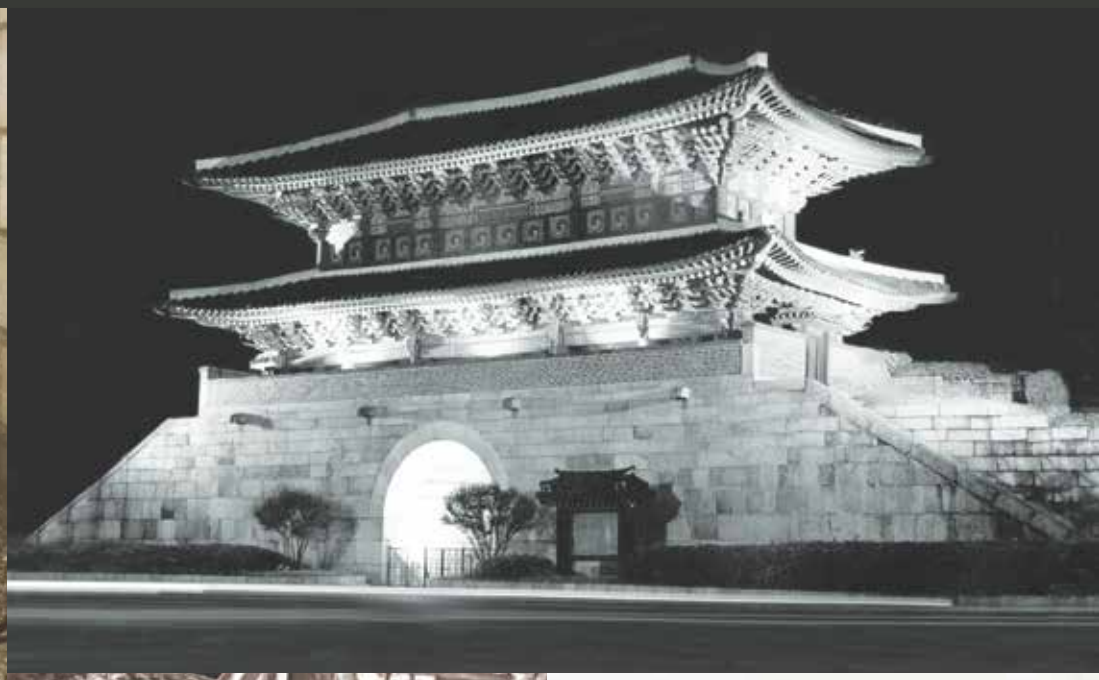
BUILDING STRONG IN KOREA

A History of the U.S. Army Corps of Engineers, Far East District



by Nicolai Kryloff with Joshua Pollarine and Lindsey Weaver

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U.S. Army Corps of Engineers, Far East District
Camp Humphreys, South Korea
2019

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Since its inception, the Far East District (FED) has played a critical role in the defense of the Republic of Korea, helping to maintain stability on the peninsula and strengthening the alliance between the United States and the Republic of Korea. This history tells that story from the district's origins during the Korean War to the present day, as we are in the process of completing one of the largest transformation, re-stationing, and construction projects in Department of Defense history.

The book delves into the district's accomplishments in its more than sixty years on the peninsula and beyond. From the district's first major construction contract—the rehabilitation of the Inchon (now Incheon) tidal basin—to military construction in Japan, discovering North Korean invasion tunnels, and from times of slow construction to times of massive construction efforts, the members of this great organization have always adjusted to change and produced engineering solutions. Through it all, during times of high tension on the peninsula and during times of relative tranquility, FED employees have never lost sight of this mission, whether here on the peninsula or deploying to Iraq and Afghanistan in support of the war on terrorism and aiding in relief and recovery efforts in the Philippines and Sri Lanka.

Amidst the changes and fluctuations in workload and personnel and the large array of construction projects, some themes in FED's history have remained constant: the desire to provide quality construction at a fair price, safely completed and on time; to provide its customers with the best possible service anywhere in the Republic of Korea; and to provide those serving in Korea with a good quality of life.

This book comes at a particularly challenging time for the district. In 2018, we said goodbye to our beloved FED compound in Seoul where we have been since the beginning. Now that we have completed our move into our new headquarters building at Camp Humphreys, we look forward as a district to the new challenges that will inevitably await.

We enjoyed putting this history together and we hope you will enjoy reading the impressive endeavors by the district in its more than sixty years as we continue Building Strong in Korea!

Teresa A. Schlosser
Colonel, Corps of Engineers
Far East District Engineer and Commander

Korea is a land of mountains. It seems fitting, then, that in writing this book, there have been both valleys and peaks, strenuous efforts followed by satisfying achievements. The journey began in earnest one October morning in Annandale, Virginia—coincidentally the main hub of the Korean community in the Washington, D.C., area. There, in a cowboy-style American diner called Silverado, with neighborhood shop signs stenciled in Hangul (the Korean alphabet), I met Earle Whitmore, onetime Far East District (FED) historian, author of the district's first comprehensive history.

I was pleased to have tracked her down (based on nothing more than an old photo and a brief biographical sketch at the back of the 1976 history), and even more pleased that she agreed to meet. Ms. Whitmore, gracious and funny, indulged my questions with recollections of Seoul, her time with the FED, and her experiences writing its first history. Several of her descriptions I remember well: the chocolate-brown water coming from the faucets of her off-compound living quarters, the exhilarating helicopter rides from one U.S. base to another, and such scenes of immeasurable beauty and tranquility as the dawn-light glinting off rice paddies below. She wished me luck.

As it turned out, I did not have the pleasure of visiting Korea. That opportunity came to my colleague, historian Joshua Pollarine, who went to the FED compound in Dongdaemun, Seoul, in October 2016. For two weeks, he ate largely by pointing at pictures on menus; explored city corners and back alleys in attempts to get a sense of the place and its people, and absorbed the history of the town, its ancient structures scattered among modern buildings. His research took him to U.S. Army Garrison Humphreys, where he was treated to a briefing and tour of the garrison, courtesy of FED. Most importantly, he rummaged daily through dozens of file drawers, binders, photo collections, and boxes to excavate the district's history—all maintained in good order by the district's Public Affairs Office. These items are cited in our endnotes as "PAO-FED Historical Files." In addition, Mr. Pollarine conducted oral history interviews and talked with FED personnel about their experiences. What he found, together with Ms. Whitmore's invaluable book and a scattering of other sources, we used to write this history.

Since the original 1976 history, much about Korea and FED has changed. No longer is the Republic of Korea a "developing" economy. Now, the Republic of Korea is a regional and global powerhouse, thanks in no small part to American financial support and expertise transmitted through organizations such as FED. No longer does the Korean construction industry struggle with inexperience, low safety standards, and a lack of managerial expertise—FED helped build the Korean construction

industry into a world-renowned engine for growth. Still, some things remain the same. Korea still hosts a large U.S. military presence, upon which FED's workload is based. The need for FED is no less today than it was following the Korean War.

This is a time of transition for FED, which perhaps justifies this retrospective. As Seoul has grown into a world-class metropolis, large U.S. military installations have been enveloped, and spiking land values are making them increasingly difficult to sustain. For strategic reasons as well, the United States has begun a process of consolidation and relocation of its forces in Korea, and, after more than sixty years in Seoul, the district has moved, along with many other U.S. personnel and their families, to Camp Humphreys, about forty miles south of the original site and about sixty miles from the DMZ. In the process, FED has taken on one of the largest military relocation programs in the world. The future is unknown, but if the past is any indication, the Far East District will be in the middle of the action.

Nicolai Kryloff
Historical Research Associates, Inc.

ACKNOWLEDGMENTS

In writing a history of the Far East District (FED), we have, in effect, become a part of it. Since the district's establishment, contractors have made best-use of the materials at hand, relying on any resources or abilities they may have had. We have done much the same. Like other FED contractors before us, we have been forced to improve. The district and the Corps' Office of History have high standards, and it is their job to ensure that those standards are met. We have been most fortunate to learn under their tutelage.

During this project, we have accumulated many debts of gratitude. John Lonnquest, chief of U.S. Army Corps of Engineers' Office of History in Alexandria, Virginia, made a preliminary reconnaissance "down-range" in 2016, recording a handful of oral history interviews in Seoul before flying to Honolulu to record still more interviews with former FED personnel at the Corps' Pacific Ocean Division headquarters. This effort helped our project immensely. Also from the History Office, Matt Pearcy, James Garber, and Douglas Wilson are deserving of our thanks for making the production of this book a reality. Susan Carroll, an independent consultant, prepared the manuscript's index.

A special debt of gratitude goes to Colonel Bryan Green, district engineer from 2013 to 2015, whose appreciation for history's importance got this project started. In Korea, our main contact was FED's chief of public affairs Stephen Satkowski, who, along with his staff of Korean nationals, kept things running smoothly. Mr. Yo, the district's photographer for decades, graciously opened his files to us during our research, sharing a wealth of images as important as the narrative history itself. In addition, we are grateful to the following individuals who shared their knowledge with us in oral history interviews: Doug Bliss, Dick Byron, Allen Chin, Kwang-Kyu Choe, Joe Clancy, Mike Feighny, Colonel Bryan Green, Sam Han, Jon Iwata, Thomas Karnowski, Roland Laberge, Robert Lau, Ed Minnerly, Ken Pickler, Greg Reiff, Harvey Robinson, George Ward, Yong-ho Yi, and Paul Yoo.

At Historical Research Associates (HRA), Lindsey Weaver came in for the final push and made valuable contributions to the writing. Without her, we wouldn't have finished the book—thank you. Other commendations go to Keith Zahniser as senior project supervisor, Derek Gaines for his research acumen in tracking down photos, Dawn Vogel for her excellent copyediting, and Marie Watson for keeping our arrangements straight. These people and more are deserving of our gratitude. Yet, despite such generous support and assistance from so many capable individuals, any oversights, errors, or omissions remain the sole responsibility of the authors.

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TIMELINE

1950–1953	Korean War
1956	Korea Construction Agency established
1957	Far East District established
1963	FED receives DOD designation (Korea/Japan)
1965	U.S. Marines deploy to South Vietnam
1965-1968	Emergency construction in Japan
1968	Blue House raid; USS *Pueblo* seized
1968-1969	Emergency construction in Korea
1970	WESTPAC established/Japan mission ends/Korea Office (FED)
1972	WESTPAC abolished
1974-1978	Three North Korean invasion tunnels discovered
1982	FED regains full district status
1988	FED aviation detachment deactivated
1990–1994	Military construction moratoriums
1998	Severe flooding in Seoul
2001	Terrorist attacks in New York City and Washington, D.C.
2002	U.S. and ROK sign Land Partnership Plan
2004	U.S. and ROK approve Yongsan Relocation Plan
2007	Groundbreaking for Camp Humphreys expansion
2011	Vertical construction begins at Camp Humphreys
2017	FED transition to Camp Humphreys begins

FAR EAST DISTRICT

INTRODUCTION

To be prepared for war is one of the most effectual means of preserving peace.[1]

—George Washington

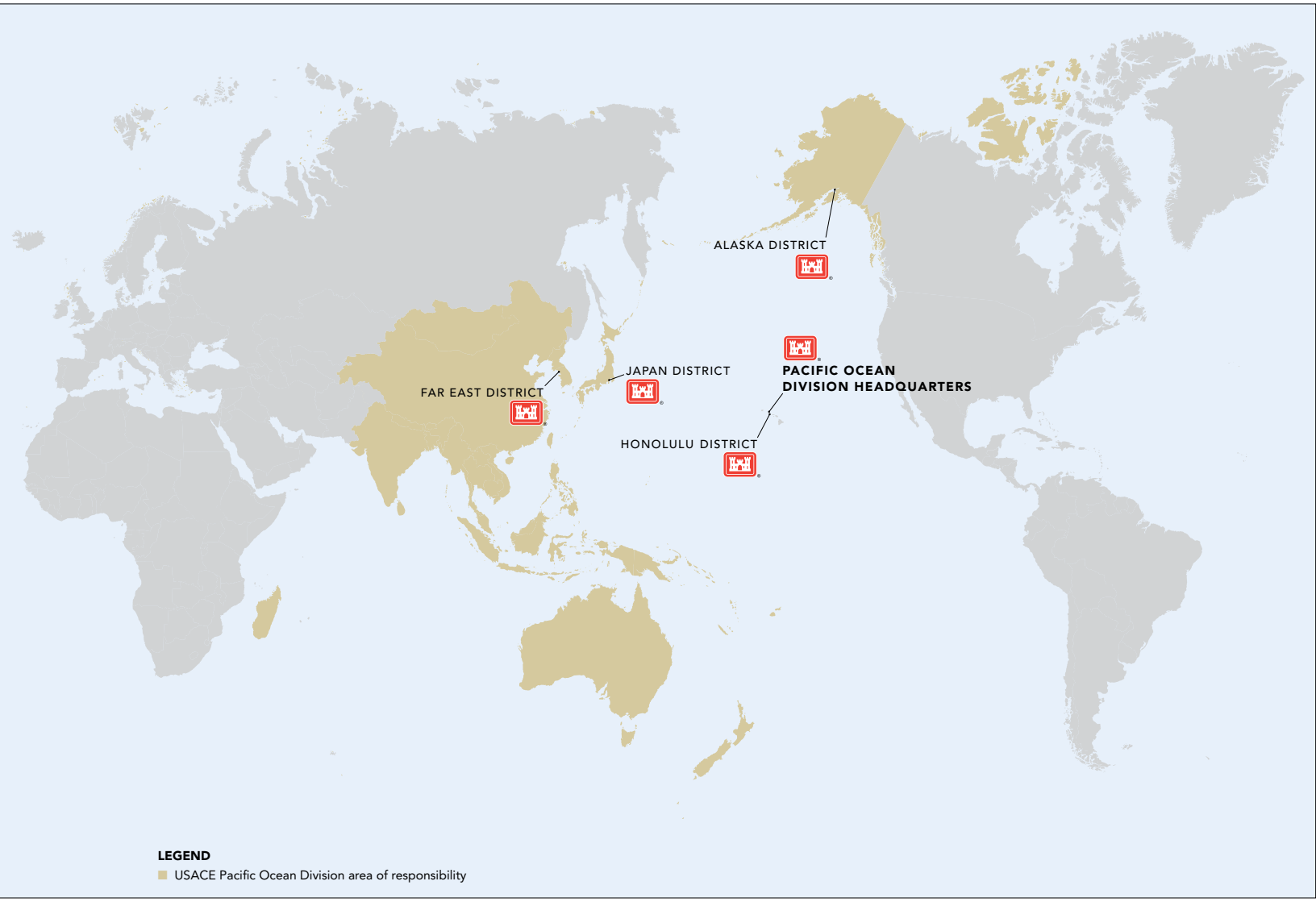
The Far East District (FED) fulfills a unique mission. As the only "maneuver" district in the U.S. Army Corps of Engineers (USACE), it must always be ready for war, even while building for peace on the Korean peninsula. These dual purposes—preparing for war and building for peace—are at the heart of FED's mission and history. District personnel are trained for wartime operations, yet aside from a handful of U.S. soldier-engineers, the district is a civilian institution, a team of Korean Nationals (KNs) and Department of the Army civilians (DACs) on assignment from other countries. For sixty years, the district has been "building strong" in Korea, providing the basis for U.S. Forces in Korea (USFK) to live comfortably and, if necessary, fight effectively.

The district traces its lineage to the Korean War, which devastated the Korean peninsula between 1950 and 1953. While combat ended with the armistice of 27 July 1953, no permanent treaty was ever signed. To this day, Korea remains balanced on the edge of war, with nothing but a 1953 cease-fire holding the peace. To preserve this fragile détente and stabilize the Republic of Korea (ROK, or South Korea), U.S. forces remained in position after the war, at dozens of American bases and installations across the peninsula. Accordingly, military agencies such as the U.S. Army's Korea Construction Agency (KCA) began to upgrade the makeshift wartime facilities used by U.S. troops and personnel.

This rapid growth of military construction in Korea, coupled with ongoing USACE activities in Japan, required a centralized agency to plan and execute U.S. engineering and construction in the region. The Corps, with its vast reservoir of knowledge, resources, and experience in military construction, proved the ideal organization to shoulder the increasing mission requirements in Korea and Japan. In June 1957, the Office of the Chief of Engineers established FED to handle the job.

In six decades of service, FED has undergone many changes. In the 1950s, it helped to build the Korean economy and construction industry. Through the 1960s, the district served the U.S. military not only in Korea but also in Japan. Then, under a 1970 reorganization initiative, USACE divested FED of its responsibility in Japan, and the district became a semi-autonomous area office with a drastically

USACE Pacific Ocean Division area of responsibility.



reduced workload. During this time, FED explored new service areas such as facility maintenance and master planning. When military construction surged in the 1980s, FED again became a full-service district, emerging stronger than ever.

Another contraction followed in the 1990s, but FED once again proved indispensable to the U.S. military in Korea. At the same time, the district began expanding its role in disaster-relief operations, and after 2001, the Global War on Terrorism took center stage. Military construction also rebounded, culminating in an unprecedented $10.7 billion program to transform the U.S. military presence in Korea. In all, the district's workload and size have followed a pattern of steep buildups and precipitous drop-offs, often driven by geopolitical events and trends. Over time, FED has improved living conditions for U.S. service personnel and their families, developed medical and support facilities, and built and maintained U.S. warfighting facilities and infrastructure—including, at present, the largest military relocation program in the world.

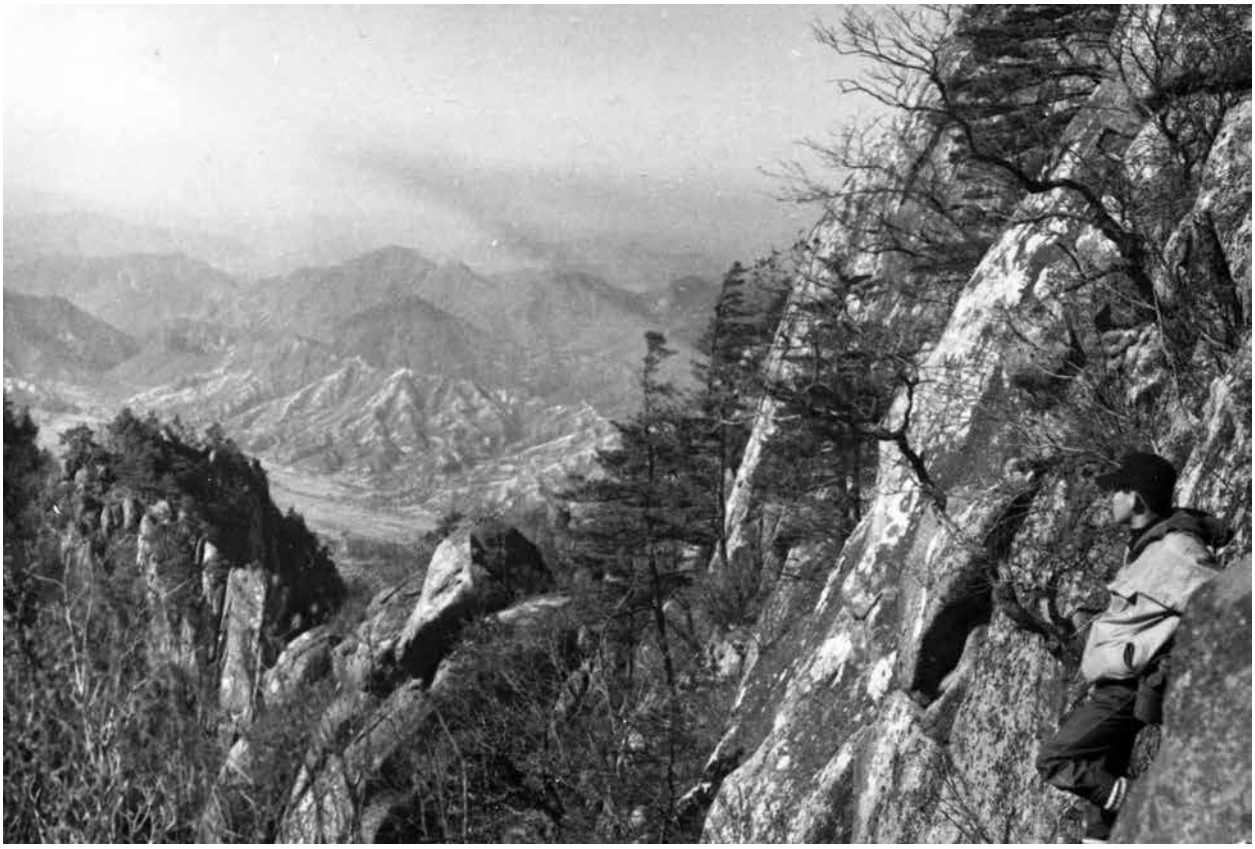
Beyond its support for the U.S. military, the district contributed to the development of the ROK. In partnership with the Korean Ministry of National Defense, FED has provided support to the ROK by educating engineers and providing assistance and services to rebuild the nation and its economy. In its early days, the district was a wellspring of expertise, experience, training, and money for then-fledgling Korean companies such as Hyundai, Samsung, Daewoo, and LG. The district also supported the ROK by detecting North Korean invasion tunnels, managing construction of the trans-Korea petroleum pipeline, and providing surveillance for construction funded by the Korean government.

Operating under the Pacific Ocean Division (POD), FED must be ready to meet wartime contingencies at a moment's notice, even while executing construction programs worth billions of dollars. The district supports all branches of the U.S. military on the Korean peninsula, providing a wide spectrum of services: design, engineering, contract administration, construction oversight, maintenance and repair, and water-well drilling, to name a few. Additionally, FED builds and maintains runways, ammunition depots, training complexes, communications infrastructure, and many other necessities that keep U.S. forces ready to "fight tonight." The district provides vital emergency response to areas of need, and many FED members have volunteered in Iraq and Afghanistan to support the Global War on Terrorism. Above all, the district has served the U.S. military and the ROK in one of the world's most critical and explosive regions.

THE KOREAN PENINSULA

The Korean peninsula, which covers approximately 85,310 square miles, is roughly the size of Minnesota. It extends southward from mainland China about 600 miles, coming within 120 miles of the north coast of Japan.[2] In relation to Korea's larger neighbors, some observers have imagined the peninsula as a "land bridge to Asia" or, conversely, a "dagger at the heart of Japan."[3] A Korean adage describes it as a "shrimp between whales."[4] Averaging 120 miles in width and with seas bordering three sides, the peninsula is somewhat like an island—indeed, the Korean word for "peninsula" translates literally to "half island."[5] In general, one observer wrote, "all of Korea may be divided into two categories, steep hills or rice paddy land."[6]

The Korean Peninsula.



A Korea mountain view.

Mountains dominate the landscape, and they are visible from practically everywhere on the peninsula. The Taebaek Range runs north-to-south along the peninsula's east coast, towering to a height of about 9,000 feet near China and descending gradually toward Korea's southern tip. Steep drops to the sea characterize the eastern front, but to the west, the peninsula opens to fertile valleys and wide coastal plains. Rivers typically carry mountain runoff and monsoon rains from east to west, and most of Korea's major population centers are located on their lower reaches. Seventy percent of the Korean peninsula is covered by mountains. Yet despite this rugged topography, Koreans historically have been an agricultural people.[7]

Korea's lowlands.

Korea's climate is ideal for wet rice production. Typically, summers are hot and humid, while winters are cold and dry. Siberian winds sweep the peninsula from November to April, giving the land a reputation for harsh, icy winters. Farmers plant their paddies in May, before the monsoon rains arrive from June to September. The rice grows profusely in these sweltering summer months and is left to ripen through October, as the weather turns sunny and dry. In this climate, abundant rice harvests enabled Koreans to maintain dense populations despite a shortage of arable land. Until the 1970s, Korean society was overwhelmingly rural.[8]

Culturally, the Korean peninsula was long regarded by outsiders as the "hermit kingdom," remote and mysterious. In fact, Korean history traces back 2,000 years or longer. Its people and institutions shared strong affinities with China (such as the Confucian values of loyalty, respect, obedience, and education), yet the peninsula retained its own distinct culture. Korean rulers regarded their land as a bastion of Sino-centric civilization, and for many centuries, Korea was a loyal Chinese subject state. In practice, however, Koreans had considerable autonomy, and they retained their own distinct customs, dress, architecture, cuisine, and language—including their own writing system, the hangul alphabet, developed in the fifteenth century.[9]

Politically, Korea enjoyed relative stability and continuity, despite periodic invasions over the centuries: seminomadic Khitans arrived from the north in the tenth and eleventh centuries; the Mongols wrought severe devastation in the thirteenth century; Japanese invaders came in the 1590s; and the Manchus invaded in the mid-seventeenth century. Even so, wrote historian Michael Seth, "none of these invasions radically altered the course of Korean history, and the society usually made a speedy recovery." However, a wariness of outsiders remained, and Korean rulers maintained a strict policy of isolation. By the late nineteenth century, the Korean peninsula was home to one of earth's oldest and most ethnically homogeneous societies.[10]

Japanese gunboats "opened" the Korean peninsula to the outside world in 1876. Previously isolated and distant from world trade routes, Koreans abruptly found themselves at a crossroads of colonial interests. China, Russia, and Japan all recognized the importance of the peninsula's central location in East Asia, but following the Sino-Japanese War (1895) and the Russo-Japanese War (1904–1905), Japan displaced its competitors and annexed Korea as a colony in 1910.[11]

Japanese colonial rule was invasive and intense, arousing a lasting bitterness among many Koreans. Japan imposed a massive bureaucracy that extended, in the words of one historian, "all the way down to the local neighborhood policeman."[12] The Japanese government sought to utilize the Korean peninsula in the standard colonial model: that is, to produce products and raw materials for the mother country. Japan established some industrial operations in the north, while southern regions produced rice, soybeans, cotton, and wool for Japanese markets. The colonial years were punctuated by an attempt to assimilate the Korean people and force them to serve Japan in World War II. Colonial rule ended in 1945 with Japan's surrender to Allied forces.[13]

U.S. ARMY ENGINEERS IN THE KOREAN WAR (1950–1953)

In 1945, following Japan's defeat, the United States and the Soviet Union divided Korea along the 38th

parallel—an arbitrary east-west line that "had no historical, geographical, cultural, or economic logic."[14] Provinces, valleys, and families were bisected. The Soviets occupied the northern half of the peninsula, while the Americans occupied the more populous southern half (including Seoul, the capital). The partition was intended to be temporary, but with the establishment of two separate Korean states in 1948—the Democratic People's Republic of Korea (DPRK, or North Korea) in the north and the ROK in the south—prospects for reunification dimmed.[15]

In the aftermath of World War II, neither the United States nor the Soviet Union evinced much interest in Korea as a strategic asset. After Japan's abrupt collapse in the summer of 1945, the two superpowers occupied the peninsula almost by accident—the Soviets had planned to invade Japanese-held Manchuria (the multiethnic region lying north of the Korean peninsula), while the United States had expected to occupy the Japanese islands. One historian observed that "South Korea got the occupation meant for Japan."[16]

Despite these circumstances, Korea soon was thrust into the crucible of the Cold War. In June 1950, North Korea invaded South Korea with overwhelming military force, in an attempt to reunify the peninsula under DPRK rule. The United States and its allies rushed to the ROK's defense. "South Korea in and of itself was of little importance to the global balance of power," observed Cold War historian John Lewis Gaddis, "but the fact that it had been invaded so blatantly—across the 38th parallel, a boundary sanctioned by the United Nations—appeared to challenge the entire structure of postwar collective security."[17] The ROK army was outnumbered and lacked tanks, artillery, aircraft, and other weaponry needed to counter the Soviet-supplied North. The United Nations (UN) denounced the attack, and the United States mobilized two Army divisions stationed in Japan to defend the South. The U.S. and UN merged their resources under Lieutenant General Walton H. Walker, of the U.S. Eighth Army, who directed all ground forces, mostly American, in Korea.[18]

Korea in the 1950s was, wrote one commentator, "an inhospitable place to wage war."[19] It was known for difficult terrain, extreme weather, and poor transportation. Steep mountainsides plunged into deep ravines, while extreme seasonal variations produced numbing winters, followed by months of stifling heat. Drenching summer rains could cause intense flooding, particularly in defoliated areas. Gentle streams transformed into torrents within a matter of hours, engulfing roads and bridges.[20]

USACE historians Barry Fowle and John Lonnquest aptly described the role of Army engineers in the Korean War: "to build, to fight, to destroy, and to rebuild." Upon arriving in Korea, the first U.S. troops fought a desperate retrograde action to stem the North Korean onslaught, ultimately retreating to a defensive perimeter around the Port of Pusan at the peninsula's southern tip. Army engineers worked continually on the country's dirt and gravel roads, holding them open just long enough for UN troops to pass through before laying mines and blowing bridges behind them to hinder the North Korean advance.[21]

Korea at that time was "virtually roadless," recalled Lieutenant Colonel Peter C. Hyzer, who served with the 3rd Engineer Combat Battalion. "They had a few dirt roads. The main highways were

Terrain north of Daegu, along the "Pusan Perimeter," February 1953. *Credit: NARA RG 111, C-9072*

U.S. forces bombard an enemy position with white phosphorous shells, 1 February 1951. *Credit: NARA RG 111, SC-357227*

gravel roads. When you got off of those, there were mostly rice-paddy cart tracks and trails over the mountains." Shortages of basic supplies often forced army engineers to improvise. "We simply couldn't get the fill material to fill the failed spots in the road," recalled First Lieutenant James A. Johnson of the 72nd Engineer Combat Company. "I blew a great big tall brick chimney to get the bricks out of it to use as fill. In that case it was the only thing we had that could get us across the doggone rice paddies."[22]

These Army engineers were driven by the imperatives of combat. As Fowle and Lonnquest noted, they often were "simultaneously blowing bridges and building them, clearing minefields and planting them, destroying port facilities and establishing them." The engineers also distinguished themselves as fighting soldiers, as "expediency and the course of the war dictated their roles more than their training and skill designators." Conversely, infantry troops were sometimes assigned to the engineers, who trained them on the spot to help with construction and demolition efforts.[23]

In September 1950, UN forces made a bold amphibious landing at the Port of Incheon (just west of Seoul), which turned the tide of the war. Simultaneously, the Eighth Army broke out from the Pusan Perimeter and advanced north. In the vanguard, Army engineers rebuilt or replaced the same bridges they had recently destroyed. Roadwork remained a critical challenge, essential for both movement and supply. "At times the roads would just completely disappear," recalled First Lieutenant Maurice D. Roush of the 13th Engineer Combat Battalion. "I once stood and watched a three-quarter-ton truck disappear right in the middle of a road into the mud. All that was left were some bubbles."[24]

U.S. troops attempt to pull a stranded vehicle out of the mud along a main supply road to the forward area, July 1952. *Credit: NARA RG 111, C-9700*

As UN forces pushed northward, Chinese troops joined the North Korean side in October 1950, forcing yet another defensive action in which Army engineers destroyed bridges, ports, rail lines, and all usable buildings in order to deny them to the enemy. After a series of attacks and counterattacks, the pace slowed toward stalemate, with both sides deployed along defensive lines.[25] Fierce tactical engagements punctuated the tension until a cease-fire was signed on 27 July 1953. No peace treaty was ever consummated, and the armistice remains in effect to the present day.[26]

Engineers served as "the glue that holds the Army together," Fowle and Lonnquest wrote. In Korea, they built bridges, roads, airfields, ports, and other infrastructure to maintain the readiness of U.S. forces. But their contributions in the Korean War went beyond these duties: the engineers doubled as combat troops, trained their fellow soldiers, and

improvised solutions in a harsh and hostile environment: "The Korean War underscores that perhaps no other branch of the U.S. Army can boast of such a broad and extensive mission in wartime as the Corps of Engineers." Indeed, as Chief of Engineers Carl A. Strock observed, engineers were among "the unsung heroes of the Korean War, for they helped create the environment that allowed the United States and its allies to fight and win."[27]

In the view of some historians, the devastation and bloodshed of the Korean War accomplished very little. "The tragedy," Bruce Cummings wrote, "was that the war solved nothing: only the status quo ante was restored, only an armistice held the peace. Today the tensions and the problems remain."[28] Michael Seth added that "the war that started in order to reunify Korea ended by hardening its division."[29] The armistice established a Demilitarized Zone—the DMZ—to serve as a buffer between North Korea and South Korea. This corridor, roughly 160 miles long and about 2.5 miles wide, approximated the original partition along the 38th parallel. Ironically, although the buffer zone itself is demilitarized, fortifications on both sides mark one of the most heavily militarized spaces on the planet.[30]

Other legacies of the Korean War were still more complex. The conflict plunged Korea into the ideological and military contest of the Cold War,

Border patrol along the DMZ, as dusk settles. *Credit: NARA RG 111, CCIC-72047*

leading the United States and the Soviet Union (with communist China) to support the divergent Korean regimes according to which was most in alignment with their own interests. According to President Dwight D. Eisenhower's "domino" theory, any country allowed to fall under communist influence threatened the noncommunist order worldwide. So it was that the U.S., in the name of democracy, bolstered successive undemocratic regimes in the ROK, while the communist powers lent support to a mercurial personality cult in the DPRK. These opposing Korean regimes, in turn, distinguished themselves by their allegiance or opposition to communism, and they extracted concessions from the superpowers on that basis. The Korean War was, wrote one historian, "a civil war that became an international conflict, with both North and South Koreans acting as manipulators as well as victims of the great powers."[31]

On a more visceral level, the combat experience shared by U.S. and ROK soldiers created a "bond of blood" between the two nations.[32] The United States needed a steadfast ally along one of the principal fault lines of the Cold War, while South Koreans needed military support, humanitarian aid, and economic assistance to help rebuild their country. In 1954, the ROK and the U.S. ratified a mutual defense treaty to formalize this relationship. The ROK became a major recipient of U.S. aid, which served to strengthen its military and economy.[33]

Meeting between UN and North Korean representatives at Panmunjom, Korea, 28 July 1953, the day after the Korean War Armistice went into effect. *Credit: NARA RG 111, SC-426684*

After the 1953 armistice quieted the guns on the Korean peninsula, there remained what one historian called "an archipelago of American installations" throughout the ROK.[34] The permanent presence of U.S. troops and civilians in South Korea ensured that the ROK and the United States would remain politically, economically, and culturally entwined.[35] Within a short time, U.S. military leaders recognized the need for an entity to oversee the construction, expansion, and maintenance of military bases and other installations scattered across South Korea. These circumstances called for a permanent USACE presence.

