

THE HANFORD ENGINEER WORKS VILLAGE

Shaping a Nuclear Community

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While the physical character of our contemporary suburban landscape is traditionally attributed to a post-World War II housing phenomenon, the roots of our suburban ideal lie much deeper. Ebenezer Howard's late-19th-century Garden City concepts, as well as the "communitarian" experiments of the 1930s, are the most obvious precedents. As we scrutinize World War II-era defense and war housing projects, however, it becomes clear the degree to which a shifting economic base spurred by defense manufacturing, in conjunction with a mobile population and modern community planning concepts, created the framework for modern suburban development.

The typical World War II defense housing project was constructed in proximity to a defense manufacturing or military facility. These were undertaken by "community builders" like William J. Levitt, who consolidated land subdivision, construction, and sales into one enterprise. Alternately, they were constructed with public funds and intended to be used eventually for public housing. By contrast, the Hanford Engineer Works Village (now Richland, Washington) was constructed at an isolated location as part of the highly secretive Manhattan Project and was designed as a sizable, permanent, federally-owned company town. Today extant homes, commercial buildings, and public spaces, overlaid by nearly 60 years of use and alteration, continue to embody characteristics associated with large-scale postwar housing developments. Various factors—including geographic isolation, secrecy, and urgency, in conjunction with expeditious and opportunistic decision-making—served to shape the Hanford Engineer Works (HEW) Village, a truly nuclear community.

In early 1943 the Manhattan Engineering District (MED) of the United States Army Corps of Engineers selected Hanford, Washington, as the site for World War II plutonium production facilities. E. I. Du Pont de Nemours & Company of Wilmington, Delaware (DuPont) was hired to construct and operate the HEW industrial facilities as well as create a new village to house the company's operational employees. On January 23, 1943, a meeting held at the DuPont headquarters was attended by officials of DuPont and the Corps of Engineers where General L. R. Groves outlined the federal government's land acquisition policy for the project. He reported that the agricultural hamlets of Hanford, Richland, and White Bluffs, including 50,000 acres of farmland, were to be immediately acquired so that a 625-square-mile secret facility could be created.

The project site was selected, at least in part, due to its isolation from any population center. From the outset, the planning of the HEW complex was based on the realization that surrounding Columbia Basin communities would be able to supply living facilities for only a tiny portion of the necessary construction and operations personnel. It would therefore be

necessary to rapidly develop temporary housing for thousands of construction crew members and plan and construct a permanent village to house the production workers and their families.

The Corps of Engineers selected the southwestern portion of the project area, the site of the small agricultural town of Richland, to establish the new "village." The original townsite of Richland had been established in 1906 during a period of accelerated irrigation development and land promotion. It had a population of approximately 250 people within its incorporated limits when, in February and March 1943 all of the privately owned property was acquired by condemnation. The old townsite comprised roughly one-third of the land needed to create the HEW Village. This was a rural community with a civic and commercial center situated along the old county highway and a scattered pattern of residences, established farms, and fruit orchards. DuPont officials noted that the "land when irrigated was productive but many of the farms had been taken over by the irrigation district during the Depression through the inability of the owners to pay their water rentals."

Richland was selected as the new village site because of its proximity to the major processing areas at the northern end of the nuclear reservation. Although it was an established community, it was considered sufficiently distant (15 to 30 miles) from the production facilities for security and safety purposes.

In early March 1943 DuPont and MED officials contacted Gustav A. Pehrson, a Spokane architect-engineer, and asked him to furnish the engineering and architectural services required to create the village. After considerable hesitation and negotiation, Pehrson contracted with DuPont to provide services that would include the preparation of complete plans and specifications for the dwellings, commercial buildings, dormitories, community buildings; related water service, sewer system and waste disposal; electric power distribution; as well as streets and sidewalks. He began work in mid-March and was required to prepare the plans and specifications for the initial duplex house type within one week. Architectural plans and specifications for the design of village housing for 6,500 residents (and intended to expand to serve 12,000 residents) had to be completed within two and a half months. Pehrson's staff reportedly grew from "two men and a girl" to over 350 architects, draftsmen, and engineers. He established an office in Pasco and continued to operate an office in Spokane at the Old National Bank Building. Construction of the HEW Village began with the earliest housing units in late April. The first unit was completed in late July, and work continued under intense pressure until early 1945. The project was not considered complete until June 1945.

