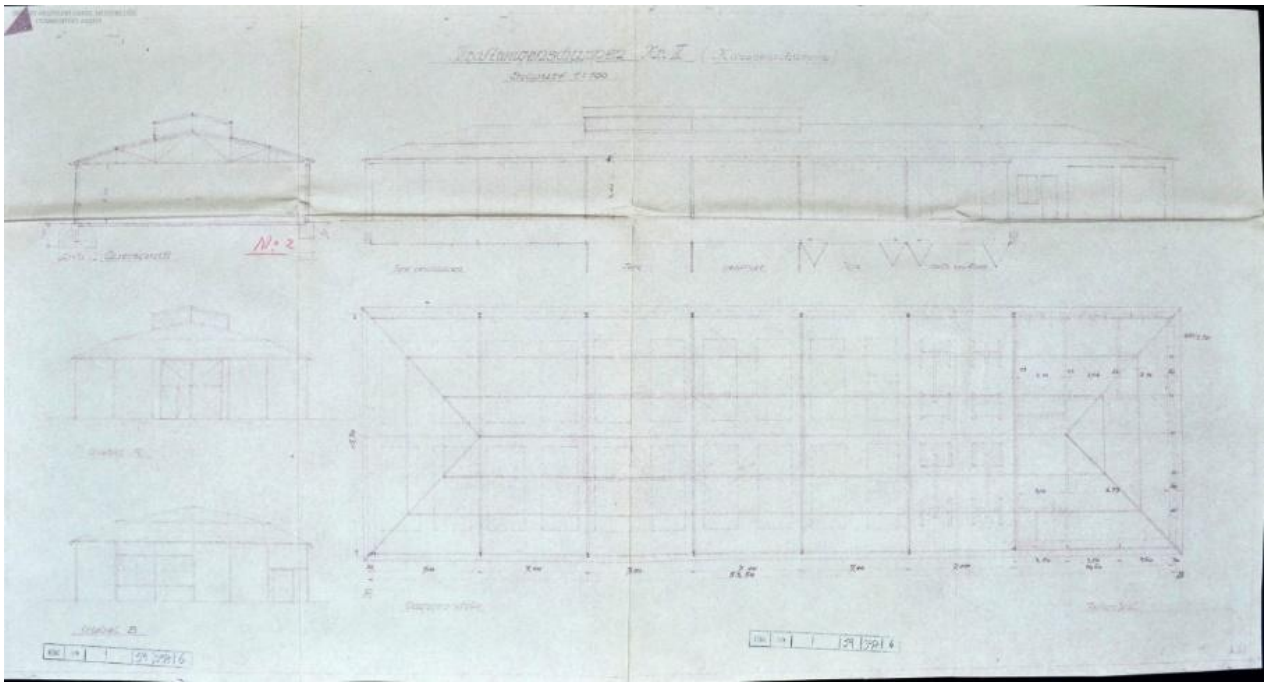

Figure 23 Motor vehicle storehouse/hangar, no: 2
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6, p.24

On 14th and 15th pages, there are Yeşilköy Sky School dormitory and hangar drawings. The dormitory building for 150 students has 3 floors. There are 1/250 scaled T-shape layout plan, 1/50-scaled basement floor, 1st and 2nd floor plans and elevations. The bearing system of the building designed to modern taste is of reinforced concrete and has an ~500 m² floor area in total. The building can be discussed under 3 blocks; even though the location names of two thin and long rectangle blocks joining to a central square block by their ends were not written on the project, it is understood that it was the dormitory. At the end of flanking blocks, were stairs with square settings. It is understood from the images that the buildings were expanded sideways within time and 2-storey additions were made (Figure 24). The medium-sized square hangar has a saddle type roof and is joined to two 2-floor thin and long rectangle blocks. The completed version of the facilities can be seen in the aerial and other images of the era (Figures 25, 26 and 27).Demirağ placed signboards to some previous residence buildings around and seemingly used them for Sky School (Figure 28).

