

# BUILDING THE PENTAGON

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## PREFATORY BACKGROUND FOR A BROAD PERSPECTIVE OF EVENTS

The anguish I felt during the first four days following the stark, shocking events of September 11th broke open the floodgates of my memory recalling my youthful experiences working sixty years ago on the construction of the Pentagon building. On the fifth day, I was impelled to write down as much as I could remember. Having done that, the text was shelved, waiting I suppose, to be incorporated in this evening's address.

Because the nature and scale of my experiences covered only a personal and extremely minute contribution to its total success, this evening I want, as an introduction, to first try now, early on, to unfold the drama of the times which established the scale and magnitude of the Pentagon Project. And, most importantly, attempt to interrelate the roles of the heroic dramatis personae who controlled its destiny.

The Nazi-Soviet non-aggression pact signed at the end of August 1939 freed Germany to attack Poland on September 1st. Four days later, the United States declared its neutrality in the European war -- and, within a week, President Roosevelt proclaimed a limited national emergency.

In June of 1940, the U.S. approved the sale of surplus war material to Britain and in September we announced the transfer of 50 over-aged destroyers. Later that month the first peacetime draft was approved. I remember registering then and not being called up until the spring of 1943.

In March, of 1941, the Lend Lease Act was signed and in August, President Roosevelt and Prime Minister Churchill signed the Atlantic Charter. Furthermore, the United States had broken the Japanese diplomatic code early in 1941 and were regularly intercepting the increasingly ominous diplomatic messages circulating between Tokyo, the Japanese Consul in Hawaii and the

Ambassador in Washington.

The rapacious action of the war in Europe combined with the dangerous situation in the Pacific theatre, alerted the President and his Cabinet to advance preparations for entry into the war. This in the face of widespread isolationist sentiment throughout the United States, vigorously championed by Senator Burton Wheeler, Charles Lindbergh, Colonel McCormick, among others. The following information of another nature further under girds this evening's story.

Born in 1867, Henry L. Stimson became known and respected as an excellent trial lawyer in New York. Identified with the Republican Party, he ran unsuccessfully for governor of New York in 1910. In 1911, President Taft appointed him to be his Secretary of War. During WWI, he left his lucrative practice to serve as an artillery officer with the rank of colonel.

Following that, he performed a number of diplomatic assignments. President Hoover appointed him to be his Secretary of State in 1929.

In 1940, President Roosevelt selected this seasoned government executive, now in his seventies, to be his Secretary of War. He was well known to be one of the strongest Republican supporters of Roosevelt's campaign to get the United States into the war against Hitler. Biographers compare him to George Marshall, noting that he was a towering figure, an awesome presence, radiating integrity and confidence.

It is recorded that Stimson hated the existing faceless War Department building located in the Foggy Bottom section of the capital. He thought it looked like a provincial opera house and refused to move in. He was perhaps the principal architect of the idea to build a new headquarters for the Department. His stimuli gave authoritative momentum to the staff assigned to plan, design and construct this new building in which he would consolidate the Department's existing functions located in twenty buildings spread out all over Washington.

At the end of the long design period described below, they finally agreed upon a solution that called for constructing a building with a gross area of over six and a half million square feet. It was said that Roosevelt felt the area excessive. Much of the space might not be needed after the war. However, Stimson and his senior staff were convinced the size was needed. In fact, during the war they entertained an idea to augment the existing space with a twenty-four-story tower, topped with an appropriately scaled eternal flame. Signifying, in the words of David Brinkley: "an expression of the power of the American

Imperium." That interesting sparkle of enthusiasm glints in the air now, signifying the attitude of today's Pentagonians.

The War Department's urgent need for a new building became an effort of the highest priority. It would accommodate the centralized, coordinated management of all of the branches of our armed forces to participate in our global struggle in the truly named Second World War. Secretary Stimson had a close working relationship with other members of the Cabinet. That, combined with approvals from the White House and the powerful Appropriations Committees in Congress, assured the necessary flow of funding.

The 2002 Pentagon website press release regarding the need to build the Pentagon, states that the idea was conceived on a weekend in mid July of 1941 at the request of Brigadier-General Brehon B. Somervell, the Chief of the Construction Division of the Office of the Quartermaster General of the War Department.

On Thursday, July 17th, Somervell summoned four of his most senior engineers and architects and his consulting architect, George Bergstrom, to his office. He gave them oral instructions, in effect a military order, to provide him, by 9 a.m. the following Monday morning, July 21st, basic plans and architectural perspectives for an air-conditioned, fireproof office building to house 40,000 persons.

He wanted a building of four stories or less, without elevators, located on the 226-acre site of the old Hoover Airport. To make this charade even more difficult, if not impossible, during this frenetic weekend, Somervell made revisions to the building program including a complete change in its location. Of course he did. From the very first moment the design of the project had great fluidity. It was inevitable due to his haste.

