

CONDENSED INFORMATION
ON
WASHINGTON NATIONAL AIRPORT

HISTORY

After many years of discussion, President Roosevelt in 1928 selected Gravelly Point as site, ordered airport constructed. Many government agencies participated, among them

Corps of Engineers, U. S. Army
Public Buildings Administration
Works Progress Administration
Public Roads Administration
Public Works Administration

Operation of airport assigned to Civil Aeronautics Administration.

First dredge started work Nov. 19, 1928. Runways completed summer of 1929. Airport used at times when weather closed in smaller Washington Airport since early in February. Airlines moved in skeleton staffs early in May.

On site are ruins of old Alexandria homestead which once belonged to the Custis children when George Washington adopted. Also buildings built by Bureau of Public Roads as laboratory, now being taken over for offices of various CAA divisions.

AREA

Total 720 acres. Landing area 450 acres. "Wade" land, 435 acres. Shore land 204 acres. Landing area 255 acres.

North-South runway 2,825 feet (Prevailing wind direction) width, 200 feet
Northwest-Southeast, 2210, width 200 feet
Northeast-Southwest, 4225 feet, width 150 feet
East-West 4100 feet, width 150 feet
Total of paved areas - runways, aprons, taxi strips, etc., 677,000 square yards.

GEOMORPHOLOGY

While section underlain by deep gravel deposit. Engineers first dredged

SILT AND SAND OUT WAY ON GRAVEL ALONG COURSE OF RIVERS RUNWAYS. SAND MUST BE
around whole area. Then, from gravel beds outside, pumped sand and gravel into
ditches for runways, piling it up to 20 feet above surface of river. Thus, no
settling, since runways could be paved six months after being placed, usually
takes two years. Silt and fine stuff pumped into intermediate sections. When
this settles, dry fill will be added to level field.

Grass strips 100 feet wide on each side of runways until final settling
complete.

CHARACTERISTICS FOR LANDING

Approaches from eight different directions free of obstructions so that
landing angle of 40 to 1 possible.

Provisions made for installing runways later parallel to existing runways.
This will require only minor addition to fill.

South of airport, provisions for seaplane base for later construction.

PROXIMITY TO WASHINGTON

Three and a half miles from downtown Washington, hotels, government buildings,
postoffice. On Mt. Vernon Highway, which was re-located to provide additional
landing area.

GENERAL LAYOUT OF FIELD

Special care in design of approaches, parking places, Terminal Building,
hangar, mail and express-handling facilities for smooth flow of traffic and
least conflict of travelers and curiosity spectators. Traveler comes in public
bus or taxicab or private car to door of Terminal. Mail trucks, etc., enter
driveway through building on ground floor by other approaches. All traffic
crosses Mt. Vernon Boulevard via underpass.

Provision now for parking 1,000 cars, eventually 5,000 cars. Gently sloping
hill from flat landing area to Boulevard provides space for parking areas at

different levels.

PROVIDENCE FOR SPECTATORS

Lessons learned from Tempelhof, Schiphol and LaGuardia, where visitors crowd promenade decks, is mind in design of Washington field. Last year 3,300,000 visitors to Washington. Last year 1,400,000 paid 10 cents each at LaGuardia to stand on promenade and watch planes take off and land.

On field side of terminal, one outside promenade 20 feet wide, 535 feet long. Back of it, on each wing each side of central waiting room, are $\frac{1}{2}$ enclosed promenades 12 feet wide and 140 feet long. Field side walls of these are 3 feet panels of glass, and spectators inside can see over heads of those on outdoor promenade. On second floor, of south wing, another promenade outside office space, 21 feet wide and 137 feet long. Promenades entered at either end of building on land side, and spectators do not cross paths of travelers. Spectators admitted to waiting room, but better view of all operations available from promenades.

DINING FACILITIES

Second floor of north wing is main dining room, entered by stairway from waiting room. Seats 535. Curving North and field-side walls consist of 3-foot panels of glass. All Washington skyline visible to diners, and operations on field in plain view. Outside, on second floor promenade on North wing, is outdoor dining terrace, seating 235.

