

**Office of the Quartermaster General  
and the National Defense Construction Program**

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Q: In October 1940 you returned to the United States and were assigned to the 10th Engineer Battalion at Fort Lewis, Washington. Why did you receive this assignment, and what were your duties at Fort Lewis?

A: Actually, I never did serve there, and not at my request, but by direction of the War Department. I had orders to go to Fort Lewis, Washington. Most of our furniture we had left in storage up in Boston before we went to the Philippines. Believing in advanced planning, when I was ordered to Fort Lewis I cabled and had our furniture shipped from the East Coast around through the Panama Canal. On our departure our other furniture from the Philippines was also shipped, headed toward Fort Lewis.

I had a short leave after arrival in the United States, and on that leave I was doing some work for the National Power Corporation in continuation of the work that I had been doing, checking on electrical equipment that had been ordered through General Electric and Westinghouse and also conferring with the Pelton Water Wheel Company, turbine manufacturers, in San Francisco. Also during that time I bought a car, ordered it in St. Louis through a friend who was with General Motors, and shipped it on to the West Coast so that Mrs. Casey would have it.

During all of this they suddenly issued orders ordering me to proceed to Washington to report to the office of General Somervell on the National Defense Construction Program. Dorothy, in the meantime, had proceeded up to Seattle and arranged to enroll our daughter at the University [of Washington] there when she got word that our orders were changed, transferring me to Washington. As a result I never did actually serve with the 3d Division.

At that time Eisenhower was on duty with the 3d Division. If I had not had my orders changed and had served there, I probably would have been associated with Ike subsequently in the war that later occurred.

But it did cost us a lot of money because of the excess freight on our household effects shipped clear around the country through the Panama Canal, and then again having it shipped back to Washington when we finally

arrived there. And over and above all the delay, during that time we were without household goods, so in Washington we had to temporize and take rented quarters and change our daughter's school reservations, canceling it just in time, and arrange for her enrollment in William & Mary. And then Dorothy, when she finally did get the car which I had shipped to Seattle, had to drive across country during the winter with the children and finally arrive in Washington where I was to serve from then on.

Q: You were now assigned to the Construction Division at the Quartermaster General's Office. Was that at the request of General Somervell?

A: I think the fact that my orders were changed from the state of Washington to Washington, DC, for duty with him was at his specific request.

Q: You were assigned then to the Engineering Branch under Ed Leavey?

A: Yes. The construction program at that time was under the direction of the Quartermaster General. I think the administration felt that progress on this vital program was being bogged down and that was the reason that the Quartermaster General called on the Chief of Engineers for personnel. They got General Somervell, who reorganized the Construction Division and then selected from the Corps of Engineers officers whom he knew and who he felt were best qualified for those particular responsibilities.

Q: Leavey assigned you to redesign defense facilities so that they could be completed more quickly and economical y, unlike the construction that had been done prior to 1940-1941. What were your primary duties in the redesign?

A: First of all, I tried to assemble an adequate staff of engineers, and so reached out and got a number of well-qualified personnel. For instance, in my Engineering Design Section I had working for me at one time—practically the whole time I was there after we got started—I had the presidents of the American Society of Civil Engineers, the American Institute of Architects, and the American Society of Mechanical Engineers. This is indicative of the type of personnel whom I was able to procure.

It was our function to review the plans that had been previously in use. I stressed that if we were going to build, let's say, a thousand buildings of a certain type, any economy that could be made in that type structure would be magnified a great number of times.

For example, I cite one economy that seems relatively simple. We were required to provide, oh, I think 20,000 or more concrete igloos for the Ordnance Department to store bombs and other explosives on the various ordnance installations. In reviewing the design that the Ordnance Department had had previously, we found, for instance, that for lightning protection they required the welding of each joint wherever the reinforcing bars crossed. By tests and so on we found that we could reduce that to about one every 5 feet instead of the much larger number that they had.

We also found out that by revising the lightning rod installation and the reinforced concrete design, we could effect further economies and still provide the required lightning protection and structural strength. Just in these specific changes we could save from \$1,000 to \$2,000 an igloo, and with 20,000 of them that would represent savings of \$20 million to \$40 million in that instance alone. Over and above the economic savings, we effected a savings in vitally needed strategic materials. We did similar things in connection with the standard barrack design, cantonment layouts, ordnance plants, and so on.

**Q:** Usage of steel was a particular problem in all these defense programs of 1940-1941. How did Somervell and you go about solving this problem?