Postwar Conditions (1953–1956)

The Korean War presaged the conditions under which FED would be required to operate, and it accentuated the challenges the district would come to face. One legacy of the war was a thriving black market in building materials and supplies. Few materials were available locally, and military shipments were often subject to the unpredictability of warfare, with acute shortages in some areas overbalanced by large gluts of supplies elsewhere. An accompanying lack of accountability opened the door to graft by both American soldiers and KNs. Theft during the Korean War was "a pervasive problem, which ranged from the disappearance of whole trainloads of supplies to small-scale pilfering," wrote Fowle and Lonnquest. At times, the black market became an alternative source of construction materials when conventional supply lines failed.[36]

The war also imprinted upon the American engineers in Korea a talent for improvisation, a resourcefulness and ingenuity that local conditions demanded. When, for example, sandbags were unavailable for roadwork during the war, combat engineers filled rice bags with sand instead. This adaptability manifested itself in countless ways during and after the war, and it would become a hallmark of FED's early years. The district would eventually oversee U.S. military construction on the peninsula, provide jobs and training for Korean citizens, contribute to the ROK's economic transformation, and ensure America's war-readiness. It would not be easy.[37]

Korea emerged from three years of industrialized warfare a battered country. Roads—rudimentary even before the conflict—had become muddy impasses littered with landmines. Bridges were blown up or washed out; buildings were flattened. Housing was in short supply everywhere, and

Women and children search the rubble of Seoul for useable items and anything that can be burned as fuel, 1950. *Credit: NARA RG 111, SC-351697*

shelter for U.S. forces was often rudimentary at best. Most U.S. Army personnel, even officers, worked in tents and slit trenches.[38] "Everybody in headquarters lived in tents," recalled Captain Delbert M. Fowler, a Korean War veteran with the IX Corps Engineer Section. "People from World War II would ask, 'Why didn't you occupy buildings for your offices and headquarters?' The answer was very simple—there weren't any except in Seoul, Incheon, and a few places like that."[39]

To compound the problem, local building materials were almost nonexistent. The war left mountainsides denuded of trees that could have been used for lumber. Aside from small amounts of local concrete, bulk construction supplies were typically unavailable at any price. Imports were rare, as the country had yet to establish formal trade relations with Japan. The Korean government levied heavy taxes on imports used by local firms and businesses.[40]

Likewise, skilled labor was scarce in the war's aftermath. Indigent labor was plentiful, but most Korean citizens had little or no technical training or managerial experience. This unpreparedness was a legacy, in part, from Japan's colonial occupation from 1910 to 1945, during which time Koreans were not allowed to hold managerial or supervisory positions. As a result, there was no viable Korean construction industry to help rebuild the country: "Skilled craftsmen, supervisors, engineers, technicians, and managers were in very short supply," wrote former USACE Chief of Engineering Kisuk Cheung. "Construction materials and equipment were not to be had in any quantities in that war-devastated country. The misery, sorrow, and degradation of life were the dominant features of Korea in these years."[41]

KOREA CONSTRUCTION AGENCY (1956)

Into this difficult environment came the Far East District's predecessor organization, the Korea Construction Agency (KCA). Created by the Eighth Army in 1956, KCA reflected the need to provide better living conditions for U.S. troops and civilians stationed in the ROK. Through a combination of congressional appropriations and non-appropriated funds, the Eighth Army found itself in charge of a $20 million construction program: barracks, family quarters, libraries, and recreational facilities for U.S. soldiers, their families, and visitors. Yet the program's size and scope exceeded the capacities of the Eighth Army Post Engineers and engineer troops, who also had to maintain combat readiness. Consequently, Army leadership established KCA to administer the program.[42]

On 1 November 1956, the Agency awarded its first construction contract, to Han Sung Construction, for the installation of warm-air furnaces at the 121st Evacuation Hospital in Seoul. Han Sung completed the work in less than two months. On 26 February 1957, the Eighth Army Command increased the Agency's authorized personnel—from a single officer to 16 officers, 100 DACs, and 300 KNs. Agency staff came from the Plans and Program Section of the Eighth U.S. Army Engineers, supplemented by temporary-duty (TDY) personnel from the USACE Okinawa Engineer District.[43] Soon after its creation, KCA was renamed U.S. Army Construction Agency–Korea (USACA-K), soon to be renamed again as FED.[44]

Working in a postwar setting, the Agency faced considerable challenges in staffing, procurement, funding, design, and construction. Particularly troublesome was the difficulty involved in recruiting qualified USACE personnel to work in Korea. Central

121st Evacuation Hospital, site of FED's first construction project, as seen in 1968. *Credit: NARA RG 111, CC-46683*

to this problem was, ironically, one of the major shortcomings KCA set out to fix—a scarcity of housing and a lack of Western amenities for U.S. troops and civilians. The agency itself occupied several old Quonset huts on Seoul Military Post. For prospective employees, tours in Korea often meant separation from family and the loss of many accustomed comforts, leading to anemic levels of recruitment.[45]

Procurement was another problem. The ROK government under President Syngman Rhee refused to open formal trade relations with Japan. Rhee's administration also imposed stiff tariffs on international procurement in general. However, supplies imported by the U.S. government were exempt from these taxes, and it was by this mode that KCA operated. Even so, the federal procurement process often

entailed lengthy delays, which could affect a project's progress, or even its completion.[46]

Compounding these difficulties were the frequent alterations in funding and design required by KCA's user agencies: the U.S. military forces in Korea. For U.S. commanders, operating in an active theater, construction needs were often provisional and uncertain, and always subject to change. Projects frequently encountered restrictions; lengthy approval processes; modifications in siting, scope, or design; and funding delays. These changes introduced another layer of uncertainty into KCA's operations.[47]

Perhaps the greatest challenge facing KCA (and later FED) was working to foster the nascent South Korean construction industry. In addition to a significant language barrier, Korean contractors were unfamiliar with American construction techniques, specifications, and equipment. American building methods were "foreign in every sense of the word to the Koreans," wrote FED historian Earle Whitmore. KCA personnel recognized that extensive training would be necessary to familiarize local contractors with U.S. government construction requirements.[48]

The Eighth Army expected KCA to be ready to launch the $20 million construction program by the spring of 1957. However, after meetings among U.S. Army leadership, local commands, and the Office of the Chief of Engineers, a different option emerged—to convert the locally focused, theater-controlled KCA into a Corps district responsible for U.S. construction in both Korea and Japan. Headquartered in Seoul, the district would report to a newly created divisional headquarters in Honolulu, the Pacific Ocean Division (POD). The new district was tentatively named the U.S. Army Engineer District, Far East.[49]

NOTES

[1] President George Washington to the U.S. Senate and U.S. House of Representatives, First State of the Union Address, 8 January 1790.

[2] The Korean peninsula is slightly smaller than the United Kingdom. By contrast, Japan (145,800 square miles) is about twice that size; China (704,000 square miles) is about seven times larger. Edward A. Olsen, *Korea, the Divided Nation* (Westport, CT: Praeger Security International, 2005), 3–4; Michael J. Seth, *A Concise History of Modern Korea: From the Late Nineteenth Century to the Present* (Lanham, MD: Rowman & Littlefield Publishers, 2010), 1.

[3] Olsen, *Korea, the Divided Nation*, 7.

[4] This Korean saying is also rendered as "a shrimp amongst whales" to include two additional "whales"—the Soviet Union and the United States during their Cold War rivalry. Elisabeth Schober, *Base Encounters: The US Armed Forces in South Korea* (London: Pluto Press, 2016), 29–30; Seth, *A Concise History of Modern Korea*, 2.

[5] The seas surrounding the Korean peninsula are known to Koreans simply as the West Sea, South Sea, and East Sea. However, western maps often label them, respectively, as the Yellow Sea, East China Sea, and Sea of Japan. Djun Kil Kim, *The History of Korea* (Westport, CT: Greenwood Press, 2005), 8–9.

[6] Robert E. Snetzer, District Engineer, USACE-FED, "Camp Carroll, A Case Study of the Korean Construction Industry," 8 May 1964, 2.

[7] Seth, A Concise History of Modern Korea, 3; Kim, The History of Korea, 9–10.

[8] Kim, *The History of Korea*, 10; Seth, *A Concise History of Modern Korea*, 3.

[9] Kim, *The History of Korea*, 5–8; Seth, *A Concise History of Modern Korea*, 1, 3–6.

[10] Seth, *A Concise History of Modern Korea*, 3–6.

[11] Seth, *A Concise History of Modern Korea*, 6; Barry W. Fowle and John C. Lonnquest, eds., *Remembering the "Forgotten War:" U.S. Army Engineer Officers in Korea* (Alexandria, VA: U.S. Army Corps of Engineers Office of History, 2005), xv.

[12] Seth, *A Concise History of Modern Korea*, 79.

[13] Kim, *The History of Korea*, 158; Seth, *A Concise History of Modern Korea*, 78–80.

[14] Seth, *A Concise History of Modern Korea*, 1.

[15] The colloquial appellation "North Korea" refers to the DPRK, while "South Korea" refers to the ROK. Fowle and Lonnquest, *Remembering the "Forgotten War,"* xiv.

[16] Seth, *A Concise History of Modern Korea*, 89; John

Lewis Gaddis, *The Cold War: A New History* (New York: The Penguin Press, 2005), 40-41.

[17] Gaddis, *The Cold War*, 43.

[18] Fowle and Lonnquest, *Remembering the "Forgotten War,"* xvii–xviii, 3.

[18] Lieutenant General Carl A. Strock, Chief of Engineers, Foreword to Fowle and Lonnquest, *Remembering the "Forgotten War,"* ix.

[19] Lieutenant General Carl A. Strock, Chief of Engineers, Foreword to Fowle and Lonnquest, *Remembering the "Forgotten War,"* ix.

[20] Fowle and Lonnquest, *Remembering the "Forgotten War,"* 432.

[21] Fowle and Lonnquest, *Remembering the "Forgotten War,"* xviii, 6-7.

[22] Fowle and Lonnquest, *Remembering the "Forgotten War,"* 15, 42.

[23] Fowle and Lonnquest, *Remembering the "Forgotten War,"* 18, 429, 437.

[24] Fowle and Lonnquest, *Remembering the "Forgotten War,"* 85–87, 121, 125.

[25] Fowle and Lonnquest, *Remembering the "Forgotten War,"* 213–15, 331.

[26] For an overview of literature on the Korean War, see Allan R. Millett, "A Reader's Guide to the Korean War," *The Journal of Military History* 61 (July 1997): 583–97; Carroll H. Blanchard, *Korean War Bibliography and Maps of Korea* (Albany, NY: Korean Conflict Research Foundation, 1964); Paul M. Edwards, *The Pusan Perimeter: An Annotated Bibliography* (Westport, CT: Greenwood 1997); Keith D. McFarland, *The Korean War: An Annotated Bibliography* (New York: Garland, 1986); Fowle and Lonnquest, *Remembering the "Forgotten War,"* 432, 447–49.

[27] Fowle and Lonnquest, *Remembering the "Forgotten War,"* xiv; Strock, Foreword to Fowle and Lonnquest, *Remembering the "Forgotten War,"* ix.

[28] Bruce Cummings, *Korea's Place in the Sun* (New York: W. W. Norton & Company, 1997), 298.

[29] Seth, *A Concise History of Modern Korea*, 111.

[30] Schober, *Base Encounters*, 5. See also Erwin N. Thompson, *Pacific Ocean Engineers: History of the U.S. Army Corps of Engineers in the Pacific, 1905-1980* (Honolulu: Pacific Ocean Division, 1985), 219.

[31] Seth, *A Concise History of Modern Korea*, 109; Gaddis, *The Cold War*, 123, 129-30.

[32] Olsen, *Korea, the Divided Nation*, 132; Seth, *A Concise History of Modern Korea*, 113.

[33] Seth, *A Concise History of Modern Korea*, 113.

[34] Cummings, *Korea's Place in the Sun*, 458.

[35] Seth, *A Concise History of Modern Korea*, 110.

[36] Fowle and Lonnquest, *Remembering the "Forgotten War,"* 434–35.

[37] Fowle and Lonnquest, *Remembering the "Forgotten War,"* 436.

[38] Earle Whitmore, *History of the United States Army Engineer District, Far East, 1957 to 1975* (Seoul: U.S. Army Corps of Engineers, 1976), 4; Fowle and Lonnquest, *Remembering the "Forgotten War,"* 436.

[39] Fowle and Lonnquest, *Remembering the "Forgotten War,"* 207.

[40] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 1, Public Affairs Office–Far East District, Seoul, Korea [PAO-FED] Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 6.

[41] Kisuk Cheung, Chief, Engineering Division, FED, Memorandum for Record, 30 December 1977, 7, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 2, 6.

[42] The Eighth Army Command formally established KCA on 17 December 1956, by General Order Number 173, with an authorized strength of one officer. Whitmore, *History of the United States Army Engineer District, Far East*, 6.

[43] USACE-FED, "Visit of Major General Gerald E. Galloway," 8; Whitmore, *History of the United States Army Engineer District, Far East*, 5–6; Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 1, PAO-FED Historical Files.

[44] On 29 December 1956, the Eighth Army Command rechristened KCA as USACA-K. For clarity, this manuscript does not distinguish between the two, using KCA throughout. Whitmore, *History of the United States Army Engineer District, Far East*, 5–6.

[45] USACE-FED, "Visit of Major General Gerald E. Galloway," 7; Whitmore, *History of the United States Army Engineer District, Far East*, 6.

[46] Seth, *A Concise History of Modern Korea*, 149–52; Whitmore, *History of the United States Army Engineer District, Far East*, 6.

[47] Whitmore, *History of the United States Army Engineer District, Far East*, 6.

[48] Yong-Ho Yi, interview by Joshua Pollarine, 5 October 2016, transcript, 2; Whitmore, *History of the United States Army Engineer District, Far East*, 6.

[49] Whitmore, *History of the United States Army Engineer District, Far East*, 6.

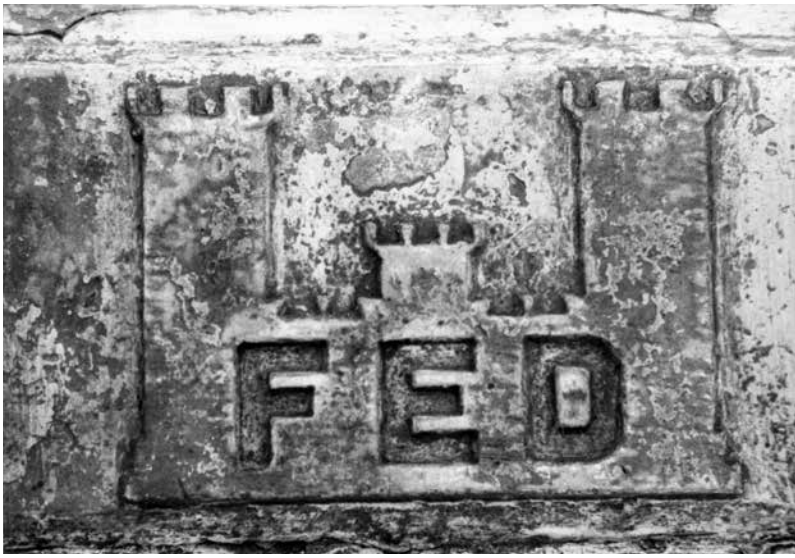
FAR EAST DISTRICT

FED ESTABLISHMENT AND DEVELOPMENT

1957–1965

The Office of the Chief of Engineers established the Far East District (FED) on 1 July 1957. Its mission was to "supervise and prosecute such work relating to military construction in Korea and Japan as directed by the Division Engineer."[1] The district provided a central point of control for all U.S. Army projects in Korea, ensuring that projects would proceed in their order of relative need. It also shifted construction burdens away from combat units, allowing them to focus on training and preparation. Under the jurisdiction of POD, the district absorbed the functions of the Korea Construction Agency (KCA, or USACA-K) and the U.S. Army Construction Agency–Japan (USACA-J) (a parallel construction agency in Japan). For U.S. military construction, FED provided planning, design, procurement, and contracting in both Korea and Japan under a single agency. Moreover, the district was supported by U.S. Army Corps of Engineers (USACE)'s substantial expertise, experience, manpower, and resources.[2]

The newly established district started with three divisions: Engineering, Construction, and Supply. In addition, a number of smaller branches and offices were necessary to carry out FED's mission.[3] The Eighth Army engineers who had staffed KCA became members of FED in Korea. Former USACA-J employees were reassigned to the FED's Japan Area Office (JAO), which set up offices at Camp Burness, in the Tsukiji area of Tokyo.[4] The district added a fourth division on 1 July 1958 in response to a newly assigned real-estate mission. The Real Estate Division was responsible for working with the



Cornerstone mold showing the FED and USACE emblem, circa 1976.

ROK on the acquisition, inspection, and disposal of all properties needed by the U.S. military, and for maintaining records of all such real-estate transactions.[5] FED's basic organizational structure became fully operational with this fourth division. Its initial workload came from the U.S. Army and, on request, from the Air Force.[6]

LEGACIES OF WAR

As the district assumed the workload of its predecessors, it also inherited the headaches—particularly in Korea. One historian summed up conditions in the war-torn country: "Overcrowded, possessing modest resources, artificially severed in half and cut off from the more industrial and developed North, riddled with official corruption and political instability. . . ."[7] Moreover, the country was heavily dependent on U.S. aid for its defense and economic growth. The district encountered the same difficulties as KCA in staffing, procurement, and contracting. In overcoming these problems, FED improvised with adaptive solutions.[8]

Many American civilians were reluctant to serve in postwar Korea. The economy and infrastructure were in shambles. Living conditions were often crude, with even rudimentary lodging at a premium. Despite recruitment drives in the United States, staffing vacancies persisted. Although FED was authorized to hire nearly 200 DACs, some 38 positions remained unfilled in November 1957.[9] Even after the district managed to fill most of these jobs by mid-1958, rapid staff turnover hampered efficiency. Civilian tours lasted just one year, while military tours lasted sixteen months (reduced to thirteen months in mid-1958). New personnel continually had to learn their responsibilities from scratch, resulting in what one division commander termed "lost motion."[10] District leaders recognized that more family housing would make Korean tours more attractive for qualified personnel.[11]

Another postwar difficulty was the lack of domestic building supplies. As KCA had discovered, Korean contractors were hamstrung by scant resources, lack of credit, high tariffs on imports, and an embargo on trade with Japan. However, the U.S. government was not subject to these restrictions, enabling FED to obtain construction materials through the federal procurement process. In this way, the district obtained all necessary project supplies except sand, aggregate, and roofing tiles, which were available locally. The district received assistance from its own JAO, which purchased Japanese materials and shipped them to Korea. In addition, USACE's San Francisco District and San Francisco Liaison Office helped FED order supplies in the United States. In its first year, the district ordered approximately $3 million worth of

Port of Pusan, main gate, 1968. *Credit: NARA RG 111, CC-51732*

supplies. It established depots at Seoul, Pusan, and Uijongbu to receive some 119,000 tons of construction products.[12]

Federal procurement was not without problems. For one, it was more expensive than buying supplies locally. It also relied on processes vulnerable to disruption: deliveries were affected by weather, labor disputes, misrouting, shipping damage, and a host of other vagaries. In the United States and Japan, some orders were delayed by work backlogs, strikes, and shortages of raw material. In August 1957, nearly every project taken over from KCA was behind schedule owing to procurement delays. There was also the issue of storage, as not all materials could be used immediately. In postwar Korea, this situation invited corruption. In one example, a FED employee issued cement and steel to a Korean firm sixteen times in the late 1950s without authorization. When the discrepancy was discovered several months later, the company and the employee had vanished.[13] In spite of the delays, inefficiency, and outright theft, the system nevertheless allowed construction to proceed in a difficult environment.

Working with contractors presented FED with another set of challenges. In postwar Korea, the basic legitimacy of firms was an open question. Pre-award surveys of contractors frequently produced "meaningless results." Credit checks were unreliable, as funds on deposit were likely to disappear when vetting was complete. Fraudulent contractors used a number of other "devious means" to appear qualified.[14] Even honest contractors were unfamiliar with American construction practices. In Korea, recalled longtime FED project engineer Harvey Robinson, "they needed labor. They wanted labor. Everything was labor."[15] This led to significant inefficiencies in work. For example, Korean laborers traditionally used a three-man shovel—one person to hold the shovel and two on either side with ropes to help hoist the load. Project manager Joe Clancy, who first came to FED in 1975, recalled this technique:

> We'd have project managers come in from the States or project engineers, and try to explain to these workers—a three-man shovel is not really efficient. And they'd explain to them, and show them how [much] more productive they could be doing it differently. . . . And the engineer would walk away, and they'd go back to doing the three-man shovel way, because that's what they knew. And that was the way the system worked.[16]

FED historian Earle Whitmore wrote: "Contractor employees had to be taught how to handle power tools and machinery, how to follow the plans, and how to build with American methods and materials. Basically, district personnel managed construction projects through on-the-job training."[17]

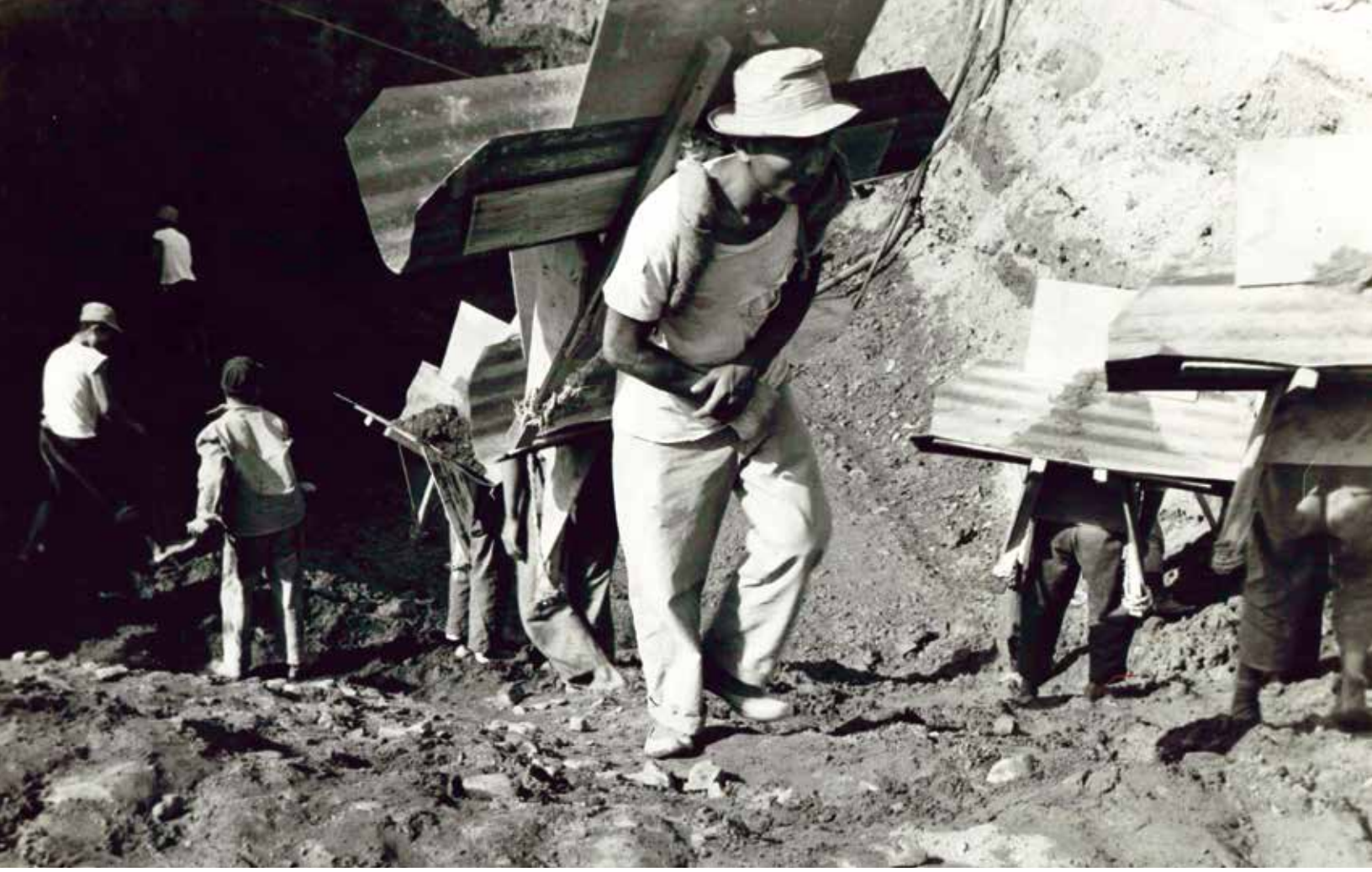
In addition, worker safety was a subject on which, according to Whitmore, "the Korean and American outlooks were diametrically different." For example, when FED project engineer Harvey Robinson first arrived in Korea in the late 1960s, most Korean workers "did not know what hard-toed shoes were. They wore sandals. In fact, we had more accidents for a while until they got used to shoes back in that time frame."[18] Korean law placed little emphasis on contractor liability or responsibility for working conditions. According to some accounts, Korean contractors tended to exhibit a sense of "fatalism" about safety: "To construct promptly, economically, safely, and legally is

almost a paradoxical concept here in Korea." However, other observers noted at least moderate progress in worker safety under the district's influence. One historian noted that while Korea long had a "dismal record" in worker safety, by 1959 it was improving.[19]

Contracting issues were cultural as well as logistical. Kisuk Cheung, who joined FED in 1957 (and would later rise to become USACE's chief engineer at headquarters), recalled a "near total mutual ignorance and misunderstanding" between American and Korean cultures.[20] Not only was there a significant language barrier—which Cheung helped to bridge as an interpreter—but Koreans and Americans also held strikingly divergent views on the concept of contracts. Cheung observed that Korean contractors tended to "avoid precedent and deprecate legal and contractual obligations because they believe an agreement valid only so long as the conditions under which it was reached continue to hold true."[21] Americans, by contrast, considered contracts binding, and district staff spent "an inordinate amount of time" trying to persuade contractors to follow the agreed-upon terms.[22]

Economic conditions magnified these contrasting views. The unavailability of performance bonds, for example, made contracts more difficult

Korean workers transporting rocks by hand to a crusher at Incheon Tidal Basin, circa 1959, typical of the manual labor methods of the day. *Credit: Photo by Sergeant Ray Boswell, FED, PAO-FED Historical Files*



Korean laborers hauling dirt using modified A-frames, at Seoul Area Command Special Services Building, October 1960.

to enforce. Korean firms also tended to overextend themselves, sometimes "wheeling and dealing" with federally procured materials, other times bidding too low on the mistaken assumption that the district would renegotiate later.[23] As a result, inertia often arrived toward the end of projects, with contractors becoming "practically indifferent toward the completion of a project or to defaulting on the contract."[24] The district eventually obtained authority to terminate contracts under $250,000 without approval from Washington. At the same time, instead of advertising new projects for bids, FED awarded many contracts by negotiation, allowing the parties to arrive at a mutual understanding and a realistic price.[25]

Small contract sizes also helped FED's contractors succeed. Korean firms typically lacked the resources for major undertakings, and those that survived tended to specialize. Wrote one observer: "[W]hile they may be efficient in one field, they are almost invariably inept in others."[26] In response, the district broke up large projects into smaller "packages" that were easier to complete. In one example, FED awarded thirty-seven contracts for twenty-seven tactical sites on remote mountaintops, with the jobs ranging from $3,000 to $200,000 each. In fact, most FED contracts were worth less than $100,000. Keeping projects small prevented many Korean contractors from defaulting, while also allowing them to gain experience and financial stability.[27] However, this strategy also raised costs for project administration and supervision, with FED field personnel scattered at dozens of sites across the peninsula.[28]

At the same time, the district's JAO was managing construction worth some $750,000. Conditions were quite different in Japan. Whereas Korea's economy still suffered, Japan's had achieved a quick recovery after World War II, largely because the United States used the island nation for supplies during the Korean War.[29] In Japan, living was cheaper and easier, there were plenty of talented professionals, and construction supplies were readily available. JAO helped its parent district by purchasing supplies for use in Korea, and by supervising contracts awarded to Japanese architect-engineer firms. The success of this arrangement prompted FED to move its Design Branch to Tokyo in December 1958, followed by much of the rest of the Engineering Division in 1960. These Japanese elements were organized as the Far East District (Rear), so named to parallel the Eighth U.S. Army (Rear) stationed in Japan. Thus, many of FED's early projects were accomplished by staff working in Tokyo.[30]

CONSTRUCTION IN KOREA

When FED took over KCA's $20 million construction program in 1957, more than $17 million of work remained to be done. By 1958, the district had awarded 153 contracts—for architecture/engineering, construction, and procurement—and

Major FED construction locations in the 1950s and 1960s.

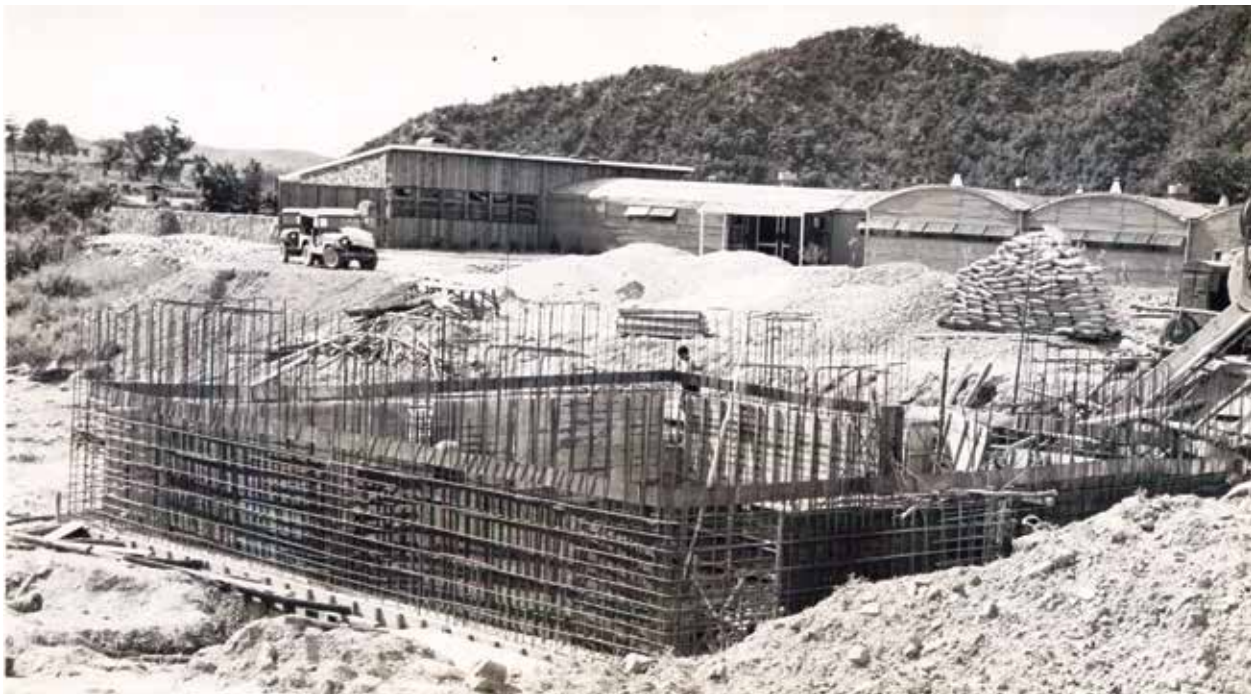
Based on map in Whitmore, *History of the United States Army Engineer District, Far East*, 9

by 1960 it had awarded more than 500 contracts at sites across South Korea. The first projects were exclusively for the U.S. Army and the U.S. Department of State, but FED's work quickly diversified to include Air Force and Navy programs as well. Project types included port facilities, airfields, hospitals, barracks, family housing, storage facilities, communication stations, power plants, water and sewage systems, and recreational amenities. Among this multitude, several stood out: the rehabilitation of Incheon Tidal Basin, a cold-storage plant at Pusan, and complete military installations at Camp Carroll and Camp Ames.[31]

A FED employee takes a core sample for soil moisture at Hialeah Compound, near Pusan, February 1960. *Credit: Photo by Sergeant Ray Boswell, FED, PAO-FED Historical Files*

Incheon Tidal Basin

The rehabilitation of Incheon Tidal Basin started in 1959. It was FED's first major construction project, worth approximately $1.9 million. Incheon, located



An early FED project: Construction of a water supply system at Camp Saint Barbara, in the forward area, August 1957.

about 30 miles west of Seoul, provided a waterway entrance to the capital city. However, the location was subject to 30-foot tidal variations—some of the highest in the world—making the shore approachable only at certain times. Between 1911 and 1923, Japanese colonial administrators directed Korean workers to build a tidal basin for a more reliable port. When complete, seawalls formed a rectangular basin 700 by 1,490 feet in size, protected from the tides and surrounded by a 25-acre dock area. A lock system allowed entrance and egress at high tide for ships up to 4,500 tons.[32]

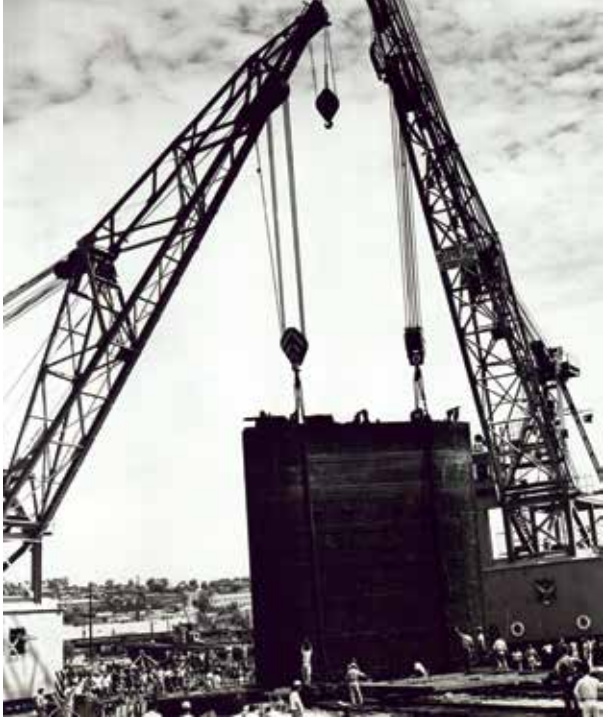
During the Korean War, the tidal basin was ruined, the gates submerged, and the lock destroyed. In 1950, Incheon also gained fame as the site of a bold amphibious landing by American troops, a surprise action that turned the tide of war. "I have never seen a place so battered in all my life," recalled one Army engineer who participated in the landing.[33] Almost a decade later, the tidal basin was still wrecked, and supplies and passengers had to be lightered from far offshore. In 1959, FED and its contractors set about repairing the gates and seawall, rebuilding the wharves and pier, constructing a new harbormaster building, and dredging the basin.[34]