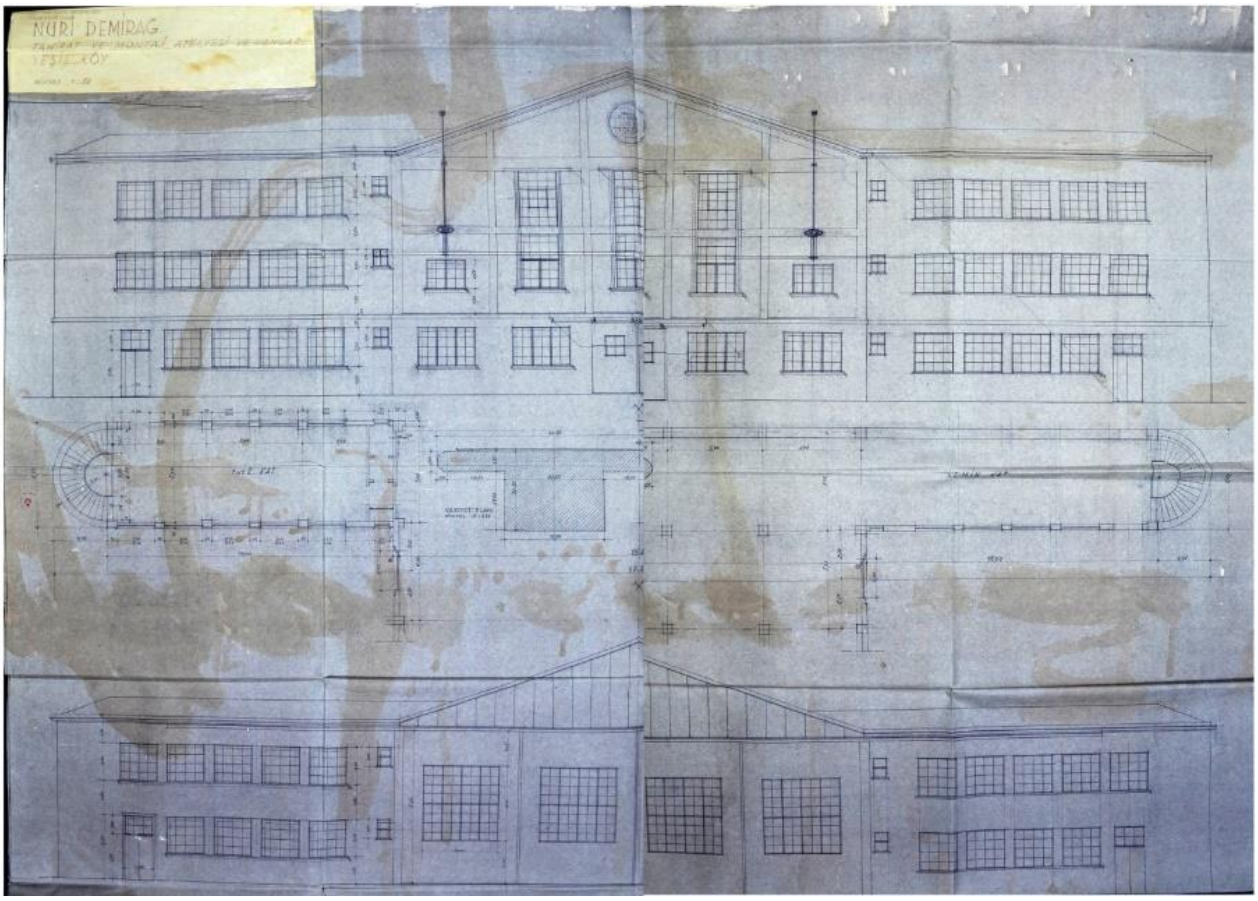

Figure 24 Nu.D. Yeşilköy Sky School Dormitory Building and hangar drawings, scale: 1/50
Source: The Prime Ministry Republic Archive, Location no 30-10-0-0 / 59-397-6, the drawing no 14, 15

Figure 25 Nu.D. Yeşilköy Sky School Dormitory Building, aerial view
Source: Yalçın, 2013

Figure 26 Nu.D.Yeşilköy Sky School Dormitory Building
Source: Nuri Demirağ Fotoğraflar, n.d.

Figure 27 Visit of young scouts to Nu.D. Yeşilköy Sky School and hangar
Source: Nuri Demirağ Fotoğraflar, n.d.

Figure 28 Nu.D. Yeşilköy Sky School, before 1940
Source: Teyyareci Arşiv, n.d.

Having founded the first civil air station with the name of “Sky School” (Ergin, 1952) in Yeşilköy, Demirağ opened these facilities in 1941 and aircraft manufacturing and aviation trainings were initiated. 16,000-hour flights were made in Yeşilköy Sky School until 1943 and 290 pilots were trained. Demirağ also founded a parachute manufacturing facility in Bursa (Deliorman, 1957; Dervişoğlu, 2011).

According to Nuri Bey, the aircraft being manufactured in Europe and the United States could be manufactured in Turkey as well. He understood the importance of aviation and accordingly, focused on giving significant importance and made investments. He aimed at founding the primary large manufacturing facility and Sky School in his homeland Divriği as a county of Sivas. Apart from aircraft workshop in Beşiktaş on 17 September 1936, the foundations of “Large Sky School” were laid in Divriği. Nuri Bey thought about establishment of a motor factory herein. According to his plan, while prototype reference aircrafts were being manufactured in Beşiktaş workshop, the aircrafts as serial production would be manufactured in the primary factory situated in Divriği (Şakir, 2011).