Let's stop for a moment to take a look at General Somervell. He was well known to have a hard driving, impatient attitude and for resisting opposition from his superiors. He was dynamic, ruthless and was even known for seeking ways to circumvent orders. He was a decisive man who cultivated powerful political connections, including Harry Hopkins. At this time, on a site inspection tour with President Roosevelt, Somervell expressed disagreement with him on an important site plan issue, causing the President to say, "My dear General, I'm still Commander-In-Chief of the Army." So we had in Somervell a Corps of Engineers General who was a powerful man of action and dedicated to obey direction by Secretary Stimson and General Marshall.

His orders commanding the start of this charade were taken with the utmost candor. What an opportunity! the kind design architects and engineers relish, rising to the occasion! Except in this case. The chaos of constant major changes made in the program that weekend showed up in the Monday morning submission.

The General received the drawings, including an aerial perspective, showing a four-story building, 5.1 million square feet in area. The footprint had five sides with one corner cut off, an interior pentagonal courtyard surrounded by two interior wings, and all in all, allegedly space for 40,000 people; for a price tag of \$36 million dollars.

Astonishingly, that very same afternoon, despite the now constantly changing program, Secretary Stimson and General Marshall approved this very, very preliminary design. The President tentatively approved it on July 24th, commanding Somervell to gain approval from the Commission of Fine Arts, which he did, reluctantly. Roosevelt then gave his approval. Wouldn't it be fascinating to know who were the members of the Commission and read the minutes of their meeting? I suspect the tumult of the times led them to heed the powerful undercurrents far beyond their control.

For the sake of simplicity, suffice it to say that major and minor on-going design modifications to the location, size, shape and details of the building were being made continuously during the construction of the building. This included the especially difficult resolution of the location of the exterior underground utilities. The layout of the approach and interior roadways serving the building and the parking lots were also a problem.

There was inevitably a hotly contested design competition preceding an agreement to select the formal pentagonal configuration with its five internal concentric rings of offices. The final architectural design reflected a sophisticated abstract derivation of classic fortresses through the ages.

The decision to construct the massive frame of the building, using steel reinforced concrete, signifies the literal intent to build a very strong, permanent, fireproof fortress.

There were undoubtedly hundreds of interoffice meetings to bring about agreements for the functional layouts of floor plans to satisfy each department of the military. Drawing the initial construction plans, writing specifications for

all trades, determining the exact site plan, preparing a rough construction cost estimate -- working out the sizes and locations of the underground utilities, specifically locating the columns so work on the foundations could proceed immediately, selecting a team of contractors -- these factors took an immense amount of thought and coordination.

The 583-acre site bordered on the Potomac River in Arlington County, Virginia. It included the swampy land of the old abandoned Hoover Airport. The final Master Plan for the building called for a five-story, reinforced concrete frame structure. It was to be composed of five sections, each having a perimeter 921' long, enclosing a five-acre landscaped courtyard.

"Time and Material" prime construction contracts were awarded to three contractors on August 11th. A formal groundbreaking ceremony and the beginning of construction took place on September 11th, 1941.

## THE CONSTRUCTION OF THIS LANDMARK BUILDING

This story, alluded to at the outset, was written on the 15th of September, 2001.

The summer of 1941 found me working as a carpenter in Washington. Late in August, I finished work as a member of the construction crew for an office-building annex to the British Embassy. As a member of the International Brotherhood of Carpenters and Joiners Union, Local #40, I was privy to the announcement from the union hall, early in September, that hiring would begin for the construction of the Pentagon building. I applied for work at the job-site and was immediately hired by the prime contractor, the John McShain Construction Company of Philadelphia, a company I had worked for during the summers of 36 and 37.

Given badge #6, I became one of the first amongst three thousand carpenters to go to work. We carpenters and several thousand other workmen, comprised the basic construction team -- surveyors, drilling rig operators, laborers, water boys, iron workers, cement finishers, stone masons, plasterers, painters, roofers and special technicians. Electricians, plumbers and steamfitters were hard to find. By December 1st of 1941, 4,000 men were working three shifts on the job -- 3,000 on my day shift. After December 7th, the number of workers increased to a peak of approximately 15,000, working on two and sometimes three shifts.

Workers of all ages, with various useful skills and experience, poured in from all over the region -- a mix of men from the rural communities of Maryland, the hills and valleys of West Virginia, nearby counties of southern Pennsylvania

and Virginia, even a few from North Carolina, and of course, a great many from Washington. One savvy carpenter from the eastern shore of Maryland came to work carrying his tools in a lobster basket.

This was a period when well paying construction jobs were just beginning to become readily available after the long years of the Depression. This motley crew of men got along amazingly well and was productive. Drinking, gambling -- shooting craps or playing poker during lunch breaks or after work on the job-site was forbidden. This was important. I worked on more than one job in Washington, especially in the late thirties, where after work on payday, it was customary for the carpenters, bricklayers and laborers to start a crap game in one of the shanties. More often than not, some lost their whole week's wages and had to borrow \$20 or so to take home!