The district recognized its own lack of experience in the complex design work necessary to rebuild the tidal basin. Consequently, it called upon one of its greatest resources—the support of a worldwide, world-class engineering organization: USACE. Personnel from the Seattle District assisted FED in designing and planning the project, drawing upon their extensive experience with lock construction in the Pacific Northwest. Chief of Engineering Kisuk Cheung recalled the "awesome impact" of these experts. "They were concerned with the formation of the solution which was best suited for Incheon, not for Seattle or Boston." He commended their training, professionalism, and dedication; their sensitivity to local problems; and also "their incredible capacity to work."[35]

With the design in place, FED awarded a construction contract to Hyun Dai Construction Co. Ltd. (Hyundai) of Seoul. Of the $1.9 million award, approximately $1.3 million was funded by the U.S. International Cooperation Administration (a federal predecessor to the U.S. Agency for International Development). The Korean government also covered a portion of the cost. These funding mechanisms enabled Hyundai to circumvent certain procurement restrictions, allowing the contractor—not FED—to obtain the necessary laborers, machinery, and materials for construction.[36]

Rehabilitation proceeded in four stages. First, workers dredged approximately 130,000 cubic yards of mud, coal, and metal scraps from the bottom. Next, they utilized a 72-ton floating crane to lift each section of lock out of the water for repair, adding a metal stop-log to prevent the basin from refilling. Each 100-ton metal gate was refurbished by scraping off more than an inch of rust. The final two phases involved rebuilding the south wharf and ramp, and constructing a harbormaster's building.[37]

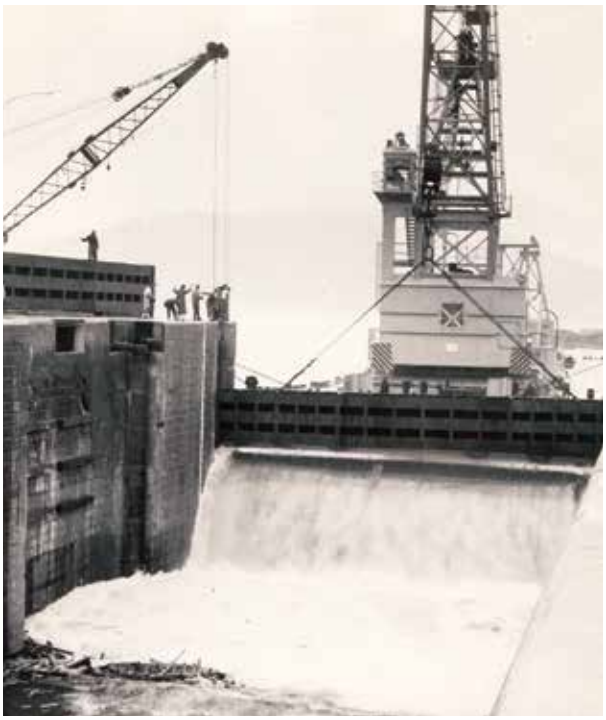
The district overcame several delays and setbacks. Problems first emerged during pier construction, when the piles could not be driven to the expected depth. Investigation revealed that the original subsurface readings had been inaccurate, necessitating a partial redesign. District and POD personnel collaborated to modify the concrete pilings and the method for their placement. The division engineer also attributed delays to a lack of equipment on the



At Incheon, one of the giant leaves of the miter gate is hoisted for repair, November 1959. *Credit: Photo by Sergeant Ray Boswell, FED, PAO-FED Historical Files*

Removal of one of the 100-ton miter gates at the Incheon Tidal Basin, October 1959. *Credit: Photo by Sergeant Ray Boswell, FED, PAO-FED Historical Files*

Placement of fill material at Incheon Tidal Basin, 1960. *Credit: Photo by PFC D. Heyde, FED, FED-PAO Historical Files.*



Removal of the stop-log from the canal lock at Incheon Tidal Basin, September 1960. *Credit: Photo by PFC D. Heyde, FED, FED-PAO Historical Files.*

contractor's part, combined with interference by port authorities. In 1960, another delay occurred with the partial collapse of the south wharf platform. After eighteen months, the district delivered the finished project in December 1960, with no cost overruns.[38]

Pusan Cold Storage Plant

The cold storage plant at Pusan was FED's second major project. The port of Pusan, located at the southeast tip of Korea, was ideal for its proximity to roads, a rail spur, and port facilities. Plans called for a 61,000-square-foot warehouse containing freezer space, chilled-air storage, an icing tower, machine rooms, a utility building, and loading docks. Rail cars would service the warehouse on one side, trucks on the other. The district contracted for the project's design in 1958, but funding delays prevented construction until 1960, when Kong Yong Enterprise took the award for approximately $1 million.[39]

Aerial view of the Incheon Tidal Basin.

The Pusan project ran into so many difficulties, cost overruns, and delays that some dubbed it the "Pusan Folly." Similar to the experience at Incheon, inaccurate readings of soil samples forced a stoppage of construction and a redesign of the plant's foundation, which also necessitated new concrete piles, which required additional equipment for installation. The project fell two years behind schedule, and costs spiked sharply.[40]

Ultimately, despite these problems, the Pusan Cold Storage Plant made FED and the Korean construction industry stronger. The contractor elected to manufacture centrifugally spun concrete piles, the first to be used in Korea. The aggregate, cement, mechanical spinning, and curing all had to meet USACE specifications. When the project was finally complete in 1963, the cost was approximately $1.7 million, with the foundation accounting for almost half the total amount.[41] However, the custom piles proved so successful that many more were manufactured—employing the same techniques and standards—for use as electrical and telephone poles across the ROK. "These poles," noted USACE Chief of Engineering Kisuk Cheung, "have been a panacea since lumber has always been a premium material in Korea."[42]

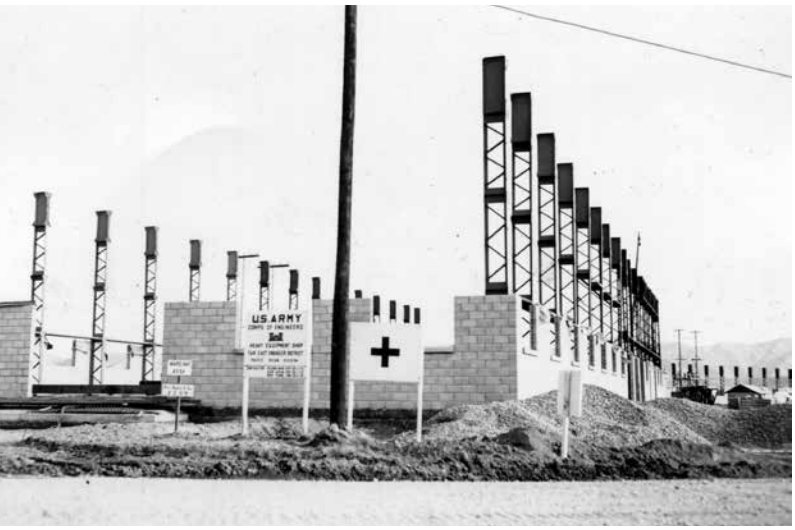
The project was also the first in which a Korean contractor imported much of the heavy equipment and other necessary material. This development relieved FED from having to procure the supplies, a role it assumed only out of necessity. Moreover, the ability of Kong Yong to accomplish the task of financing and importing materials from the United States indicated progress in the Korean construction industry. A FED employee observed: "The larger contractors have mastered the intricacies of dealing with local traders, customs clearances, and bank credits sufficiently to import large quantities of specialized equipment."[43]

Camp Carroll and Camp Ames

At Camp Carroll and Camp Ames, FED constructed two major U.S. military installations from the ground up. Camp Carroll Logistics Center was a supply and maintenance depot carved into rugged terrain; Camp Ames was an ordinance depot located in a remote area. Both installations represented the Eighth Army's decision to reposition its supply centers farther away from the DMZ and North Korean artillery. The projects demonstrated the district's geographic range and its ability to deliver complex, multiyear projects ahead of schedule.[44]

Camp Carroll was the larger of the two projects, worth approximately $10 million and occupying some 300 acres. Originally known simply as the Logistics Center, the depot was named for an enlisted engineer killed in the Korean War. The site had another wartime connection: Waegwan, the nearest town, had been a cornerstone of the Pusan perimeter in 1950. The area had lost its tactical significance but not its strategic position. Located on a ridge above the Naktong River, it was near a rail line and highway about 160 miles southeast of Seoul, far from enemy guns.[45]

Work began in 1959 as a joint venture between FED and the 44th Engineer Construction Battalion. Engineer troops were responsible for earthwork, site preparation, roads, and a base camp. The district took responsibility for all permanent buildings—and for final inspection of all troop construction.[46] The major obstacle was the terrain. Although the site was strategically situated, most of the valley was already in use for rice production. Consequently,



Construction of a heavy equipment shop at Camp Carroll, March 1964. *Credit: NARA RG 111, SC-611464*

the U.S. military chose an unoccupied ridge, necessitating removal of more than one million cubic yards of earth. An observer wrote that "every building rests near a cut section on one side and a steep fill section on the other," with all level areas "closely husbanded" to maximize storage space.[47] Chiseled into a hillside, the camp had an asymmetrical layout, with facilities occupying different elevations. Some officers' quarters were separated from the main installation by rice paddies.[48]

Despite an early fall typhoon in 1959, construction proceeded ahead of schedule. By 1960, troops were operating the installation on a limited basis. The first facilities included maintenance buildings, barracks, a mess hall, and a 70,000-square-foot warehouse; followed by additional asphalt hardstands (paved parking areas for heavy vehicles or aircraft), water and utility systems, a sewage-treatment plant, a power plant and fire station, rail facilities, and three smaller warehouses. Even though troop accommodations were basic, they provided hot showers and washbasins, and were "palatial" in comparison to previous conditions. The initial facilities were complete by 1963.[49]

Between 1963 and 1968, FED oversaw an additional $25 million of work at Camp Carroll. Construction included "welfare and morale facilities" such as a gymnasium, theater, library, and a bowling alley. The installation had heated warehouses, a large amount of refrigerated space, and an instrument calibration laboratory. The warehouses contained everything from rifles to heavy construction equipment. As a whole, the logistical center consolidated a number of previously scattered facilities, enabling faster, more efficient, and more economical operation.[50] For FED, the project proved the district's ability to coordinate with other engineering elements in Korea. Overall, Camp Carroll was "a triumph" for the district, wrote one commentator—cut from a mountainside and delivered to the Eighth Army ahead of schedule.[51]

Camp Carroll, showing open and closed storage areas, 1968. *Credit: NARA RG 111, CC-52784*

Camp Ames was a smaller undertaking, but no less successful. Worth approximately $1.5 million, the project was originally known as Spring Valley Ordnance Depot, so named for the thousands of natural springs occurring in the remote valley where the camp was situated, about 7 miles north of the town of Daejon. The depot was renamed in the early 1960s for a fallen Korean War commander. The installation provided eight hundred acres of ammunition storage for the U.S. Army Ordnance Corps.[52]

Construction began in July 1959, and ordnance troops were able to move in by 1960. The camp included a number of ammunition igloos, Stradley magazines (earth-covered ammunition storage structures), a missile shop, and buildings for calibration and assembly. Other features were barracks, officers' quarters, a mess hall, a dispensary, and utility systems for water, power, and sewage. The site was encircled by some 22,000 feet of double-construction fencing with twenty-two guard towers and security lighting. The district encountered no significant problems, and the installation was essentially complete by 1963, save for the addition of more Stradleys in 1965. At Camp Ames, FED accomplished its work smoothly despite the remoteness of the site.[53]

Other U.S. Army Projects

The undertakings at Incheon, Pusan, Camp Carroll, and Camp Ames were far from the district's only projects. In mid-1958, FED awarded 153 separate contracts for design, construction, and procurement. This "flurry of activity" became a trend, as FED juggled hundreds of small, scattered projects across South Korea, from the DMZ to Pusan. Many of these projects, wrote FED historian Whitmore, supported

Camp Casey, 1963. *Credit: NARA RG 111, CC-621611*

One-thousand-man mess hall at Camp Red Cloud, October 1958.

efforts "to make Korea a more habitable duty station for U.S. troops."[54] A prime example was the 121st Evacuation Hospital in Seoul. Because dependents were not authorized in-country when adequate medical facilities were lacking, the district's delivery of the fifty-bed facility finally allowed family members to join U.S. personnel in Korea. At the same time, the district undertook projects to build barracks, mess halls, and latrines, sometimes creating new military compounds from scratch—as well as schools, commissaries, and other facilities. Water, sewer, and energy infrastructure was necessary everywhere. In addition, FED oversaw construction at airfields and mountaintop tactical sites.[55]

Near the DMZ, the so-called forward area, the district supported the U.S. Army by constructing living and operational facilities at Camps Saint Barbara, Beavers, Kaiser, Hovey, Howze, Casey, and Red Cloud. The district also led construction of permanent officers' quarters at Panmunjom, the "truce village" where talks with North Korea had taken place. At Camp Ori (later renamed Camp Alexander Williams), FED built an entire compound from the ground up, complete with barracks, officers' quarters, a mess hall, administrative and operational buildings, kennels, security fencing, and guard towers. In Seoul, the district contributed numerous recreational and administrative facilities, as well as a water treatment plant with an intake on the Han River.[56] South of Seoul, FED oversaw aircraft hangars, repair shops, and warehouses at Camp Humphreys, which became the largest Army aviation facility in Korea.[57]

Between 1960 and 1962, FED administered a $3.2 million construction program at twenty-seven mountaintop installations. The Eighth Army utilized these locations as missile sites, communications relays, and for other tactical purposes. The work presented special challenges. For one, site inaccessibility made supervision difficult. Whenever

Gymnasium construction in Seoul, 1960.

possible, district field personnel traveled by helicopter, which could reduce a treacherous two-hour drive to a quick twenty-minute flight.[58] Additionally, slope stability and erosion became major concerns: "Design of drainage systems in Korea will challenge any engineer," one observer noted, particularly at mountaintop sites.[59] In response, district personnel frequently embraced local materials and techniques. Kinchi walls, for example, required no steel, no concrete forms, and very little cement. Instead, these traditional gravity walls used hand-cut granite wedges to control drainage and erosion.[60]

Other notable FED projects included petroleum facilities at the ports of Pohang and Incheon. At the latter, the district oversaw rehabilitation of the liquid fuel dock complex from 1961 to 1963. At Pohang, on the opposite side of the peninsula, FED installed an offshore petroleum unloading complex. Unlike a standard dockside arrangement, the facility allowed tankers to offload through a submarine line, making harbor installations along the rugged coastline unnecessary. In 1964, the district awarded contracts for a railroad spur and a 340,000-barrel storage-tank farm. Through a diversified range of projects, FED personnel gained specialized experience that would pay dividends in the future.[61]

DOD Designation (1963)

Effective 1 July 1963, the U.S. Department of Defense (DOD) designated FED as its sole design and construction agent in Korea and Japan. On a practical level, the district became responsible for projects from the U.S. Air Force, which previously had been managing most of its own construction. The DOD designation was designed to reduce inefficiency, overlap, and duplication of effort. In the short term, the Air Force continued work on some ongoing projects, while the district took over others. By 1965, FED assumed all Air Force design and construction within its jurisdiction.[62]

In Korea, the most important program FED inherited from the Air Force—and the most difficult—was Project Rocktop, a five-year program involving Aircraft Control and Warning sites at eight locations. The problems multiplied quickly: the district first suspended construction due to incompatibilities between terrain and design, then updated the design, and then had to renegotiate contracts for construction. These necessary actions led to delays, cost overruns, and "seemingly endless problems." By 1968, the program had been modified more than eighty times. The difficulties, wrote FED historian Whitmore, "stemmed from the district's attempt to construct a project designed and initiated by another service and from the subsequent radical alterations." Even so, FED overcame these challenges to complete the program by 1968.[63]

The district undertook a number of other Air Force projects in Korea. At Suwon Air Base near Seoul, FED administered roughly $2.2 million worth of

Groundbreaking ceremony at Suwon Airfield, September 1963.

work, improving runways, taxiways, warm-up pads, parking aprons, and airfield lighting.[64] At Gimpo Air Base, with help from experts at POD, the district conducted runway rehabilitation and delivered airmen's billets and a gymnasium.[65] At Kunsan Air Base, FED oversaw construction of an ammunition storage complex, a base rocket assembly station, utility systems, airmen's dormitories, and maintenance shops. Osan Air Base received a control tower, barracks, an auto maintenance shop, ammunition storage, and a theater. The district also constructed ammunition storage at Daegu Air Base and delivered barracks, officers' quarters, mess halls, and administrative buildings at various other locations into the 1960s.[66]

OBSTACLES AND OPPORTUNITIES

The district's early accomplishments were remarkable in light of the challenges it faced. In 1965, District Engineer Robert E. Snetzer remarked that "in the environment in which we operate, the avoidance of disaster is often a significant achievement."[67] An engineer in Seoul wrote that "the Far East District is more difficult to operate than any in the Corps of Engineers."[68] Despite FED's diverse workload—indeed, partly because of it—the district struggled with high administrative costs and oversight expenses. With hundreds of small projects dotting the ROK landscape, field personnel were constantly in motion; training and supervising contractors and laborers took patience and time. On the administrative side, large numbers of small contracts necessitated reams of paperwork. The sheer volume and diversity of the district's workload resulted in considerable expense.[69]

Another reason for FED's high overhead was the tactical environment in which it operated. The needs of the U.S. military in Korea and Japan were fluid. According to auditors in the 1960s, the district was hampered by a "lack of reasonably firm plans, frequent changes in design and siting criteria, and inadequate site preparation by troop units."[70] These factors sometimes resulted in the need for additional work, or abandonment of sites altogether. Major projects were sometimes suspended or canceled without warning. Other times, large programs were needed on short notice, resulting in expensive "crash" projects that entailed compressed design and construction schedules.[71]

Unpredictable funding added another layer of difficulty. Congressional appropriations for military construction varied from year to year. At the same time, user agencies habitually waited until the final quarter of each fiscal year to make funding available, creating an imbalance in FED's workload. One observer noted that FED personnel were "strained to the utmost in June of each year to obligate the available funds."[72] Added historian Whitmore, "Alterations in funding were common. Consequently, jobs had to be stopped when partially designed, and numerous designed structures never reached the construction stage." Fluctuations in funding and the district's overall workload complicated planning, staffing, and programming.[73]

Corps leaders considered eliminating FED to reduce costs, but they ultimately decided against such action. POD Division Engineer Gerald Galloway wrote that the district's presence was essential "to maintain the necessary *responsiveness* to the Using Services and to assure *quality* construction as *promptly* and *economically* as possible."[74] As a partial solution to reduce overhead, FED underwent several reductions in force from 1959 to 1961. To further

reduce overhead costs, the Eighth Army took over the district's logistical support (billeting, messing, and guarding the engineer compound) in 1963.[75]

However, not all cost-saving measures had the desired results. For example, DOD-mandated layoffs in 1964 actually backfired. The district was required to release forty Korean employees and sixteen Japanese employees and was not allowed to replace them with American civilian hires. As a result, FED was compelled to use contract agencies to accomplish work formerly done by salaried employees. The reduction, wrote FED historian Whitmore, "produced effects diametrically opposed to those desired," adding approximately $240,000 to the cost of real-estate surveys and other work. In addition, to handle its workload with a reduced staff, the district extended the regular work week for its remaining employees from forty hours to forty-eight hours, with no change in salary, which "staggered morale" while also failing to cut costs. Episodes such as this demonstrated that U.S. government policies aimed at saving money sometimes had unintended consequences. For FED, controlling overhead expenses would be a recurring concern.[76]

Other obstacles affecting FED stemmed from American policy decisions. A prime example was the 1962 International Balance of Payments (Buy American) policy, or IBOP, which required foreign contractors working on USACE projects to purchase American materials. In Korea, where local industries were just becoming established, IBOP increased construction costs by forcing contractors to account for shipping, storage, and import taxes. Importation also increased FED's own administrative requirements and overhead costs. In some cases, the added expense and time spent importing items erased any savings that might have accrued: A 1966 study showed that "[t]o save $16 under IBOP policies . . . the district might spend up to $224 in construction funds."[77] Subsequent directives allowed exceptions for certain local items, relieving some pressure on contractors but creating additional paperwork for FED.[78]

Korean Construction Improvements

One source of pride for the district was the growth of the Korean construction industry. Practically nonexistent when FED was established, the industry had expanded rapidly by the mid-1960s. Years later, Paul Yoo, former FED Engineering Division chief, spoke to this point directly:

> What we're really proud of is that, during that time, a lot of large Korean construction firms were involved in doing the contract with FED, because that was the only work that existed at the time. A lot of them learned a lot about the Corps practices. . . . As a former FED member, I'm proud that we helped them to develop that technical expertise.[79]

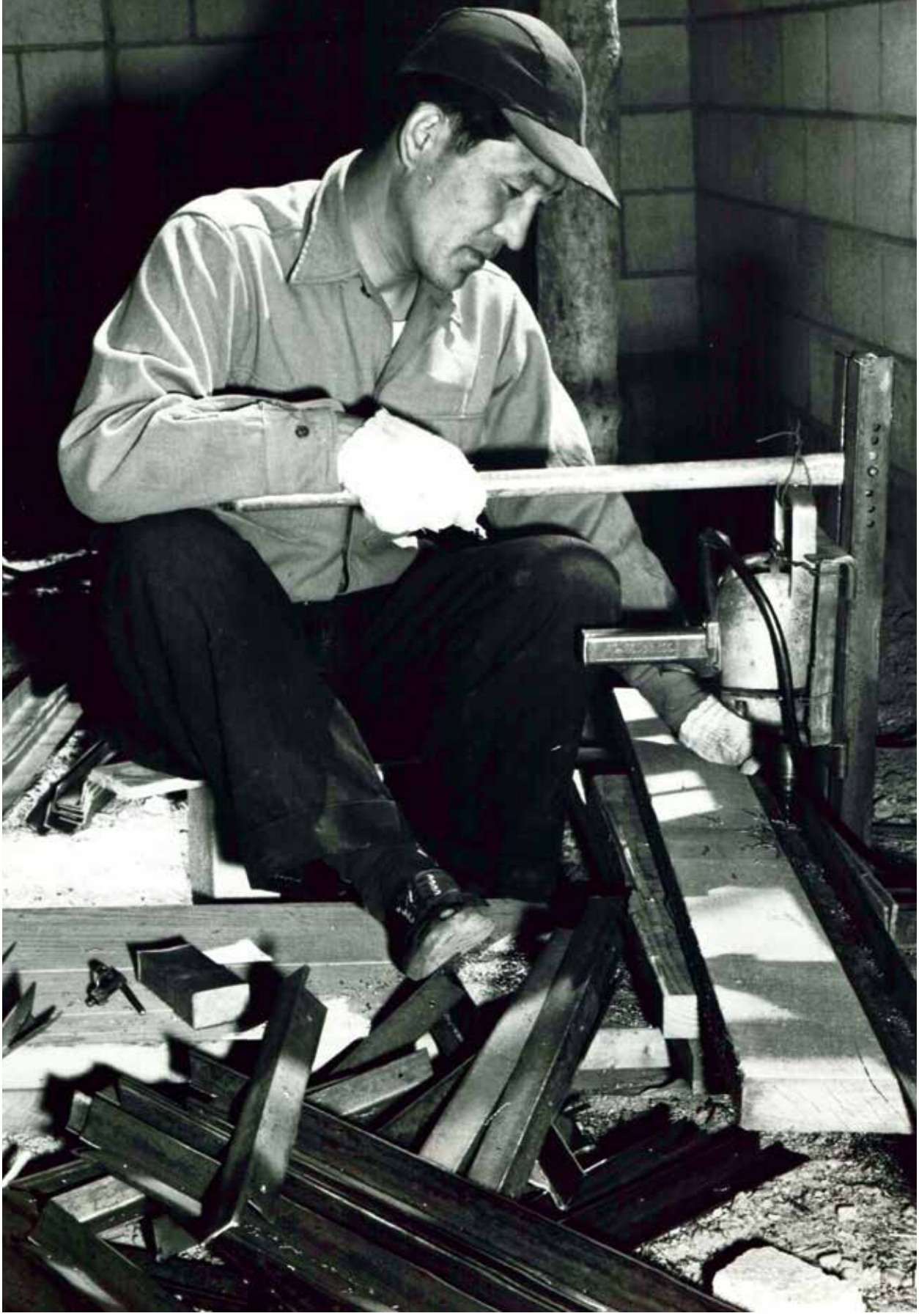
The district was not only a conduit through which American dollars and expertise flowed, but also a nexus for cross-cultural exchange, as FED projects often utilized Korean labor and construction techniques. With heavy machinery in short supply, rock crushing and aggregate washing were done by hand, taking advantage of plentiful unskilled labor. In other instances, indigenous construction techniques were used: wood scaffolding was tied with rice rope and wire, and heavy loads were hoisted into place using gin poles and capstans. "Even though some of the procedures would make safety inspectors shudder," one observer wrote, "a one-year record

showed no accidents resulting from [Korean] methods and equipment."[80]

Korean contractors and laborers also adapted their own methods to USACE standards. Hands-on training at construction sites helped laborers to better understand unfamiliar ways of working: district field personnel explained not only the "how" but also the "why" of building techniques. As USACE Chief of Engineering Kisuk Cheung remarked, "quality control was learned at the lowest level" by manual laborers and ditch-diggers constructing trenches.[81] At higher levels, too, contractors showed improvement. At first, Korean builders gave little regard to standardized methods and materials, and instead treated each site and project as unique unto itself. But with FED's emphasis on standardization and construction planning, construction quality steadily improved. An observer in 1964 noted that "work by Korean contractors is of high quality and equals, even exceeds in some cases, similar work in the United States."[82]

This improvement did not happen by chance: FED promoted contractor education through formal

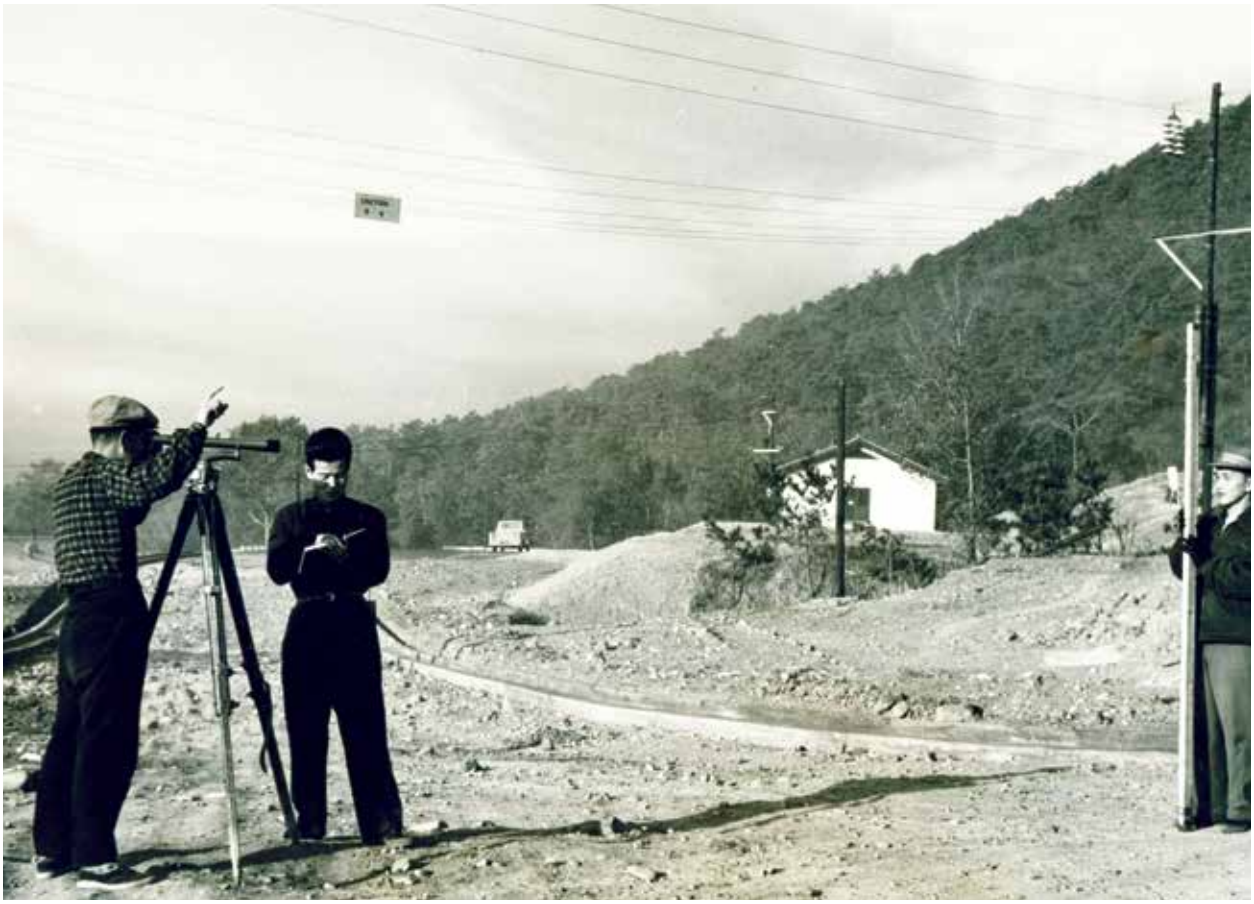
Korean workers curing the precast concrete floor beams used to repair the south wharf of the Incheon Tidal Basin, November 1959.
Credit: Photo by Sergeant Ray Boswell, FED, PAO-FED Historical Files



A Korean contractor operates a drill machine at a FED construction site in Seoul, 1960.

training programs. The district offered classes on job organization, quality control, safety, earthwork, masonry, plastering, and concrete mixture and placement. These topics were soon expanded to include cost estimation, bid preparation, and proposal presentation. The district also offered on-the-job training for ROK Army junior engineer officers, and the South Korean government established its own Army Engineer School, modeled on the American version in Fort Belvoir, Virginia.[83] With the overall development of the construction industry in Korea, FED was able to begin advertising some contracts in the 1960s, instead of negotiating each job.[84]

The district also brought Korean civilians into the FED family, creating another opportunity for cultural exchange and mutual benefit. Engineer Kisuk Cheung noted the importance of this development: "The Corps' officers and civilians got hold of the intelligent and hard-working young Korean engineers, accountants, technicians, and legal specialists, mostly from the leading universities in Korea." These employees, he added, brought their own skills to the job, while absorbing the expertise USACE had to offer. "FED was more than a U.S. construction agency in Korea to the Korean intellectuals . . . above all it was a place where everyone

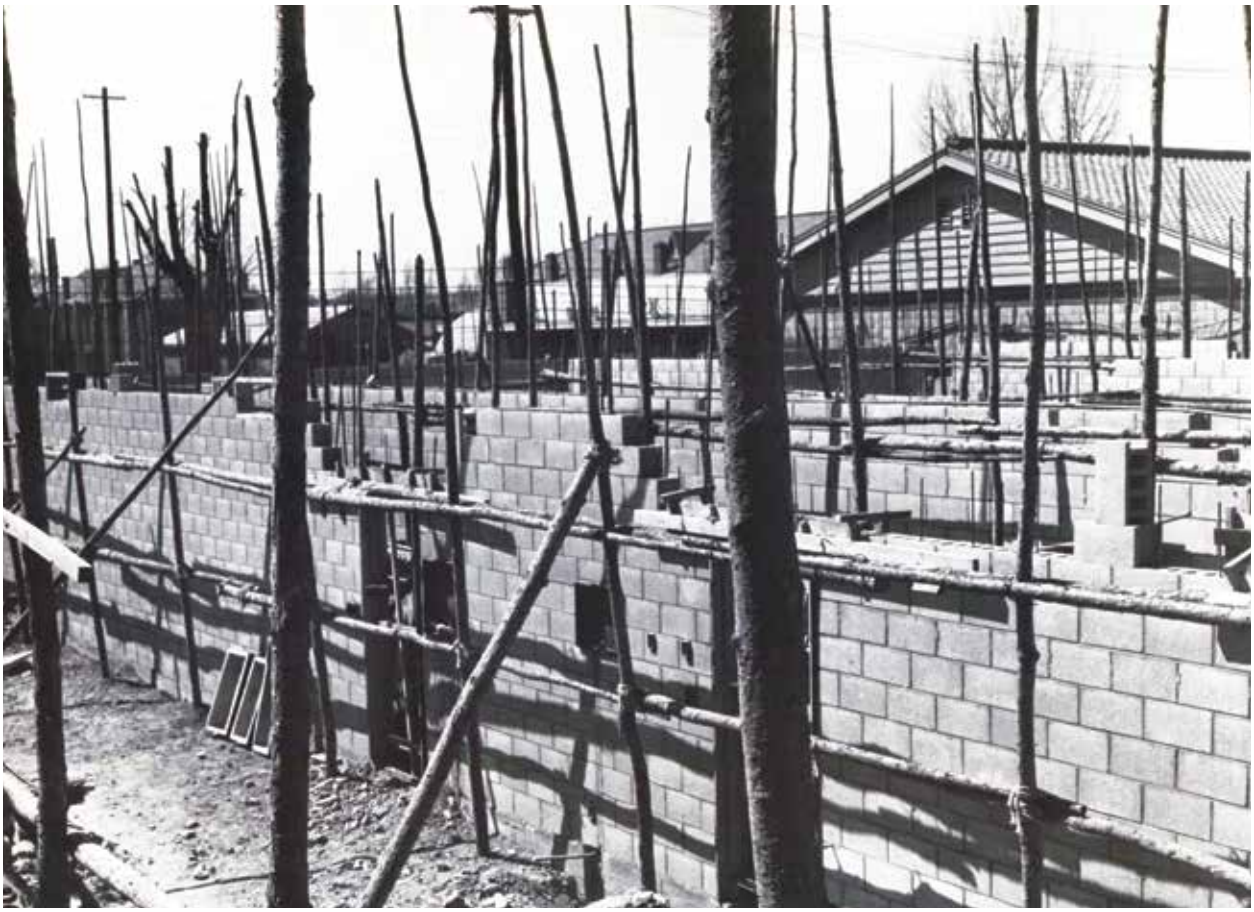


Surveying streets and layouts for Naval Advisory Group housing area, Chinhae, February 1960. *Credit: Photo by Sergeant Ray Boswell, FED, PAO-FED Historical Files*

learned about new technical, contractual, and managerial development." The district conducted training programs for U.S. employees, Korean employees, contractors, and other organizations to improve standards across the board.[85]

In addition, locally manufactured supplies became more widely available. In 1961, the district finally extricated itself from the procurement business, allowing contractors to take over the job of finding the supplies they needed. With encouragement from FED, suppliers diversified and improved their products, resulting in better construction at lower prices. By 1964, many Korean products met USACE construction specifications: cement blocks, corrugated roofing and siding, transformers and other electrical items, lumber, plywood, concrete piles and poles, and reinforced steel.[86] At roughly the same time, in 1960, the Korean government lifted its trade barrier with Japan, further increasing the availability of all types of construction materials. Over the next several years, with prompting from American advisors, ROK leaders further normalized diplomatic and economic relations with Japan, resulting in an influx of Japanese capital that boosted the Korean economy.[87]

The district promoted contractor improvement by insisting on strict specifications for those



Concrete-block walls and scaffolding used to build the ACAN (Army Command Administrative Network) Communications Center, Seoul Area Command, April 1960.