The government explicitly supported Demirağ in terms of his investments to aviation industry (Deliorman, 1957; Yalçın, 2013). Turkish Air Association (THK) ordered 10 school aircrafts and 65 gliders between 1937 and1938. The aircrafts would be delivered within 8 months, the inspection would be situated in Yeşilköy and item price of each aircraft would be 11,500 Turkish Liras (Yalçın, 2013). While these orders were being manufactured, a new type by completely Turkish engineering and workers with their all features emerged. In this period, a MMW-1 double seat training aircraft of which the prototype was manufactured by Selahaddin ALAN in Eskişehir was developed. Twelve ALAN-2 prototype was prepared and produced during the period under Nu.D.-36 code (Yavuz, 2013). In 1938, a double engine aircraft with aluminum fuselage accommodating 6 passengers were designed under Nu.D.-38 code, with the contributions of Aircraft Certified Flight Engineer. He carried out his first flight successfully in 1938 between Istanbul-Ankara-Izmir (Şakir, 2011) (Figure 29 and 30).

Figure 29 Nuri Demirağ, landed in Nuri Demirağ Airfield with Nu.D.-38
Source: Nuri Demirağ, n.d.

Figure 30 Double pilot-operated Nu.D.-38 with the capacity of speed of 235 km/h, flying up to 5000 feet and 1000 KM, taking off
Source: Nuri Demirağ, n.d.

The developments made a tremendous impact in Sivas and Istanbul newspapers and announced to the society. Kandemir as the journalist of Tasvir-I Efkar newspaper dated 17 August 1941 asked to Demirağ, “How did you establish this facility?” and Demirağ replied as:

> After believing that our future, independency and honor is on sky, we made visits and long investigations almost everywhere from Moscow to London with the expert young people continuously for 5-6 years. We went to all aircraft factories and aviation institutions of Europe day and night. Consequently, we selected the perfect ones from the ones that we have seen and established here. (Demirağ, 1941, p.2)

In the same interview, he replied to the question of “What are your opinions for the future?” of Kandemir as:

> First of all, to expand this institution in a perfect way, to establish Yeşilköy Sky High School that will cost 1 million two hundred thousand liras... It will contain thousands of young people in Divriği; to establish Gök University which will comprise of twelve branches such as wireless operation, engine system, piloting, engineering, parachuting. And...while I am drinking coffee with tranquility and happiness with people who attained their desires along with this meadow, to see hundreds of aircraft tailing off immediately with one sign" (Demirağ,1941, p.2) (Figures 31 and 32).

Figure 31 1940s Yeşilköy Nu.D. Airfield; hundreds of people were visiting Demirağ airfield to celebrate "Sky Holiday" that was held by Nuri Demirağ each year
Source:Nuri Demirağ, n.d.

Figure 32 The aircrafts of Nu.D.-36 and Nu.D.-38 were carrying out fly past in Sky Holiday held by Nuri Demirağ each year traditionally and the society was watching national aircrafts with a great curiosity
Source: Nuri Demirağ, n.d.

In parallel with these attempts, the works towards establishment of aircraft branch in order to raise aircraft engineer were initiated in the department of Machine Department of Certified Engineer School (İTÜ) with the persistence and efforts (Tayhani, 2001). He also wanted to raise his children as aircraft engineers in this school (Dervişoğlu, 2011). Raising aircraft engineers was proposed by THK to the Prime Ministry in 1941 and was found appropriate, the works were initiated by the relevant ministries. It was requested to work in coordination with THK during these works. In this context, the efforts of Nuri Bey related to open aircraft department and to raise aircraft engineers was a much foresighted step for that period. A statement of Nuri Bey to his relatives that he was living 30 years ahead of his time confirms this foresighted step.

The first national Turkish aircraft manufactured in Beşiktaş İstanbul flied to and back from Divriği as the birth place of Nuri Bey (Dervişoğlu, 2011). The fleet with 12 aircrafts flew in the route through Bursa, Kütahya, Eskişehir, Ankara, Konya, Adana, Elazığ and Malatya in September 1941 (Yalçın, 2013). During the period the activities of aircraft facility and aviation school of Nuri Demirağ, American Aircraft Manufacturers Union sent Chairman Mr. Todd. He came to Turkey for the observations (Deliorman, 1957). In the assistance agreement of the U.S. for Turkey following the report prepared by Mr. Todd (Marshall Plan/Assistance), it was stipulated that Turkey would not manufacture aircraft but purchase from the U.S. instead (Yalçın, 2013).

