Lloyd Wright and the Lehigh Airport Competition

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RÉSUMÉ

En 1929, 321 architectes participaient au concours organisé pour la conception d'un aéroport parrainé par la Lehigh Portland Cement Company d'Allentown en Pennsylvanie. Le Centre Canadien d'Architecture possède aujourd'hui deux grands rendus et 24 dessins préparatoires que l'architecte Lloyd Wright (1890-1978) a présentés à ce concours. L'analyse des rendus et des dessins préparatoires nous aide à mieux comprendre la nature du programme du concours. On peut retracer ainsi les différentes étapes qui ont été poursuivies par Lloyd Wright pendant la formulation de son envoi. Il considérait l'aéroport comme un centre nerveux autour duquel s'articulait un système de transport intermodal. Ses croquis indiquent qu'il imaginait un réseau efficace et logique dont l'enchevêtrement complexe rendait possible la circulation sans heurt d'avions, de piétons, d'automobiles et de bateaux. Les travaux de Lloyd Wright et le programme du concours nous renseignent également sur les facteurs qui exerçaient une influence sur la conception d'ensembles architecturaux qui étaient nouveaux à l'époque.

Lloyd Wright (1890-1978) recalls that his first experience of aviation was a visit to Paris in 1910 with his father Frank Lloyd Wright where he witnessed the flight of the first monoplane to cross the English Channel.[1] He subsequently worked for two aircraft companies and this early involvement clearly impressed the young architect, leaving him with a deep appreciation of the airplane and its needs.[2] These seeds of understanding blossomed in late 1928 when Lloyd Wright began work on the first of three airport schemes that were to occupy him to the end of 1929.[3]

Charles Lindbergh had become an instant international hero in 1927 when he successfully crossed the Atlantic in his single-engine plane *Spirit of St. Louis*. The excitement and pride that this achievement generated also served to focus Americans' attention on the sad state of their airport facilities, especially in relation to more advanced developments in Europe.[4] At the end of 1928 there were 800 airports in use and another 800 proposed for development. By late 1929, the United States

* Professor David Gebhard graciously read, and provided thoughtful and sensitive improvements to, an early draft of this paper.

1 David Gebhard and Harriette Von Breton, *Lloyd Wright Architect: 20th Century Architecture in an Organic Exhibition* (Santa Barbara, California, 1971), 23.

2 In 1918 Lloyd Wright worked on the design of a flying boat for Standard Aircraft at Elizabeth, New Jersey, and in the same year he worked at Curtis Aircraft on Long Island. See Gebhard and Von Breton, *Lloyd Wright Architect*, 23.

3 The airport schemes were for the City of Los Angeles at Mines Field (1928-29), Boeing Air Transport Company at Burbank, California (1929), and the Lehigh Airport Competition (1929). Drawings and documents for all of these projects are in the Prints and Drawings Collection of the Canadian Centre for Architecture. None were executed to Lloyd Wright's designs although he came closest to success with his design for Mines Field, Los Angeles. Lloyd Wright's scheme was accepted by the Los Angeles Municipal Art Commission but eventually vetoed by City Council. In a newspaper report with the headline "What Is Art?," Lloyd Wright's so-called "futuristic" proposal is illustrated alongside the "Spanish mission style" design which was finally built (*Evening Herald* [Los Angeles], 7 March 1929, A-3).

4 In the United States the 1926 Air Commerce Act had prohibited the federal government from establishing, operating, or maintaining airports, thereby leaving these functions to private individuals or municipal governments. In Europe, most airport construction was sponsored and subsidized by central governments at this date (American Public Works Association, *History of Public Works in the United States: 1776-1976* [Chicago, 1976], 192).

boasted 1,509 airports in active use and a further 1,278 proposed or under construction.[5] Yet the average North American airport or flying field at this date consisted of little more than a flat, grassy pasture for take-offs and landings, a barn to shelter airplanes overnight, and possibly a small, temporary, one-storey structure serving as mail depot and ticket office.[6]

In response to this situation and to promote the use of portland cement in the construction of landing fields and airport terminal buildings, the Lehigh Portland Cement Company of Allentown, Pennsylvania, sponsored an open competition in 1929 to design a "modern airport." Although the jury of awards included such notables as William Boring, director of the School of Architecture at Columbia University, and Raymond Hood, this competition with its $5,000 first prize attracted no major architects of the day.[7] This apparent lack of interest probably was due to the fact that success in the competition did not lead to a commission. Also, since no specific site was indicated in the competition programme, the exercise was speculative and theoretical, of more interest to students and aspiring architects than to well-established practitioners who could gain little from victory.

But the competition as a whole—programme and resulting designs—is extremely interesting as a focused body of work allowing us to study how contemporary ideas relating to airport design were translated into architectural form at the crucial moment when this new building type was evolving. This can be seen in the comments of a contemporary critic who complained that "one of the most outstanding features of the designs submitted in the [Lehigh] competition is that those which are apparently the most practical are almost identical with the designs which are being incorporated in modern airports."[8] The Lehigh competition results may lack originality as a group; but because the individual submissions incorporate so many of the features regarded as desirable in contemporary airport design, these proposals represent the best-equipped airports of their time.

In 1929, no existing airport in the United States could compare with the designs submitted to the Lehigh Airport Competition, since no American airport attracted the volume of passenger traffic necessary to support the array of features required by the competition programme committee. Yet at airports such as Croydon outside London, Le Bourget near Paris, and Tempelhof in Berlin, terminal buildings normally accommodated offices for several airlines, waiting rooms and ticket offices, and access to aircraft directly from the terminal building, often through enclosed corridors. Croydon boasted a hotel and all three maintained restaurants, some with observation decks from which passengers could watch departing and incoming flights.

By contrast, Buffalo Municipal Airport—completed in 1928 amid hopes of that city's regaining the world position in aviation it formerly held during the First World War—featured two 3,000-foot runways, five hangars with electrically operated doors, a garage, and a modest administration building.[9] In the North American context, Buffalo's airport represented an advanced facility. We should not, then, underestimate the significance of the Lehigh competition for its time and place. And in view of the primitive state of North American airports, we may appreciate the wonder of a reviewer for *Scientific American*, who remarked, "It is extraordinary to think that such a competition is in being today. Three short years ago it would have been regarded as visionary."[10]

Lloyd Wright's two panels submitted to the competition (Figs. 200 and 201), may be studied as representative of the competition programme. Furthermore, looked at together with his two dozen surviving preliminary sketches for this project, these panels can teach us much about his general concerns at this date as an architect and specifically as a designer of airports. These conceptual sketches represent quickly recorded ideas

5 Lehigh Portland Cement Company, *American Airport Designs* (New York and Chicago, 1930), 11.

6 Airport development responded to the design of airplanes but technological advances in related fields concurrent with the Lehigh Airport Competition were to affect both greatly; air traffic rules for civil aircraft (1926), lighting of air mail routes (beginning 1926), radar and other radio aids such as the four-course radio range and ground-to-air radio control (late 1920s and 1930). The first airport to introduce a pavement of portland cement concrete was the Ford Airport at Dearborn, Michigan, in 1928 (American Public Works Association, *History of Public Works*, 210-15).

7 There were 257 submissions from 321 architects. The complete list of entrants does not seem to have survived, but *American Airport Designs*, published by the cement company, illustrates 43 entries including the prize winners. Lloyd Wright's submission is not among those published. In Britain another airport competition was sponsored by the Royal Institute of British Architects in 1928 with similar results—no major architects competed and the judges did not see fit to award a first prize to any of the 23 submitted designs ("The Future London Airport," *Flight*, XXI [31 January 1929], 82).

8 Archibald Black, "Comments on the Prize-Winning Designs in the Lehigh Airports Competition," *The American City* (January 1930), 101.