Pehrson was a Swedish-born architect who is credited with the design of hundreds of buildings in Spokane and the Inland Empire from 1913 until his death at the age of 85 in 1968. During his long career Pehrson developed the well-deserved reputation of having an unyielding temperament for hard work. He began his Spokane career with the venerable firm of Cutter & Malgren (who coincidentally was also a Swedish immigrant) and served as the project architect for the design of the Davenport Hotel. After a falling-out with K. K. Cutter in 1916 Pehrson established his own firm and continued as Louis Davenport's architect for several decades. During the 1920s and 1930s he operated a diverse architectural practice, designed numerous highly regarded commercial and residential projects, and gained regional fame.

By 1943 Pehrson was clearly among the most well-known and well-established architects practicing in the Inland Empire. The creation of the HEW Village fits into what was a lifelong pattern of industrious devotion to the challenges of financing, designing, and constructing architecture. There is no record of any prior involvement by Pehrson with Federal Housing

Administration or Defense Housing projects during the late 1930s or early 1940s. He was reportedly involved with the design of aircraft hangars at Geiger Field (now Spokane International Airport) immediately prior to assuming this project. His selection by military and civilian officials for this highly secretive and complicated project appears to have been based on both his reputation for hard work and his familiarity with and appreciation for the terrain and climatic conditions in the Columbia Basin.

In August 1943, after the earliest house types were well under construction, DuPont requested that Pehrson prepare a report describing the general features of the HEW Village. The "Report on the Hanford Engineer Works Village" was modeled on a similar report prepared for the Clinton Engineer Works Village at Oak Ridge, Tennessee, which was simultaneously under construction. Pehrson's lengthy report documenting the prior six months of work was submitted in November 1943. It described the existing conditions at the townsite, the background and basis for the design of the entire village, and identified the problems encountered in the process.

Three principal problems faced the village planners, designers, and construction workers. First, as a war project to be completed quickly, important aspects of the project had been finished prior to the involvement of architects and site planners. Most difficult was the fact that a great deal of information about the project and its purposes could not be revealed to them. The architect-engineer, surveyors, and planners knew only the barest essentials about the project. According to Pehrson's November 1943 report:

The reason for the location of the site was not divulged, although the specifications precluded the possibility of locating the work near any existing town of a size sufficient to accommodate the people required...the planners could not weigh any of the sociological or ecological factors involved. Under the circumstances, they were without information as to the anticipated future use, ownership, administration, economic or industrial base of the village, or the probable population shifts after the war. In the actual laying out of the site, therefore, many important decisions were deferred to those with more thorough understanding of the scope and objectives of the project.

Second, while the planners were aware that the village was intended to house people working at HEW (and those employed in the administrative area), standard information about the intended population was very limited. The initial analysis of housing requirements was made by the army and DuPont and was based on several incorrect assumptions regarding the utility of the existing housing accommodations (within and outside the village site) and the actual required plant, construction, and village work force population. The number of plant employees and family members, the anticipated total village population, the number, sizes, and costs of the required housing units and the related village retail, commercial, and community needs fluctuated throughout the design process. The anticipated village population of 6,500 grew, with a final building schedule based on an actual village population of nearly 16,000.

In addition to these factors, G. A. Pehrson was simultaneously pressured by DuPont to provide good quality housing for their employees and by the military for an economical approach that would provide only the most basic and minimal forms of housing. Debates ensued regarding the inclusion and utility of basements, fireplaces, and enclosed porches, and brought about frustration and ultimately compromise for both Pehrson and the DuPont officials.

The village was initially designed to house only HEW operational personnel and their families. However, its construction was ultimately expedited for the purpose of making a portion of it

temporarily available for housing construction personnel and their families. It differed from earlier New Deal era housing projects, planned towns or communities that typically had the advantage of proximity to populated areas for supplies, equipment, and personnel. Prior New Deal era planned communities or resettlement towns were typically established to house low-income families. The HEW Village however, was a rather unusual company town constructed in a state of urgency and secrecy at an isolated location. Thus, according to a 1945 DuPont report, "due to its size, unique nature and remote location, there was little in the way of precedent upon which to draw. Speed of construction was paramount so that in most cases only a minimum of study could be given to the various problems and questions arising before arriving at decisions or determining policy."

While the village was created in response to a wartime emergency, its planning reflected to some degree the democratic and environmental attitudes of earlier "communitarian" planners. The design attempted to follow the existing land contours and sought to preserve the existing shade trees (cottonwoods, willows, and black locust trees) and old fruit orchards. The same quality of materials and construction were used in all dwellings. Yards were large and as uniform in size as feasible, and the site plan included generous amounts of "greenbelts," or open space and common areas.