One of the Nu.D.-36 aircraft had a crash by stumbling on the runway hole while landing at Yeşilköy, and Selahaddin Alan (Adıgüzel, 2006; Hürkuş, 2014; Yalçın, 2013) as its pilot died due to the crash. He was flying from Istanbul to Eskişehir İnönü. After this, THK suspended and cancelled its contract with Demirağ due to this incidence; thus the company which was newly established with large investments encountered a challenging trouble. Failure of interest to Nu.D.-38 type which was manufactured in a similar way for Turkish Airlines was the second major impact against the company. Upon the lack of order from government institutions as the largest customer of Demirağ while entering into aviation industry, the productions were suspended. Nuri Demirağ runway and facilities in Yeşilköy were expropriated to generate a new airport (today's Yeşilköy Atatürk Airport) in 1944 and accordingly, the adventure of national aircraft manufacturing ended with a bankruptcy during such a period on which it would bear fruit (Adıgüzel, 2006; Tayhani, 2001). Certain aircrafts manufactured and not delivered were used for a particular time in the trainings of pilots in Sky School, some of them were requested by Spanish but it was not allowed to sell these aircrafts. In the claims filed, the expert reports decided in favor of Nuri Demirağ, yet the proceedings were concluded against Demirağ.

Despite the adjudications against him, Nuri Bey continued his works towards aircraft manufacturing and completed manufacturing of Nu.D.-38 type aircraft in 1944 (Adıgüzel, 2006; Yalçın, 2013). The model of aircraft was designed by Turkish engineers. All parts excluding engines were produced by Turkish technicians and workers. Test flights were completed successfully. Even though State Airlines was expected to accept the aircraft, this never happened. Yet, Nu.D.-38 type aircraft carried out its flight from Istanbul to Ankara on 26 May 1944 (Adıgüzel, 2006; Yalçın, 2013).

Having ended its activities in 1943, Nuri Demirağ Beşiktaş Aircraft Factory was expropriated in 1949. Beşiktaş Aircraft Factory was removed from Minute Book no 2/12060 on 11.06.1949. The activities of facilities and Sky School in Yeşilköy which were aimed to work with Beşiktaş Aircraft Factory were ended. The remaining aircrafts were not transferred but sold to junk. Maybe not Beşiktaş, but Yeşilköy is still a district in which civil, commercial and military (Air Force Academy) activities are currently continuing.

Conclusion

Having come out on top in a period characterized as “Golden Age” of aviation in the West in 1930s, aviation architecture also brought the result of emerging new structural types. Even though Ankara was selected as the capital of the newly established Republic of Turkey, Istanbul became one of the places selected for investments of international and national attempts with its population, history and geographical advantages. In this context, as reviewed in the article, Nuri Demirağ, as one of the national entrepreneurs, established aircraft factory in Beşiktaş situated in European side of Istanbul and several facilities in terms of aircraft maintenance services. The facilities situated in Yeşilköy had amenities such as test, storage, maintenance, repair and a runway. Additionally, he founded a “Sky School” and dormitory built for training of pilots. The facilities both in Beşiktaş and Yeşilköy have distinctive importance as being the first national civil aircraft structures of the era. These facilities are the concrete indicators that Western technologies of that era and accordingly aircraft industry as a new industrial branch have been followed in the country. The location of Beşiktaş factory at seafront, as discussed in the article, associates with the idea that manufacturing of watercraft (the popular luxury transportation vehicle of that era) was considered to be carried out in the future. “Marshall Plan” of the United States under the name of “assistance”, the policies aircraft supply without charge, to be long questioned, was effective in closing of this facility.

As understood from the documents founded in Prime Ministry Republic Archive (BCA) and the projects in the other documents, both Beşiktaş and Yeşilköy Nu.D. facilities have almost identical features with foreign references (with aircraft industrial structures of the age). Being in conformity with the style of New Architecture (Contemporary Architecture or International Style) of the period, they can be assessed as modern industrial facilities for which reinforced concrete and steel were used as new materials. These facilities are explicitly reflecting the new objectives of a new state (the ideal of being among the leading states), while geometrical basic forms show the influence of Bauhaus and Art Decoas the common tendencies in the West (Europe and the Unites States) of that period. Industrial facility/machine aesthetics attracts the attention in the images of that period. These facilities have a nature of important “industrial heritage “due to the effort of establishing the first references of aviation architecture in 1930s. Alas, they are no longer present.

The effort of Nuri Demirağ for establishing the first references of aviation architecture ascribes a meaning to these facilities. Based upon the idea of Atatürk formulated by him as “Future is in the skies" and aviation, the thoughts of establishing aircraft facility with “serial production” in Sivas Divriği were the attempts in conformity with the futuristic spirit of the era. These facilities gained a new identityto the districts of both Beşiktaş and Yeşilköy. These districts were being shaped with the structures as the symbols of renewed image of the Republic of Turkey.

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