**A:** Well, we sought in every way to effect savings in requirements for steel. For instance, if we could use lumber, if we could use reinforced concrete in place of steel for certain structures, we would seek that. We sought in every way, I think, even to the extent of relatively minor details that went into various projects, to seek an economy of construction time and effort and particularly of critical materials, critical strategic materials.

**Q:** You were very involved in an extensive investigation of substitute materials wherever you could in the construction program, things like plastics and wood. Did you direct that program?

A: No, not specifically. Our function was to prepare or supervise or review the layouts of cantonments, the layouts of ordnance manufacturing plants, ordnance depots, and chemical warfare projects. And particularly, as I say, the large cantonment program that was under construction and in contemplation for the greatly expanded services that we were about to embark on.

Q: As the chief of the Design and Engineering Office, how much authority did you have to effect changes in design and construction to make these savings in material and money?

A: I think it was virtually delegated to me completely. Our plans that we drew up were reviewed, and then I would sign and approve them. I think we got another signature, maybe the chief of the Engineering Division, which was almost routine. These were the standard designs that went out to the field and those were the ones that were used by the architect-engineers and the contractors who were engaged on the construction of these structures.

Q: In 1941 a new process of site selection surveys was carried out. The surveys of potential defense sites were made much stricter than they had been in 1940. Were you in any way involved in those surveys?

A: Yes, because the architect-engineers or the group that made those surveys for the selection of such sites would submit their proposed layouts to our office, and they were reviewed then by our staff. I had a site planning section specifically y, and we reviewed the layouts from the viewpoint of economy of layout, seeing whether, for instance in the cantonment, the areas where troops were going to be trained and so on were in the best proximity to wherever the troops were quartered and considering whether or not that layout in our opinion was the best, would serve most effectively, and also could be done at a minimum of overall cost.

Q: The new 800-series plans that you came up with in 1941 were more or less of a semipermanent nature rather than temporary. But you got these through with only minor changes, and many of these buildings are still in use today. Do you recall much about your 800-series plans?

- A: Not in specific detail. I do know that we worked intensively on development of these plans, and if there was any possibility to effect a change, even minor, to effect some economy, why, we would seek it out and make such change. We pointed toward the adoption of what we felt would be the best suited structure for the purpose, at relatively minimum utilization of strategic materials, and also cost, which is also a measurement of manpower and materials.
- Q: In the area of defense plant construction, the Ordnance Department presented many problems because they insisted on control of design and selection of a single contractor for all phases through the actual production of the plant. Somervell and Major General Charles M. Wesson, Chief of Ordnance, waged a long and bitter conflict over these ordnance plants. Were you involved in that?
- A: Not as directly as they were. But I previously referred to the matter of effecting economies in the redesign of the igloos used to store bombs and munitions. Over and above that, we proposed a changed spacing arrangement effecting further economies and still affording protection against a mass explosion of all of them. But when we made these changes in the standard plans, indicating potential savings, we had a little difficulty trying to prevail on the Ordnance Department that these changes and these economies could be effected. We had to show the tests that we had made to indicate how they could get equally good lightning protection with this reduced and less expensive design.
- Q: There have been various appraisals of Somervell's effectiveness in the Construction Division. What are your views on the role he played?
- A: Somervell was a very active, driving leader. For instance, if it was his job to get something done, why, the most important thing in life at that time to him would be to get that job done. And he was forceful, he was articulate, he could meet up with anybody who was opposing any of the programs in which he was involved. But he did not get into details, for instance of design, himself. He did feel that he had an organization qualified to do it, and he would give that organization maximum authority and support.

Q: So he was an excellent administrator, then?

A: Yes.

Q: But how was he on the engineering side?

A: Well, as I say, I don't think he got into the details, the engineering. I think he relied on his organization. I had [Warren H.] McBryde and [Frederick H.] Fowler and [George E.] Bergstrom—those were the presidents of the professional engineer societies that I referred to. Knowing that we had them and other highly qualified personnel of their choice and qualifications, I think he felt that he had in our organization qualified personnel to perform the engineering and the detailed design. He did not involve himself in any such detail.

Q: What about Somervell when you knew him earlier in the 1930s? How were his engineering talents when you knew him in Washington?

A: Well, my principal contact with him then was when he was a district engineer in the Washington District and I was on the rivers and harbors desk as executive assistant to the chief of the Rivers and Harbors Section. I know he was very much concerned in pushing through the various projects under his jurisdiction. I can recall his coming in on several occasions and contacting me, a junior, personally in connection with his efforts to try to get additional funding for certain of the projects in his district. If he was charged with something, he'd keep driving and driving to get the maximum in the way of approval or authority or funding or whatever was required in order to execute that particular operation.