The on-site union shop stewards for all trades, saw to it that everyone was paying their monthly dues. As a matter of expediency, I transferred from Local #40 in Washington to Local #1776 in Alexandria. I attended an evening union meeting once a month to pay my dues of \$2. The union secretary, an aged former shop steward, would carefully write my name in a huge old ledger mounted on his dimly lit desk and then punch my union card for that month.

Management's strategy for the division of labor called upon the coordinated assembly of five separate construction crews, comprising all trades. Each crew was assigned to one of the five sections of the building, A - E. I was assigned to work on Section D, facing the river, destined to become the command center for the Secretary and his staff.

As work progressed, the War Department's revised construction drawings were often delivered to the contractors only a day or so ahead of progress in the field -- quite often fresh batches of construction drawings were printed every night for delivery to all five sections the first thing the next morning before we could go to work. Significant changes were made as construction progressed, ones increasing the height of the building in the interior rings of offices and expanding the basement areas. Direct news of the design turmoil never really touched down within my purview. Our job was to build the building.

The pace and quality of construction activity was overseen and guided by experienced senior engineers and job foremen. They directed the coordination of manpower and equipment and were responsible for the procurement and timely delivery and placement of enormous quantities of materials -- steel pile casings, reinforcing steel, electrical and mechanical systems equipment,

limestone, green slate to cover the roof, materials for interior partitions, flooring, windows, doors, hardware and an array of other building materials.

An onsite concrete batch plant, whose technical operations were monitored by government inspectors, provided some 350,000 cubic yards of concrete. The concrete was delivered to the pour sites by a fleet of ready-mix trucks. There were almost always big pours every Friday, some lasting well into the evening - giving the concrete undisturbed curing time over the weekends.

The Raymond Concrete Pile Company started work the minute the contract was signed on the 11th of September. They operated several drilling rigs, working around the clock, seven days a week, eventually driving 50,000 of their patented steel pile casings some 50 feet through the underlying clay. The constant rhythmic pounding of the jackhammers driving the mandrels inside the steel casings, created a lively pulsation and rhythm of continuous activity on the job-site.

The steel casings were driven in clusters of 3 to 12 piles each, depending upon the building column loads. These casings, projecting about a foot above grade, were then filled with concrete. Two man carpenter crews assembled 4' high, prefabricated wood forms around each cluster. After steel reinforcing grids were installed, concrete was poured to form the foundation for the building columns.

Large crews of carpenters worked at each of the five assembly line mass production "mills" centrally located at Sections A, B, C, D and E. They prepared all of the modular forms for columns, beams, slabs and walls, sized to the need for each specific location. The forms were carried to the carpenter crews to be erected. There were several carpenters at each "mill" whose only duty was to sharpen and set the teeth of our handsaws when needed.

The repetition of the production techniques and the coordinated division of work perfected efficiencies as construction continued upward for each of the five floors and finally for the construction of the sloping concrete roof slabs.

I learned more about the organized simplicity of mass production during my stint working at our mill in Section D. This was an era before plywood, when all of the forms were made up of 3/4-inch 1x6 and 1x8 tongue and groove boards, assembled and secured with battens. We had ample manpower with the right skills to accomplish the work using the simplest of tools, materials and procedures. It was my first experience using an electric skill-saw.

We worked 40 hours each week and were paid the union wage of \$1.625 an hour. Every Friday afternoon, we received our pay envelope containing \$65 in cash -- actually, minus a dollar and change for social security. There was occasional overtime to get ready for a large concrete pour early the next morning. During the long peaks of employment, the project payroll probably amounted to well over a million dollars a week. The construction cost was \$83,000,000 for the entire project. The building alone cost \$50,000,000, roughly \$12 a square foot.

Construction of the entire project took sixteen months. The refinement of the mass production techniques improved markedly as the job progressed. Keeping the ten to fifteen thousand of us organized to work in a timely manner, coordinating the sequence and interface of all of the trades, expediting delivery of materials (some of which were scarce and hard to get), was a triumph of the executive construction management team, headed up by Paul Hauck, the project manager for the contractors.

The construction of the entire 6,636,000 sq. ft. project was completed in 16 months, on the 15th of January, 1943.

However, on the 28th of April, 1942, after some eight months of intensive work, the construction finale for those of us in Section D was memorable. In anticipation of imminent occupancy the next day, we were ordered to work straight through, almost nonstop for 24 hours, putting up office partitions, hanging doors, etc. All of us in my crew, were charged with an adrenaline of enthusiasm that carried us through the night, until 8:30 in the morning. The first occupants, both military and civilian staff, were gathered outside the entrance doors, eager to go to work.

Our foreman simply asked all of us to quickly pick up our tools and go home. A truly exhilarating ending!

And then? quite a surprise, a sequel to this story!

Twenty-five years later, in 1967, guided by what only could be a mysterious flow of destiny, the architectural design of the Pentagon Metro Station became my responsibility as project manager at the Washington office of Harry Weese Associates.

...and, at the beginning, strangely enough, we discovered that the original pile



foundation drawings for the Pentagon were nowhere to be found!

Well, my friends, that's a whole new adventure... Let us stop here.

Now, a memento for everyone!

Thank you.

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