The village plan was neighborhood oriented with a predominantly curvilinear street system. Neighborhood streets and main arterials were designed to accommodate bus travel to and from HEW and commercial areas within the village. Some streets terminated in cul-de-sacs, and instead of garages the plan included parking courts or car compounds. The former provided convenient off-street parking and connected the residences via a network of courtside walkways.

Following utopian "garden" communities, the plan for the village separated residential, commercial and industrial areas from one another by the use of greenbelts or open space. Pehrson noted that plans existed for an "abundance of open green spaces running into the center of the town, with tree-lined parkways dividing the town naturally into neighborhoods, providing pleasant and safe walks for students going to and from school." There was already a fine park along the Columbia River "with wedges of greenery and trees coursed by irrigation canals fringed with trees and shrubs...the answer to a town planner's dream. There could be no better guarantee against tedium, no better guarantee of open air and space to play."

All of the house types in the original village plan were wood-frame construction with concrete foundations and basements. They were constructed in wall sections which were then raised into place in a production-line method. Much of the framing lumber was high-quality Douglas fir that had been harvested from the 1929 Tillamook burn in Oregon. Complete mills, shops, and concrete plants were set up on-site. These factors contributed significantly to the speed, low cost, and uniform quality of construction.

Eight different house types and floor plans were used to create a total of 2,500 permanent housing units. The majority were duplexes, although single family homes that varied in size and construction cost were also an essential part of the village plan. The intent was to achieve a mixture of income levels in each of the neighborhood districts. Despite these intentions, specifications called for higher cost houses to be given more favorable locations, concentrated in the district nearest the Columbia River. Indeed, the majority of the duplexes were concentrated in the western portion of the town, with a greater number of single family homes situated east of the old County Road (now George Washington Way), and nearer to the river.

The generous spacing of all dwellings was recommended due to the low cost of land and high degree of fire danger during the hot, dry summers. Each residence typically included an ample backyard. To reduce monotony (and increase privacy) houses were placed at an angle to the street; higher two-story houses were placed at the middle of the block while at the ends of the blocks, lower units were set back, in order to achieve an "open" feeling at the street intersections.

Potential flooding from the Columbia River was of concern to the planners. There had been a record flood overflowing the river banks in 1894, and large areas of the original Richland townsite were seriously impacted. It was decided that a uniform minimum first-floor elevation of 360 feet above sea level, four feet above the townsite's flood level, would be used for all residential buildings.

Pehrson's design for the village took into consideration the existing highway and road system and the presence of 185 existing residential, commercial, and community buildings. It was initially estimated that 75 of the existing buildings could be retained, reconditioned, and converted for residential or commercial use. Pehrson's work involved the examination and assessment of these settlement-era structures. This aspect of the project proved to be time-consuming and discouraging because incorporating existing buildings and structures into the village plan caused several problems. Some of the residences had electricity but few had sewers and indoor plumbing, and water was mainly from individual wells. Pehrson determined that "these conditions naturally affected the adaptability of the dwellings to modern use." Many of the properties were found to be either of questionable quality and unsuitable for continued use, difficult to incorporate into the layout and infrastructure of the village plan, or too expensive to modernize and bring up to the standards required by DuPont and the Corps of Engineers. Thus, only 26 of these structures were ultimately retained for use within the village.

Pehrson expressed dismay with the requirement that they utilize even those nineteen residences and seven commercial facilities. "The difference in the materials used, the general appearances of the structures, and the necessity of accepting them 'as they are' hampered site planners and will influence the total effect of the commercial center as now planned...the current buildings are conspicuous and so prevent the effect from being as harmonious as the planners had hoped."

Ultimately, the layout for the HEW Village took into consideration the natural and the cultural landscape of the old townsite and other features within the general vicinity. The designs of the new house types were also based on the architect's observations of the existing older residential structures. Not surprisingly, Pehrson observed: "Their orientation, their use of screen porches shaded by vines and trees indicated to the site planners the expression of the need by the former residents of shade and as great a degree of air circulation as possible."

The creation of the HEW Village involved the planning and design of four distinct residential neighborhood districts and a central business district, as well as the design of commercial, community and administrative structures of all kinds and functions and their related utility and sewer systems. However, only the residential building designs that significantly defined the character of the village are worthy of close scrutiny, in an effort to understand both their design criteria and social implications.