In Seoul, Jim J. Leonard, Chief of FED Foundations and Materials Branch, explains the importance of materials testing in the construction of embankments, foundations, and pavements, May 1966. *Credit: U.S. Army Photo by SP5 Mike Fournell, PAO-FED Historical Files.*

construction materials. In one example, Korean contractors submitted samples of locally fabricated steel sash for windows and doors, but the district initially rejected these items. After several years of manufacturing improvements, the product met American specifications, supplanting a formerly imported item. The district engineer wrote that "new industries, the improved living condition, the increase in gross national product are reflected in the improved welfare of the Korean people at every turn."[88]

Such was the improvement of the Korean construction industry that, by 1963, the district began advertising projects in larger packages. This

ROK Finance Minister In Sang Song (second from left) presents scroll of appreciation to FED District Engineer Daniel A. Richards (second from right), for the District's assistance and cooperation with Korean contractors. Also pictured are Hi Suk Han, President of the Construction Association of Korea, and POD Division Engineer Ellsworth I. Davis, January 1960. *Credit: Photo by Sergeant Ray Boswell, FED, PAO-FED Historical Files*

strategy, designed in part to reduce supervision and administration costs, attracted well-established American firms and Korean joint ventures. For example, the district contracted with an American company to improve airfields at Suwon for $2.1 million. At Camp Carroll, a Korean firm completed a mess hall and barracks for approximately $500,000. Many Korean firms still lacked the capital to tackle large projects, but a dramatic reduction in defaults demonstrated the progress of the burgeoning local construction industry.[89]

Increasing Activity in Japan

Even as the Korean construction industry improved, events were leading the district toward an increasing workload in Japan. Construction requests in Korea were so low that some USACE leaders wondered if FED should be eliminated. Already, the district had moved most of its Engineering Division to Tokyo—the Design Branch in 1958 and all but the Foundations and Materials Branch in 1960—to take advantage of lower costs, better working conditions, easier recruitment, and a more robust Japanese construction industry. JAO oversaw construction in Japan, assisted with procurement for projects in Korea, and managed architecture and design work for the entire district.[90]

The workload in Japan was variable and, at first, much lighter than in Korea. The earliest activities in 1957–1958 included a junior high school and family housing at Camp Zama. In 1958, after one year of operation under FED, JAO placed about $1.9 million worth of construction: housing and operational facilities at Chitose (northern Japan) and operational facilities at Hakata (southern Japan). In 1959, the workload dropped to about $250,000 (family housing at Camp Zama in Tokyo) before rebounding in 1960 with $3 million worth of construction, mainly for communication stations at Chitose and at Camp Drake (on the outskirts of Tokyo). At that time, JAO was staffed with two officers, forty DACs, and one hundred forty Japanese nationals.. With no major construction on the horizon, the district reduced JAO to the Japan Resident Engineer Office in 1961.[91]

Compared to Korea, Japanese contractors could take on larger jobs—for example, construction at Camp Drake occurred under a single $1.4 million contract, won by a joint venture between two Japanese firms.[92] At Chitose, the U.S. military divided a $4.5 million construction program into several parcels, completed between 1961 and 1963. The district awarded a number of contracts, the smallest being $142,000. As FED historian Whitmore noted: "The experience and capability of the Japanese construction industry was a considerable advantage to FED in Japan as compared with the situation in Korea."[93] Contractors built barracks, officers' quarters, warehouses, administration buildings, and other support and operational facilities. The district also undertook three communication sites at Chiran, Itazuke, and Seburiyama for the Pacific Scatter System, a regional telecommunications and data network for the U.S. military.[94]

Construction in Japan remained relatively light until 1963, when DOD designated FED as the sole design and construction agent for the Army, Navy, Air Force, and Marines, in both Korea and Japan. While this designation had little immediate impact in Korea, it increased the district's workload considerably in Japan, where the U.S. Air Force had a significant program under way. In 1963 and 1964, the district launched projects at Misawa, Yokota, and Tachikawa

air bases, as well as at Wakkanai Air Station in Japan's far north. For the U.S. Marine Corps, FED initiated work at Iwakuni Air Station. Collectively, over time, these projects would be worth nearly $12 million.[95]

By 1964, JAO had a staff of sixty-five DACs and one hundred thirty-four JNs, mostly with engineering experience. "We are building everything from barracks to beacons and incinerators to igloos," remarked the deputy district engineer, Lieutenant Colonel Raymond A. Murray. In addition to in-country construction, JAO was handling all aspects of engineering and design for the district as a whole. The work, in essence, involved "translating the needs of the troops into actual buildings," Murray added. "It is our job to see that each man or machine is properly provided for but that money is not wasted."[96] The burgeoning workload in Japan after 1963 enabled FED to maintain its staff despite diminishing construction in Korea. By 1965, geopolitical events would make Japan the district's main focus.[97]

The late 1960s would test the district as never before. First, U.S. military escalation in Vietnam created an urgent and immediate need to build and improve support facilities in Japan. These "crash programs" prompted FED to turn its full attention to the island nation, while most activities in Korea were put on hold. Then, just as the district's programs in Japan were concluding in 1968, world events vaulted South Korea back into the spotlight. Aggressions by North Korea prompted another series of crash programs by the U.S. military, this time to improve and upgrade facilities in the ROK. These emergency construction programs in Japan and Korea would demonstrate not only FED's full range of capabilities, but also the persistence and dedication of its leadership and personnel.

NOTES

[1] Office of the Chief of Engineers General Order No. 11, dated 3 June 1957, stated as follows: "By authority of the Secretary of the Army, effective 1 July 1957, a new Corps of Engineers district to be known as the U.S. Army Engineer District, Far East, is established with headquarters in Korea, under the jurisdiction of the Division Engineer, U.S. Army Engineer Division Pacific Ocean." Whitmore, *History of the United States Army Engineer District, Far East,* 6.

[2] USACE-FED, "Visit of Major General Gerald E. Galloway, Division Engineer, U.S. Army Engineer Division, Pacific Ocean," October–November 1960, 5–6, PAO-FED Historical Files.

[3] The branches included Personnel, Office Service, Safety, and Legal, in addition to three resident offices, a comptroller, and other contingents. Whitmore, *History of the United States Army Engineer District, Far East,* 6–7.

[4] Whitmore, *History of the United States Army Engineer District, Far East,* 6–7.

[5] The ROK handled transactions with Korean landowners. Whitmore, *History of the United States Army Engineer District, Far East,* 13–14; Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 1, PAO-FED Historical Files.

[6] Thompson, *Pacific Ocean Engineers,* 296.

[7] Seth, *A Concise History of Modern Korea*, 149.

[8] Whitmore, *History of the United States Army Engineer District, Far East,* 11, 16; Seth, *A Concise History of Modern Korea*, 149, 157–60.

[9] Thompson, *Pacific Ocean Engineers,* 201; Whitmore, *History of the United States Army Engineer District, Far East,* 13.

[10] Thompson, *Pacific Ocean Engineers,* 202.

[11] Whitmore, *History of the United States Army Engineer District, Far East,* 13.

[12] Thompson, *Pacific Ocean Engineers,* 201, 203; Whitmore, *History of the United States Army Engineer District, Far East,* 13.

[13] FED did not finally distribute its initial $3 million supply order until 1961. Whitmore, *History of the United States Army Engineer District, Far East,* 13; Thompson, *Pacific Ocean Engineers,* 207.

[14] Robert E. Rich, "Engineer Activities in Korea," *The Military Engineer* 349 (September–October 1960): 362.

[15] Harvey Robinson interview by Joshua Pollarine, 7 October 2016, USAG Humphreys, Korea, transcript, 6.

[16] Joseph Clancy, interview by Joshua Pollarine, 5 October 2016, transcript, 16.

[17] Whitmore, *History of the United States Army Engineer District, Far East,* 11.

[18] Harvey Robinson arrived in Korea in 1969, years after FED had been working with Korean contractors, but his remark illustrates the safety situation encountered by the district in Korea. Harvey Robinson, interview by Joshua Pollarine, 7 October 2016, USAG Humphreys, Korea, transcript, 5.

[19] Whitmore, *History of the United States Army Engineer District, Far East,* 11; USACE-FED, "Visit of Major General Gerald E. Galloway, Division Engineer, U.S. Army Engineer Division, Pacific Ocean," October–November 1960, 31, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers,* 206.

[20] Cheung, Memorandum for Record, 6.

[21] Cheung added that Korean contractors' views were shaped by "Confucian culture and the Buddhist view on the transient nature of our existence and things in general [which] became a severe stumbling block in dealing with the Korean contractors during those years." Cheung, Memorandum for Record, 7.

[22] Whitmore, *History of the United States Army Engineer District, Far East,* 11.

[23] Whitmore, *History of the United States Army Engineer District, Far East,* 12; Thompson, *Pacific Ocean Engineers,* 202.

[24] Thompson, *Pacific Ocean Engineers,* 202–3.

[25] The district was authorized to negotiate contracts under 10 USC 2304 (a)(6), and it began engaging in the practice as early as 1957. Whitmore, *History of the United States Army Engineer District, Far East,* 12; Thompson, *Pacific Ocean Engineers,* 202–3.

[26] Thompson, *Pacific Ocean Engineers,* 205.

[27] Dollar amounts given in uninflated prices. See Rich, "Engineer Activities in Korea," 362; Whitmore, *History of the United States Army Engineer District, Far East,* 12; Thompson, *Pacific Ocean Engineers,* 205.

[28] Whitmore, *History of the United States Army Engineer District, Far East,* 12; Thompson, *Pacific Ocean Engineers,* 204.

[29] Kim, *The History of Korea, 164; Seth, A Concise History of Modern Kore*a, 113.

[30] Of the district's Engineering Division, only the Foundations and Materials Branch remained in Korea in 1960. Wrote historian Erwin Thompson: "Although the district Engineer continued to operate from Seoul, a considerable portion of his staff was now in Tokyo." Thompson, *Pacific Ocean Engineers,* 204.

[31] Whitmore, *History of the United States Army Engineer District, Far East,* 8, 16; Rich, "Engineer Activities in Korea," 361; Thompson, *Pacific Ocean Engineers,* 414; Seoul Resident Engineer, Report, 20 January 1965, 1–3, PAO-FED Historical Files.

[32] Whitmore, *History of the United States Army Engineer District, Far East,* 16; Thompson, *Pacific Ocean Engineers,* 296, 414; Seoul Resident Engineer, 20 January 1965, 1.

[33] First Lieutenant Claude L. Roberts, Jr., in Fowle and Lonnquest, *Remembering the "Forgotten War,"* 109.

[34] Whitmore, *History of the United States Army Engineer District, Far East,* 17–18; Thompson, *Pacific Ocean Engineers,* 296.

[35] Cheung, Memorandum for Record, 10.

[36] USACE-FED, "Visit of Major General Gerald E. Galloway," 16; Whitmore, *History of the United States Army Engineer District, Far East,* 17.

[37] Whitmore, *History of the United States Army Engineer District, Far East,* 18–19; Thompson, *Pacific Ocean Engineers,* 296.

[38] Whitmore, *History of the United States Army Engineer District, Far East,* 18–19; Thompson, *Pacific Ocean Engineers,* 296–97.

[39] Whitmore, *History of the United States Army Engineer District, Far East,* 24.

[40] Whitmore, *History of the United States Army Engineer District, Far East,* 24–25.

[41] Whitmore, *History of the United States Army Engineer District, Far East,* 24–25.

[42] Cheung, Memorandum for Record, 11–12.

[43] Whitmore, *History of the United States Army Engineer District, Far East,* 25.

[44] Whitmore, *History of the United States Army Engineer District, Far East,* 19–24.

[45] Thompson, *Pacific Ocean Engineers,* 414; Whitmore, *History of the United States Army Engineer District, Far East,* 19; Bill Schrenk, "Army Storage Facility: Camp Carroll—It's Big, and Still Growing," *Pacific Stars and Stripes*, 15 April 1964, 7; Snetzer, "Camp Carroll," 1–2.

[46] Whitmore, *History of the United States Army Engineer District, Far East,* 19.

[47] Snetzer, "Camp Carroll," 2–3.

[48] Whitmore, *History of the United States Army Engineer District, Far East,* 22; Snetzer, "Camp Carroll," 2–3.

[49] Snetzer, "Camp Carroll," 2–3.

[50] Bill Schrenk, "Army Storage Facility: Camp Carroll—It's Big, and Still Growing," *Pacific Stars and Stripes*, 15 April 1964, 7.

[51] Whitmore, *History of the United States Army Engineer District, Far East,* 22.

[52] Whitmore, *History of the United States Army Engineer District, Far East,* 23; USACE-FED, "Visit of Major General Gerald E. Galloway," 20.

[53] Stradley magazines, or "yurts," were earth-covered ammunition storage structures widely used in the 1950s. They featured arched roofs and vertical sidewalls allowing for efficient storage of missiles, rockets, bombs, and other munitions. R. Christopher Goodwin and Associates, "Army Ammunition and Explosives Storage During the Cold War (1946-1989)," for U.S. Army Environmental Command, May 2009, 1-2, 7-4, 7-18; Whitmore, *History of the United States Army Engineer District, Far East,* 23–24; USACE-FED, "Visit of Major General Gerald E. Galloway," 20.

[54] Whitmore, *History of the United States Army Engineer District, Far East,* 22.

[55] USACE-FED, Remarks for OB/GYN Dedication Ceremony, 121st Evacuation Hospital, 28 June 1983, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East,* 25–30.

[56] Whitmore, *History of the United States Army Engineer District, Far East,* 25–26; Thomas T. Jones, "Water Supply from the Shifting Han," *The Military Engineer* 370 (March–April 1964): 96–97.

[57] Concentrated construction at Camp Humphreys took place between 1963 and 1966, with further development into the mid-1970s. Whitmore, *History of the United States Army Engineer District, Far East,* 30.

[58] Whitmore, *History of the United States Army Engineer District, Far East,* 27.

[59] Thomas T. Jones, "Korean Ingenuity in Construction," *The Military Engineer* 371 (May–June 1964): 164.

[60] Jones, "Korean Ingenuity in Construction," 159–64.

[61] Whitmore, *History of the United States Army Engineer District, Far East,* 30–31.

[62] Prior to the designation, the decision of the Fifth Air Force in Korea to undertake most of its own construction stemmed from concerns that USACE construction costs were too high. Thompson, *Pacific Ocean Engineers,* 209–11; Whitmore, *History of the United States Army Engineer District, Far East,* 40; "Memorandum of Understanding between PACF and the Pacific Ocean Division Engineer Concerning Assignment of all DED Design and Construction Work in the Far East (Japan, Korea, Taiwan) to the Corps of Engineers," 1 May 1963, PAO-FED Historical Files.

[63] Whitmore, *History of the United States Army Engineer District, Far East,* 40–41.

[64] Thompson, *Pacific Ocean Engineers,* 415.

[65] FED historian Whitmore noted that while the work at Gimpo was not technically an Air Force job, funding was funneled through Air Force channels. Whitmore, *History of the United States Army Engineer District, Far East,* 28.

[66] Whitmore, *History of the United States Army Engineer District, Far East,* 41–42.

[67] Quotation dated 19 July 1965, from Whitmore, History of the United States Army Engineer District, Far East; opening page; USACE-FED, Lt. Col. Walter D. Birchfield, FED Deputy Commander, interview by Randall A. Martin, Unit Historian, 3 June 1985, 7.

[68] Thompson, *Pacific Ocean Engineers,* 213.

[69] Thompson, *Pacific Ocean Engineers,* 204.

[70] Whitmore, *History of the United States Army Engineer District, Far East,* 27.

[71] Thompson, *Pacific Ocean Engineers,* 206.

[72] Rich, "Engineer Activities in Korea," 362.

[73] Whitmore, *History of the United States Army Engineer District, Far East,* 35; Thompson, *Pacific Ocean Engineers,* 206–7.

[74] Quotation in Thompson, *Pacific Ocean Engineers,* 207. Emphasis in Thompson's original.

[75] In 1961, the district's strength was reduced from 583 to 516 total officers, enlisted men, civil service personnel, and local or foreign nationals. Thompson, *Pacific Ocean Engineers,* 207, 212. See also Whitmore, *History of the United States Army Engineer District, Far East,* 34.

[76] Whitmore, *History of the United States Army Engineer District, Far East,* 42; Thompson, *Pacific Ocean Engineers,* 212.

[77] Quotation in Thompson, *Pacific Ocean Engineers,* 212.

[78] Whitmore, *History of the United States Army Engineer District, Far East,* 34.

[79] Bong Su (Paul) Yoo, interview by John Lonnquest, 10 March 2016, transcript, 26.

[80] Whitmore, *History of the United States Army Engineer District, Far East,* 31; Jones, "Korean Ingenuity in Construction," 161.

[81] Cheung, Memorandum for Record, 9–10; Whitmore, *History of the United States Army Engineer District, Far East,* 33.

[82] Wilmot R. McCutchen and Thomas T. Jones, "Construction in the Far East District," *The Military Engineer* 369 (January–February 1964): 9–11.

[83] The ROK engineering school provided training in the operation of heavy equipment, as well as specialized courses in subjects such as electrical engineering,

masonry, and carpentry. Gregg Brazinsky, *Nation Building in South Korea: Koreans, Americans, and the Making of a Democracy* (Chapel Hill: University of North Carolina Press, 2007), 84–85.

[84] Whitmore, *History of the United States Army Engineer District, Far East,* 32–33.

[85] Cheung, Memorandum for Record, 8–9.

[86] McCutchen and Jones, "Construction in the Far East District," 11.

[87] After World War II, normalization of trade with Japan remained a sensitive issue for many Koreans. At first, ROK leaders opposed forging economic ties with Korea's former colonial occupier, despite Japan's rapid economic recovery. In 1961, however, the ROK's new military government, led by Park Chung Hee, pushed for increased trade with Japan to fuel Korea's industrialization and economic growth. American advisors also supported closer relations between the two countries to counteract communist influence in Asia. Ultimately, cheap labor in Korea and abundant capital in Japan proved to be a good match. Under Park, Japanese imports accounted for thirty percent of Korea's total by 1963. The ROK fully normalized diplomatic relations with Japan in 1965, signing a peace treaty that opened the way for further Japanese imports and investment in the Korean economy. Trade with Japan increased tenfold during the decade after the treaty. See Jung-en Woo, *Race to the Swift: State and Finance in Korean Industrialization* (New York: Columbia University Press, 1991), 85; Seth, *A Concise History of Modern Korea*, 162–63; USACE-FED, "Visit of Major General Gerald E. Galloway," 9.

[88] Snetzer, "Camp Carroll," 7.

[89] Whitmore, *History of the United States Army Engineer District, Far East,* 38–40.

[90] In 1958–1959, JAO was reorganized to coordinate all district elements in Japan and renamed Far East District-Rear (FED-R) to parallel the Eighth U.S. Army (Rear) stationed in Japan. Originally activated at Camp Burness, JAO moved to other sections of Tokyo: first to Hardy Barracks shortly after activation, and then to Camp Oji in 1958. For clarity, this manuscript refers to FED-R as JAO throughout. Thompson, *Pacific Ocean Engineers,* 204, 217; Whitmore, *History of the United States Army Engineer District, Far East,* 14–16, 34.

[91] USACE-FED, "Visit of Major General Gerald E. Galloway," 22–23; Whitmore, *History of the United States Army Engineer District, Far East,* 35–36.

[92] Whitmore, *History of the United States Army Engineer District, Far East,* 26.

[93] Whitmore, *History of the United States Army Engineer District, Far East,* 37.

[94] Whitmore, *History of the United States Army Engineer District, Far East,* 36–37, 44.

[95] Thompson, *Pacific Ocean Engineers,* 415.

[96] USACE-FED Press Release No. 64-5, "Murray Runs Far East Engineering District in Japan," 20 January 1964.

[97] Whitmore, *History of the United States Army Engineer District, Far East,* 41.

FAR EAST DISTRICT

EMERGENCY CONSTRUCTION IN JAPAN

1965–1968

The district's "crash programs" in Japan started with Vietnam. In 1965, the United States sharply escalated its military activities there, sending approximately 185,000 troops by year's end, with more arriving every month. For the U.S. military, Japan became a crucial base of supply and operations, prompting emergency construction programs to improve American installations across the country. As a result, the district's workload rose from $11.9 million in 1963 to $25.7 million in 1966. Congress funded supplemental military construction programs in 1966 and 1967. The district deferred most projects not related to the conflict in Southeast Asia, while undertaking an unprecedented workload in Japan. The district's activity in Japan peaked in 1967 and had diminished by 1968.[1]

The U.S. military buildup in Southeast Asia accelerated the district's shift to Japan. Prior to the start of emergency construction in 1965, variety characterized the district's workload in the island nation. Projects included barracks at Hakata, airfield lighting at Atsugi, a radio facility at Totsuka, and a chapel at Green Park. Geographically, the district's work spanned the country, from the tip of Hokkaido (Japan's northernmost island) to western Kyushu in the far south.[2]

Major FED construction sites in Japan.

Based on map in USACE-FED, Briefing Material, 1967, 4.

Already, most of the district's construction was taking place in Japan instead of Korea, in large part

Key FED personnel in Japan, January 1967: (front, left to right) E. Groden, Engineering Division Chief; J. Boylan, Deputy District Engineer, Rear; E. Flaxa, Construction Division Chief; (rear, left to right) D. Sakakita, Office Service Branch Chief; T. Henningsen, Contract Administration Chief; J. Feyko, Procurement and Supply Chief.

because of the 1963 Department of Defense (DOD) designation that brought U.S. Air Force construction into the Far East District (FED)'s purview. Most of the Engineering Division was in Tokyo as well, at Camp Oji, along with small detachments of FED personnel from the Office Service, Supply, Contract Administration, and Budget and Fiscal branches. In 1966, the Construction Division would join the Engineering Division in Japan at a new location—Camp Zama, Tokyo, a move that improved living and working conditions and provided faster communication with U.S. forces. District headquarters remained in Seoul, and FED established an area office in Korea to supervise construction there, while most attention shifted to Japan.[3]

CRASH PROJECTS

Funding for emergency construction in Japan came from two special congressional appropriations in 1966 and 1967. These projects became FED's highest priorities, forcing the district to reshuffle its workload to serve wartime needs. Because these crash programs were responses to tactical needs in an active military theater, changes in funding and planning went with the territory. As a result, some projects required extensive redesigns while others were discarded altogether. Despite numerous obstacles—funding problems, project alterations, procurement difficulties, and contractor performance—the district carried out the enormous construction program rapidly and successfully.[4]

By the end of 1965, the district was flooded with Vietnam-related construction in Japan, resulting in the largest workload in FED's history to that point. An early test of the district's responsiveness came in September 1965, when a deadly fire destroyed several buildings at a U.S. Navy security installation at Kamiseya (near Yokohama). The ruined facilities

A.D. Sameshime, FED Chief of Architectural Section, Design Branch, discusses a drawing for an Air Force project, May 1966. *Credit: U.S. Army Photo by SP5 Mike Fournell, PAO-FED Historical Files.*

were essential for communications and operations, prompting the Navy to request a ninety-day turnaround to replace the complex. In less than two weeks, the district finished the design, and in just sixty-five days, FED delivered two of the four buildings. This quick response was a prelude to the urgent jobs yet to be done.[5]

One of the district's first large crash programs was to improve and expand Japan's network of Army hospitals, which were critically important to soldiers injured in Vietnam. The Army's surgeon general remarked: "Any man receiving severe abdomen, chest and head wounds, serious compound fractures, or badly burned, who is not evacuated to Japan could well suffer consequences of far reaching proportions in regards to his return to full health."[6] To serve these troops, the district rehabilitated existing Army buildings, many of them old barracks or warehouses, and repurposed them for hospital uses. The sites included Camps Oji and North Drake in greater Tokyo, and Kishine Barracks in Yokohama.[7]

The hospital program was a "near miracle of reconstruction," wrote one historian.[8] At North Camp Drake, for example, FED converted twenty-one buildings on the 249th General Hospital compound—including vacant warehouses, shop

FED's Jim Calhoun checks on the progress of an operating room being built at the 106th General Hospital at Kishine Barracks, near Yokohama, May 1966. *Credit: Photo by SP5 Mike Fournell, U.S. Army, FED-PAO Historical Files.*

Ribbon-cutting ceremony at the U.S. Army Hospital at Camp Oji, Tokyo, March 1968. *Credit: NARA RG 111, SC-12294*

buildings, and dilapidated barracks—into a 2,000-bed facility with surgery, X-ray, and dental services, in addition to hospital wards, supply areas, and barracks. With these increased capacities, the hospital also needed upgrades to its utilities: water wells, a 100,000-gallon water tank, a sewage treatment plant, a million-Btu-per-hour boiler, and a helipad. At Kishini, FED transformed a rest and recreation center into a 1,000-bed hospital.[9] At Camp Oji, FED converted unused warehouses and shop structures built by the Japanese into another 1,000-bed facility. The district accomplished the entire renovation program without closure of any active areas. Ultimately, when final work on the hospitals was completed in 1969, the program was worth $5.1 million. The district demonstrated its ability to launch a major program rapidly while keeping costs under control.[10]

Other crash projects included communications centers, petroleum facilities, and airfield improvements. For example, at Koshiba and Hakozaki Depots, FED installed submarine petroleum pipelines connecting floating terminals to onshore storage tanks. A larger project, worth $2.4 million, took place at Yokosuka Naval Base, where the district provided a dockside power complex for ships under repair. The facilities enabled vessels to shut down shipboard systems without offloading their crews. Meanwhile, at Yokota Air Base, FED oversaw construction of a runway and taxiway, a control building, an air freight terminal, and supporting utilities. These facilities were followed by a fire station, equipment shops, a passenger terminal, and fueling systems capable of servicing large cargo planes. Other air bases across Japan received lighting, aircraft parking aprons, and power plants. In addition, FED oversaw housing and operational construction at Chitose and Wakkanai, in Japan's far north. The district worked for the Air Force, Navy, and Marines, often scheduling work at night to keep busy installations functional.[11]

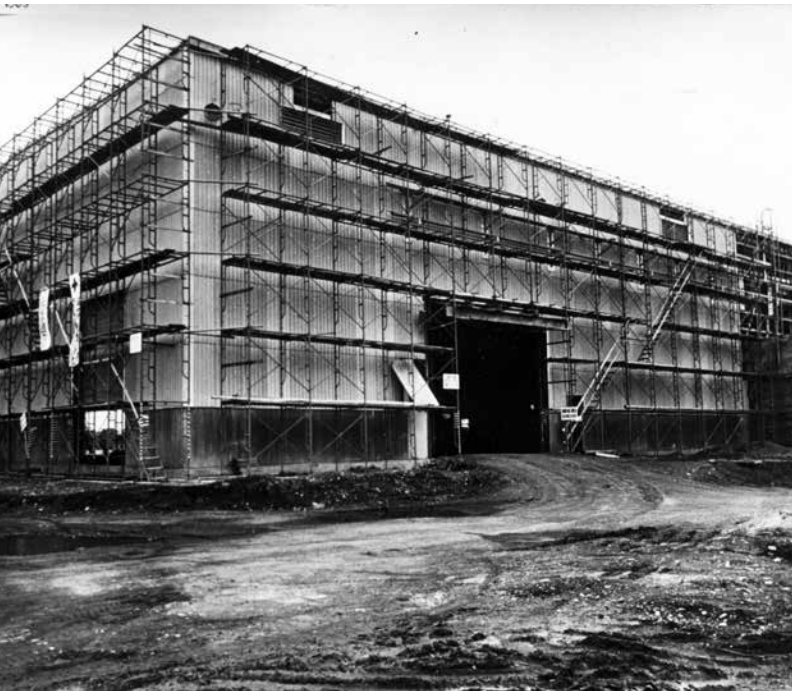
CHALLENGES IN JAPAN

An array of challenges emerged during construction in Japan: funding availability, project alterations, procurement problems, and difficulties with Japanese contractors. Shortages of field personnel added to these complications, while changes in U.S. military planning and funding sometimes resulted in substantial project alterations. In these circumstances, the district adapted and persevered, delivering projects despite the obstacles.[12]

Funding delays and underfunding were basic problems during the crash programs. Some projects or project components were canceled when construction estimates exceeded the programmed

funds. In other cases, funding requests by the district languished, pushing projects behind schedule and keeping them that way. Examples were family-housing projects at Wakkanai and Chitose, in northern Japan, where winters were so severe that the construction season lasted only six months. At Wakkanai, the district received funding approval more than two months after it had been requested. By then it was too late in the season to begin exterior work, and construction waited until the following year.[13]

Project modifications also complicated the district's work. For example, in the fall of 1966 alone, there were thirty-six modifications to the hospital rehabilitation projects at Camp North Drake and Camp Oji, a result of programming changes—the Air Force canceled one phase of hospital rehabilitation at Camp Oji, and it scrapped plans for hospital work at Camp Tokorozawa altogether. Another instance involved the Kanto Plains Communication System, a project encompassing multiple sites. After FED awarded the construction contract, the Air Force increased its power requirements, necessitating installation of different wiring, panel boards, and motors to achieve compatibility with the new design.[14]



Jet engine maintenance facility, Atsugi Naval Air Station, Japan, 1969.