9 James P. Moore, "Buffalo Municipal Airport Planned for Safety and Convenience," *The American City* (August 1928), 102-103.

10 "The Lehigh Airport Competition," *Scientific American* (July 1929), 72.

on scraps of tracing paper that were sometimes roughly torn from larger sheets. Often they are surrounded by calculations, doodles, and diagrams relating to the central image or to the project as a whole. Taken together, the sketches illuminate the particular design issues that occupied Lloyd Wright at this time. Their logical progression and the marginal information on them show us how he resolved problems relative to the incorporation of these issues into his scheme.

The most remarkable feature of Wright's design is the way he linked the airport with the other transportation systems that he located nearby. Many competitors included supporting transportation systems: the contemporary literature on airport design is almost unanimous in recommending such links and their provision may even have been a condition of the competition.[11] But Wright went beyond the other competitors in including this feature and in dealing with traffic and circulation patterns and considerations of general feasibility so that the transportation network operates as an integrated whole.

Wright's Lehigh Airport can be reached by plane, seaplane, boat, train, car, or bus. Passengers arriving by boat dock at the pier (#4 in Fig. 201) and proceed along it to the station (#1), passing over the railroad tracks and highway (#13) on their way. A train shed is provided (#3) with access to the station while car and bus travellers follow an elaborate circulation pattern that takes them right up to the station if they choose or into the automobile parking area (#14). From here a viaduct provides access to the station (#16 and "CROSS SECTION THRU STATION" in Fig. 200). Airplanes land in the central field while seaplanes land on the water and proceed to the amphibian landing (#5). In both instances, concrete taxi lanes lead to protected sheds (between #1 and #6 and "PLANE SHED CONCOURSE CROSS SECTION" in Fig. 200) where passengers disembark and then follow an underground concourse back to the station.

Wright's decision to treat the airport as the key element in an integrated transportation network must be viewed against a contemporary context in which other avant-garde architects were already experimenting with such a conception of the airport. Sant-Elia's futurist visions of 1914 were perhaps the first to include the airplane and to make its provision a major component of the design. But other architects such as Le Corbusier, Virgilio Marchi, Hugh Ferris, and Richard Neutra produced work in a similar vein.

Richard Neutra's "Rush City Air Transfer," a scheme conceived in the late 1920s that relates air travel to a city plan, is particularly noteworthy since Neutra worked in Los Angeles, knew Lloyd Wright, and entered the Lehigh Airport Competition.[12] Neutra sought to cut down travel time by speeding up the transfer of travellers from one mode of transportation to another. He proposed an interlocking transportation system with the airport located on a train or subway line and automobile access to arriving and departing passengers.

Equally important to Lloyd Wright's conception of the airport was his interest in city planning: the airport itself is like a city plan in microcosm. Wright had been working on two utopian city plans: a civic centre for Los Angeles and a "City of the Future" (both 1925). According to David Gebhard and Harriette Von Breton, Lloyd Wright's airport plans of the 1930s carried forward many planning ideas from these earlier projects.[13] In the Los Angeles plan Lloyd Wright incorporated linked transportation systems in a multilayered grid much as did Le Corbusier (another architect fascinated by the airplane) in his "Plan Voisin" de Paris, also of 1925. Wright's city plans, Le Corbusier's Plan Voisin and similar contemporary schemes involving airports were obviously visionary and unrealizable, then or now. But while Wright's Lehigh Airport follows in the tradition of such utopian schemes, he intended his submission to be taken seriously. His treatment of the airport buildings as an integrated unit at one with the landing field and his meticulous working out of circulatory systems is surprising for a competition entry where such specific attention to detail is unusual.

The competition programme called for a sea-level field of uniform grade with a landing area 3,500 lineal feet in all directions, and it recommended paved runways at least 100 feet wide in each of the eight cardinal points.[14] Wright did not

11 An article about the competition, discussing airport requirements, noted that "easy transportation facilities, other than by air, are now considered essential" (*Scientific American* [July 1929], 71).

12 Neutra worked on the airport project as a part of his plans for Rush City, first introduced in Richard J. Neutra, *Wie baut Amerika?* (Stuttgart, 1927), 7-12. He attempted to promote his ideas further by entering the Lehigh Airport Competition. See Thomas S. Hines, *Richard Neutra and the Search for Modern Architecture* (New York, 1982), 67, 100. Neutra subsequently used a detail of one of his competition panels to illustrate an article explaining his scheme (Richard J. Neutra, "Terminals-Transfer!," *Architectural Record*, LXVIII, no. 2 [August 1930], 99-104).

13 Gebhard and Von Breton, *Lloyd Wright Architect*, 51. The two city planning schemes are illustrated and discussed on 24-26, 45-47.

14 The competition programme has not survived, but for a summary of the regulations see Lehigh Portland Cement Company, *American Airport Designs*, 10-11, and Black, "Comments on the Prize-Winning Designs," 101. With regard to the paved runways, *American Airport Designs* states

provide the recommended paved runways and this may have led to his being overlooked by the jury. (Not surprisingly, all the designs published by the cement company feature paved runways.) Perhaps he felt that they were unnecessary initially and could be added later once airport traffic had increased enough to warrant their inclusion, or he may have been thinking of European examples. According to Sterling P. Wagner, who studied major European airports, the only common feature in their design was a tendency towards a single large landing field without definite runways or landing strips.[15] In any case, Wright did include concrete paved taxi lanes (#10 in Fig. 201) in a generously wide swath around the central landing area and leading up from the amphibian landing. These eliminated the blast of sand and cinders occasioned by starting airplanes that was so annoying to nearby passengers. Likewise, passengers were spared the need to walk through mud when embarking or disembarking.[16]

All competitors had to protect the landing field with surrounding "marginal areas" extending seven times the height of any adjacent structures, since airplanes then ascended at the rate of one foot vertically for every seven feet travelled horizontally. At the far left of an early sketch (identified as being for Boeing Airport but possibly for the Los Angeles or Lehigh project), Wright works out this 1:7 ratio with respect to a structure 50 feet in height (Fig. 202).[17] Wright takes great pains to minimize the height of surrounding buildings and maximize their distance from the landing field. He locates the ground storey of the station and observation tower in the Lehigh scheme below the grade of the landing field, decreasing the prominence of its 50-foot height above grade. Wright also situates this observation tower about 1,200 feet from the landing area, a distance nearly four times greater than required.

He uses a similar ploy in his designs for the hangars and shops that ring the landing field. In a preparatory drawing made before his submitted panel (Fig. 203), Wright indicates a 30-foot height for these semicircular structures. To the right of the hangar closest to the landing field, he provides a bunker that rises at the accepted 1:7 ratio and continues this slope in the roof of the hangar. The result is ingenious, for it solves the technical problem while also avoiding any psychological fear that a 30-foot barrier might present to onrushing pilots and passengers. From the centre of the landing field they would simply see a flat, gradually rising surface. Furthermore, because these hangars are closed on the side facing the landing field, they provide protection from noise, smoke, and dust for those working within. Wright places them 300 feet from the border of the landing field, more than twice the distance their height above grade would make necessary.

The presence at the top of the plan of facilities nearly identical to those included at the bottom was the architect's response to a condition of the competition programme. In an attempt to deal with the needs of potential future growth, the programme asked competitors to anticipate expansion up to double the capacity of all ground facilities initially required (other than the flying field itself) without necessitating the removal or abandonment of any original elements. Presumably the programme committee felt that a landing field of 3,500 feet in all directions adequately provided for future expansion.[18]

Lloyd Wright's developed thinking on airport design and construction is evident from his concentration on the more functional aspects of his proposal—circulation, plans, sections—as opposed to its outward architectural expression. The other competitors generally chose elevations and perspectives to illustrate their submissions, as

that these were "required," while Black indicates that they were "suggested as being preferable practice to adopt, but [were] not made mandatory upon the competitors."