Q: General Leslie Groves wrote that he believed Somervell could have been an excellent theater commander had he been given the opportunity. Do you think that assessment was accurate?

A: I believe so. I think he was one who, when given a job or responsibility, was keen enough to know whom to select for whatever function it was that had to be performed. I think he, too, had a driving force that would keep them on the ball, and I think he was also—what do you call it—forceful

enough that he would have no compunction, for example, I'm sure, of relieving someone who he felt was not qualified to do the job and replace him with someone who was. So as a military commander I think he could have served almost equally as well as he did in the type of job heading up the Construction Division, which was a very, very vital operation for war preparation at that time.

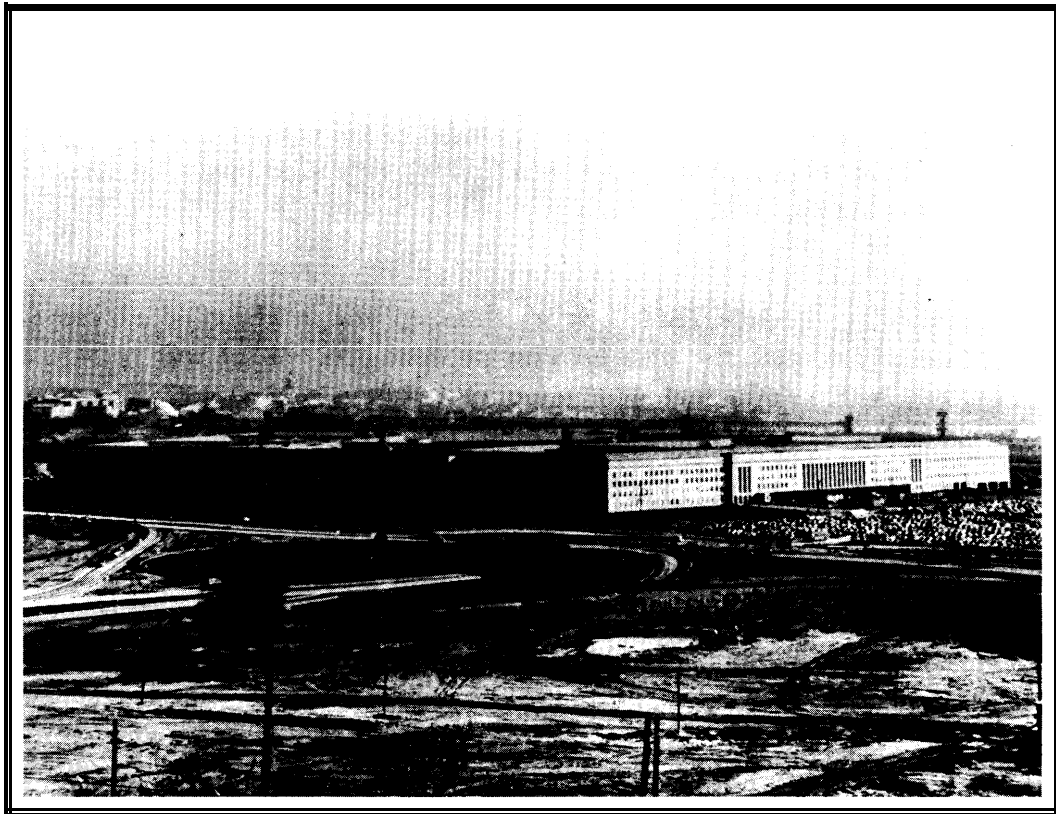
Q: On Thursday, 17 July 1941, Somervell called you in and ordered you to prepare a basic plan for what became the Pentagon. What was your first response to his order and what were your ideas and concerns about the project?

A: I can recall very well being called in. I was given no written instructions. He said, "Pat, we're going to build a, new War Department Building and we're not going to build it in Washington. It's going to be built over in Virginia on the site of the old Washington airport, the Gravelly Point Airport. It's to be for 40,000 people with parking for 10,000 cars, 4 million square feet of area-that's at the ratio of 100 square feet per person-not over four stories high and no elevators, solely ramps, and on Monday morning I want a general layout and design plan and perspective and so on for that structure. The structure is not to be air conditioned, and we want 500,000 square feet ready in six months and the whole thing ready in a year."