Similarly, procurement problems adversely affected some projects. Much of the difficulty stemmed from the federal Buy American policy, which required the housing units to be manufactured, pre-finished, and packaged in the United States, then shipped to Japan on American vessels. However, a shortage of U.S. ships caused delays, and manufacturers were not always able to keep up with orders. Additionally, damage to cargo during the transpacific voyage was all too common. At Chitose, for example, practically every unit was affected to some degree, necessitating supplemental funding and repairs. At Wakkanai, units arrived late, damaged, and mismatched.[15]

Trouble with Japanese contractors vexed district personnel. The country's building industry was booming, and Japanese contractors "neither needed nor particularly desired district contracts, especially in remote areas," wrote FED historian Whitmore. With an abundance of work elsewhere, many larger Japanese firms chose to avoid the severe weather, high costs, and logistical headaches associated with some district projects. As a result, less well established Japanese contractors often worked with FED on these jobs. In a few instances, American "briefcase artists" also got involved, having no means or intentions of doing the work, and causing the district to redouble its efforts to thoroughly vet bidders despite the urgent nature of the projects.[16]

The projects at Chitose and Wakkanai exemplified these problems. Both sites were on the far northern island of Hokkaido where, at the northern tip, snowfall of 200 inches or more was possible, with strong winds and driving rain limiting the construction season to just half the year. For Japanese contractors, Whitmore noted, "working for FED in northern Japan offered few attractions." High labor costs and supply issues added to uncertain weather and site conditions. Contractors considered U.S. government cost estimates too low, and they chafed at what they considered unwarranted and extreme district requirements. In many cases, profit margins were thin or nonexistent. "Consequently," Whitmore wrote, "many FED contractors, Americans included, went bankrupt."[17]

An American company, the Rand Corporation, was forced to surrender three of its four contracts at Chitose owing to financial problems. Some observers suggested that local subcontractors, laborers, and suppliers applied a "subtle squeeze" on prices, forcing the American company into an untenable position. In May 1966, FED began requiring performance bonds for all its contractors. The district also turned to negotiated contracts (as opposed to formal advertising) in response to inflated bids by Japanese firms. Despite these difficulties, FED accomplished its missions in northern Japan. The district completed construction for the U.S. Army Security Agency at Chitose in 1965 and for the U.S. Air Force at Wakkanai in 1968. In addition to modular housing, the district oversaw construction of operational facilities, maintenance shops, warehouses, schools, dispensaries, and other utilities and amenities necessary for U.S. forces.[18]

The district used a number of methods to achieve success in Japan, despite the problems. To streamline administrative processes, FED sometimes utilized supplemental agreements, allowing additional work to be performed under active contracts without the expenditure of time and money that would have been needed to award projects from scratch. In addition, the district employed commercial firms to conduct site supervision and inspections when FED staff was unavailable. In procuring construction materials from the United States (required under federal Buy American policy), FED sometimes undertook to speed the delivery of these items by obtaining the necessary supplies itself instead of relying on contractors. In all, these adaptations showed the district's flexibility in finding effective solutions.[19]

SLOWDOWN IN KOREA

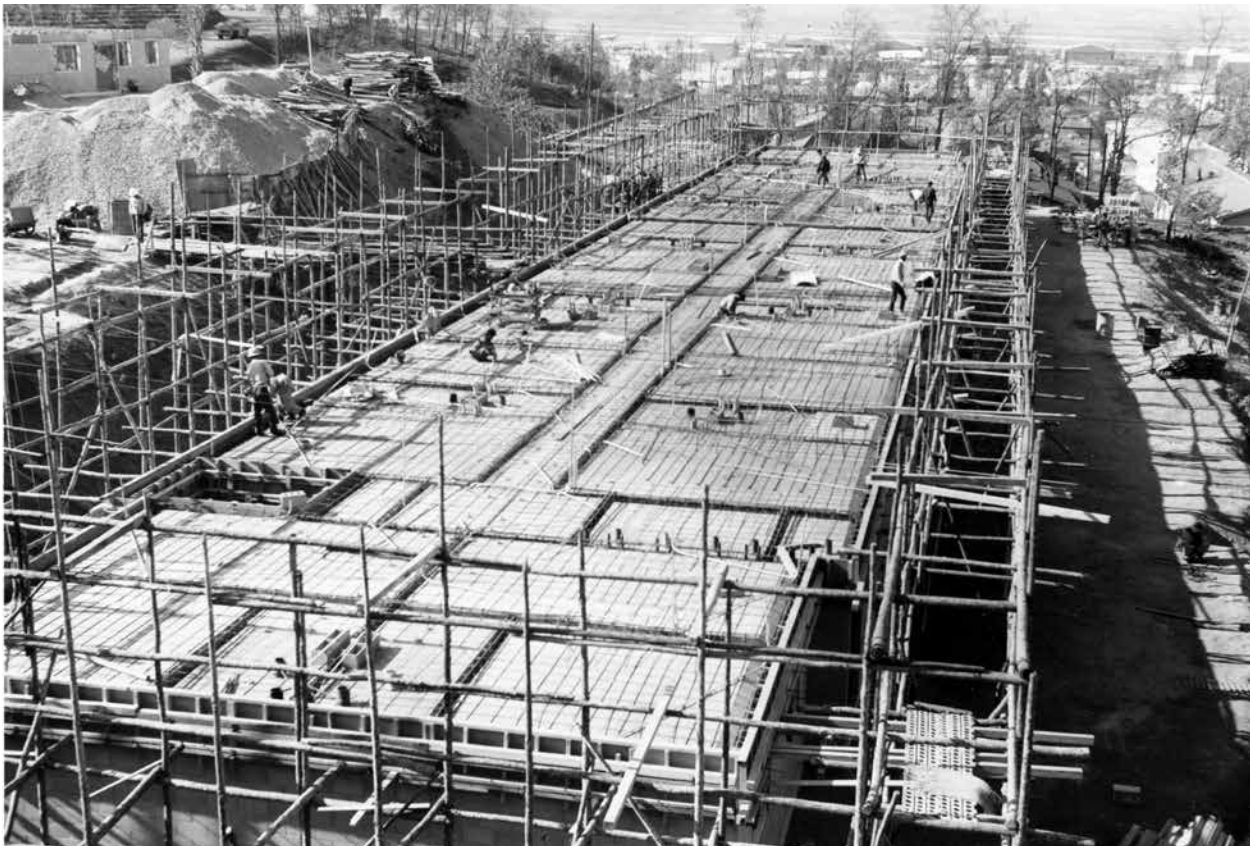
As emergency construction in Japan consumed most FED personnel, work in Korea proceeded on a reduced scale. Active contracts continued at Carroll, Ames, Pohang, Humphreys, and elsewhere, but the district's entire placement in Korea for 1967 amounted to just $7.1 million—a third of which was in operation and maintenance work. New contracts in Korea represented only one-seventh of the district's $22 million total that year. Some projects, such as troop housing near the DMZ, moved forward despite DOD cutbacks for Korea.[20]

In the forward area (near the DMZ), the district placed $1.3 million worth of construction for barracks and officers' quarters from 1966 to 1968. The buildings were scattered across eleven different camps, and FED personnel had to contend with heavy security, screening protocols, and the reluctance of qualified laborers to work in a tense military environment. Even so, FED contractors delivered fifteen troop housing units by October 1968, earning

letters of commendation from the district engineer.[21] Another program in the forward area used troop labor to replace flooded-out bridges, utilizing locally manufactured concrete girders designed by the district. Other work included an auxiliary airfield at Daegu, officers' billets and an administration building at Osan, and an aircraft apron at Gimpo. Still, these projects remained minor in comparison to the work in Japan.[22]

Personnel shortages affected the district in Korea. As the war in Vietnam fueled USACE construction in Japan, the conflict impacted Korea in other ways. For one, the "bond of blood" between American and ROK soldiers was reaffirmed: more than three hundred thousand South Koreans served in Vietnam—more men per capita than any other nation, including the United States. At the same time, the U.S. made cash payments to the ROK government and agreed to use Korean supplies and contractors in Vietnam whenever possible. As a result, Hyundai and other emergent Korean construction firms gained valuable experience overseas.[23]

For FED, however, these developments created a vacuum of qualified Korean personnel—both contractors and employees—in the ROK. In 1967 alone, twenty-seven KNs resigned their posts at the district to work in Southeast Asia. For skilled Korean workers, a month in Vietnam could yield the equivalent of a year's salary. Many staff vacancies remained unfilled for extended periods.[24]



Officers quarters at Osan Air Base, November 1967.

SUNG AE WON ORPHANAGE

In 1957, FED forged a special relationship with Sung Ae Won Orphanage in Seoul. For many years, district personnel freely donated money, time, and materials to this home and its children. Hundreds of children (aged five through eighteen) passed through the orphanage, with some becoming pastors and government officials. Sometimes, residents older than eighteen years were accommodated as they finished school or waited for jobs. The children learned knitting and weaving and maintained a small farm for subsistence items. Some residents received education through college, at the personal expense of the orphanage director.

In 1968, in addition to regular donations, the district gave the orphanage an industrial sewing machine and renovated its dining hall, bathhouse, and water heating system. In the months and years to follow, FED personnel built a playground, chlorination system, latrine, and septic tank. They also provided charcoal for cooking and heating during the winter, donated rice and barley, and offered transportation and other assistance. In 1977, the district renovated the house's activity room, added a bath and kitchen, and furnished a new hot water tank and pressure pump in 1979. The orphanage moved in 1984 to the town of Ichon-dong, about an hour's drive southeast of Seoul. Still, district employees considered Sung Ae Won to be "our orphanage."

The district gave more than material items to the orphanage. A yearly Christmas party, complete with a holiday banquet, gifts, and Santa Claus, was a favorite tradition. For the event, FED brought the children from the orphanage to the old Seoul Civilian Club on the FED compound. At other times, the district sponsored bake sales at the FED flagpole, sponsored Thanksgiving feasts, and brought the children on seasonal picnics. Some individual employees spent additional free time with the children. Always, the children talked about visits from "Yook Ka Boo Dae," or the "troops on 6th street."

Over the years, Sung Ae Won's resident population decreased, from 228 orphans in 1968 to 82 children in 1984. At the same time, the district's support activities branched out to include other Korean orphanages equally worthy of support, providing aid through medical/dental supplies and services, clothes and bedding, school supplies, scholarships, picnics and parties, and other support. The district's relationships with Sung Ae Won Orphanage and other worthy institutions formed a special bond.

Children from Sung Ae Won orphanage stand outside the East Gate Club during a Christmas celebration at FED..

NOTES

[1] Thompson, *Pacific Ocean Engineers*, 214.

[2] Whitmore, *History of the United States Army Engineer District, Far East*, 49.

[3] Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 2, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 34, 44, 56.

[4] Whitmore, *History of the United States Army Engineer District, Far East*, 52.

[5] Whitmore, *History of the United States Army Engineer District, Far East*, 50.

[6] Army Surgeon General Lieutenant General Leonard D. Heaton, quotation from Thompson, *Pacific Ocean Engineers*, 218.

[7] Whitmore, *History of the United States Army Engineer District, Far East*, 50.

[8] Thompson, *Pacific Ocean Engineers*, 301.

[9] At the opening of the hospital at Camp Oji, Japanese students rioted in protest of the Vietnam War. Thompson, *Pacific Ocean Engineers*, 301.

[10] The average price per bed in the hospital program was approximately $2,822, and the cost per square foot was $5.95. Whitmore, *History of the United States Army Engineer District, Far East*, 51–52; Thompson, Pacific Ocean Engineers, 301, 415.

[11] Whitmore, *History of the United States Army Engineer District, Far East*, 53–54.

[12] Whitmore, *History of the United States Army Engineer District, Far East*, 50–51.

[13] Whitmore, *History of the United States Army Engineer District, Far East*, 44–46, 56.

[14] Whitmore, *History of the United States Army Engineer District, Far East*, 50–51.

[15] Procurement difficulties could also increase costs. For example, specialized power converters cost $199,000 in Japan, delivered to the job site, whereas the imported version started at more than $400,000, minus shipping. In order to get supplies locally, the district had to secure an exception to Buy American regulations, even for common materials such as plywood and acoustical tile. Whitmore, *History of the United States Army Engineer District, Far East*, 44–45, 52, 55.

[16] Thompson, *Pacific Ocean Engineers*, 218; Whitmore, *History of the United States Army Engineer District, Far East*, 44.

[17] There were 156 military families waiting for the modular family housing units (USAHOMES) at Chitose and Wakkanai. Whitmore, *History of the United States Army Engineer District, Far East*, 44–45, 48.

[18] Thompson, *Pacific Ocean Engineers*, 218, 415; Whitmore, *History of the United States Army Engineer District, Far East*, 44.

[19] According to Whitmore, FED staffing shortages were due in part to the Tri-Service wage scale, which set salaries for foreign employees (such as JNs) at levels below local wages for comparable work. Whitmore, *History of the United States Army Engineer District, Far East*, 47–48, 52.

[20] Whitmore, *History of the United States Army Engineer District, Far East*, 56–57.

[21] President Bill Clinton is said to have described the DMZ as "the scariest place on earth." See Schober, *Base Encounters*, 6; USACE-FED, Technical Liaison Office, "New Barracks for 2d Infantry Division," 9 October 1968, PAO-FED Historical Files.

[22] Whitmore, *History of the United States Army Engineer District, Far East*, 56–57.

[23] A diplomatic document known as the "Brown Memorandum," dated March 4, 1966, governed arrangements for U.S. utilization of ROK forces in Vietnam, in coordination with U.S. economic aid to South Korea. Woo, *Race to the Swift*, 92–94; Seth, *A Concise History of Modern Korea*, 162–63; Brazinsky, *Nation Building in South Korea*, 140.

[24] Thompson, *Pacific Ocean Engineers*, 217; Whitmore, *History of the United States Army Engineer District, Far East*, 44.

[25] USACE-FED, Press Release, "District Engineers Donate to Orphanage," 21 October 1968; "Our Children at Christmas," 30 October 1975, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 27, 88.

[26] USACE-FED, Fact Sheet, Sung Ae Won Orphanage, 1 August 1975, PAO-FED Historical Files; "Ichon, Celadon, and Rice," *East Gate Edition* 5, no. 54 (October 1987): 6; Kim Bowen, *Supplement to the History of United States Army Engineer District, Far East, 1976 to 1977* (Far East District: Seoul, 1979), 24–25.

[27] USACE-FED, Minutes of Sung Ae Won Orphanage Meeting, 18 September 1979, PAO-FED Historical Files, "New Sung Ae Won Orphanage Opens," *East Gate Edition* 2, no. 20 (November 1984): 1; Choi Un-Sook, "Sung Ae Won News," *East Gate Edition* 5, no. 51 (July 1987): 8; Al Bertaux, "FED Christmas Cheer Bubbles Over," *East Gate Edition* 5, no. 56 (December 1987): 4.

[28] USACE-FED, Constitution, Far East Orphanage Committee, 31 March 1989, PAO-FED Historical Files; "New Sung Ae Won Orphanage Opens," *East Gate Edition* 2, no. 20 (November 1984): 1.

FAR EAST DISTRICT

EMERGENCY CONSTRUCTION IN KOREA

1968–1969

In 1968, the district's fortunes changed with the course of international events. At the beginning of the year, it seemed that the Far East District (FED)'s dwindling workload in Korea did not justify the presence of a U.S. Army Corps of Engineers (USACE) district. A staff study for Pacific Ocean Division (POD) recommended relocating the district's headquarters to Japan, leaving only a subordinate area office in Korea. Many of FED's best engineers were in Tokyo already, having participated in the crash programs there. In addition, Corps leadership anticipated less than $21 million in construction placement for the district in fiscal year 1969, split about evenly between Korea and Japan. Among the personnel in Korea, there were rumors about "hush-hush preparation of secret charts" for a massive downsizing. The district's days in Seoul, it appeared, were numbered.[1]

Two high-profile incidents in early 1968 altered that outlook. The first was a raid by North Korean commandos on the Blue House—President Park Chung Hee's official residence in Seoul. In January, thirty-one trained agents slipped into the Republic of Korea (ROK) with a mission to assassinate the president. Acting on a tip from villagers who had encountered the men, South Korean security forces went on high alert, and on 21 January 1968, South Korean police discovered the foreign agents impersonating ROK soldiers, just hundreds of yards from the Blue House. A massive firefight ensued, claiming close to a hundred casualties, civilian and military alike. Some surviving infiltrators fled north from Seoul, but after a days-long manhunt, twenty-eight of the intruders were confirmed dead, although at least one escaped across the Demilitarized Zone (DMZ). One commando was captured, interrogated, and later repatriated as an ROK citizen. Even though the assassination attempt failed, the event accentuated the explosive state of affairs on the peninsula.[2]

Two days later, North Korea raised the stakes by seizing the USS *Pueblo*, an American intelligence vessel in international waters. The ship, equipped with specialized surveillance and encryption devices to intercept foreign communications, had held a position near the North Korean port of Wonsan for weeks. On 23 January 1968, the North Korean Navy attacked the ship and captured its crew. At the same time, North Korea's aggressive postures along the DMZ underscored the instability of the situation. A

The Blue House, Seoul, Republic of Korea. *Credit: U.S. Department of Defense. Photo by Tech. Sgt. Jacob N. Bailey, U.S. Air Force.*

USS *Pueblo* off San Diego, California, 19 October 1967. *Credit: U.S. Naval History and Heritage Command*

week later, as Washington pondered how to respond to the *Pueblo* seizure, the North Vietnamese opened their Tet offensive in South Vietnam. Faced with the prospect of two land wars in Asia, the administration sought to deter further North Korean aggression—and to prepare for the possibility of war—with a steep buildup of U.S. Army and Air Force capabilities on the Korean peninsula. Almost overnight, FED was at the helm of a large emergency construction program.[3]

The so-called crisis in Korea spotlighted Army housing shortages. As news reporters rushed to the peninsula to cover the Blue House raid and the *Pueblo* incident, some were shocked to learn that many U.S. troops, particularly near the DMZ, still lived in tents or in dilapidated Quonset huts left from the Korean War. News stories of soldiers

enduring the frozen Korean winter galvanized American public opinion, prompting Congress to appropriate funds for troop housing as well as military facilities. On 11 July 1968, President Lyndon B. Johnson approved the Supplemental Military Construction Program for fiscal year 1968, providing a total of $87.8 million in construction funds—$41.8 million for the U.S. Army and $46 million for the U.S. Air Force. Later, Congress supplemented this amount by an additional $9.7 million. The district, recently short of work, saw its project load increase tenfold as it took on a crash construction program in Korea worth about $100 million.[4]

EXPANSION AND REORGANIZATION

Even before the funds were released, POD asked the district to begin planning for a large crash program in Korea. By March 1968, FED was marshalling its resources in preparation for the impending avalanche of work. "Calm departed," one observer recalled.[5] The district requested an infusion of temporary personnel, created incentives for current employees and new arrivals, and restructured its internal organization. On 28 June 1968, FED transferred some district elements from Japan back to Korea—the Construction Division relocated from Tokyo back to Seoul, along with the chief of the Engineering Division and much of his staff. The reorganization also provided for an area office in Japan and two in Korea, at Seoul and Daegu, along with an extensive reordering of numerous resident and project offices throughout both countries.[6]

At the divisional level, POD supported FED's preparations by providing temporary-duty personnel from elsewhere. Some districts, such as the Okinawa District, were facing staff reductions already, and FED welcomed these transfers to Korea. The Corps also instituted active recruiting efforts in all its districts, and it raised the per diem rate for duty in Korea. By November 1968, the district had taken in sixty USACE employees from Okinawa, Hawaii, and elsewhere, with more on the way from the Alaska and Savannah districts, the New England Division, and other mainland U.S. locations. The U.S. Army contributed by assigning eighteen engineer lieutenants to FED. At the same time, the Office of the Chief of Engineers provided FED with two deputy district engineers to serve as liaisons with the program's two main user agencies, the Air Force and the Army. The Eighth Army, together with the U.S. Embassy in Seoul, provided desperately needed housing for some FED personnel.[7]

With all the new arrivals, office space was tight. Conditions were especially crowded at the FED compound in Seoul, which one participant likened to "the battle ground around the flagpole." To help alleviate the overcrowding, Eighth Army furnished a building at its main post in Yongsan and provided additional space at Camp Roberts (Yong Dong Po), which was slated for renovation owing to its dilapidated condition. District personnel remembered Camp Roberts for frozen toilets, lack of hot water, and sleeping in offices—but also appreciated having the "space to breathe and get on with it." At the Yongsan Army post, conditions remained crowded, such that business often occurred in the corridors between rooms.[8]

At first, engineering staff was in greatest demand at FED, but as the emergency program progressed, construction and administrative personnel became the top priority. Some temporary staff spent so much time in Korea that new arrivals mistook them for longtime FED employees. For many people involved in the expansion effort, extended hours were the

norm. One participant recalled: "the work day was now 0730 in the morning calm til 2300 when the evening staff meeting was held in the lawn chairs between the BOQ's over a glass of scotch."[9] By the start of 1969—at the peak of the crash program—temporary personnel made up more than 120 of FED's 547 total positions. In the words of POD historian Erwin N. Thompson, the district's rapid expansion and reorganization again proved "the ability of the Corps of Engineers to mobilize its resources on a worldwide basis."[10]

CONTRACTING CHANGES

By June 1968, U.S. architecture and engineering firms were flooding into Korea. District officials planned to utilize the design staffs of FED and the Okinawa District as much as possible and contract the remainder to private companies. Corps leadership also preferred American firms for construction responsibilities. Despite a pronounced improvement of the Korean industry since FED's early days, USACE officials reasoned that the management expertise of American companies would be invaluable, given the enormous workload and compressed time frame. Moreover, American companies could more easily procure supplies from the United States, as required by federal Buy American policy.[11]

However, exclusive use of American construction contractors was unacceptable to the ROK government, which preferred to channel the work through Korean firms. The ROK's position was supported by a Status of Forces Agreement (SOFA) between the U.S. and the ROK, an extension of the 1953 Mutual Defense Treaty between the two countries. The SOFA, signed in 1966 and effective in 1967, prohibited (among other things) the importation of American contractors to work on military construction in Korea. As a solution, Corps officials proposed that Korean and U.S. contractors would partner as joint ventures to carry out the emergency construction program. At first the ROK government was resistant to the idea, but officials eventually agreed to the concept and provided a list of large Korean firms authorized to participate.[12]

In addition to using joint ventures, the district also employed "competitive negotiation" to gain flexibility. In many cases, funding was inadequate to achieve all the desired construction at a particular location. The Corps and its user agencies agreed that emergency projects in Korea should be negotiated as fixed-price contracts in order to reduce costs. The district negotiated with joint ventures to perform the work on a progressive basis, ensuring that high-priority items would be completed first. This approach allowed the joint ventures to finish some aspects of construction (airfield paving, for example) before agreeing to perform supplemental work (such as the buildings at the same airfield). In this way, FED was able to prioritize the most critical facets of programs that often lacked full funding.[13]

With its contracting strategy in place, FED nevertheless faced a daunting workload. The district's organization and personnel would be tested to the utmost. "The way was finally clear," wrote one observer at the close of the decade. "We had the projects, the money, and most of the people pinned down. Time was the big factor and still is."[14]

CHALLENGES IN KOREA

Despite the district's readiness, FED confronted "staggering problems" in its emergency construction program. District historian Whitmore listed many:

"bad weather, governmental and civilian resistance, bureaucratic inertia, shortages of everything from cranes to contractors, vacillating guidance and funding alterations." Above all, time was short—all Air Force projects were due for completion by 1 November 1969, and all Army projects by 15 July 1970. In other words, the entire construction program was scheduled for completion within two years. Yet even as FED personnel pushed forward, circumstances often pushed back.[15]

The weather presented a formidable challenge for FED and its contractors. Heavy snows arrived in the winter of 1968–1969, piling to the highest totals in nearly fifty years and causing major delays in construction. Some projects fell further behind with record rainfall the following spring and summer. Delay—or "slippage"—became the watchword of the day. Siting changes, funding alterations, and shipping delays all played roles in setting projects behind, even as FED personnel worked relentlessly to drive them ahead. In these circumstances, there was occasional friction: one observer noted periodic "tugs-of-war" between different facets of the newly expanded FED team. Sensing this problem, the district engineer made reforms to clarify authorities and establish new lines of communication.[16]

Worker safety posed another problem. With a spike in construction by late 1968, job-related fatalities increased. In response, FED pushed an intensive safety program to reverse the trend. The district's Safety Office returned to Korea from Japan in November 1968 to focus on educating FED employees and contractors. As part of Operation COMMAND SAFETY, FED required additional training for all field personnel, and it held seminars on topics ranging from epoxy use to working in enclosed spaces. The district also had the Corps' safety manual translated into Korean, and it maintained ongoing education programs to emphasize safety on every level.[17]

In addition to weather and safety concerns, the crash program in Korea at times suffered from underfunding, siting issues, and planning changes. This was particularly true of Army projects, which in some cases were inherently complex. For example, the largest project—the trans-Korea pipeline—traversed some 258 miles of property, giving rise to citizen protests when construction interfered with other activities and land uses. Other Army projects, such as an ammunition port at Chinhae, were underfunded and required considerable engineering skill. In addition, strategic and tactical decisions by U.S. forces often required siting alterations and planning changes. The district responded to these challenges by redoubling its persistence.[18]

Transportation was another hurdle. District inspectors were needed everywhere at once, and their work took them to far-flung locations. Paperwork had to be shuttled between offices and sometimes cross-country. For these purposes, the district had two helicopters, and it submitted requests to the U.S. Army for additional aircraft—two more helicopters and one fixed-wing plane. However, the Army's priorities in Southeast Asia prevented FED from getting the aircraft—one additional helicopter—until May 1969. The aircraft arrived "almost unusable," wrote one observer. Moreover, replacement helicopter parts were hard to come by, meaning excessive downtime and endless hours on the road for FED field personnel.[19]

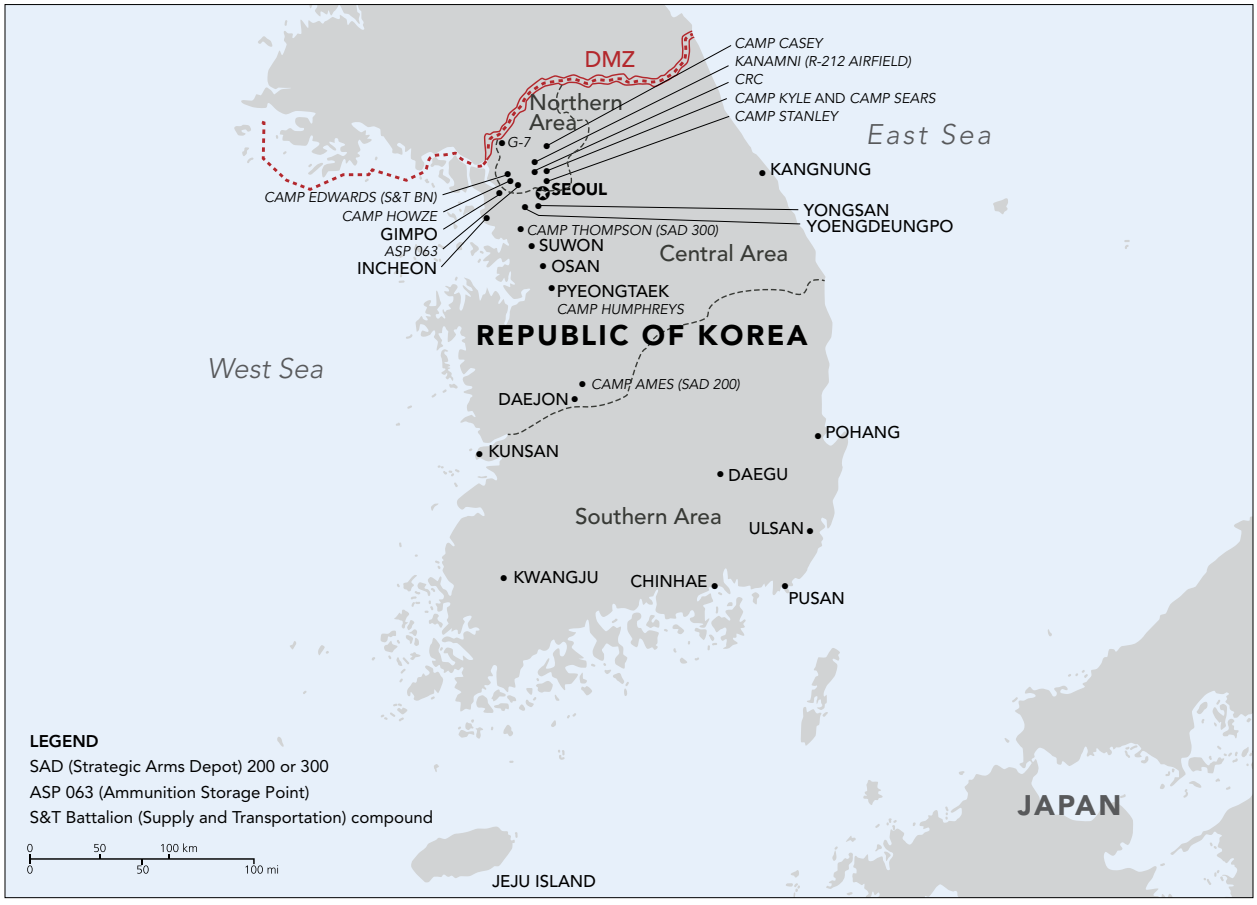
Procurement difficulties persisted as well. In 1969, changes to procurement procedures eliminated FED's ability to procure certain items from Japan. In

addition, changes to the Buy American policy curtailed contractors' abilities to obtain certain locally manufactured items such as underslab drains and sewer pipes. In addition, procurement policies meant that supplies and equipment had to make lengthy voyages from the U.S. mainland. For example, construction at Kunsan and Osan air bases was delayed while contractors awaited asphalt plants manufactured in America, en route by sea from the United States. The equipment then was shipped to the job sites, at which points it was often found to be defective. Considering these obstacles, General Edward T. Podufaly of POD remarked that emergency construction in Korea would be "a tough job," but that USACE personnel were ready "to go all out on this program."[20]

CRASH PROGRAM

The district's crash program in Korea was for two user agencies—the Air Force and the Army. The projects fit into three broad categories: airfield improvements, troop housing, and logistical installations. DOD officials had a hard time selecting the individual projects to be included in the program because, as FED historian Whitmore noted, "almost everything needed improving" for U.S. forces in Korea. Air bases required more runways, taxiways, cargo aprons, and fighter

Locations of the emergency construction in Korea, 1968–1969.



Based on map in Whitmore, *History of the United States Army Engineer District, Far East, 65*

hardstands; additional housing was urgent everywhere. Finally, to support the buildup, logistical improvements were critical, particularly a reliable system of petroleum distribution.[21] Colonel John J. McCulloch, the district engineer, described the program's scope:

> Runways and taxiways needed strengthening; more cargo aprons and fighter alert hardstands were required; and based on Vietnam and the Israel-Arab war experience, hardened fighter aircraft shelters were needed to keep planes from being destroyed on the ground before they could get airborne. With the buildup came increased logistical needs—more depots, storage areas, and port facilities to handle the burgeoning shipping requirements (especially ammunition). Our POL (petroleum) supply system was extremely vulnerable. Shipments are now being made from the ports by rail and highway transport, either of which could be easily disrupted.[22]

U.S. Air Force Projects

The district's $48.2 million Air Force program got under way first. The district focused on five major

Locations of major Air Force projects under the emergency construction program, 1968.

Based on map in Whitmore, *History of the United States Army Engineer District, Far East, 66*

Placement of concrete cover on aircraft shelter, Kwangju Air Base, August 1969.

Kwangju pavement improvements and corrugated sheet-metal for aircraft shelters, 1969.

airfields (Osan, Kunsan, Suwon, Daegu, and Kwangju), where construction would include "the entire spectrum of troop activities." The work, predictably, was required immediately. The projects began with a "horizontal phase" that included airfield paving, foundations, and the construction of aircraft shelters, or "wonder arches"—semicircular, hardened shelters designed to protect grounded aircraft. The second stage of construction included fuel-storage facilities, operation and communication structures, ammunition storage, utilities, and housing.[23]

Two Air Force projects got under way even before Congress funded the crash program. Using emergency monies, the Fifth Air Force requested airfield upgrades at Osan and Kunsan air bases. Almost immediately, the district had to improvise. At Osan, an asphalt plant procured in Japan arrived "a heap of junk," compelling the contractor to order a replacement from the United States. In the interim, FED managed to borrow an asphalt-concrete plant from the 802nd Engineer Battalion to keep at least some of the work moving forward. In August, a supplemental agreement added more project features: a taxiway and foundations for aircraft shelters. However, the site, a former rice paddy, was unstable, forcing a partial redesign by the district and the use of pile foundations. Additionally, the poor quality and quantity of local aggregate slowed work until a reliable source was found. Freezing temperatures added more delays, and the project slipped behind schedule.[24]

At Kunsan Air Base, a base about 160 miles south of Seoul, FED used local aggregate, dynamiting a small hill near the base, and then processing the debris through rock crushers. However, progress was slow. At both Kunsan and Osan, delays illustrated the problems associated with shipping materials and supplies across the Pacific Ocean. Heavy equipment bound for both air bases was packed onto the USS *Meandros*, which finally showed up in Pusan nearly two months late and so overloaded it almost swamped on arrival. When the equipment was offloaded, it proved too large to fit through the available railroad tunnels, and it had to be rerouted

Laying concrete pipe for cross-wind runway at Kunsan Air Base, August 1969.

"by all conceivable manner of transport," wrote one observer. Yet it finally arrived, and with FED's guidance, construction moved ahead. The taxiway at Kunsan was finished in the snow, and one at Osan was completed on Christmas Day. "Equipment was always on the next boat, or the Pusan Road, or coming next week," recalled one participant.[25]

In August 1968, as work progressed at Osan and Kunsan, the district awarded its first true emergency construction contract—funded by Congress's 1968 supplemental appropriations. All airfield paving at Daegu, Suwon, and Kwangju air bases went to the first American/Korean joint venture in the ROK: a partnership between Vinnell Corporation and Hyundai. One observer remarked that the preconstruction conference "looked like the mob scene from Ben Hur—or the Democratic National Convention." The meeting was so crowded that the FED Construction Division representative leading the conference could not get through the door. However, once actual construction began, the joint venture worked efficiently.[26]

Initial construction at Daegu, Suwon, and Kwangju consisted of concrete hardstands, taxiways and pads, operational aprons, aircraft shelters, and other associated structures. To make paving machinery available, contractors accelerated projects elsewhere to free the necessary equipment. At Gimpo Air Base, one correspondent recalled, work finished early "with one of the directors of Hyun Dai riding the spreader." Ultimately, the joint venture finished much of the construction at Daegu, Suwon, and Kwangju with only minor delays. In 1969, the joint venture accepted a supplemental agreement from FED to build wonder arches at the three air bases. At Kunsan, the district awarded supplemental contracts to build an operations terminal, officers' quarters, and an airmen's dormitory. Overall, the district's contracts for airfield paving and placement of shelters amounted to $21.7 million.[27]

GOSA CEREMONY

Gosa (or Kosa) is a traditional Korean ceremony said to bring good fortune. It is often observed to commemorate new beginnings, such as the start of a construction project. At Kunsan in 1968, an Air Force correspondent described the ceremony:

> Before any blasting could get underway, Korean National construction workers participated in a Buddhist ceremony known as Kosa. A small table was set up near the blasting site and filled with food—melons, fruits and a roasted pig's head. Saki was offered as part of the ceremony designed to ward off evil spirits. The Kosa is conducted before all construction projects, especially high rise work.[28]

The traditional blessing has survived into more recent times, especially at construction groundbreaking events. Central to the ceremony is the pig's head, symbolic of good fortune. Offerings of rice wine and colorful fruits are also displayed, with dried fish strung over entranceways for luck. Money is typically placed into the pig's mouth, with rice wine poured at the construction site's boundaries to guard against bad luck.

At groundbreakings for FED projects—in true multicultural fashion—the Gosa ceremony was sometimes followed by a Christian benediction, and capped by an American brass band playing martial tunes (for example, "The Army Goes Rolling Along"), with cake and hot coffee served afterward.[29]

A gosa at a groundbreaking for construction at Camp Red Cloud, 1999.

In its housing program, the Air Force opted for speed. It procured eighty-two prefabricated buildings, or "moduluxes," for quick construction. The district teamed with Air Force construction units to assemble the structures, engaging in some creative contracting along the way. When initial bids for the modulux program came in too high, FED split the program into two packages totaling approximately $3 million. In contrast to past problems with modular housing in Japan, the Air Force housing program was relatively smooth—the first units were ready for occupancy at the end of 1968. By the following year, the district and its partners had built dormitories, officers' quarters, and crew quarters across the five air bases.[30]

Contracts for utilities and communications facilities at the five air bases totaled about $6 million. The district awarded these contracts to various joint venture firms for fuel tanks, electrical upgrades, water

Modular dormitories at Kunsan Air Base, December 1968.

and sewer systems, roads and parking lots, and communication stations. Finally, FED issued contracts for the "vertical" project components—ammunition storage units, supply and maintenance facilities, administration buildings, and dining halls. Most of the buildings were pre-engineered, but some concrete structures and additions to existing facilities took longer. Overall, the district's Air Force program was well under way by 1968, and most projects were substantially complete the following year.[31]

U.S. Army Projects

For the U.S. Army, the district orchestrated a $53.6 million program for troop housing, airfield improvements, ports and logistical facilities, and a massive petroleum pipeline crossing South Korea. Compared with the district's Air Force program, construction for the Army got off to a slower start owing to siting and funding concerns. District personnel questioned whether construction at some sites could be accomplished with the funds available. For example, one proposed storage facility was sited in a dry streambed that showed evidence of severe flooding. In other instances, Army site requests were so outdated that proposed structures would be far from troop concentrations (particularly in the forward area at Camps Casey, Stanley, and Howze). In addition, some projects proved to be underfunded, including the Chinhae ammunition port and the massive trans-Korea pipeline.[32]

Barracks nearing completion at Camp Howze, September 1969.