The final housing plan prescribed dwelling types typically identified by "unit" letter. These basic housing types were organized by the number of bedrooms (one, two, three, or four) and the

related cost of construction. For nonresidents identified as "transients," or individuals waiting for assignment to other dwellings the housing plan called for the construction of the Transient Quarters, initially referred to as the Clubhouse. For persons without family members, there were dormitories for women, the "J" units, and for men, the "K" units. The Corps of Engineers initially anticipated the need for only six women's dormitories and twenty men's dorms. In fact, there proved to be a substantially greater number of single women than single men in the operational work force and seventeen women's dormitories and eight men's dorms were actually provided.

One-bedroom units were initially planned in eight-unit apartment buildings (Type "I"), similar to the familiar row house. Because there was sufficient land area and a desire to avoid "the psychological hazard in a too-cramped plan," the row house type was limited to only the one-bedroom unit. In the final analysis, the Type "I" was entirely eliminated from the housing plan and prefabricated individual one-bedroom units were built.

The two-bedroom units were provided in a duplex—Type "B" plan. Three-bedroom units were provided in the duplex—Type "A" plan as well as three different plans for single family residences, Types "E", "F," and "H." Four-bedroom units were provided by three separate plans for single family residences, Types "D," "G," and "L." These housing types each had a basic plan; however, some variation was achieved by using different exterior cladding materials, altering the mass, or flipping the plan of the building and altering the roof form.

The duplex houses (Types "A" and "B") were the basic housing types within the village. The Type "A" was a two-story duplex with two three-bedroom family units. The two identical family units were symmetrically placed around a central axis. A central party wall allowed for three outside walls at each unit. This was a crucial feature, given the summer time temperatures, and provided maximum opportunity for cross ventilation on both the first and second floor levels. The floor plan included a large living room and dining alcove and a kitchen designed to accommodate two or three people at work. This house type, as all of the original planned house types, included a generous amount of closet space and a basement that housed a coal furnace and provided a laundry space and general storage area. Pehrson described the interior appointments, the built-in cabinetry, plumbing and kitchen fixtures and interior finishes as "adequate without being luxurious." The interior finishes remained standard throughout the project—floors were typically natural stained hardwood; kitchens and bathrooms, linoleum; walls and ceilings were painted drywall with softwood trim. The boxlike, two-story form of the "A" Type helped to break up the monotony within the streetscapes of the village and was distinguished by a variegated siding pattern and symmetrical Colonial Revival proportions.

The one-story duplex plan, Type "B," was the principal family housing unit in the village. The two identical two-bedroom family units are symmetrically placed around a central axis, very similar to the Type "A" duplex units. Again, the bedrooms were placed at exterior angles in order to provide cross ventilation. The standard rear exit/basement stair arrangement (utilized in virtually all of the house types) provided easy access to the basement and efficient circulation between the basement, the main house and the out-of-doors. Again, generous closet and storage spaces of various kinds were provided, which Pehrson noted "is highly favored by the housewife." The standard dining and living room alcove remains an essential element within the floor plan, as well. The Type "B" plan, being one story in height was a distinctly horizontal form and was typically finished with heavy cedar shakes. The gable ends incorporated vertical siding complementary to the exterior wainscoting used on the Type "A" units.

The Type "F" and "H" units were each single family house types designed to be constructed for under \$6,000. The Type "F" was a two-story form, nearly square in plan, that included three bedrooms on the upper floor level. Perhson noted that as "a version of an old and much admired plan, it offers every possible utilization of space and advantage of orientation." It was indeed economical in space and construction cost, and is clearly based on the "American foursquare," a highly popular house type dating back to the mid-19th century. Every room could be cross ventilated and while the standard living room/dining alcove was provided, a large kitchen, by HEW Village standards, was also included. In exterior appearance the architect found the form rather "boxy," thus he utilized a side gable roof form with wall dormers. The finishes again fit into the village palette and included the exterior wainscot treatment, quite similar to the Type "A" duplex. The other lower-cost single family unit was the Type "H." This three-bedroom unit was clearly similar to the individual unit plans of the Type "B" duplex. The one-story form, side gable plan, and exterior finishes were very similar. The living room/dining alcove, rear stair configuration and storage space remained essential elements. A "Colonial" paneled door with fluted trim surround was provided in order to give this unit type some individual distinction.