15 Sterling P. Wagner, *The Modern Airport* (Syracuse, New York, 1931), 30.

16 Stedman S. Hans, *International Airports* (New York, 1929), 6.

17 As Lloyd Wright was developing three airport plans in a little over a year's time, it should not be surprising that individual drawings would be difficult to attribute to a specific project. His design for Boeing Airport, which featured a row of hangars behind a smaller complex containing hotel, station, and observation tower, could be represented in Fig. 202. An elevation of the Los Angeles scheme, published in the Los Angeles *Evening Herald* (see n. 3 above), bears formal similarities with Fig. 202, notably the low-lying hangars on either side of a station with central observation tower. But the physical relationship of administrative, station/control tower, and hotel functions also corresponds to their arrangement in the Lehigh scheme. And two small sketches on this sheet (upper centre) suggest the formal organization of the two submitted panels (Figs. 200 and 201). Many of the drawings for Lloyd Wright's three airport schemes have identifying inscriptions in a later hand but these are mostly unreliable. For example, Fig. 203 is identified by this hand as being for Boeing Airport, but it is clearly a drawing made preparatory to one of Wright's competition panels for the Lehigh project (Fig. 200).

18 United States government regulations at the time stipulated a minimum 2,500-foot landing distance for airports. But one can appreciate the dilemma of contemporary airport planners. While larger and heavier planes inevitably pointed to longer takeoff and landing needs, development at this date of the so-called auto-gyro principle of vertical ascents and descents (a precursor of today's short takeoff and landing planes [STOL]) suggested that future airfields might actually get shorter. See Wagner, *The Modern Airport*, 46, 72.

one might expect in a competition. In every other submitted project the airport station is the focal point of the design. Wright, however, blends the station building into the overall scheme. Station, hangars, and airfield are given equal weight in this integrated design. He gives prominence to the interrelationship of airplane, passenger, and the airport as a whole rather than to the design of any one element.

One has to look carefully to pick out the station in Wright's perspective. He covers all structures—hangars, shops, piers, and station—with the same checkerboard roof, designed to alert fliers to the presence of the field. Only in the elevation detail of a concrete pier (Fig. 200) does he suggest the kind of abstract, Art Deco surface ornament that he has in mind for the project. Lloyd Wright used this same "Moderne" v motif in other buildings, but here it appropriately characterizes flight in its winglike or arrowlike appearance. Pieces of glass were to be encrusted in these piers. The light shimmering across the resulting variegated surfaces would have simulated the airplane's preeminent quality of speed. Such attempts to interpret the quality of speed—through sleek, curvilinear lines and the use of materials like chrome and polished black granite—would occupy architects and designers of the Art Deco and Moderne styles throughout the 1930s.[19] From the station elevation (Fig. 200) we can gather that Wright intended piers, rising to the building's full height, separated by mullions and bisected by an observation tower surfaced with a similar V-shaped ribbing. Crowning the station, at one end of the pier and on a peninsular outcropping of land protecting the shore (Fig. 200), Wright has placed beacon lights perched atop dramatically cantilevered supports that are designed in a constructivist idiom.[20] The structurally simple yet daring design of these light standards celebrates the materials and technology of their construction, evoking at once the excitement of early flight and its modernity.

Although he does not give visual prominence to it, the station is the keystone of Wright's overall airport scheme, linking all the elements of his proposed transportation network. In the station's plan (Fig. 201), Wright worked out the disposition of required elements (facilities for the public, transportation companies and pilots, offices for immigration, customs and traffic control, a hotel, and income-producing concessions) in a logical manner, with the overriding goal of establishing a clearly defined system of circulation for passengers moving from one mode of transportation to another.

In the centre of an early conceptual sketch for the station (Fig. 204), Wright combines the second-floor waiting room and the ground-floor concourse of the final panel. The movement of passengers through the building is only suggested, at bottom, and the plan works more as a self-contained unit than as a link with other elements of a larger, encompassing scheme. In a more developed version, closer in detail to the submitted panel (Fig. 205), the concourse is now free to serve as the grand, central space common to transportation buildings. This clarified spatial arrangement suggests to the traveller a natural progression, from platform to vestibule through the concourse to a passage leading to planes, trains, and hotel. In the submitted version (Fig. 201), this passage becomes a two-way street, allowing passengers arriving by plane to walk directly to the hotel, train, or pier without having to enter the station proper.

One more requirement of the competition programme asked designers to provide protection for passengers when "enplaning" and "deplaning." Most competitors responded by designing an underground passage from the station to a nearby departure pavilion or by extending cantilevered roofs from the station, one each for incoming and outgoing flights. One architect interpreted this condition as an excuse to create a terminal building in the form of a monumental eagle with outstretched wings embracing passengers and planes alike.[21] Because of its implications for airplane

19 For an excellent essay on the Moderne and the importance of the airplane as a symbol of modernity, see David Gebhard's "The Moderne 1920-1941," in David Gebhard and Harriette Von Breton, *Kem Weber: The Moderne in Southern California 1920-1941* (Santa Barbara, California, 1969 and 1976).

20 A colleague has suggested that these cantilevered supports carry directional wind socks, common at contemporary airfields, rather than beacon lights. This is a compelling possibility since the white cones at the ends of the supports do resemble wind socks and since all three point in a similar direction. But there is already a wind indicator present as part of the plan (#7 in Fig. 201 and pointing in the opposite direction). I read these white cones as beams of light, further emphasizing the dramatic night scene represented. These lights are strategically placed to alert flyers to the outcropping of land at right signalling their imminent approach to the landing field, the start of the covered pier, and the top of the station building. In the key to the airfield plan (Fig. 201), Lloyd Wright indicates that the station will be topped by a rotating beacon. The other two beacon lights do not appear on this plan but Wright has provided field boundary lights, obstruction lights, and approach lights throughout the plan.

21 A precursor of Eero Saarinen's 1962 terminal for Trans World Airways at Kennedy Airport, New York, this project was submitted by Fred Fornoff of Columbus, Ohio (Lehigh Portland Cement Company, *American Airport Designs*, 64-65).

circulation and the movement of passengers, Wright allowed this regulation to serve as the principal motif guiding the organization of his entire scheme. Fully half the surviving sketches for Lloyd Wright's Lehigh Airport concern the resolution of this aspect of the design.

In a thumbnail sketch of the site on a very early sheet of designs (Fig. 206), Wright already establishes the general format of the airport with amphibian landing, semicircular hangars, and duplicate passenger and technical facilities at the top of the design. The rest of the sheet is filled with tiny diagrams in which Wright works out the route that airplanes would follow in picking up and depositing passengers under a covered shelter connected to the station. At this stage of the design process, Wright imagines the shelter as a physical link, perpendicular to the pier and to one of the semicircular hangars located above it in the drawing. On this sheet, Wright experiments with various airplane circulation patterns—figure-eights and other looped circuits—labelling one direction "EN[trance]" and another "EX[it]," but none satisfy him.

In a more developed sketch (Fig. 207), the disposition of buildings and the general organization of the circulation system correspond to the final scheme. The protective shelter now continues the axis of the pier and connects, in a straight line, with a semicircular bay of hangars. Wright has supplied a plane dock, indicated by schematically drawn airplanes, in the same location as in the submitted panel (#11 in Fig. 201 and visible in Fig. 200). Highway and railroad tracks are suggested. At this stage of the conceptual process three routes lead to and from the amphibian landing (although one has already been crossed out with an X) and Wright indicates that planes will taxi the perimeter of the landing field in a clockwise route.

In another drawing from this sequence (Fig. 208), Lloyd Wright continues to refine the details of his plan and to introduce new elements. Now the passenger shelter clearly has six bays as in the final version. A definite location for the station is established (the rectangle with vertical lines) and the taxi route around the landing field moves counterclockwise, as in the final scheme. The pedestrian viaduct (#16 in Fig. 202) appears for the first time here (a long rectangle, capped at both ends by blackened squares).