In October 1968, the district awarded its first emergency Army contract, for a strategic arms depot at Camp Ames. Following this project was a similar facility at Camp Thompson, which included Stradley magazines, security systems, fencing, roads, drainage, and waterproofing. Other Army projects included an "Advanced Line of Communication Airfield" to support units near the DMZ. The district called upon its extensive Corps support network to find the necessary expertise, partnering with stateside specialists from the USACE Waterways Experiment Station (Vicksburg, Mississippi) and the Ohio River Division Laboratories (Cincinnati, Ohio) to form an airfield evaluation team, which evaluated twenty-six sites in Korea's rugged terrain. The ultimate site, R 212, was developed by FED contractors and engineer troops, and the district delivered it to the Army's I Corps in 1969.[33]

One of the district's most important tasks for the Army was to improve and expand troop quarters. Housing for the Army involved placement of $9.7 million worth of construction at Camps Stanley and Casey, with additional construction at Camps Red Cloud, Howze, and smaller facilities. These projects underwent numerous changes in criteria and siting before being awarded to a single joint venture in December 1968. Unlike the Air Force's decision to install moduluxes, the Army's requirements called for solid masonry construction up to a height of 5 feet, for protection against small-arms fire. The Army housing program was hampered by bad weather, materials shortages, and trouble with contractors. Only after "continual exhortations" by district personnel did contractors complete most of the units by 1970. However, "deficiencies existed in

Construction of a new 500-man mess hall at Camp Red Cloud, September 1969.

every building," wrote one commentator, mostly the result of contractor-furnished materials.[34]

The district also provided supply and storage facilities for the Eighth Army, delivering an ammunition point and a supply compound. The district combined the two elements into a single package, which it awarded for $6.7 million in April 1969. Once again, FED leveraged its USACE resources, calling on the Okinawa District to design the project. The supply compound (which later became Camp Edwards) included warehouses, sheds, petroleum facilities, barracks, officers' quarters, and administration buildings. Even larger was the ammunition storage point, which required numerous Stradley magazines along with administrative facilities. Bad weather and real-estate acquisition problems delayed the project, and the installations were not fully completed until 1971.[35]

The Port of Chinhae represented a singular accomplishment. The project called for construction of an entire ammunition port in a remote area, from the ground up. The site, on Korea's southwest coast, was a rocky promontory of low hills extending into a sheltered harbor—miles from any population centers or developed areas. The design called for significant blasting, leveling and fill placement, and construction of a 1,000-foot-long reinforced concrete pier. Other features included a mooring island, a causeway, a seawall, interior roads, and a railroad. In March 1969, FED awarded a $4.3 million contract to a Korean/American joint venture.[36]

At Chinhae, FED encountered a range of unexpected difficulties that required creative solutions. Site preparation required deep cuts into solid rock, 80 to 100 feet thick in some places, as low hills were blasted flat and low areas were filled. However, the local aggregate did not meet FED's construction standards, and consequently that material had to be trucked in from nearly 50 miles away. The district solved equipment shortages by arranging the rental of a 50-ton drill from the ROK government, and by supplying a Pumpcrete machine, a concrete batch plant, ready-mix trucks, and specialized cement from Japan. Installation of the 1,000-foot pier presented special challenges. The project's remote location required much of the concrete work to be done on-site. To preserve the quality and consistency of concrete for support piles—more than 100 feet long at the harbor end—FED required the contractor to set up their batch plant as near to the pier as possible. Support piles for the pier were cast in place, and FED had the contractor pre-cast pier beams and skirts on-site.[37]

Bad weather and equipment malfunctions hampered progress on the ammunition port. In August 1969, for example, torrential storms dumped twenty inches of rain in just over two days. Shortages of skilled laborers and equipment breakdowns added to the problems, and when drilling commenced, the contractor complained that the bedrock was harder than expected. Progress was sluggish. The district

Construction of the pier at Chinhae ammunition port, 1970.

responded by installing a new project engineer and placing contractor operations under charge of the joint venture's American firm. By late 1969, "the improvement in progress and quality was noticeable," wrote FED historian Whitmore, and the project was completed shortly thereafter.[38]

Trans-Korea Pipeline

The largest project in FED's emergency program was the trans-Korea pipeline. At a cost of $24.8 million, it accounted for nearly a quarter of Congress's 1968 supplemental appropriations. Though technically an Army project, the pipeline ultimately benefited all U.S. forces in Korea. The project consisted of a 258-mile underground pipeline from Pohang to Seoul; a submarine pipeline for tankers at the Port of Pohang; underground storage tanks at Pohang, Daejon, Pyeongtaek, and Seoul; and numerous storage tanks, pumping stations, and delivery terminals along the way. The project was also among the district's most difficult—FED overcame underfunding, siting changes, farmers' protests, land mines, real-estate disputes, and equipment theft. As added pressure, the pipeline was scheduled for operation by 1970.[39]

As with many projects in Korea's emergency program, the district's accomplishments stood out

Route of the Trans-Korea Pipeline, 1969.

Based on map in Whitmore, *History of the United States Army Engineer District, Far East*, 66

against the obstacles encountered. In July 1968, the POD commander reported that FED personnel were "chomping at the bit" to get started. A feasibility study by Bechtel Corporation contemplated a pipeline from Pusan to Seoul, but funding constraints dictated a change in the southern terminus to Pohang, 65 miles north of Pusan. Still, the route entailed several river crossings, including one over the Han River near Seoul. With the route settled, Bechtel commenced the design. At the same time, USACE's San Francisco District awarded a $2.6 million contract for a U.S. firm to manufacture the pipe, and it also arranged the purchase of a communication system essential for the pipeline's operation, using copper wire to be laid below ground, alongside the pipe. In December 1968, FED awarded a $7.3 million construction contract to a Korean/American joint venture.[40]

The project was a race against time. Construction began at both ends simultaneously, and the district hoped to complete much of the excavation work in winter, to avoid interfering with spring planting in the rice paddies along the route. However, delays began almost immediately. A dock strike in the United States necessitated alternate shipping arrangements using Military Transportation Management Terminal Services. In February 1969, the Air Force flew in 150,000 feet of copper cable from McChord Air Base in Washington state, to be laid in conjunction with the pipeline. Installation work entailed clearing, excavating, stringing, and welding, but heavy snowfall hampered progress. By April 1969, the pipeline was less than five percent complete.[41]

As spring arrived, so too did passive protests from farmers whose land the pipeline traversed. The demonstrations lasted through October, occurring whenever construction interfered with crops or dikes, and causing more than forty "adjustments" to the pipeline route. In addition to the protests, summer

Before the pipeline: Empty 55-gallon drums at a refueling point near Wulsan, about 30 miles northwest of Pusan, May 1968. *Credit: NARA RG 111, CC-49082*

Pipeline casing being lowered into a trench, April 1969. *Credit: NARA RG 111, CC-56300*

brought torrential rains and further disruptions. Contractors encountered graves and trees along the way that had not been removed, as well as land mines from the Korean War. To compound the problems, there was a shortage of welders in Korea, and U.S. companies protested certain contract specifications, leading FED to re-advertise some project components.[42] At the same time, theft of communications wires became problematic: "Almost as fast as the copper cable could be laid, thieves in the night made off with it," wrote POD historian Thompson.[43]

With the project already behind schedule, serious real-estate problems emerged in late 1969. A referendum to change the ROK constitution clouded the real-estate transactions necessary to complete the pipeline. The Park administration was reluctant to alienate landholders because the president sought constitutional changes to allow for a third term in office, and FED's pipeline contractor

Welding together segments of the trans-Korea pipeline, circa 1969.

wanted to suspend work until real-estate matters were clarified. Ultimately, the district persuaded its contractors to keep working, and by February 1970, there were 240 miles of pipe in place. With a final surge of effort and help from a special temporary-duty detachment, FED flushed and readied the system by December 1970. Finally, the entire pipeline system was operational by March 1971. By any measure, the district's completion of the trans-Korea pipeline was a major achievement.[44]

NONEMERGENCY PROGRAM

At the same time FED carried out its emergency program, it also supervised a number of other projects (in both Korea and Japan) funded by regular appropriations. These projects included a hospital in Seoul, water wells for all Army bases across Korea, bridges near the DMZ, schools, chapels, and other buildings and infrastructure. The district's nonemergency projects were differentiated from the emergency construction program by the source of funding—regular, as opposed to special, congressional appropriations. Many of the projects in the district's regular program were needed just as urgently by their user agencies.[45]

One example was water wells at Army bases. In 1965, the Eighth Army requested that FED initiate a drilling program for water wells at more than 150 military installations in Korea. This multiyear mission presented a monumental task, one that only the district was equipped to undertake. Each year, the Army paid millions of dollars to have water hauled in by contractors to its bases. The district's Exploration, Laboratory, and Survey (EL&S) Branch responded by hiring and training well drillers. Its

A worker drills a water well at Camp Hovey.

first ten wells were all successful, and soon the Eighth Army could not keep pace in connecting the new wells to its existing water systems, a function which FED eventually took over. The peak of activity took place in 1968 and 1969, coinciding with emergency construction across the country.[46]

Another high-profile project in the district's regular program was the expansion and rehabilitation of the 121st Evacuation Hospital in Seoul. The Eighth Army asked FED to enlarge the facility from 50 beds to 310 beds, renovate the old hospital, and add a number of new features. The project's main challenges involved contracting rather than construction. Originally, the project was programmed for fiscal year 1968, but lack of funds pushed it into the following year. Then, the bids were too high. The district resorted to competitive negotiations, awarding a $2.8 million contract to a joint venture of Korean firms in March 1969. A new two-story building consisted of a clinic, cafeteria, and administration elements on the first floor; with a surgery and intensive-care unit on the second floor. The old hospital received upgrades to its rooms and utilities, a dental clinic, and corridors connecting the old and new elements. Overall, the project added approximately 122,200 square feet to the old hospital, and the new facility was complete by October 1970.[47]

At the same time, FED supervised an expansion of Seoul American Elementary School, improvements at Gimpo Air Base, construction of a new chapel for the Eighth Army, and a $1.4 million main post exchange at Yongsan. In addition, FED continued its efforts to replace bridges in the forward area. All these projects were important to their users. For example, children at Seoul American Elementary School had been taking instruction in the cafeteria, auditorium, teachers' lounge, and in Quonset huts because student enrollment had been twice the old school's capacity. In another instance, crews at Gimpo Air Base carefully removed rockets and live ammunition discovered under a portion of the construction site. The Eighth Army Chapel provided seating for 370 people and adequate space for services of any denomination. Near the DMZ, permanent construction for structures such as the Old Faithful and Bayonet Bridges improved reliability of military supply routes. With these projects, FED made contributions to military operations and to the day-to-day lives of U.S. service personnel and their families.[48]

In Japan, the district's workload was comparatively light. As emergency construction in Korea progressed, some carryover from Japan's own crash programs continued. At Atsugi Naval Air Station, for example, FED placed facilities for jet engine maintenance, sound suppression, and an officers' mess. These contracts totaled approximately $1.7 million. At Sasebo, FED supervised dredging for the Navy, expansion of an ammunition wharf, and placement of petroleum storage tanks. For the Air Force bases at Iwakuni and Yokota, the district oversaw $5.7 million worth of construction for barracks, storage facilities, billets, maintenance buildings, drainage systems, airfield paving, and a passenger terminal. Additionally, in December 1968, FED was tasked with overseeing construction of the U.S. Pavilion for the Japan World Exposition.[49]

U.S. PAVILION, JAPAN WORLD EXPOSITION

Aerial view of the U.S. Pavilion at Expo '70 in Osaka, Japan. *Credit: NARA RG 306, Series EXB, No. 48*

The district's last major project in Japan also was one of its most unusual: the $4.5 million U.S. Pavilion at the Japan World Exposition (Expo '70), held in Osaka in 1970. Under a memorandum of understanding between USACE and the U.S. Information Agency, the district supervised construction of a massive exposition center covered by an air-supported cable roof—the first such structure ever built.

Work began in early 1969. The pavilion was five stories high, covered by a translucent glass-fiber dome that enclosed 100,000 square feet of park-like exhibition space. Held aloft by compressed air, the dome stretched across a grid of steel cables anchored to an elliptical concrete ring. Most of the structure was built underground, with the dome rising about 20 feet above the ring. Despite heavy rains during construction and a flurry of last-minute design changes, contractors successfully removed the scaffolding and inflated the roof in November. The building was ready for the Expo's opening on 15 March 1970.

For its efforts, FED received high praise from Ambassador Howard L. Chernoff (U.S. commissioner general and executive assistant to the director of the U.S. Information Agency). But while the district enjoyed private accolades for its successful coordination of the project, it received no publicity. The U.S. Information Agency, seeking to avoid any perception that the Pavilion was associated with the U.S. military, kept FED's involvement discreet. One historian called the Pavilion the pièce de resistance for the district in Japan, a fitting end to more than a decade of service in the country.[50]

Construction at Expo '70 in Osaka, Japan, May 1969.

END OF PROGRAM

By late 1969, emergency activity in Korea had tapered off. Although some construction remained ongoing, the design phase was complete. The frenzy that had marked the program's peak began to subside, giving way to recognition of FED's accomplishments and reflections on its future. Overall, the crash program involved 630,000 square yards of airfield pavement, housing for approximately 10,000 officers and enlisted men, a 258-mile underground petroleum pipeline, a large ammunition port, and two new supply complexes. Despite seemingly overwhelming obstacles, FED succeeded. It had called upon a world-class support network and, at the peak of the program, saw its ranks swell by sixty percent. In August 1969, FED had a total staff of 857 people across its Engineering, Construction, Real Estate, and other divisions. As FED historian Whitmore noted, "FED had again demonstrated its adaptability and flexibility by rapidly responding to another drastic fluctuation in the magnitude of its workload."[51]

The district's efforts did not go unnoticed. As POD historian Thompson wrote, "[T]he Far East District could take satisfaction in knowing that the emergency mission had been accomplished and that the defenses of the peninsula had been vastly improved." The Society of American Military Engineers recognized Eugene Groden, chief of FED's Engineering Division, with its 1968 Wheeler Medal, presented annually to a member of USACE who made the most outstanding contribution to the field that year. Groden was commended for the "$98 million of construction which had to be designed and placed under contract between July 1968 and March 1969." In addition, District Engineer John J. McCulloch received the Legion of Merit in 1969 for achieving

> outstanding results in the successful design of $122.2 million and placement of $73.9 million of new and critically needed military construction throughout Japan and Korea for the Army, Navy, and Air Force. Much of this effort was accomplished as urgent priority for the advancement of the US posture in Korea after the Pueblo incident in North Korea in January of 1968.[52]

In the summer of 1969, the district's Engineering Division returned to Camp Zama in Japan. There, it prepared for construction of the United States Pavilion at the 1970 Japan World Exposition in Osaka, which would prove to be FED's last major project in Japan. At the same time, FED joined other USACE districts in taking "economy measures" to reduce costs and workforce. In July 1969, President Richard Nixon ordered a ten percent reduction in U.S. forces overseas, signaling a diminishing workload for FED and the Corps as a whole. The district closed its Seoul Area Office and several resident offices, and planned for the release of many Korean employees. Additionally, in October 1969, the district's Real Estate Division was abolished when the Eighth Army took over real-estate functions in Korea. With these changes, the district prepared for a sharp decline in its workload.[53]

The end of emergency construction in Korea coincided with the end of the district's real-estate mission. Established 1 July 1958, FED's Real Estate Division had responsibility for the acquisition, management, and disposal of all real property in Korea for the U.S. military. This function stemmed from a 1952 agreement, whereby the ROK government agreed to furnish land to U.S. forces at no cost to the United States. At first, the Eighth Army executed the necessary paperwork, but in 1958 it transferred real-estate functions to FED, retaining for itself major policy and approval authority.

The Real Estate Division coordinated with FED's user agencies and the ROK Ministry of National Defense to acquire the land needed for district construction projects. It also handled clearance of crops, graves, trees, and structures from newly acquired land, and from real property already in possession of U.S. forces. The ROK maintained nominal responsibility for compensating landowners, but in practice, such payments were not always forthcoming. This situation caused endless headaches for the Real Estate Division. In 1960, angry Korean landowners petitioned President Dwight D. Eisenhower for $446 million in back rents, but the administration held that such matters were beyond its purview.

In the early 1960s, the Real Estate Division assumed a new task. It had become evident that most U.S. military installations in Korea were inadequately mapped or not mapped at all. The division expanded to thirty-two positions and launched a complete metes and bounds survey. This work facilitated land utilization by U.S. forces, and it helped the ROK government identify property owners deserving of compensation. In 1964, a reduction in FED personnel forced the district to award a contract for the remaining work, successfully completed by aerial photogrammetry for $172,000.

Following a SOFA agreement between the U.S. and the ROK, effective in 1967, the Eighth Army began reassuming some of FED's real-estate functions. In January 1969, new regulations transferred all real-estate functions back to the Eighth Army. Although Army commanders did not give a reason for the change, the decision was final. In October 1969, USACE leadership formally ended the district's real-estate mission in Korea, followed by the formal abolishment of the Real Estate Division on 21 May 1970. POD leaders affirmed that, after more than a decade of service, the performance of FED's Real Estate Division was beyond reproach.[54]

NOTES

[1] USACE-FED, Seoul Area Engineer Office, "As it was in the Beginning—Korea 68S," January 1969, reprinted in Whitmore, *History of the United States Army Engineer District, Far East*, 129–30; USACE-FED, "Organizational Changes," circa February 1968, 7–13, PAO-FED Historical Files.

[2] Upon infiltrating the ROK, the North Korean commandos encountered and captured four ROK villagers in the mountains south of the DMZ—but decided not to kill them because the ground was too frozen to dig graves. Upon their release, the villagers notified ROK police. Mark McDonald, "Failed North Korean Assassin Assimilates in the South," *New York Times*, 18 December 2010, sec. A; Woo, *Race to the Swift*, 122; Thompson, *Pacific Ocean Engineers*, 220; Whitmore, *History of the United States Army Engineer District, Far East*, 61.

[3] One crew member was killed in the North Korean attack on the USS Pueblo, and 82 others were imprisoned for 335 days. After months of negotiations, North Korea released the crew in December 1968. Colin Schultz, "The Time the U.S. Nearly Nuked North Korea over a Highjacked Spy Ship," smithsonian.org, 28 January 2014; Thompson, *Pacific Ocean Engineers*, 220; Whitmore, *History of the United States Army Engineer District, Far East*, 61.

[4] USACE-FED, Briefing Data, March 1968, 1; Thompson, *Pacific Ocean Engineers*, 220; Whitmore, History of the *United States Army Engineer District, Far East*, 61–63, 76, 82.

[5] Quotation from "As it was in the Beginning—Korea 68S," in Whitmore, *History of the United States Army Engineer District, Far East*, 129. See also USACE-FED, Briefing Data, March 1968, 3, PAO-FED Historical Files.

[6] USACE-FED, General Order No. 5, 28 June 1968, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 221–22. Whitmore, *History of the United States Army Engineer District, Far East*, 83–84.

[7] Thompson, Pacific Ocean Engineers, 219, 221, 302; Whitmore, *History of the United States Army Engineer District, Far East*, 83–84.

[8] USACE-FED, Briefing Data, March 1968, 5, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 85; "As it was in the Beginning—Korea 68S," in Whitmore, *History of the United States Army Engineer District, Far East*, 129–30.

[9] "As it was in the Beginning—Korea 68S," in Whitmore, *History of the United States Army Engineer District, Far East*, 129.

[10] Thompson, *Pacific Ocean Engineers*, 219, 222–23, 302.

[11] At the same time, POD sought a waiver of some Buy American provisions in order to use Japanese design firms. Thompson, *Pacific Ocean Engineers*, 219, 221–22, 302.

[12] With many Korean construction firms still working on U.S. projects in Vietnam, one participant noted the strangeness of seeing American contractors at work in Korea: "How the Corps of Engineers ended up with a Joint Venture on ROKAF Bases and Korean Contractors on USAF Bases is answered by fate and a tangle of twisted events beyond control." See "As it was in the Beginning—Korea 68S," in Whitmore, *History of the United States Army Engineer District, Far East*, 129–30. See also Thompson, *Pacific Ocean Engineers*, 221–22; Whitmore, *History of the United States Army Engineer District, Far East*, 58.

[13] The district also facilitated its field operations by increasing the contracting and approval authorities of area and resident engineers. Whitmore, *History of the United States Army Engineer District, Far East*, 66; Thompson, *Pacific Ocean Engineers*, 220–21.

[14] USACE-FED Yearbook 1968-1969, "U.S. Army Engineer District, Far East," PAO-FED Historical Files.

[15] Thompson, *Pacific Ocean Engineers*, 222; Whitmore, *History of the United States Army Engineer District, Far East*, 62–63.

[16] Thompson, *Pacific Ocean Engineers*, 223; Whitmore, *History of the United States Army Engineer District, Far East,* 71.

[17] Thompson, *Pacific Ocean Engineers*, 223; Whitmore, *History of the United States Army Engineer District, Far East,* 83.

[18] Whitmore, *History of the United States Army Engineer District, Far East*, 74.

[19] Whitmore, *History of the United States Army Engineer District, Far East*, 83.

[20] Quotation in Thompson, *Pacific Ocean Engineers*, 223. See also Whitmore, *History of the United States Army Engineer District, Far East*, 83.

[21] Whitmore, *History of the United States Army Engineer District, Far East*, 61.

[22] Quotation in Thompson, *Pacific Ocean Engineers*, 220.

[23] Quotation from USACE-FED, Briefing Data, March 1968, 2 PAO-FED Historical Files. See also Thompson, *Pacific Ocean Engineers*, 302.

[24] Whitmore, *History of the United States Army Engineer District, Far East*, 63, 66.

[25] Quotations from "As it was in the Beginning—Korea 68S," in Whitmore, *History of the United States*

Army Engineer District, Far East, 129–30. See also Whitmore, *History of the United States Army Engineer District, Far East*, 66–67.

[26] "As it was in the Beginning—Korea 68S," in Whitmore, *History of the United States Army Engineer District, Far East*, 129–30; USACE-FED, Technical Liaison Office, "Award of Contract for Airfield Pavements," 23 August 1968; Whitmore, *History of the United States Army Engineer District, Far East*, 70.

[27] Quotation from "As it was in the Beginning—Korea 68S," in Whitmore, *History of the United States Army Engineer District, Far East*, 129–30. See also USACE-FED, Technical Liaison Office, "Award of Contract for Airfield Pavements," 23 August 1968; U.S. Air Force, News Release, circa August 1968, PAO-FED Historical Files; USACE-FED, Kunsan Resident Engineer's Office, Briefing, circa December 1968; Thompson, Pacific Ocean Engineers, 302; Whitmore, *History of the United States Army Engineer District, Far East*, 70.

[28] U.S. Air Force, News Release, circa August 1968, PAO-FED Historical Files.

[29] For example, see Patrick Forest, "Walker Clinic Ground Breaking Chilling," *East Gate Edition* 10, no. 11 (December 2000): 6.

[30] Thompson, *Pacific Ocean Engineers*, 302–3; Whitmore, *History of the United States Army Engineer District, Far East*, 71.

[31] Thompson, *Pacific Ocean Engineers*, 302; Whitmore, *History of the United States Army Engineer District, Far East*, 72–74.

[32] Whitmore, *History of the United States Army Engineer District, Far East*, 74.

[33] Whitmore, *History of the United States Army Engineer District, Far East*, 74–75; Thompson, *Pacific Ocean Engineers*, 304.

[34] Thompson, *Pacific Ocean Engineers*, 304–5; Whitmore, *History of the United States Army Engineer District, Far East*, 76–77.

[35] Thompson, *Pacific Ocean Engineers*, 304–5; Whitmore, *History of the United States Army Engineer District, Far East*, 75–76.

[36] Whitmore, *History of the United States Army Engineer District, Far East*, 78–79; Thompson, *Pacific Ocean Engineers*, 305.

[37] Whitmore, *History of the United States Army Engineer District, Far East*, 78–79; Thompson, *Pacific Ocean Engineers*, 305.

[38] Whitmore, *History of the United States Army Engineer District, Far East*, 78–79; Thompson, *Pacific Ocean Engineers*, 305.

[39] USACE-FED, Technical Liaison Officer, "POL Pipeline Contract Awarded," 31 December 1968, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 79; Thompson, *Pacific Ocean Engineers*, 305.

[40] USACE-FED, "POL Pipeline Contract Awarded,"; Whitmore, *History of the United States Army Engineer District, Far East*, 79–82; Thompson, *Pacific Ocean Engineers*, 224–25, 305.

[41] USACE-FED, "POL Pipeline Contract Awarded,"; Whitmore, *History of the United States Army Engineer District, Far East*, 79–82; Thompson, *Pacific Ocean Engineers*, 224–25, 305.

[42] According to FED historian Whitmore, FED received a U.S. manufacturer's formal protest "that the turbine pumps' bearing specifications for the pumping stations contract constituted sole source procurement." The district changed the specifications and re-advertised the affected contracts. Contracts for the pumps, the submarine line, pumping stations, tank farms, and dispensing terminals were awarded to a number of different contractors. See Whitmore, *History of the United States Army Engineer District, Far East*, 81–82.

[43] Whitmore, *History of the United States Army Engineer District, Far East*, 79–82; Thompson, *Pacific Ocean Engineers*, 224–25, 305.

[44] Numerous claims by contractors against USACE persisted after the pipeline's completion date, principally a dispute regarding the contracted length of the pipeline compared to its actual length. Whitmore, History of the United States Army Engineer District, Far East, 82; Thompson, Pacific Ocean Engineers, 224–25, 305.

[45] Thompson, *Pacific Ocean Engineers*, 305; Whitmore, *History of the United States Army Engineer District, Far East*, 86–88.

[46] Whitmore, *History of the United States Army Engineer District, Far East*, 58.

[47] USACE-FED, Seoul Area Engineer's Office, Project Descriptions, 30 June 1969, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 86; Thompson, *Pacific Ocean Engineers*, 305.

[48] USACE-FED, Technical Liaison Office, "Classroom Addition," 26 June 1968; "Corps of Engineers Completes New Apron at Kimpo AB," 31 October 1968; "New Eighth Army Chapel," 21 November 1968; "Bayonet and Old Faithful Bridges," 26 November 1968, PAO-FED Historical

Files; Whitmore, *History of the United States Army Engineer District, Far East*, 86–88.

[49] Whitmore, *History of the United States Army Engineer District, Far East*, 90.

[50] Deputy District Engineer Lt. Col. D. E. Dobson took charge of the project, contracting the construction to one of Japan's largest firms, Ohbayashi Gumi, which also designed the structure in partnership with American firm Davis, Brody, Chermayeff, Geismer, Deharak and Associates. Thompson, Pacific Ocean Engineers, 305–6; Whitmore, *History of the United States Army Engineer District, Far East*, 91.

[51] Whitmore, *History of the United States Army Engineer District, Far East*, 63.

[52] Quotations in Whitmore, *History of the United States Army Engineer District, Far East*, 85–86.

[53] Thompson, *Pacific Ocean Engineers*, 225, 305, 308; Whitmore, *History of the United States Army Engineer District, Far East*, 85–86, 91–93.

[54] Thompson, *Pacific Ocean Engineers*, 306–8; Whitmore, *History of the United States Army Engineer District, Far East*, 13–14, 84; Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 1, PAO-FED Historical Files.

FAR EAST DISTRICT

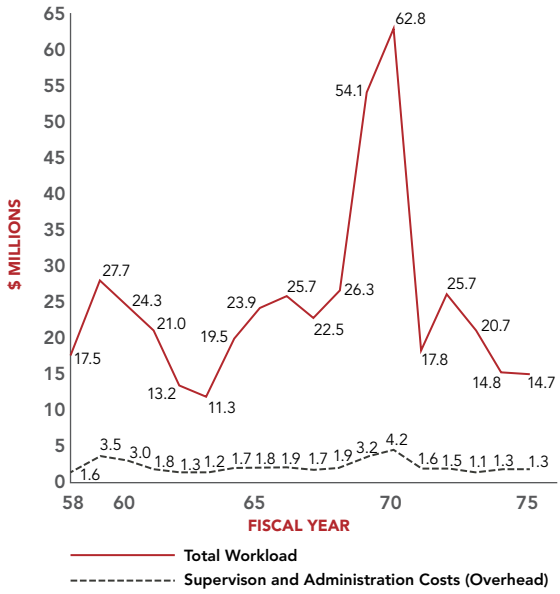
REORGANIZATION AND REINVENTION

1970–1979

Waves of change swept the district in the 1970s. Major restructuring occurred throughout the Corps of Engineers, and Far East District (FED) temporarily lost its status as a U.S. Army Corps of Engineers (USACE) district. Its mission in Japan eliminated, FED became an area office. At the same time, the U.S. government proposed to reduce its military commitment to Korea. By decade's end, however, the country reversed that policy, and FED became more essential than ever—first paving the way for troop withdrawals, and then improving the infrastructure for a continued presence. The Republic of Korea (ROK) and the Korean construction industry also expanded, presenting new challenges and opportunities. In all, the 1970s was a decade of reinvention for FED, from which it emerged with new strength.

At the start of the decade, global currents once again shifted FED's course. In the late 1960s, the buildups in Japan and Korea had flooded the district with crash programs and an almost overwhelming workload. But by 1970, the tide was receding. Already, in July 1969, President Nixon ordered a ten percent reduction in troops stationed overseas. The Nixon administration's foreign policy, unveiled to Congress in 1970, envisioned shifting Korea's defense burden from the United States toward Japan and the ROK itself. In preparation, USACE leadership made plans for a "Corps-wide retrenchment" to adjust to leaner times.[1]

Far East District Total Workload and Annual Supervision & Administration Cost



Based on material in Whitmore, *History of the United States Army Engineer District, Far East*, 66

WESTPAC

In Seoul, District Engineer Colonel Franklin Day recognized that FED's overhead costs were too high and its workload too low. Already, the district had released a number of Korean employees. It had also consolidated numerous area offices, resident offices, and district offices. Still, FED faced "spiraling costs," particularly in the Engineering Division. With no major projects on the horizon, the district could not rely upon its anticipated workload to support a full staff. Its overhead also included a number of fixed expenses—office space and operation of the FED compound, expenditures for temporary employees with special skills, and mandatory allowances for certain employees. To control overall costs, Colonel Day proposed a merger of USACE contingents in Korea, Japan, and Okinawa.[2]

WESTPAC (Office of Deputy Division Engineer for West Pacific) was the product of this merger. Effective 1 October 1970, USACE consolidated its operations in Korea, Japan, and Okinawa by establishing WESTPAC, a sub-office under POD with headquarters in Okinawa. The reorganization reduced FED to an area office, renamed the Korea Office (FED). Under the new structure, JAO reported directly to WESTPAC, thus divesting FED of its mission in Japan. WESTPAC's third area office, the Southern Area Office, was formerly the Okinawa District. This restructuring required FED to reduce its remaining personnel in Japan and Korea by about forty-five percent. Some employees were eligible to join the staff in Okinawa, and many FED engineers made the transfer. The new Korea Office (FED) had a strength of 19 officers, 33 enlisted men, and 130 civilians (88 of whom were KNs).[3]

As part of WESTPAC, FED relinquished its in-house contracting authority, legal counsel, comptroller functions, and a range of administrative capacities. Even though the engineering team in Korea was, by this time, "almost non-existent," FED carried out a number of projects as an area office, mostly carryovers from the 1968 emergency program. Included in this category were troop-housing projects at Yongsan and Camps Humphreys, Walker, Ames, and Carroll. FED also continued to make improvements at Army airfields at a number of locations, and it continued work on the Chinhae ammunition complex and adjacent facilities at Masan. Because many projects were small and widely dispersed, FED grouped similar work at different locations under a single contract, both to attract bidders and to reduce administrative costs.[4]

Camouflaged entrance at Camp Ames Stradely, circa 1971.

Compared to the frenzy of emergency construction, work in Korea was sluggish under WESTPAC. To compensate, FED began to accept small requests for facilities upgrades and maintenance—a service that would continue to expand. For the U.S. Air Force, FED managed construction at Daegu, Kunsan, and Osan. In some cases, the Air Force sought to reduce costs by reverting to its own project design, supervision, and inspection, with FED in an advisory role only. Air Force project managers reasoned that the work could move faster by applying standards less stringent that those required by the Corps.[5]

The problems of high overhead costs and a diminishing workload did not vanish with WESTPAC. Most of FED's projects were small, scattered, and expensive to administer. Additionally, because some 1968 emergency construction was still ongoing, FED required a full complement of field inspectors until mid-1971. This situation did little to help WESTPAC reduce expenses. Less than two years after its founding, WESTPAC was being reconsidered. By 1972, rising expenses, a decreasing workload, and global events all contributed to USACE's second reorganization its western field elements in two years.[6]

SECOND RETRENCHMENT

Beyond FED's high overhead—dictated largely by a profusion of minor projects at dispersed sites—the district's future again shifted with international currents. In 1971, the United States began removal of its 7th Infantry Division from Korea, part of President Richard Nixon's foreign policy to reduce U.S. military commitments overseas. By midyear, U.S. troop totals on the peninsula dropped from approximately 62,000 to 42,000, with plans to withdraw the remaining forces over the next five years.[7] At the same time, a prospective disengagement from Vietnam and an economic recession in America prompted the Corps to reconsider WESTPAC and its organizational structure. Finally, Okinawa's reversion to Japan in 1972 signaled a further diminution of USACE activity in the region.[8]

In response to these developments, the Corps abolished WESTPAC in May 1972. At the same time, POD established the Japan Engineer District and re-designated FED as the U.S. Army Engineer District, Far East. Okinawa became a resident office of the Japan District, and many engineers transferred back to Seoul to better serve the Eighth Army. Contracting authority for FED rested with POD, and, as such, the district remained "a semi-autonomous, augmented area office." On 1 January 1973, DOD returned to FED the responsibility for designing all Army, Air Force, Navy, and Marine projects in Korea.[9]

RISING WORKLOAD

As these reorganizations unfolded, the district's workload began to expand in many directions. Although there was a decline in conventional military construction through congressional appropriations—formerly the main funding source for most FED projects—the district found new viability using "unconventional monies." These funding sources, in contrast to congressional appropriations, included Army and Air Force maintenance and operations budgets and other nonappropriated monies generated by user agencies.[10]

In 1973, FED received an unexpected request from the Army to do $8 million worth of operations and maintenance, work that exceeded the

Interior of Camp Humphreys barracks.

capacity of the Eighth Army Facilities Engineer. The program represented a sudden change in FED's workload. The district responded by hiring additional personnel, and FED again received temporary-duty staff from the POD "surge tank." The new program—"facility engineers support"—would soon grow into a large and significant aspect of the district's overall mission. In the meantime, FED undertook the management of about 150 diverse, small-scale projects to maintain and upgrade various military facilities. In addition, the abolishment of the draft in 1973 prompted U.S. forces to upgrade housing in order to support an all-volunteer military. Between 1976 and 1978, FED's construction placement jumped threefold.[11]

Upgrades to strategic communications site billets at Changsan, circa 1972.