The Type "D," "E," and "G" units were each single family dwellings initially designed to be constructed within the under-\$7,500 construction cost range. Later in the project the Type "L" was added within this category. In a conscious effort to follow a "democratic principle," these houses differed in "quantitative" rather than qualitative ways. They utilized the same quality construction materials and techniques, incorporated the same essential spatial features (living room/dining alcove, storage space and relationship to the out-of-doors). The designs primarily differed in the quantity of bedroom (four) and bathroom (two) space. It was assumed that many of these houses would be occupied by the "more permanent executives upon whom certain socio-business demands are made." Thus, substantially fewer of these house types were indeed constructed. A conscious effort was made to lend variety, however subtly, to the use of these standard plans by varying the exterior cladding materials between shake siding and horizontal wood siding and alternating the mass or plan orientation. In the case of the Type "E," the roof form also varied between a straight gable and a hipped gable.

Traditional architectural forms and elements were consciously used within the housing designs to provide villagers with a sense of normalcy and continuity. The architectural character of the HEW Village fits within the modern 20th-century "Minimal Traditional" stylistic category. These residential designs reflect the form of traditional eclectic designs that gained broad popularity in the 1920s as Tudor and Colonial Revival styles but with only minimal decorative elements. This Minimal Traditional style was commonly constructed between 1935 and 1950 and has its roots in Depression-era forfeiture as well as the modern International Style that favored efficiency and the unornamented wall surface. A lack of ornament, simplified building forms, intermediate roof pitches, as well as close eaves and rakes distinguish all of the village house types. The one-story and one-and-a-half-story houses with dominant front gables suggest the Tudor cottages popularized in the 1910s and 1920s. The two-story houses are loosely based on well-established traditional Colonial plans and house types.

The design criteria upon which the HEW Village house types were based indicate that serious consideration was given to the comfort and varying sizes of relocated families, the occupational and social-related needs of executives as well as less senior employees, and the opinions and needs of relocated housewives—all in conjunction with a predominantly "democratic" approach. There was an equally overriding need to maintain high morale. Perhson stated:

High morale cannot be achieved by crowding skilled and veteran workers into inadequate dwellings. Neither can it be predicated upon salary, position, or caste distinction. No village can eliminate such distinctions entirely for it is the American tradition to aspire to executive status, and where such men locate will undoubtedly be considered favored territory; but insofar as the planners could arrange these matters, all types of houses were scattered throughout the project.

During the latter stages of the establishment of the HEW Village the Army Corps of Engineers recommended that DuPont consider the possibility of using prefabricated housing within the village. The Operating Department and Design and Construction Divisions within DuPont selected a prefabricated housing model used at a War Housing project in Knoxville, Tennessee. These prefabricated house types had originally been designed for the Tennessee Valley Authority. Thus, the village plan was expanded to include one-bedroom, two-bedroom, and three-bedroom prefabricated houses that could be constructed for DuPont at a significantly lower cost than the Pehrson-designed houses. A total of 1,804 prefabricated units was approved for construction and situated in the southwestern portion of the village. As already mentioned, the one-bedroom apartment buildings, Type I, had been deleted from the original plan and fewer Type "B" duplexes were constructed than originally anticipated. The design of these houses, with flat roofs and without traditional form or architectural character, placed in a repetitious pattern and concentrated in one district, deviated significantly from Pehrson's plan for the village. However, the necessary housing was provided more expeditiously and economically.

After August 6, 1945, the purpose of the Hanford Engineer Works became well-known. The village continued to provide housing and community needs to workers involved with plutonium production. The post-World War II era brought additional growth and the planned homogeneous expansion of the original village plan. By 1950 the population of Richland had grown to almost 22,000, and hundreds of additional houses, based on G. A. Pehrson-designed house plans, had been constructed. Between 1957 and 1960 the entire town, including the individual houses, commercial and community buildings, and administrative facilities not directly involved with the Engineer Works production or operation, was sold to the town residents and business owners. While the creation and establishment of the village had been one of the largest undertakings of this kind in the nation, the sale of the town was reported to be the largest single-package real estate transaction in United States history. Over the subsequent 40-plus years, the homogeneous character of these residential properties and their neighborhoods has been gradually modified and changed to suit private ownership and individual taste, reflecting broader changes in American society.

The Hanford Engineer Works Village was shaped by a peculiar mixture of military austerity, business concerns, economic opportunism, and democratic and environmental ideals filtered through communitarian and public works projects and overlaid on a settlement landscape. It was considered a "step above" its sister atomic cities of Los Alamos and Oak Ridge. Here, a

mobile population found lucrative employment in a highly secretive defense manufacturing mission as well as comfortable middle-class housing. The Hanford Engineer Works Village provided a respite from the harshness of the surrounding desert and the strict military atmosphere at Hanford. One recognizes in this nuclear village the essential framework of our modern suburban communities.

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