Wright continued to develop his proposal in another drawing (Fig. 209), which contains all of the elements present in the submitted version. The automobile parking area now appears, complete with an inscribed traffic route leading into the parking lot, around the pedestrian viaduct and past the station entrance. He includes the seaplane hangars along the shoreline, just above the pier, and clearly indicates the railroad tracks and highway beside them. In this drawing he also makes clear that the highway and railway line pass under the airplane taxi strip leading to the amphibian landing.

Lloyd Wright designed no further airport projects after 1929. Perhaps he felt disheartened after three unsuccessful attempts in one year. The Depression of the 1930s discouraged such major undertakings in any event.[22] His drawings for the Lehigh Airport Competition, however, leave no doubt about the seriousness with which he approached this project and the degree to which he understood the complexities of contemporary airport design. His proposal is perhaps utopian in its attempt to integrate links to water transportation, but this fault could be blamed on the competition programme, which implicitly encouraged such high ideals. (No ceiling on construction costs was specified in the competition programme.)

An analysis of the drawings reveals Lloyd Wright's fascination with and dedication to the solution of problems relating to plan and circulation. If he faltered in this entry, it is in the restraint of his architectural conception. From our point of view the stripped, clean lines of Lloyd Wright's buildings and hangars appear refined and even elegant. They have an up-to-the-minute quality without loudly proclaiming their modernity. But the competition jury preferred classically inspired designs with strong, axial relationships and imposing, centralized station buildings. In a broader sense, then, Lloyd Wright's drawings for the Lehigh Airport Competition reflect the search for the appropriate forms and functions of the airport in those heady days when a new technology was being tested and a new building type developed.

22 Investment in airport development dropped from $35 million in 1930 to only $1 million in 1933 (American Public Works Association, *History of Public Works*, 193).

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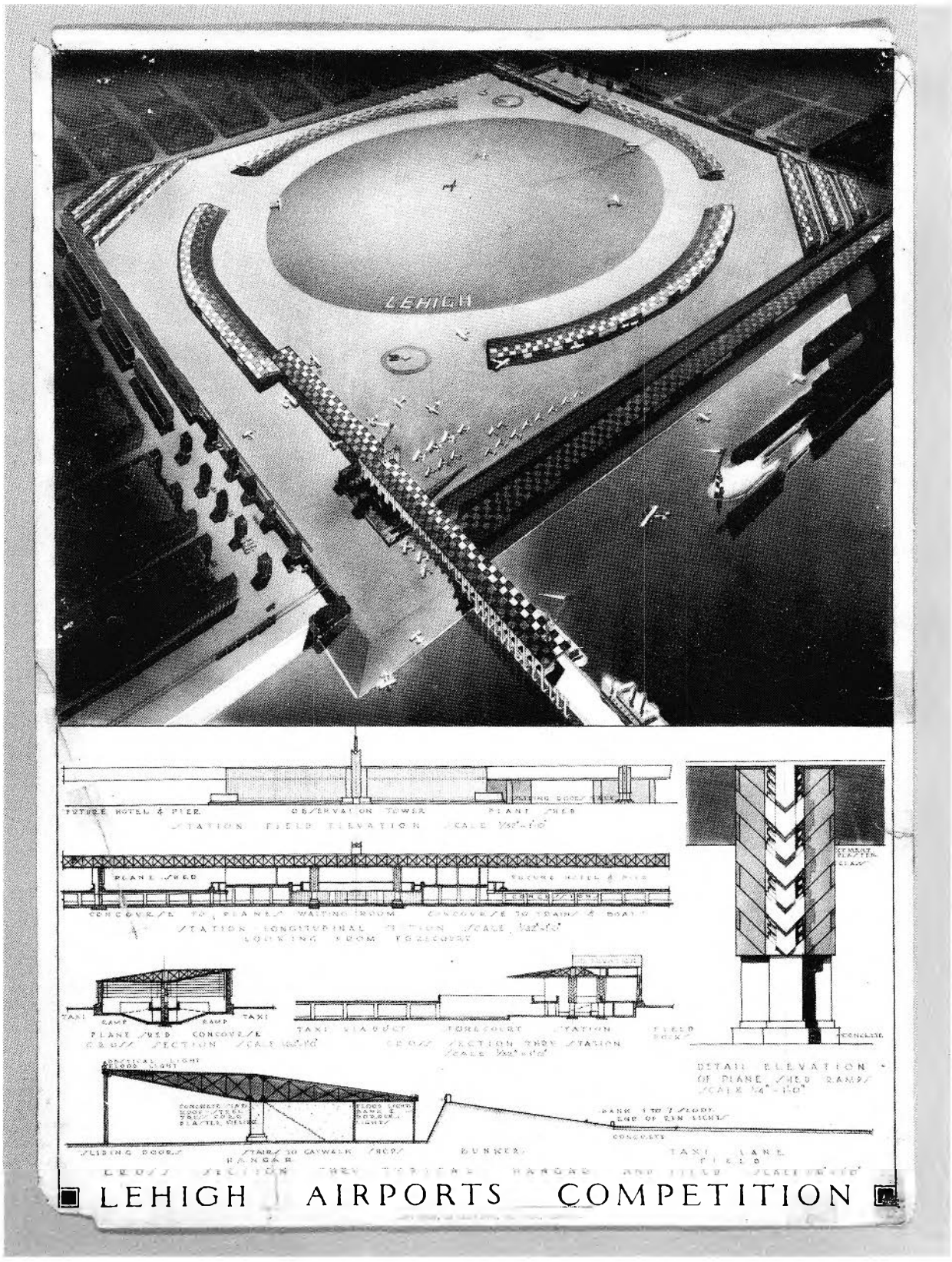

FIGURE 200. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Competition Panel for the Lehigh Airport Competition: Aerial Perspective, Elevations, and Sections*, pen and black ink, black and grey watercolour, gouache over graphite on stiff cardboard, 1929, 76.5 × 56.0 cm. DR1987:0359, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.