In 1977, President Jimmy Carter announced plans to withdraw U.S ground troops from Korea in favor of an emphasis on air power. For FED, this proclamation had the short-term effect of halting design programs, minor construction projects, and military construction. Yet far from having a negative impact on FED's activities, the prospective tactical shift actually increased the district's workload—Air Force projects multiplied, while Army programs expanded to support consolidation of units and facilities. In 1979, when the Carter administration reversed its decision to withdraw troops, the Army redoubled its efforts to provide more and better housing, increasing FED's workload further still.[12]

RECRUITMENT

As FED regained its footing in the post-WESTPAC era, numerous challenges emerged, some familiar and others new. For one, the district continued to have trouble recruiting qualified civilians. When key positions opened, they sometimes remained vacant for extended periods of time. There were several reasons: housing at FED headquarters was scarce, and a mandated two-year minimum tour in Korea made some prospective employees think twice. And until 1979, the anticipated military withdrawal and uncertainty about the district's future caused some job candidates to avoid Korea. One observer cited "the perception of the apparent temporary nature of the job" due to a possible troop drawdown. The POD commander noted that, for potential recruits in the 1970s, Korea had a "downer image resulting from the threatened withdrawal."[13]

At the same time, the district suffered an exodus of experienced Korean employees to the United States, where they received immigration priority for having fifteen or more years of federal service. These departures resulted in an experience gap between departing KN professionals and newly arrived U.S. civilians (DACs). Many talented KN employees also took high-paying positions with Korean firms in the Middle East, where construction was booming. District Engineer Robert M. Bunker explained: "I had to be rather strict and persuasive several times to avoid having too many of our good employees stolen at any one time to go to work overseas for these construction companies." However, given the excellent quality of FED's training and personnel, he was only partly successful. Staff turnover and understaffing worked against continuity.[14]

In some ways, the district's own success contributed to its difficulty in retaining employees. District Engineer Bunker noted that "the Korean construction industry held FED in great esteem." Each FED commander, he recalled, was also informally considered "the dean of Korea's finest engineering graduate school." Bunker noted that Korea's best young engineers often perfected their trade at FED—typically at salaries below those offered by private firms—before moving to more lucrative jobs in the private sector, and he wondered if Korean firms sometimes supported these prized apprenticeships. "I am convinced," he wrote, that the only way to retain our professional workforce over the long haul is to reinforce the loyalties of the 'FED Family' and maintain salaries as close to comparability as possible."[15]

FED'S WORKFORCE: DACS, KNS, AND SOLDIERS

Since 1957, the district's workforce has been a combination of Department of the Army Civilians (DACs), Korean Nationals (KNs), and small contingent of U.S. soldiers. In 2016, FED employed 253 DACs, 252 KNs, and 29 uniformed U.S. soldiers. Each contingent has played an important role in advancing FED's mission as the principal design and construction agent for the U.S. military in Korea.[16]

FED's military personnel provided, foremost, a command structure: the district commander and deputy commander were always U.S. Army officers, and FED's soldier-engineers historically have been the primary points of contact between the district and its military customers. This arrangement emerged because soldiers often felt "more at ease dealing directly with other military members," one observer noted. In addition, the district's soldiers served as team leaders for the Forward Engineer Support Team (FEST), which deployed in contingency or emergency exercises or operations. Engineer-officers had the ability to translate military requirements into well-defined technical processes for civilians. Overall, FED's soldiers have served as resident and project engineers, construction inspectors, and staff officers, and have worked in offices and divisions throughout the district.[17]

DACs normally comprised about half of the district's civilian workforce. These overseas transfers filled many roles, especially in project management. Most tours for DACs lasted between two and five years, though some remained at FED for decades. Often, recent arrivals brought new skills and perspectives from other USACE districts. "We really leveraged that experience and those techniques that they would bring with them for accomplishing work," recalled Dick Byron, a program manager who worked at FED from 1997 to 2015. Korea provided good opportunities for people interested in challenging work and cross-cultural experiences, and many DACs extended their tours when possible, or returned for additional assignments. Even so, recruitment for Korea was historically difficult, and international events sometimes compounded the difficulties. FED Logistics chief Ed Minnerly noted that "any time that North Korea does something, a rocket launch, a nuclear test, some type of saber rattling or whatever, people decline the assignment."[18]

FED's diverse workforce, shown here in 2007.

KN employees typically made up the other half of FED's workforce, and they have always been vital to FED's mission. From its earliest days, the district hired intelligent and hardworking Korean engineers, technicians, accountants, and legal specialists from Korea's best universities. These KNs, in turn, received top-notch experience and training on the job. They also became indispensable interlocutors between FED and its Korean contractors, bridging language and cultural gulfs. Over time, they provided essential continuity and historical knowledge—whereas U.S. employees typically worked at FED for five years or less, many KNs stayed with the district for decades. "They understand the day-to-day operations," Minnerly said. "They know how things happen and how things get done." KNs also served as ambassadors of Korean culture to the many Americans coming and going. KNs could help explain, for example, Korean holiday traditions, or how best to approach a Korean contractor about a problem.[19]

The multicultural nature of the district's workforce was a source of both strength and tension. FED soldiers typically dealt with U.S. military leaders, DAC's often interfaced with U.S. customers, and KNs had special facility with Korean contractors. From another perspective, KNs provided continuity, DACs brought new ideas, and soldiers had special skills. Yet cultural divides were not imaginary. Because DACs and soldiers typically dealt with clients, they held most of FED's supervisory titles. For KNs, who staffed mainly technical positions, supervisory grades and salaries were unavailable. And in earlier days, recalled FED commander Robert Bunker, "it took a lot of effort over time to make soldiers of the U.S. Army understand that when they were talking to a [KN] professional engineer with a FED hat on, they were talking to their equal." Cultural traits, such as traditional Korean deference to supervisory authority, sometimes presented challenges for managers. Yet more important were the opportunities for learning on all sides. Often, FED employees viewed their cross-cultural experiences with friends and colleagues as the most rewarding aspects of their job.[20]

OTHER CHALLENGES

Some difficulties were familiar. The district contended with many small and scattered projects, as opposed to major concentrations in a central area. Between 1972 and 1975, FED made only ten awards over $1 million, and most contracts were for $100,000 or less. As a result, supervision and administration costs were difficult to control. Far-flung projects and programs scattered across the Korean peninsula were more expensive to administer than individually sited projects because, for example, they required more time to supervise. The district responded by reshuffling offices and consolidating manpower, but the fight against creeping overhead costs was constant.[21]

In addition, problems with procurement of offshore materials persisted, causing delays and frustrations. Many items were not available locally or did not meet USACE standards. In other cases,

Workers inspect progress during construction of a road to a Hawk or Nike missile site.

Aerial view of TAC Site 6, 1975.

Buy American policies dictated offshore procurement. It took four to six months for most items to arrive in Korea from the United States, and some orders were subject to errors, losses in transit, or damage to equipment. Offshore procurement was further hampered by labor strikes and shipping line bankruptcies, while global inflation and economic recession in America made firm price quotes difficult to obtain. In response, FED utilized local materials when possible, and it airlifted some supplies from the U.S. at a steep cost increase. The district also received and warehoused materials, using a "hardware store" model to furnish supplies to contractors when needed. Although the Buy American directive lasted into the 1970s, securing exceptions became the standard procedure for FED. In addition, the provisions of the 1966 SOFA between the United States and the ROK gave the district greater flexibility in procurement of local supplies and materials.[22]

The U.S. Government Accountability Office (GAO) issued a 1974 report critical of some district activities. Historian Whitmore summarized: "The GAO report echoed the familiar comments that FED projects took

too long and cost too much." However, the authors of the report also recognized that user-agency alterations in siting or construction criteria aggravated these problems. In addition, the GAO noted that the district relied too heavily on design contractors—by 1974, only about twenty-five percent of FED's architecture and engineering was being done in-house. At the same time, a USACE manpower survey reached the opposite conclusion, finding that FED could reduce overhead by contracting even more design work. The district endeavored to adjust its personnel and organization to address these concerns, but difficulties in staffing, procurement, and overhead costs had no simple solutions. In spite of these obstacles, FED not only carried out its mission, but also grew stronger and more diversified the process.[23]

CHANGES IN CONTRACTING

Since the 1950s, Korea's construction industry had matured considerably with FED's support. By the 1970s, the industry as a whole showed a level of expertise and product quality that "equals and, at times, surpasses the current U.S. standards," wrote POD Engineering Directorate head Kisuk Cheung. Moreover, the ROK government had focused on promoting industrialization in Korea during the 1960s, and many Korean construction companies had gained wealth and experience working for the U.S. government in Vietnam. The industry continued this outgrowth in the 1970s, winning lucrative construction contracts in the Middle East.[24]

From FED's perspective, the success of Korean companies in the Middle East led to a shortage of construction experience on the peninsula. In the 1970s, as oil-rich nations such as Saudi Arabia accrued massive wealth from their petroleum

Workers using a pile driving machine during construction of troop housing at Camp Humphreys in the 1970s.

resources, many embarked upon large public-spending programs to build new infrastructure. With the ROK's economy booming, rising Korean companies competed for lucrative construction contracts overseas, often with great success.[25] As a result, many skilled Korean workers and contractors left the country to take jobs in the Middle East. The ROK government supported this "massive export of labor" with loans, subsidies, tax reductions, and other concessions for contractors who worked abroad. For the district, the drain of experienced contractors led to more time spent educating replacements. Wrote one FED project engineer: "Many contractors who were the former mainstay of the district have moved on to the international marketplace, leaving smaller

Aerial view of Camp Humphreys, circa 1972.

Workers using a pile driving machine during construction of troop housing at Camp Humphreys in the 1970s.

contractors to take their place. Our workforce has responded to the daily task of training these newcomers in the Corps standards and methods."[26]

During this time, American/Korean joint ventures virtually disappeared from the construction landscape. After having been a mainstay of the 1968–1969 crash programs, American/Korean joint ventures in construction were not permitted by the ROK government, which preferred to see the work go to exclusively Korean firms. However, the Park administration allowed joint ventures for design work, seeking to nurture that budding domestic industry in the same way. Through most of the 1970s, FED still depended largely on visiting American companies to supplement the district's in-house architecture and engineering staff.[27]

Until the late 1970s, the district continued to "package" numerous small projects to attract bidders, as well as to avoid the "unknown contractor" that might be attracted to piecemeal work. As an example, FED arranged for the repair of sixteen different bridges under a single contract, grouping together similar work at dispersed sites.[28] The district also utilized contract modifications and amendments liberally, both for convenience and to reduce costs. This practice could extend contracts over long periods of time. One contract at Daegu lasted nearly six years, starting as a power upgrade project but, through the course of sixty-five contract modifications, it grew to include communications infrastructure and a computer mainframe facility.[29]

The GAO's 1974 report criticized FED's use of contract modifications and supplemental agreements, interpreting these practices as a form of sole-source procurement that circumvented competitive advertising. From the district's perspective, these practices represented efficient ways of accomplishing small projects that would otherwise not attract reputable construction firms, while at the same time reducing administrative costs and bringing savings to user agencies. In the end, the GAO's findings led the district (and Army facilities engineers, who received similar GAO criticism) to recalibrate their organizational plans and personnel distribution to minimize the use of amendments and modifications. Yet these mechanisms remained useful tools in the FED contracting arsenal.[30]

Single-Source Selection

In 1977, a major change occurred in the way FED awarded its contracts. That year, confirming long-standing suspicions, Army investigators found evidence of collusion among Korean firms vying for American construction projects. In the view of one historian, cultural differences may have shaped different outlooks between Americans and Koreans about fairness in bidding and negotiating. Nevertheless, work on U.S. military contracts required adherence to American standards of ethics.[31] In

essence, the idea of single-source selection emerged as a way to reconcile the divergence between FED and its contractors in the parties' understanding of the concept of "truth in negotiating."[32]

In contrast to competitive bidding, single-source selection provided a formal process for negotiated contracts. The district rated each of its contractors on quality, safety, reliability, and other factors. Based on these ratings, FED chose a handful of contractors most suitable for a given job. Then, the district recommended its choices to a Source Selection Board, which included representatives from the ROK and the U.S. military. Upon approval by the board, the district negotiated with the chosen contractor to arrive at a fair and realistic price. If no agreement could be reached, FED cycled to the next-highest-rated contractor, and the negotiation process began anew. By 1979, the district had a list of twenty-two approved construction firms it could call upon for negotiations.[33]

Single-source selection was, at first, an experimental idea, a significant departure from the normal competitive bidding process formerly in place. District Engineer Bunker remembered "a time of nervousness from those who were used to a competitive system." In practice, the process was surprisingly effective. The board typically approved the district's selections, which were based on a contractor's suitability for a given job. Bunker added: "We graded our construction contractors and let them know what we were doing. We graded them on quality of work, timeliness, and their willingness to get the job done. . . . If their work was better than others, their workload went up. If they did worse, their workload would go down. If they did their work badly, they went off our list. That's how we managed it, and it worked well."[34]

CHAEBOLS

FED District Engineer congratulates Joo Yung Chung, president of the Hyun Dai Construction Company, for winning the contract bid to rehabilitate the Incheon Tidal Basin, 1959. *Credit: Photo by Sergeant Ray Boswell, FED, PAO-FED Historical Files*

A unique feature of doing business in Korea was the presence of chaebols, family-owned industrial and business conglomerates that dominated the country's construction, manufacturing, and other industries. Beginning in the 1950s, the district helped to develop some of these companies—for example, Hyundai, Samsung, LG (Lucky-Goldstar), and Daewoo—which later went on to build worldwide brands. Chaebols were favored and cultivated by the ROK government. Each one was, in the words of one historian, "a private agency of public purpose," the purpose being to build a rich and strong Korean nation.[35]

From the ROK government, chaebols received cheap and abundant credit (derived mainly from U.S. financial aid), special rates for utilities and transportation, and other competitive advantages. Most were founded after World War II and grew stronger during the 1960s and 1970s with, in part, the help of U.S. government organizations such as FED. At the same time, Korea underwent rapid, state-directed industrial development—earning it the moniker "Korea, Inc.," a spinoff of "Japan, Inc.," shorthand in the 1980s for the government-backed economic booms in both countries. But unlike the powerful state-sponsored corporations in Japan, keiretsu, Korean chaebols lacked their own banks for capital and thus were wholly dependent on the ROK government for financing. Unsatisfactory performance or political disfavor could bankrupt a company overnight.[36]

The district contributed to the success of many chaebols, and to Korea's development generally, by providing knowledge, training, and a steady stream of profitable contracts. These opportunities, in turn, allowed chaebols to gain experience in construction, learn U.S. methods, and practice sophisticated financing techniques. More broadly, Cold War financial aid from the U.S. to the ROK provided the fundamental basis for cheap credit, and American consumers provided a market for Korean products. Other major chaebols, still active today, include Samhwa, Hyosong, Kukje, Sunkyung, Sangyong, Kumho, and Kolon.[37]

Samsung was the contractor for this tactical building at Camp Pelham.

RELOCATABLE HOUSING

As the district's workload increased in the mid-1970s, one of its major tasks was to build additional housing for the U.S. Army. Despite FED's focus on troop housing in the late 1960s, a shortage of adequate living quarters had persisted, with some soldiers still occupying Quonset huts erected for temporary service during the Korean War. A commentator wrote: "Living conditions were poor, substandard, and deplorable." As a result, the Eighth Army made a renewed push to address the problem. Construction of troop housing became one of FED's main programs in the 1970s, involving more than 540 relocatable buildings. The program encountered major difficulties, but FED proved its worth with innovative solutions.[38]

Because of uncertainties about future troop levels, Congress was reluctant to invest in permanent troop housing for Korea. A solution was "relocatable" housing—pre-engineered structures built with prefabricated panels. The Army moved away from concrete-block housing in favor of relocatable barracks, latrines, and other structures that could be assembled, disassembled, and moved depending on logistical and tactical needs. Following a successful pilot program in 1975, FED was tasked with a larger program the following year.[39]

By 1976, the district engineer had identified the relocatable housing program as FED's "first priority." The Army's needs were not concentrated—instead, project sites were spread among bases all over the ROK. The initial program was also a race against time, as panels had to be procured and received within a ten-month period, in time to be assembled before winter. The first stage called for nearly $4 million worth of construction at Camps Casey, Stanley, Red Cloud, and Humphreys. However, complications soon arose that severely tested the resolve and flexibility of FED personnel.[40]

When the first shipment of prefabricated panels arrived in August 1976, major problems were evident. First, district personnel discovered shipping damage, substandard electrical parts, and a shortage of some hardware components. More alarmingly, the aluminum-skinned, honeycombed wall panels had "delaminated" during shipment. Some panels that had been improperly glued began peeling apart out of the packing crates, while others deteriorated after construction. In either case, delamination destroyed the structural integrity of the components. The panels were, in the words of the POD commander, "junk." Construction stopped, and FED scrambled to find a solution.[41]

Already, numerous old Quonset huts had been demolished to make way for the new construction. With winter approaching, troops were herded into the remaining substandard buildings, and forty-nine single-story structures were erected using the faulty panels, as a temporary measure. Soldiers endured the winter in overcrowded conditions as FED weighed options. Ordering replacement panels from the United States would be prohibitively expensive, and in-country repair was ruled out. A visitor from the Inspector General's office noted that the program, so far, had been "plagued with major deficiencies," and that the defective modular panels were "a disgrace." Meanwhile, the visitor wrote, "troops occupy dangerous buildings."[42]

As a solution, in 1977, the district contracted with a Korean firm to manufacture new panels locally. Personnel from FED and POD collaborated on the design—a unique "K-panel" concept that utilized salvaged materials from the defective panels to cut

Two-story relocatable housing unit, circa 1979.

costs. District Engineer Bunker recalled: "We literally had to set up a factory with a contractor in downtown Seoul and re-manufacture all the pieces and parts of the 1976 Relocatable Barracks before we could put them up." The panels withstood testing, and construction was able to resume.[43]

During 1977, new challenges emerged. A warehouse fire at Camp Market destroyed special tools, supplies, and building components, causing further delay. Throughout the year, material shortages, lack of specialized equipment, and funding constraints created headaches. Another problem was theft. Delays to the relocatable housing program necessitated storage of equipment during work stoppages. Some items—particularly electrical and architectural components—were "of a highly pilferable nature," wrote one historian. Parts damaged by shipping and fire further complicated the inventory process, opening the door for unaccounted losses.[44]

In spite of these obstacles, the program moved ahead. In fact, the quality of construction proved to be remarkably good. One observer noted: "Modern, sunny, light brown relocatables were popping up like mushrooms after a spring rain, amidst old, tired green quonset huts in forward areas."[45] For the 1977 program, FED managed activities from beginning to end, including design, procurement, and construction. The district also conducted a life-cycle study of relocatable designs—one FED member traveled across the U.S. and Japan, visiting manufacturers and end users to evaluate their products. Ultimately, the district changed the relocatable design to a two-story, rectangular model capable of housing forty-eight people. This concept proved to be extremely popular with the Army, which considered adopting it as a standard for nonhousing units as well.[46]

As construction progressed, District Engineer Bunker noted that the "once beleaguered program was fast emerging as our crown jewel." The district and user agencies submitted the relocatable units to rigorous testing, including cycling of hot and cold temperatures, simulated rainfall hose-downs, and a host of other travails—"using river water, pumps, fans and whatever other torture they can dream up," one commentator wrote. Roof leakage was discovered in some units, requiring a last-minute fix on a shrinking budget. In July 1979, the last two-story relocatable units were placed at Camps Henry and Humphreys. Despite the challenges posed by this project, the district engineer observed "some sadness" in seeing the project's ultimate completion, which marked "the end of an era." What began as a difficult trial had ended as a major accomplishment.[47]

FACILITIES ENGINEERING SUPPORT

The need for better troop housing in Korea went far beyond FED's relocatable housing program. Many facilities—old 1950s Quonset huts to two- and three-story barracks from the late 1960s—were not scheduled for replacement for many years, if at all. Nevertheless, they badly needed maintenance and renovation. The need for upgrades also went beyond barracks and officers' quarters: ancillary facilities such as latrines and mess halls required attention as well. Work of this nature was, at first, unusual for FED—previously, most of the district's work had involved new construction. But by the late 1970s, the upgrade program had become an essential component of a diversified workload.[48]

The program began in the early post-WESTPAC era, when the district's workload was at low ebb. In 1972, to compensate for the absence of standard design and construction work, FED began accepting user-agency requests for small-scale rehabilitation or upgrade projects at numerous sites. District personnel noted: "Due to [the] inability of Using Agencies to obtain engineering/construction support services from other sources we have been finding ourselves with some new or previously infrequent customers."[49] These new customers were U.S. military facilities engineers, who were overburdened by the magnitude of the upgrades in addition to their routine work.[50]

By 1973, FED was at work on $8 million worth of "facilities engineering support" maintenance and upgrade projects at approximately 150 sites throughout Korea. The program brought FED personnel into closer contact with not only military engineers in Korea but also U.S. troops, whose daily lives were impacted by the work. To cope with the increased workload, FED received a contingent of temporary-duty personnel from POD—"Charlie Cheung's fire brigade," the district engineer called it—"without which we would never survive." However, the post-WESTPAC phase was only the beginning.[51]

In 1976, the district embarked on a $22 million program for upgrading barracks, latrines, and mess halls at installations scattered throughout Korea via numerous small-dollar contracts. To support this program, the district created a separate Facilities Engineer Support Section within the Engineering Division to coordinate tasks with various military facilities engineers. The district awarded the program in more than a dozen contracts, often grouped geographically, each ranging from $100,000 to $1 million. The first phase of the program involved the repair and upgrade of 431 bachelor-enlisted quarters, 81 officers' quarters, 78 latrines, and 29 mess halls for the 2nd Infantry Division. The second phase, launched in 1978, covered 655 more buildings at 36 different sites across the peninsula. Project sites included practically every Army installation in Korea, as well as some Air Force bases as well.[52]

Funding for the upgrade program came not from military construction appropriations, but from operations and maintenance funds or non-appropriated monies held by user agencies. Because of budgetary rules, the district was not allowed to destroy and replace even the most dilapidated buildings slated for upgrade. Instead, FED had to find a way to fix the structures, some of which were in quite poor condition. The district engineer recalled: "We were literally lifting up quonsets which had rusted away at the bottom, suspending them in-place while we poured some concrete up the side, and putting them back again."[53]

Rehabilitating Quonset huts in the Forward Area, circa 1979.

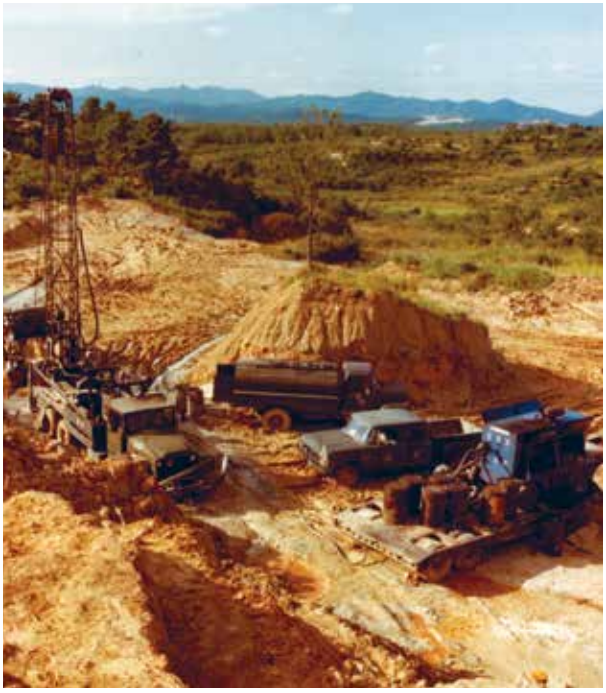
In some instances, FED was able to completely rebuild the interiors of buildings, as long as the exteriors were preserved. The district also used local materials whenever possible, for convenience and to cut costs. However, this approach sometimes led to strange outcomes. In one example, FED needed locksets to fit thousands of interior doors. A local supplier (Lucky, or LG) took the order, but the sheer volume led to manufacturing shortcuts. Colonel Robert Bunker, the district engineer, recalled that "pretty soon we had 2,700 doors that would not open in the western corridor." Ultimately, the supplier agreed to replace the defective hardware. Despite such situations, FED generally found local solutions. "There are a thousand stories like the Lucky locksets," Bunker added, "all generated as we found what local materials we could and could not use in our projects."[54]

The district also began to identify and document maintenance and repair needs at various facilities. This backlog of maintenance and repair (BMAR) existing at U.S. military installations helped FED's user agencies prepare for future needs. It also ensured that facilities engineering support would be among the district's ongoing efforts. As long as U.S. forces remained in Korea, periodic maintenance and upgrades would continue to be necessary.[55]

NORTH KOREAN TUNNEL DETECTION

One of FED's most critical assignments in the 1970s was to locate subterranean tunnels constructed by North Korean forces beneath the DMZ. These were not smugglers' tunnels—instead, they were large passageways designed to facilitate a military invasion. The first hints of tunnel activity emerged in 1973, when ROK patrols reported hearing underground explosions near the central area of the DMZ. On 15 November 1974, ROK soldiers noticed steam escaping from below the ground. Upon further examination, they discovered a shallow tunnel less than 2 feet below the surface, extending some 3,600 feet into South Korea. The discovery set off a search for more suspected tunnels, as many as fourteen of them—one for every North Korean infantry division. Based on intelligence reports, ROK forces focused their search on an area around Cholwon, near the center of the DMZ, hiring a Korean mineral firm to conduct the drilling. Yet after sixty-nine boreholes, no additional tunnels were found.[56]

In late 1974, knowing FED's expertise in high-precision drilling for water wells, the ROK made a request through the Eighth Army for assistance from the district. In March 1975, FED established a Precision Borehole Drilling Unit and dispatched two drill crews to the area for around-the-clock drilling.



Drilling operation at Tunnel #3, June 1978.

The teams worked in three shifts, eight hours each, twenty-four hours a day. Finally, after twelve days of intensive drilling, the effort paid off—155 feet below the ground, one of the drills hit a void. The district had discovered a second tunnel. The passage was 4 feet high by 3 feet wide, and was fitted with a narrow-gauge railway for moving troops and weapons.[57]

Following the discovery of the second tunnel, the Eighth Army established a Tunnel Neutralization Team (TNT), with FED providing technical and logistical support. Drilling teams worked along the entire length of the DMZ to locate additional tunnels. In 1978, using intelligence gathered from defectors and satellite imagery, drill crews focused on an area near the armistice village of Panmunjom. The teams used every available hour of daylight, but to no avail. On 10 June 1978, the drillers caught a lucky

Inside a North Korean tunnel, 1978.

break—an explosion occurred in an old abandoned borehole, apparently from a faulty dynamite charge planted years earlier. "We noticed that the water table in this borehole was totally out of balance with the rock structure," recalled Michael King, chief of FED's Hydrology and Construction section. "We decided a tunnel must be within a short distance allowing water to escape."[58]

Immediately, FED launched a hydrogeologic survey that indicated an "anomalous condition" in the near vicinity. Within days, on 12 June 1978, drillers found an elaborate third tunnel located 213 feet underground, roughly 6 feet high by 7 feet wide. In response, the ROK undertook an intercepting tunnel, but FED personnel warned that a massive wall of water could engulf workers if the original tunnel were not dewatered first. Using deep-well submersible pumps, FED crews worked nonstop to drain the water and provide other technical assistance. UN officials estimated that, had the tunnel been completed, 30,000 armed soldiers could have passed through every hour. [59]

Subsequently, the ROK army discovered a fourth tunnel and continued to search for still others, while the district continued to provided support. In 1980, for example, FED teams drilled boreholes collectively totaling 15,400 feet in depth. As late as 1988, FED had four drill rigs working twelve-hour days, seven days a week. The drill crews were staffed with the district's skilled KN personnel. In following years, although much of the work was classified, the district continued to support tunnel neutralization efforts until the 1990s, when the ROK took over the activity entirely.[60] Tunnel detection near the DMZ, an unusual activity by any measure, remains one of the district's most distinctive accomplishments.

ROK clearing teams, equipped with gas detecting devices and self-contained breathing gear, worked to neutralize the third North Korean tunnel, October 1978. *Credit: NARA RG 111, CC-114711*

Workers in an intercept tunnel.

"HOST NATION" CONSTRUCTION

Like facilities engineering support, "Host Nation" construction started small in the 1970s and grew to become a major program in subsequent decades. Later renamed Combined Defense Construction, the concept was driven, in part, by rapid urbanization in Korea. As cities grew, some U.S. military installations obstructed development, prompting the ROK government to seek swaps/trades of certain U.S. property in exchange for equivalent facilities constructed by the ROK elsewhere. In these quid-pro-quo exchanges, the district was not involved on a contractual basis, but rather was asked by U.S. forces to ensure compliance with U.S. standards. This role often put the district in a "tug-of-war" with ROK contractors over design, construction, and safety standards.[61]

In 1976, the ROK government requested relocation of several U.S. military installations on a quid-pro-quo basis. The idea was not without precedent—at Okinawa, which had reverted to Japan in 1972, the United States had agreed to exchange certain military properties for equivalent facilities built by Japan at other sites. Using this model, the ROK agreed to build new facilities in exchange for portions of U.S. military reservations at Gimpo International Airport, Pusan Pier, and Pohang. The ROK was responsible for design and construction of the replacement facilities.[62]

In preparation for this process, FED vetted several Korean design firms to determine their capacity to design Host Nation projects. All proved fully qualified to do the work, "albeit with close supervision by FED to ensure that U.S. standards were met throughout." District leaders envisioned joint ventures between Korean and American design firms. In practice, the ROK government chose Korean design firms and construction contractors. With no real authority in the process, FED was left with little control over construction standards, materials, or safety. Deputy District Engineer Jon Iwata summarized the challenge: "We don't have a hammer, if you will, to enforce quality. . . . It's very difficult to get quality when you don't have the contract authority."[63]

The emergent program also put Korean contractors in difficult positions. District Engineer Bunker explained: "We had a situation where Korean contractor firms were being directed to do Host Nation support projects, and do them in accordance to our standards. However, they weren't even being paid enough to do these projects in accordance to Korean standards of the time. We had a great amount of difficulty bringing that system on. Even though most of the contractors doing the Host Nation work had worked for FED or in Saudi Arabia, and knew our standards, it was difficult to bring on a proper effort, the quality, and safety standards required in construction."[64]

The first project started in late 1976. It involved moving an entire Signal Corps battalion complex from an area near Gimpo International Airport, which was rapidly expanding, to an undeveloped area near Camp Carroll. The new site's hilly terrain entailed a large amount of earthmoving and grading, and construction involved twenty-five new buildings (including housing, dining, administrative, and maintenance facilities), as well as water, sewer, drainage, and electrical systems. Although the project was designed according to FED's technical specifications, the ROK's understanding of those standards did not always match the district's expectation. The project engineer's office reported

that "portions of the work are substandard in view point of FED." However, with cooperation among the parties, the project moved forward.[65]

Learning from the Gimpo experience, the district engineer prepared a detailed memorandum of understanding setting forth design and construction procedures for future projects. At project sites, FED relied on "hard hat diplomacy" to persuade contractors to follow the district's standards for quality and safety. These efforts were only sometimes successful. At Pohang Pier, where U.S. port facilities were being relocated across the harbor, the district rejected $100,000 worth of concrete slab poured at the wrong temperatures. The contractor protested, but FED was insistent. During the standoff, the slab flooded with seawater while drying, resolving the impasse by ruining the work in dispute. In another instance, FED successfully persuaded ROK officials to halt an extension to the trans-Korea pipeline after finding numerous deficiencies in the work, including improper pipe coatings and burial depth, poor bends and welds, and a lack of cathodic protection. After more than 10 miles of pipe had been buried, FED personnel finally persuaded ROK officials to stop construction and address the flaws.[66]

Safety was another area of concern. In Korea during the 1970s, workers had the longest average workweek in the world (53.1 hours per week), and the country had an accident rate about fifteen times higher than in Japan. "Working conditions were often appalling," one historian noted, "with scant regard to safety and long hours."[67] Where FED was involved, the situation improved. Contractors knew their safety records on Host Nation projects would also factor into consideration for other USACE projects, particularly after the district began rating and recommending contractors for single-source selection. One district engineer recalled: "I expect we probably threatened a couple of times to take people off of our contracting list if they didn't buck up their safety."[68]

Despite imperfections, Host Nation construction was fast becoming a major component of FED's work. Even with difficulties enforcing construction standards, the program's strength was evident in its growth. By 1979, the district engineer noted that FED's "Quid Pro Quo Program seems never to abate," with at least eleven active projects under way. In the coming years, the program would grow further still.[69]

OTHER PROJECTS

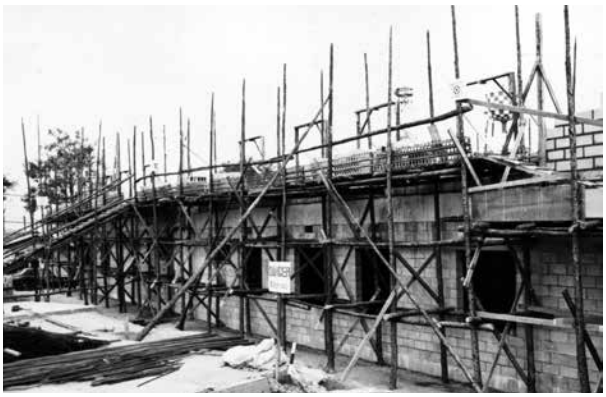
During the 1970s, most of FED's major programs involved relocatable housing, facilities engineering support, and Host Nation construction. However, the district's workload included a variety of other projects as well. During the WESTPAC era, the district oversaw construction of an underground command post for the Army. In addition, military construction was ongoing at Humphreys and elsewhere. The district also engaged in an Air Force program, construction at mountaintop sites, installation of water wells, and other activities.