Well, that was a big order, so my staff and I had a very busy weekend trying to visualize the construction of a new office building, probably the largest one in the world at that time, and under the conditions and height limitations that were set. But those were my verbal instructions; there was nothing in writing. So we had to proceed from there.

I might say that on Monday morning he did have our layout plans, the architectural perspectives, and the general description of this structure conforming generally to his instructions. As I say, it was a busy weekend.

After receiving his instructions, I got Bergstrom and some of our design personnel together and we made tentative layouts. We knew we couldn't go vertically as he had said it was to be a four-story structure. And not going vertically and requiring that amount of office space meant getting a vastly spread out area. You have to visualize that here's a city of 40,000 people



*Pentagon construction, 30 November 1943. Northeast exposure showing part of the south parking and access roads.*

who don't go by car from house to house but just by foot within the structure to make contact between the various agencies that would be in this vast building. So we finally came up with what turned out to be a group of concentric and interconnected five-sided structures which later on was called the Pentagon Building because of its pentagonal shape.

I was a little concerned about the Gravelly Point location that he had designated. I did ask something about other equivalent areas over there, and he indicated, well, he'd give consideration to them. So we looked over the map of Washington, and I tried to figure out other suitable areas. We were afraid of the foundation conditions at the Gravelly Point site, and as it was right on the riverbed it was also possibly subject to flooding. At that time I thought that the large plateau area adjacent to the Lee Mansion area and Arlington Cemetery seemed ideally suited from the viewpoint of foundation,



utilities, water supply, traffic to and from it, and its high location-all making it a very desirable site.

So we laid out tentatively this new structure on that site. That weekend we also sent a small survey party up there laying out and checking on the actual physical terrain. And Monday morning when we submitted this plan, we indicated that this was for a structure at that location adjacent to the Arlington Cemetery. On Monday he got it, and I think he took it to General [George C.] Marshall, Chief of Staff, and the next day to the Secretary of War, and then the next day to the President. Before we knew it, why, we were in action ready to build the Pentagon.

From then on it meant that we'd call in architect-engineers on specific phases, such as mechanical and electrical, and also contractors in connection with doing it on a cost-plus basis because it would be impossible to prepare detailed plans and specifications and call for bids and so on within the time limitations. There would have been a major delay in doing that. So it was done, as were a number of the other defense projects, on a cost-plus, fixed-fee basis.

Q: Do you remember who specifically came up with the pentagonal design?

A: I would say Bergstrom probably has the greatest credit for it. There were, I think, Fowler and I and some of the others who were working with him on different setups and layouts, such as square, octagonal, and rectangular and so on, and finally we came up with sort of a joint expression of views and thoughts and ideas and ended up with this five-sided pentagon structure.

Q: There was a great deal of dispute and disagreement over the design and location of the Pentagon, not within your organization, but in the Congress and public groups?

A: The instructions I had from General Somervell were secret orders, and our investigation was also done just within our organization. However, news leaks out, and when word got out that the War Department was going to build a building not in the District of Columbia but over across in Virginia, I think the real estate interests and other District interests rose up in concern

that here the government was departing from its policy of building all of its federal structures in the Washington area.

So there was some opposition that way. In addition, the Fine Arts Commission had always been involved in reviewing public structures, and they and similar agencies were concerned that here the War Department was going to build a building that was not going to be subject to their review, with probable changes for architectural improvement and whatnot.

At that time we were building the quartermaster depot at the present site of the Pentagon, and that was an area that was surrounded by brickyards and comparable industries. It was sort of semi-industrial. As far as I was concerned, it was far from an ideal site for the Pentagon Building. However, this agitation as to location finally got to the President, and it was President Roosevelt who directed that we not build the building at the Arlington Cemetery site, but that we build it at the site of the quartermaster depot then under construction.

So we had to cancel the contracts on this partially built quartermaster depot and redesign our layout to adapt it to this new area. I'd say we added millions of dollars to the cost by reason of this change because the foundation conditions were much more difficult and required piling and increased costs on utilities, traffic arrangements, and so on, as compared to what it would have been up at our Arlington Cemetery site.

Some of the objections that they raised on the Arlington Cemetery site were that it might interfere with the enlargement of the cemetery, along with other similar comments such as that. But I think the principal reasons in opposition were mainly the idea of having the War Department building not in the District but over in Virginia.

When we did cancel the contract and the work on the quartermaster depot buildings, we then had to find another location for it, and I recall going down, farther down toward the Alexandria area, and I found a very suitable site there. So we had to relocate and redesign the quartermaster depot site there and proceed on work from there.

Q: That depot became Cameron Station then?

A: Yes.