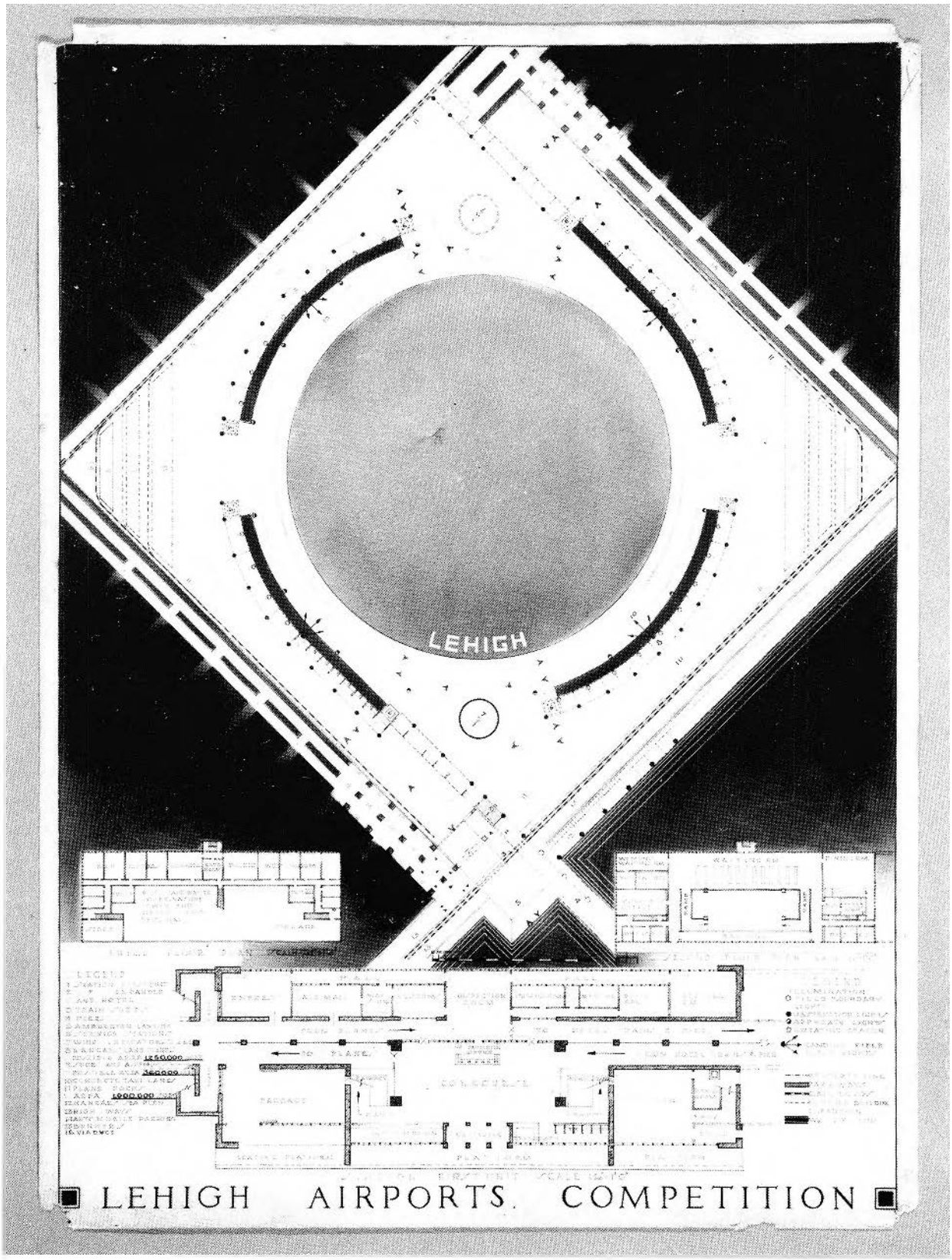

FIGURE 201. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Competition Panel for the Lehigh Airport Competition: Airport Plan, First, Second, and Third Floor Plans of the Station*, pen and black ink, black and grey watercolour, gouache over graphite on stiff cardboard, 1929, 76.5 × 56.0 cm. DR1987:0360, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.

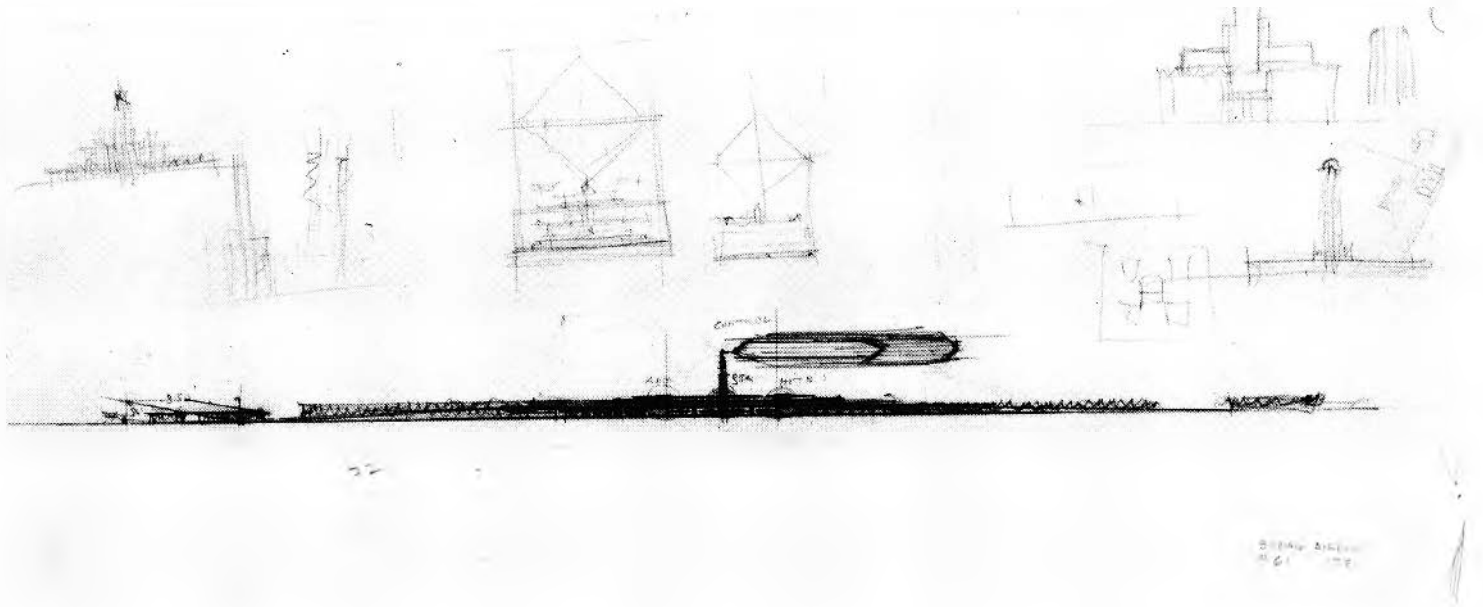

FIGURE 202. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Schematic Elevation of the Station and Control Tower for the Lehigh Airport Competition*, graphite on tracing paper, 1929, 24.3 × 59.1 cm. DR1987:0386, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.