First floor, North wing, entered from waiting room, is coffee shop and employees' cafeteria.

LOADING STATIONS

14 loading stations on curving apron in front of Terminal. Each has six-foot turntable which pilot uses to pivot his plane after taxiing up. Around each station are pits for gasoline hoses, telephone lines, air conditioning hoses, pneumatic tubes for written messages and batteries.

Only vehicles allowed on ramps are small hand trucks to handle baggage and mail. Passengers kept off loading platform until plane is ready to take off.

AIRWAY TRAFFIC CONTROL

Latest in airway traffic control includes large "flight progress" board similar to electric boards in exchange offices. As pilots report by radio, airline men type report in code on teletype machines in their offices. Essential information on flight report then automatically appears on board in proper windows under flight designation. Thus, GAA airway traffic men can tell where all planes are in the Washington control area at any given time.

Also a battery of 20 teletype machines for sending and receiving weather and traffic movement messages.

FIELD TRAFFIC CONTROL

Consists of usual two-way radio between tower men and planes. Also a system of lights, consisting of an arrow in green neon and a cross in red neon at each end of each runway. Runways outlined by lights visible from above. Atomic electric smoke pots at each end of each runway to indicate exact surface wind direction. Blue lights, visible only from ground to lead pilot to landing station along proper taxi strips. All other lights on field, except boundary lights, or flood lights if pilot has requested them, are out so that pilot sees exact runway to use and direction to come in. System controlled in tower from switchboard on which is duplicated runway layout.

GENERAL TOWER

Special scientific design, with walls of green glass set at an angle pointing outward. This avoids all reflection, day and night. Glass also removes actinic rays of sun which cause sunburn. Tower air-conditioned. Device for recording conversations between pilots and operators.

MIRADOR

Curved, structure with small, revolving dome at each end, from which weather men work. Make theodolite observations through domes, to ascertain direction and velocity of upper air wind currents. Inflate and release balloons carrying radio

sondes for upper air observations and receive radio code signals in Hiredor.

HANGARS

Seven projected. One finished, five under construction. Total plane storage space in first six, $8\frac{1}{2}$ acres.

On each end, a hangar with arched roof. In center, the largest and two on each side of it with flat roofs. On each end of hangar group and in between all hangars are shops, two stories in height, second stories not now finished. Across entire rear of hangar structure is two-story section, shops below, airline offices above.

All hangars 198 feet deep. Center hangar 229 feet wide, others 181. All doors 20 feet high. Center hangar has extra hinged section above doors, 15 by 20 feet, to admit planes as high as 45 feet. Others have 10 by 20 sections. These hings and swing outward.

HANGAR DOORS

Special inter-connected type, developed by Public Buildings Administration engineers. Powered by two 10-hp electric motors, actuating cables in pit beneath rails on which doors ride. So connected by cables and pulleys that they arrive at all-open and all-close positions simultaneously. Operator rides leading door, gripping switches which stop movement of doors instantly in emergency. Eight leaves on smallhangars weigh 88,000 pounds. 178 feet clear opening on small hangars, 229 feet on largest.

HANGAR FIRE PREVENTION SYSTEM

"Deluge" sprinkler type. Controlled by "rate of temperature rise" switches. 3 degrees in 20 seconds sets off deluge in proper section. With all operating total of 5,000 gallons a minute flood hangar, usual sprinkler system in shops.

GASOLINE STORAGE

~~500,000~~ 500,000 gallons, stored at southern end of field, piped to landing platform.

COST OF AIRPORT

The grand total is \$16,064,782, including funds from several government agencies, and including certain equipment necessary for operation and not actually a part of the construction cost.

COST OF OPERATION

The estimated cost of operation for a year is \$300,000.

PROSPECTIVE REVENUE

All concessions on the airport have been let on a percentage basis, and the minimum guaranteed for the first year is \$396,000. This does not include income from operators on promissories, parking charges, etc.

Aviation and automobile fuel concession sold for \$750,000 for first five years. Food, \$65,000 a year. Taxical privilege, \$16,000.