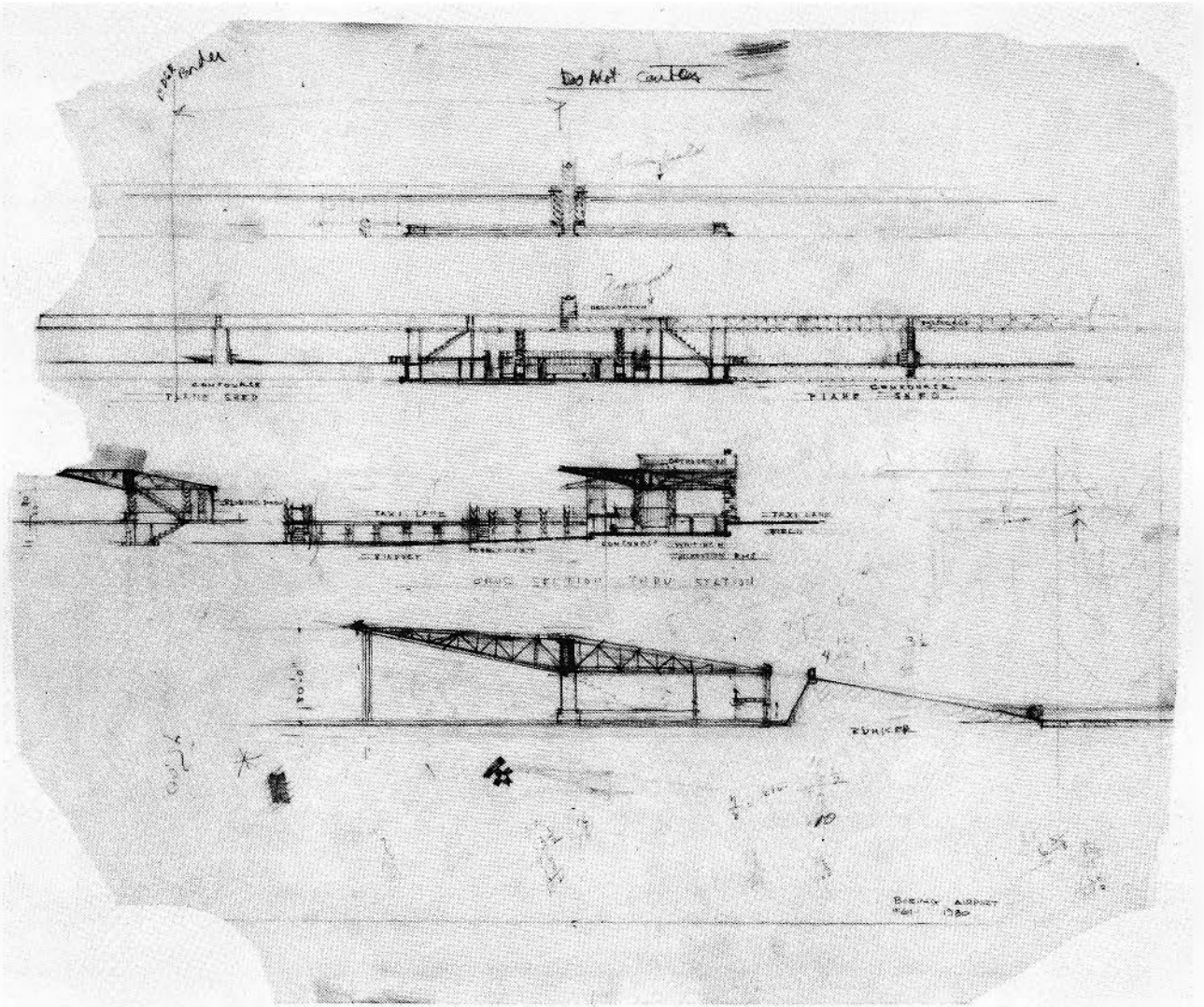

FIGURE 203. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Elevation of Station and Sections through Hangars and Concorse for the Lehigh Airport Competition*, graphite on tracing paper, 1929, 47.2 × 55.6 cm. DR1989:0001, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.

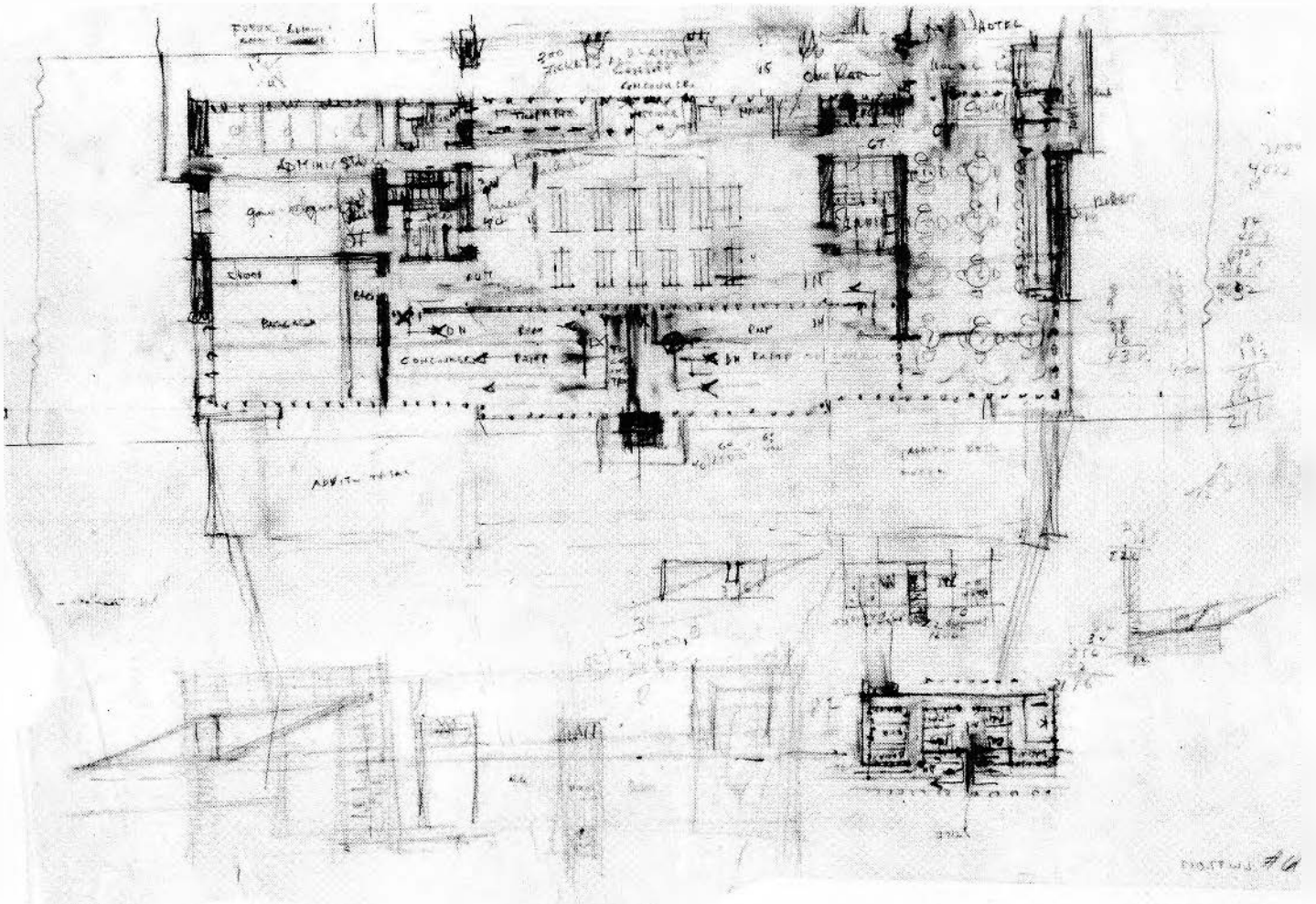

FIGURE 204. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Developmental Plan of the Station for the Lehigh Airport Competition*, graphite and blue pencil on tracing paper, 1929, 34.0 × 49.8 cm. DR1987:0380, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.

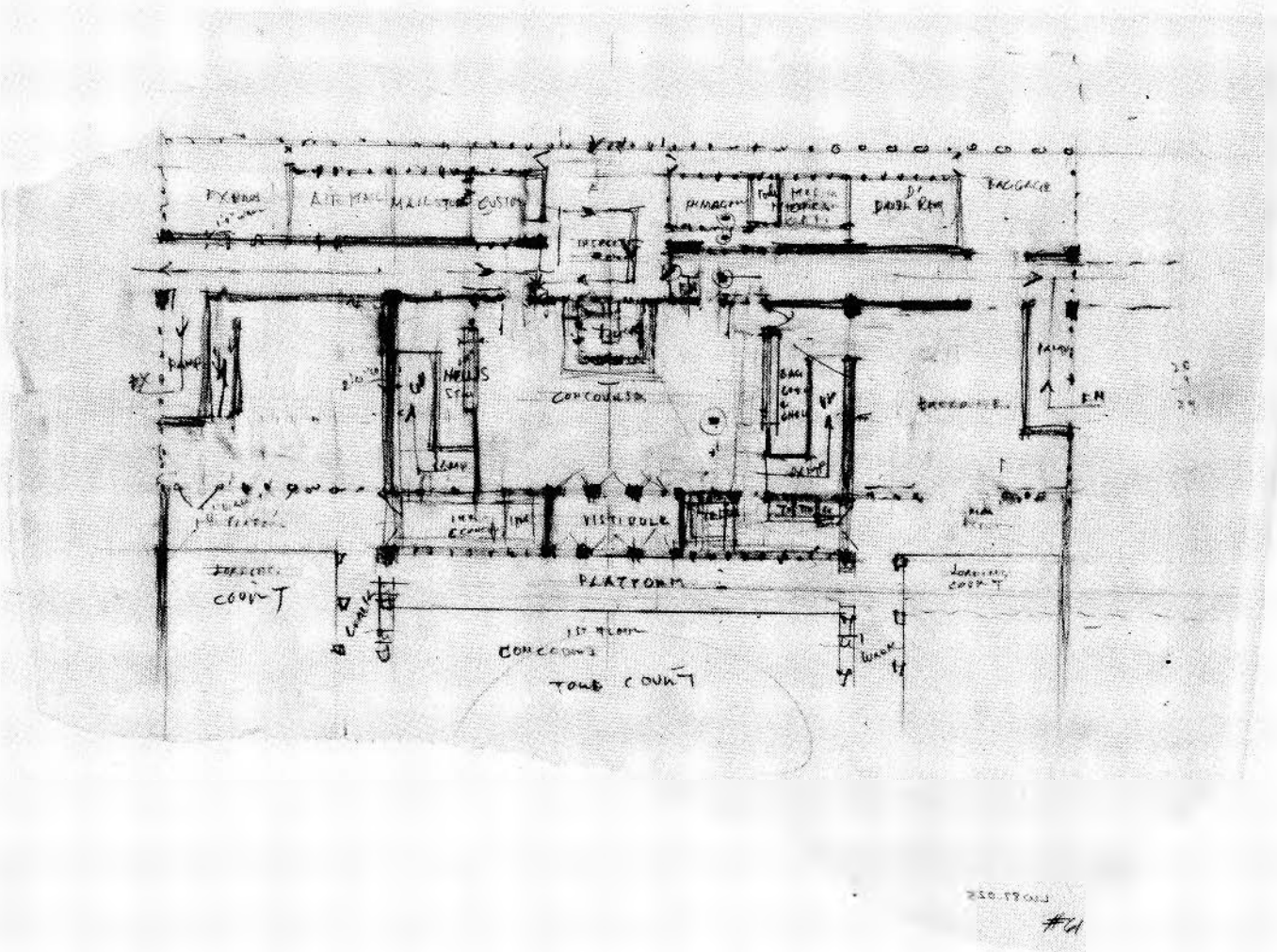

FIGURE 205. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Developmental Plan of the Station for the Lehigh Airport Competition*, graphite and blue pencil on tracing paper, 1929, 34.0 × 49.5 cm. (irregular). DR1987:0383, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.

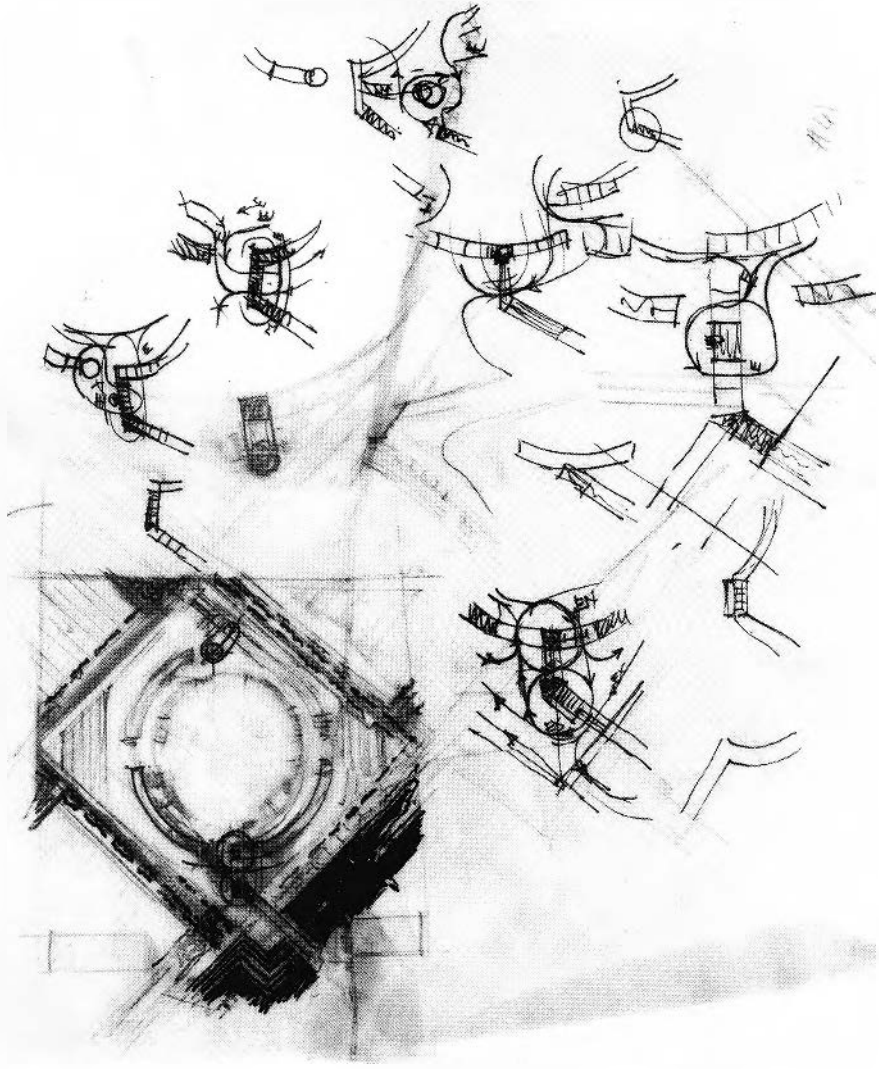

FIGURE 206. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Sketch of the Airport Plan and Alternate Designs for Airplane Circulation for the Lehigh Airport Competition*, graphite and India ink on tracing paper, 1929, 27.5 × 27.5 cm. (irregular). DR1987:0352, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.

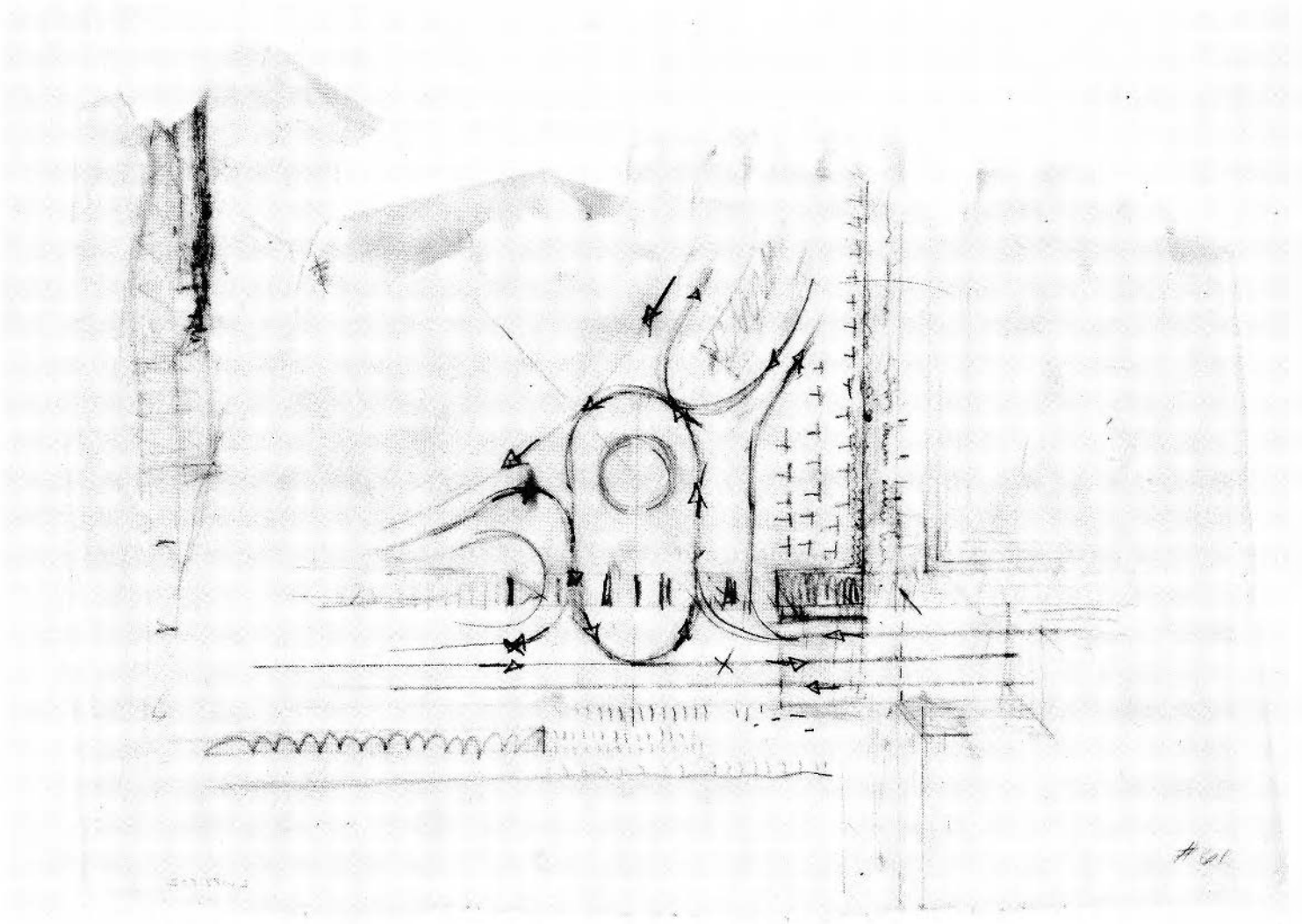

FIGURE 207. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Detail of the Airport Plan, Showing Airplane Circulation, for the Lehigh Airport Competition*, graphite, charcoal, and red pencil on tracing paper, 1929, 28.5 × 38.7 cm. (irregular). DR1987:0347, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.

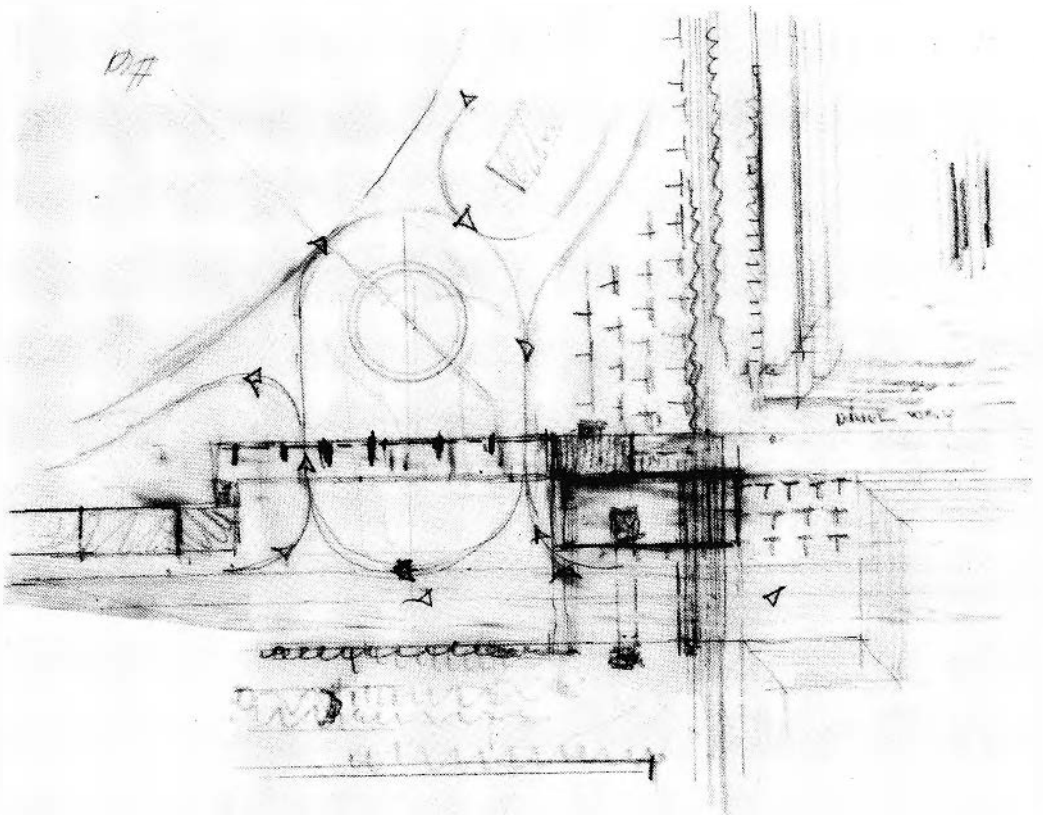

FIGURE 208. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Detail of the Airport Plan, Showing Airplane Circulation Pattern, for the Lehigh Airport Competition*, graphite on tracing paper, 1929, 23.6 × 21.0 cm. (irregular). DR1987:0353, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.

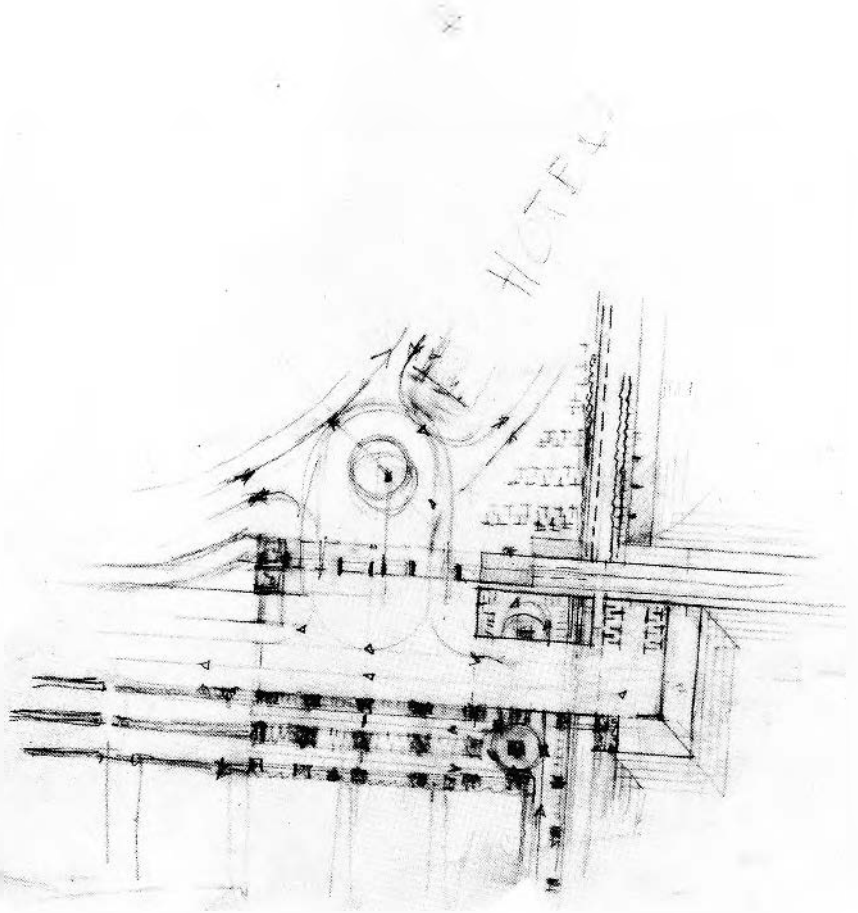

FIGURE 209. Lloyd Wright, United States, Oak Park, Illinois, 1890-Santa Monica, California, 1978, *Detail of the Airport Plan, Showing Airplane Circulation and Transportation Links, for the Lehigh Airport Competition*, graphite on tracing paper, 1929, 34.7 × 45.3 cm. (irregular). DR1987:0358, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal. © Eric Lloyd Wright 1989.