During the WESTPAC years, one important project was a $4 million underground command post for the Eighth Army and United Nations Command. In 1969, FED studied design concepts for a subterranean complex 15 miles south of Seoul. In 1970, work commenced on a ventilated tunnel, entries and exits, access roads and a helipad. With the help of a rock tunnel expert from the Portland District, excavation moved forward, and workers removed some 45,000 cubic yards of rock and debris. Over the next several

years, FED contractors installed interior structures and a communications system, completing the complex in 1973.[70]

Also under WESTPAC, the district launched construction of the $7 million Masan Ammunition Storage Depot. The new facility was adjacent to the Port of Chinhae, built during the 1968 emergency construction program. The depot at Masan required mountainside excavations to install twenty-seven Stradley magazines, railroads, and an administrative area. The district had worked for four years with the 44th Engineer Battalion (Construction), the Korean National Railroad, and three contractors to accomplish the work. During the same time, the district also oversaw a $7 million troop housing project at Camp Humphreys. The new facilities included ten 250-person barracks, three 1,000-person dining halls, officers' quarters, and numerous administrative and operational structures.[71]

Air Force projects included runways, aprons, terminals, and other structures at Daegu, Kunsan, and Osan air bases. In 1977, FED placed a renewed emphasis on Air Force projects, in light of President Carter's plans to withdraw U.S. ground troops from Korea in favor of air power. The district engineer wrote: "Our emphasis is beginning to shift on the engineering side towards the Air Force programs since we recognize that FED's future workload will be largely dependent on them as a customer." Among the district's Air Force projects were a flight simulator building, hangars, shops, and dormitories, in addition to significant infrastructure work at Osan and Kunsan air bases.[72]

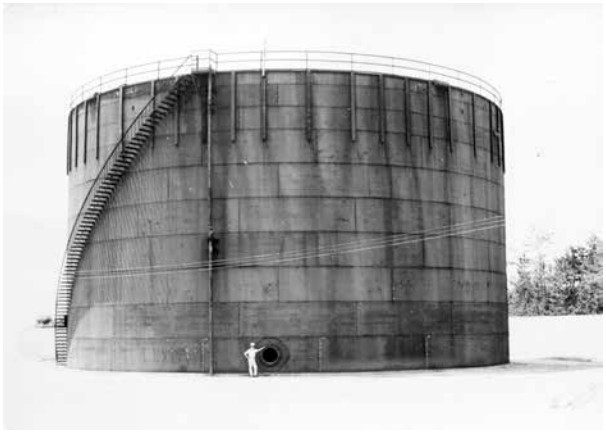


Camp Humphreys communication facility under construction, 1975.

Construction of troop housing at Camp Humphreys, 1975.

At Osan, the district supervised construction of a radar approach control facility, built to increase safety in aircraft landings. The project featured a fire-resistant building with all utilities, including air conditioning. Contractors also had to tunnel beneath an existing runway to install pipes—difficult work that, in the words of a FED historian, "demonstrated the ingenuity of the Korean contractors." Equally impressive was a 500,000-gallon water tank at Kunsan Air Base. "The finished structures," the FED historian wrote, "display excellent workmanship and sensitivity to special requirements." In addition, at both Osan and Kunsan, the district contracted

Light pier to help guide airplanes at the approach to Kunsan Air Base, 1972-1974.



A 55,000-barrel fuel storage tank at Kunsan Air Base, 1975.

$2.7 million worth of operations and maintenance upgrades, awarded to eight separate contractors.[73]

Other notable projects included a $1.5 million renovation of the Seoul Military Hospital, which involved new wiring, utilities, and a piped oxygen system. The project progressed in stages to avoid disrupting normal hospital functions. In addition, the district installed dining facilities at ten mountaintop communication sites. Water-well drilling and maintenance continued for both Army and Air Force facilities, even while some drill crews still searched for North Korean tunnels. By 1979, FED was maintaining 163 water wells, with another 55 new wells scheduled for 1980. The district also designed a $3 million annex for Seoul High School, upgraded offshore mooring at Pohang to accommodate supertankers, and replaced a cold storage warehouse destroyed by fire.[74]

An unusual project was the inspection of Korean materials for use in Saudi Arabia. As the Korean construction industry expanded its push into the Middle East, some companies earned USACE contracts abroad. To support this effort, FED's Design Branch inspected precast concrete piles and deck planks manufactured at Hyundai Shipyard to ensure compliance with USACE specifications. The district also evaluated aluminum windows, wood doors, hardware, and ceramic tiles. Items that passed inspection were added to a list of approved local materials for use in construction projects. In addition, FED identified Korean construction drawings that had proven acceptable in the past, and that could be substituted for FED's own standard drawings.[75]

Master planning was another area of FED's workload outside normal construction activities, one that would expand significantly in the coming years. It involved the preparation of maps and basic information on the infrastructures of major Army installations throughout Korea. Such overall analysis had never been done before, reflecting the tactical operating environment and the sprawling scale of the U.S. military presence on the peninsula. In 1976, FED received $1.2 million from the Army to update existing master plans. The program grew to include utilities studies and analyses of various existing facilities. Starting in 1977, FED began developing master plans for all U.S. Army installations in Korea. One observer noted: "This long-neglected program will

vastly improve the effectiveness of facility planning in the years ahead."[76]

OBSTACLES AND ACCOMPLISHMENTS

As the 1970s came to a close, FED found itself engaged in "one of the largest MCA [military construction, Army] programs since the USS Pueblo and Blue House incidents of 1968," one observer wrote. Projects included not only new construction for the Army and Air Force, but also extensive upgrades to existing facilities.[77] By 1979, the district's workload had grown so large that FED personnel were strained to the utmost. The district engineer wrote: "Hard work, dedication, 6/7 day work weeks and good customer relations are holding our head above water at the moment, but there is little more that management can do without more inspectors and support personnel."[78] However, FED leaders were careful not to increase the district's permanent workforce above sustainable levels for the future. Despite the heavy workload, morale remained high. "This is a deep and continuing source of satisfaction," the district engineer wrote, "given the massive—frequently staggering—workload which has faced the individual members of the FED family for more than twelve months without respite."[79]

The district's increasing workload brought with it rising costs for supervision and inspection. This perennial problem stemmed, as in the past, from the fundamental nature of many FED projects—small contracts widely dispersed across Korea. Adding to this difficulty was the exodus of experienced Korean contractors to the Middle East, which required FED personnel to train new companies and workers in USACE standards, processes, and expectations. At the same time, Korea's construction boom fueled rising costs for materials and labor. As a result, the district's contract costs rose by about twenty-five percent in the late 1970s.[80]

Construction of troop housing at Yongsan Army Base, 1975.

Completed troop housing at Yongsan Army Base, 1976.

As in years past, FED also dealt with compressed schedules at the end of each fiscal year, as user agencies scrambled to use available funds

before expiration or diminishment. In fiscal year 1979, for example, approximately eighty percent of FED's year-long workload was packed into the final quarter. In the end, the district placed thirty-seven contract packages worth some $39.4 million ($23.4 million Army and $16 million Air Force). The district engineer noted with some satisfaction: "I now find out we were in the minority of districts who met this guidance."[81] Also in 1979, the Office of (the) Inspector General wrote that "the district's mushrooming workload should be cause to consider moving FED closer to a full-service district."[82]

Among its accomplishments, FED could count an excellent safety record—a considerable achievement in Korea, where workplace safety had once been a major concern. In 1976 and 1977, for example, FED had no accidents for two years running. The district provided safety training to inspectors and contractors, and safety inspections at work sites occurred on a regular basis. In addition, the FED Aviation Office—consisting of aviator-engineers who transported FED personnel to far-flung project sites— received a Department of the Army Award of Merit in 1979 for its fifth straight year of accident-free flying, logging 713 hours of flight time that fiscal year, a record that also indicated FED's rising workload.[83]

In addition, the district engineer launched a Human Relations Plan in 1978 designed to "enhance racial/cultural harmony and understanding, and to foster the FED family spirit." To further these goals, FED required the elimination of discriminatory language and practices, such as searching

Construction workers at Camp Humphreys, circa 1972.

U.S. President Jimmy Carter's 1979 visit to Korea, with ROK President Park Chung Hee and an unidentified officer, June 1979. *Credit: NARA RG 111, CC-116792*

Korean military or private vehicles at the gate of the FED compound. The district also sponsored sports programs to boost integration among offices and employees. By 1979, FED had teams for volleyball, softball, bowling, and golf.[84]

Korea also underwent major changes in the 1970s. Amid rapid urbanization, the Korean construction industry boomed, resulting in a stronger industry but also inflation. The country's economic development since the 1960s was astounding: South Korea's gross national product—$2.3 billion in 1962—had skyrocketed to $61.4 billion by 1979. Along with other up-and-coming "Asian Tigers," including Taiwan, Hong Kong, and Singapore, the ROK sustained phenomenal export-driven growth. Yet South Korea's success was also distinctive. In particular, the ROK benefited from foreign investment that accompanied Japan's economic resurgence, and from lucrative military contracts supporting the U.S. military in the Vietnam War. Moreover, from 1946 to 1976, the United States provided at least $12.6 billion in economic aid to serve South Korea as a bulwark against communism. These factors promoted the ROK's dramatic economic surge.[85]

At the same time, political circumstances in Korea incubated uncertainty. In the early 1970s, domestic repression intensified under the military dictatorship of ROK President Park Chung Hee, prompting some reporters to dub the country "tear gas nation." A failed assassination attempt on Park in 1974 took his wife instead, and in 1979, the leader of the ROK secret service shot and killed Park. In the aftermath, a coup brought yet another military dictatorship to power, and popular unrest in South Korea soon would begin to manifest in anti-American attitudes.[86]

Global currents, as in the past, affected both Korea and FED. Early in the 1970s, President Nixon sought to reduce the costly burden of U.S. troops stationed in Korea and elsewhere, and by 1972, the administration had reduced U.S. forces in Korea by

nearly a third. In 1977, President Carter pledged a further withdrawal of all U.S. ground troops from the peninsula. This development cast doubt on the district's future, yet its workload actually increased, owing partly to plans for a stronger Air Force posture on the peninsula. However, in 1979, political headwinds and tactical considerations led the Carter administration to reverse course, and FED's workload would grow even larger with the continued presence of U.S. Army forces.[87]

Overall, the 1970s was a decade of significant change for FED. At the start, the district was nearly reorganized out of existence, but FED reinvented itself with more diverse services and a broader base of funding. In contrast to the early 1970s, when FED was temporarily merged into WESTPAC, by 1979, the district had become more indispensable than ever. Its primary user agencies—the Army and Air Force—competed for top prioritization of their projects. Moreover, FED had branched into other service areas. When congressional funding appropriations for military construction dried up early in the decade, the district branched into other project areas, such as facilities engineering support and master planning.[88]

By the end of the decade, with these programs going strong, there was also talk of renewed military construction. The Carter administration's 1979 freeze on troop withdrawals from Korea provided the district engineer with "significant hope for an increased MCA program" on the peninsula. Indeed, after many lean years, congressionally funded military construction looked to be on the upswing, with more than $120 million programmed for fiscal year 1981. The district was primed for a robust new era.[89]

NOTES

[1] Olsen, *Korea, the Divided Nation*, 83; Cummings, *Korea's Place in the Sun*, 359; Thompson, *Pacific Ocean Engineers*, 225.

[2] Whitmore, *History of the United States Army Engineer District, Far East*, 94–95.

[3] USACE-POD, General Orders No. 6, 29 September 1970; Yearbook 1976, "U.S. Army Engineer District, Far East," PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 95.

[4] USACE-FED, Colonel Ames S. Albro, District Engineer, History and Organization of the U.S. Army Engineer District, Far East, 4 June 1976, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 97–100, 106–7.

[5] Whitmore, *History of the United States Army Engineer District, Far East*, 102, 105–7.

[6] Whitmore, *History of the United States Army Engineer District, Far East*, 105–7.

[7] Until the 2000s, U.S. troop totals in South Korea ranged from approximately 38,000 to 42,000. During the George W. Bush administration (2001-2009), troop levels were further reduced to about 30,000. Schober, Base Encounters, 2, 60, 173; Olsen, Korea, the Divided Nation, 83; Cummings, *Korea's Place in the Sun*, 359, 365; Thompson, *Pacific Ocean Engineers*, 225. See also Woo, *Race to the Swift*, 123.

[8] The United States annexed Okinawa from Japan in World War II, converting it into a key American military bastion. U.S. involvement in Vietnam delayed the reversion of Okinawa until 1969, when President Nixon overruled Pentagon leaders and pledged its return to Japan. See "Okinawa's Reversion," *New York Times*, 15 May 1972, 34; Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 3, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 95.

[9] Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 3, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 95, 97.

[10] USACE-FED, Col. Robert M. Bunker, District Engineer, to Gen. Maurice D. Roush, POD, 2 June 1978, 1, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 108.

[11] Whitmore, *History of the United States Army Engineer District, Far East*, 103, 108, 117; Thompson, *Pacific Ocean Engineers*, 366; Bowen, *Supplement to the History*

of United States Army Engineer District, Far East, 17–18; USACE-POD, J. L. Anderson, Comptroller, Staff Study-POD Organization, 25 January 1978, 2, PAO-FED Historical Files; USACE-FED, Col. Robert M. Bunker, District Engineer, to Gen. Maurice D. Roush, POD, 2 June 1978, 1, PAO-FED Historical Files.

[12] Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 4, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 366; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 1, 22.

[13] Thompson, *Pacific Ocean Engineers*, 366; Whitmore, *History of the United States Army Engineer District, Far East*, 120; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 24; U.S. Office of Inspector General, EIG Exit Notes, FED-FY77, 31 March 1977, PAO-FED Historical Files; Unpublished Draft, "History of the Corps of Engineers, Far East District, 1978-1997," July 1997, 3, PAO-FED Historical Files.

[14] USACE-FED, Colonel Robert M. Bunker, District Engineer, to General Maurice D. Roush, POD, 2 June 1978, 1, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 366; Whitmore, *History of the United States Army Engineer District, Far East*, 120; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 24; U.S. Office of Inspector General, EIG Exit Notes, FED-FY77, 31 March 1977, PAO-FED Historical Files; USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 9–10, PAO-FED Historical Files.

[15] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 11–13, PAO-FED Historical Files; Unpublished Draft, "History of the Corps of Engineers, Far East District," 26.

[16] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker, Commander, 1977–1979," March 1995, 2, PAO-FED Historical Files; Robert Collins, "A Brief History of the US-ROK Combined Military Exercises," *38 North*, 26 February 2014; Al Bertaux, "FED and Ulchi Focus Lens," *East Gate Edition* 6, no. 62 (July 1988), 7; Kwang-Kyu Choe, interview by John Lonnquest, 10 March 2016.

[17] Major Terry L. Stewart, "FED's Soldiers, 'Ready, Relevant, Responsible and Reliable," *East Gate Edition* 17, no. 2 (June 2007): 29.

[18] Dick Byron, interview by John Lonnquest, 3 March 2016, Honolulu, HI, transcript, 25; Ed Minnerly, interview by John Lonnquest, 8 March 2016.

[19] Robert Lau, interview by John Lonnquest, 2 March 2016, transcript, 21–22; Dick Byron, interview by John Lonnquest, 3 March 2016, Honolulu, HI, transcript, 21–24; Ed Minnerly, interview by John Lonnquest, 8 March 2016, transcript, 18; Cheung, Memorandum for Record, 7.

[20] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 9–10, PAO-FED Historical Files; Colonel Gregory Kuhr, "From the Commander," *East Gate Edition* 10, no. 11 (December 2000): 2; Kuhr, "From the Commander," *East Gate Edition* 12, no. 4 (April 2002): 2; Julie Park, "Saying Goodbye—Jack W. Church Story," *East Gate Edition* 12, no. 5 (May 2002): 12.

[21] Whitmore, *History of the United States Army Engineer District, Far East*, 119–20; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 19.

[22] Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 21; Unpublished Draft, "History of the Corps of Engineers, Far East District," 17; Whitmore, *History of the United States Army Engineer District, Far East*, 120, 122; United States and Republic of Korea, "Facilities and Areas and the Status of United States Armed Forces in Korea," 9 July 1966.

[23] Whitmore, *History of the United States Army Engineer District, Far East*, 118.

[24] USACE-FED, Kisuk Cheung, Chief, POD Engineering Directorate, Development of Foreign Construction Industry by the Corps of Engineers, 15 October 1976, PAO-FED Historical Files; Colonel Frederick A. Perrenot, District Engineer, "Prose and Cons," *East Gate Edition* 1, no. 1 (March 1983): 2; Whitmore, *History of the United States Army Engineer District, Far East*, 98–100, 105–7; Kim, *The History of Korea*, 163

[25] Hyundai, for example, emerged as the largest Korean chaebol at the end of the 1970s, based largely on its success in the Middle East. Eun Mee Kim, *Big Business, Strong State: Collusion and Conflict in South Korean Development, 1960–1990* (Albany: State University of New York Press, 1997), 131–32; Alon Levkowitz, "The Republic of Korea and the Middle East: Economics, Diplomacy, and Security," *Korea Economic Institute Academic Paper Series* 5, no. 6 (August 2010), 3.

[26] USACE-FED, Everett Elliott, Central Project Engineer, 25 January 1978, PAO-FED Historical Files; Woo, *Race to the Swift*, 180; Thompson, *Pacific Ocean Engineers*, 366; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 8–11, 23.

[27] Whitmore, *History of the United States Army Engineer District, Far East*, 108.

[28] Whitmore, *History of the United States Army Engi-*

neer District, Far East, 98–100, 108, 111, 116.

[29] USACE-FED, Southeast Project Office, Organizational Histories, circa 1978; Whitmore, *History of the United States Army Engineer District, Far East*, 105.

[30] Whitmore, *History of the United States Army Engineer District, Far East*, 119.

[31] In addition to divergent cultural outlooks, economic and political realities in Korea differed from those in the United States. The ROK practiced a form of "guided capitalism" under which, in the words of one historian, private firms and the ROK partnered in "a corporate state old boy network . . . with big business and government interacting closely." Standards of ethical business practices in the two countries were not necessarily congruent. See Thompson, *Pacific Ocean Engineers*, 370; Olsen, *Korea, the Divided Nation*, 82.

[32] Thompson, *Pacific Ocean Engineers*, 370–71; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 22; USACE-FED, Lieutenant Colonel Ronald W. Brass, District Engineer, to General Maurice D. Roush, POD, 3 June 1977, 2–3, PAO-FED Historical Files; U.S. Office of Inspector General, EIG Exit Notes, FED-FY77, 31 March 1977, PAO-FED Historical Files.

[33] USACE-FED, Kisuk Cheung, Chief, POD Engineering Directorate, Development of Foreign Construction Industry by the Corps of Engineers, 15 October 1976, PAO-FED Historical Files; Colonel Frederick A. Perrenot, District Engineer, "Prose and Cons," *East Gate Edition* 1, no. 1 (March 1983): 2; Whitmore, *History of the United States Army Engineer District, Far East*, 98–100, 105–7; Kim, *The History of Korea*, 163; Unpublished Draft, "History of the Corps of Engineers, Far East District," 7.

[34] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 9–10, PAO-FED Historical Files.

[35] Woo, quoted in Cummings, *Korea's Place in the Sun*, 317; Kim, *The History of Korea*, 163.

[36] Cummings, *Korea's Place in the Sun*, 318; Woo, *Race to the Swift*, 150; Brazinsky, *Nation Building in South Korea*, 230–31; Olsen, *Korea, the Divided Nation*, 82–83.

[37] Seth, *A Concise History of Modern Korea*, 165–67, 172, 178; Woo, *Race to the Swift*, 168.

[38] Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 1–2; USACE-FED, Draft, Organizational Histories, circa February 1978, 2, PAO-FED Historical Files.

[39] Whitmore, *History of the United States Army Engineer District, Far East*, 108; Thompson, *Pacific Ocean Engineers*, 368; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 19.

[40] USACE-FED, Lieutenant Colonel Ronald W. Brass, District Engineer, to General Maurice D. Roush, POD, 3 June 1977, 2–3, PAO-FED Historical Files; U.S. Office of Inspector General; Whitmore, *History of the United States Army Engineer District, Far East*, 114; Thompson, *Pacific Ocean Engineers*, 368–69.

[41] Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 2–3, 19–20; Thompson, *Pacific Ocean Engineers*, 368.

[42] U.S. Office of Inspector General, EIG Exit Notes, FED-FY77, 31 March 1977, PAO-FED Historical Files; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 2–3, 19–20; Thompson, *Pacific Ocean Engineers*, 368–69.

[43] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 5, PAO-FED Historical Files; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 20.

[44] Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 20.

[45] Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 20.

[46] Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 3–6, 20; Thompson, *Pacific Ocean Engineers*, 369.

[47] USACE-FED, Colonel Robert M. Bunker, District Engineer, to General Maurice D. Roush, POD, 5 March 1979, 3; Colonel Robert D. Carpenter, District Engineer, to Brigadier General Henry J. Hatch, POD, 7 November 1979, 3, 8; Unpublished Draft, "History of the Corps of Engineers, Far East District," 21.

[48] Whitmore, *History of the United States Army Engineer District, Far East*, 107; Thompson, *Pacific Ocean Engineers*, 367–68; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 5.

[49] Quoted in Thompson, *Pacific Ocean Engineers*, 367.

[50] Thompson, *Pacific Ocean Engineers*, 368–69.

[51] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 4, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 368–69.

[52] USACE-FED, Draft, Organizational Histories, circa February 1978, 2, PAO-FED Historical Files; Unpublished Draft, "History of the Corps of Engineers, Far East District," 15–16, 23; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 5–6; Thompson,

Pacific Ocean Engineers, 368–69.

[53] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 4, PAO-FED Historical Files.

[54] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 4–5; Unpublished Draft, "History of the Corps of Engineers, Far East District," 23.

[55] Quotation from USACE-FED, Southeast Project Office, Organizational Histories, circa 1978, 3; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 12–13.

[56] USACE-FED, Statements of Kim Se-kon and O Chin-sok, no date; and Michael K. King, Chief, Hydrology and Construction Section, Memorandum for the Record, circa 1990, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 369–70.

[57] During this time, tensions along the DMZ began to increase. In 1976, North Korean soldiers axe-murdered two U.S. officers on tree-trimming detail, followed by the death of three more U.S. soldiers when North Koreans shot down their unarmed helicopter. See USACE-FED, Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 4; and Statements of Kim Se-kon and O Chin-sok, no date; and Michael K. King, Chief, Hydrology and Construction Section, Memorandum for the Record, circa 1990, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 369–70; Elsie Smith, "Far East Searches for Tunnels Along the DMZ," *Engineer Update*, April 1988, 5.

[58] Quotation in Elsie Smith, "Far East Searches for Tunnels Along the DMZ," *Engineer Update*, April 1988, 5; USACE-FED, Statements of Kim Se-kon and O Chin-sok, no date; and Michael K. King, Chief, Hydrology and Construction Section, Memorandum for the Record, circa 1990, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 369–70.

[59] Upon discovery of the third tunnel, the four-man drill crew was overcome by fumes from the borehole and had to be evacuated for medical treatment. USACE-FED, Statements of Kim Se-kon and O Chin-sok, no date; and Michael K. King, Chief, Hydrology and Construction Section, Memorandum for the Record, circa 1990, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 369–70.

[60] USACE-FED, Statements of Kim Se-kon and O Chin-sok, no date; and Michael K. King, Chief, Hydrology and Construction Section, Memorandum for the Record, circa 1990, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 369–70.

[61] Seth, A Concise History of Modern Korea, 169; Thompson, Pacific Ocean Engineers, 371–72; Bowen, Supplement to the History of United States Army Engineer District, Far East, 13–15; USACE-FED, Lt. Col. Ronald W. Brass, District Engineer, to Gen. Maurice D. Roush, POD, 3 June 1977, 4, PAO-FED Historical Files.

[62] Thompson, Pacific Ocean Engineers, 371–72; USACE-FED, Lieutenant Colonel Ronald W. Brass, District Engineer, to General Maurice D. Roush, POD, 3 June 1977, 4; Southeast Project Office, Organizational Histories, circa 1978, 2, 6, PAO-FED Historical Files.

[63] USACE-FED, Kisuk Cheung, Chief, Engineering Division, Development of Foreign Construction Industry by the Corps of Engineers, 15 October 1976; Unpublished Draft, "History of the Corps of Engineers, Far East District," 10; Jon Iwata, interview by John Lonnquest, 8 March 2016, transcript, 53.

[64] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 3, PAO-FED Historical Files.

[65] Thompson, *Pacific Ocean Engineers*, 371–72; USACE-FED, Southeast Project Office, Organizational Histories, circa 1978, 2, 6, PAO-FED Historical Files; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 13–15.

[66] Unpublished Draft, "History of the Corps of Engineers, Far East District," 20–21; USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 3, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 371–72; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 13–15.

[67] Seth, *A Concise History of Modern Korea*, 205.

[68] USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, supplemental comments, 1, PAO-FED Historical Files.

[69] USACE-FED, Colonel Robert D. Carpenter, District Engineer, to Brigadier General Henry J. Hatch, POD, 7 November 1979, 3, PAO-FED Historical Files.

[70] Whitmore, *History of the United States Army Engineer District, Far East*, 102.

[71] Whitmore, *History of the United States Army Engineer District, Far East*, 98, 102.

[72] USACE-FED, Lieutenant Colonel Ronald W. Brass, District Engineer, to General Maurice D. Roush, POD, 3 June 1977, 1, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 373.

[73] Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 12.

[74] USACE-FED, Colonel Robert D. Carpenter, District Engineer, to Brigadier General Henry J. Hatch, POD, 7 November 1979, 2, PAO-FED Historical Files; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 8–12; Thompson, *Pacific Ocean Engineers*, 371–73.

[75] Thompson, Pacific Ocean Engineers, 373.

[76] Quotation from USACE-FED, Southeast Project Office, Organizational Histories, circa 1978, 3; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 12–13; Whitmore, *History of the United States Army Engineer District, Far East*, 116.

[77] Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 4–5, PAO-FED Historical Files.

[78] USACE-FED, Colonel Robert M. Bunker, District Engineer, to General Maurice D. Roush, POD, 2 June 1978, 3.

[79] USACE-FED, Colonel Robert M. Bunker, District Engineer, to General Maurice D. Roush, POD, 5 March 1979, 5. See also Colonel Robert D. Carpenter, District Engineer, to Brigadier General Henry J. Hatch, POD, 7 November 1979, 5, PAO-FED Historical Files; USACE-FED, "Historical Interview, Maj. Gen. Robert M. Bunker Commander 1977–1979," March 1995, 8–9, PAO-FED Historical Files.

[80] USACE-FED, Colonel Robert D. Carpenter, District Engineer, to Brigadier General Henry J. Hatch, POD, 7 November 1979, 7, PAO-FED Historical Files; USACE-FED, Everett Elliott, Central Project Engineer, 25 January 1978, PAO-FED Historical Files; Unpublished Draft, "History of the Corps of Engineers, Far East District," 26.

[81] USACE-FED, Colonel Robert D. Carpenter, District Engineer, to Brigadier General Henry J. Hatch, POD, 7 November 1979, 5, PAO-FED Historical Files.

[82] Unpublished Draft, "History of the Corps of Engineers, Far East District," 1.

[83] USACE-FED, Colonel Robert D. Carpenter, District Engineer, to Brigadier General Henry J. Hatch, POD, 7 November 1979, 5, PAO-FED Historical Files; Whitmore, *History of the United States Army Engineer District, Far East*, 88; Bowen, *Supplement to the History of United States Army Engineer District, Far East*, 24; U.S. Office of Inspector General, EIG Exit Notes, FED-FY77, 31 March 1977, PAO-FED Historical Files.

[84] Unpublished Draft, "History of the Corps of Engineers, Far East District," 35–36.

[85] Seth, *A Concise History of Modern Korea,* 162–63, 169–71, 177–78

[86] Brazinsky, *Nation Building in South Korea*, 230–31; Seth, *A Concise History of Modern Korea*, 169, 183; Cummings, *Korea's Place in the Sun*, 357; Kim, *The History of Korea*, 168.

[87] Woo, *Race to the Swift*, 183–84; Brazinsky, *Nation Building in South Korea*, 230–31.

[88] USACE-FED, Colonel Robert D. Carpenter, District Engineer, to Brigadier General Henry J. Hatch, POD, 7 November 1979, 1–4, PAO-FED Historical Files.

[89] USACE-FED, Colonel Robert D. Carpenter, District Engineer, to Brigadier General Henry J. Hatch, POD, 7 November 1979, 1–4, PAO-FED Historical Files.

FAR EAST DISTRICT

RESURGENCE

1980–1989

In the 1980s, the Far East District (FED)'s workload surged higher than ever before. Programs that began in the 1970s continued at a pace of phenomenal growth. Operations and maintenance—principally upgrades to various U.S. military facilities and infrastructure—grew exponentially. At the same time, congressional appropriations for military construction also increased, and by 1986, FED had one of the most robust programs across U.S. Army Corps of Engineers (USACE). Projects included troop housing, air base improvements, medical complexes, command centers, and firing ranges. In addition, Host Nation (Combined Defense Construction) projects proliferated, giving the district ever more oversight responsibilities for projects administered by the Republic of Korea (ROK) government.[1]

In 1982, FED regained full district status under the leadership of Colonel Frederick A. Perrenot. During his time as district engineer, 1981 to 1984, FED's workload increased by 300 percent—the fastest-growing workload in USACE—and the district's staff doubled in size. Perrenot's tenure marked FED's growth "from a small appendage of POD to a large, bustling full service district, by most measures the best in the Corps."[2] In 1980, FED started with a workforce of 325 employees. By 1986, the district's personnel increased to 744. Construction placement peaked in 1987. However, by decade's end, FED braced for an era of diminishing resources.[3]

The 1980s also marked other significant changes for FED. In contracting, the district modified its single-source selection program to reintroduce competition into the process, while safety and contractor training continued to receive attention. At the same time, computers and automation proliferated throughout USACE, bringing changes of their own. The FED compound underwent a major renovation, and the district's Aviation Office was deactivated after nearly twenty years of service. Through all these developments, the 1980s brought FED its highest-ever project and staffing levels, demonstrating the district's ability to handle heavy workloads on multiple fronts and adapt to new conditions.[4]

CONTRACTING CHANGES

During the early 1980s, FED continued to award contracts by single-source selection. This process, in effect since 1977, involved direct negotiations

between FED and preselected contractors—a system designed to limit collusion in bidding among Korean firms. In 1985, however, the district returned to a system of competitive contracting, resulting from the 1984 Competition in Contracting Act, a U.S. law requiring federal agencies to utilize "competitive procedures" in their procurement activities. Despite past problems with collusion among bidders in Korea, the country's construction industry by the mid-1980s was considered to have matured enough to handle competition once again.[5]

In 1984, the U.S. Office of Inspector General (OIG) examined Korea's contracting situation overall, ultimately finding that reestablishment of competitive procedures was warranted. The OIG noted that because of the involvement of engineers, attorneys, auditors, negotiators, price analysts, and estimators in the process, single-source selection took two to four months from proposal to award. Competitive bidding, by contrast, would reduce the award time to less than a month, resulting in savings in both cost and time. These savings, the OIG concluded, outweighed the risks of a "perpetual collusive contracting atmosphere" in Korea:

> It has been recognized that "Teahousing" existed in the Far East for over 4,000 years and that real competition does not exist, nor that it will ever meet the perquisites of the Federal Acquisition Regulation. However, it was believed that adequate controls, other than the CSSSP [Controlled Single Source Selection Procedure], could be established to ensure that USFK [U.S. Forces in Korea] contracting activities attain a dollar's worth of construction for every dollar spent.[6]

Based on the OIG's findings, FED implemented a "modified competitive procedure," whereby the district selected six to ten prequalified firms to bid competitively on each project. Prequalification criteria for a given job included (1) experience in work of similar magnitude and complexity, (2) ownership or access to the facilities needed for the job, (3) a record of quality and timely performance, (4) a record of financial capability, (5) a record of successful contract administration, (6) offshore procurement capacity, and (7) adequate staff for the job. The district also continued to rate its contractors based on performance. Thus, FED retained some features of its single-source selection program while simultaneously introducing competition into contracting procedures.[7]

In 1985, FED utilized thirty-nine different contractors to accomplish $170 million in construction. In total, approximately 170 Korean construction firms were registered to work with FED. The district's Procurement and Supply Division continued to review and analyze cost and pricing data submitted by bidders, to ensure that the amounts were not excessive. However, the district approached the transition toward competition carefully—in 1988, FED reduced its selection of qualified contractors on some project to two or three firms, which then competed using open bidding. "The hope," wrote the district engineer, "is to reduce the possibility of outside influences on our contracting process."[8]

Construction quality remained important. The district expanded its list of locally produced materials, approving drywall, ceramic tile, polystyrene board, deadbolt locksets, transformer outlet switches, and various paints meeting U.S. standards.[9] FED hosted regular workshops on a range of topics, both technical and administrative. The presentations were translated

into Korean by district employees. In June 1984, for example, approximately 250 construction managers from Korean firms attended a FED workshop on quality-assurance techniques. Other seminars involved live demonstrations of construction methods, such as applying insulation to building exteriors. In some instances, FED used "sample" components—model walls, for example—to discuss potential problem areas with contractors before actual construction began. Safety remained a point of emphasis, and the district provided asbestos-removal training to some of its contractors. In addition to outreach and education efforts, FED insisted on quality standards. "Our contractors will give us what we demand," wrote the district engineer, "and we must continue to demand the highest quality outputs."[10]

COMBINED DEFENSE CONSTRUCTION

Host Nation Construction—renamed Combined Defense Construction in the 1980s—continued to grow. The program's new name reflected, in part, a recognition that the term "Host Nation" might suggest that the ROK was attempting to "buy" the continued presence of U.S. troops in Korea. As a result, U.S. officials renamed the program "Combined Defense Construction" to reflect reciprocal burden-sharing between the two countries. For FED, the program also meant, in part, "involvement in construction we do not fully control." The district was responsible for upholding U.S. construction standards, but because the ROK government administered the design and construction contracts, FED had little actual leverage. The district engineer noted: "The ROK Army often ignore[s] our recommendations; however, we intend to continue with our tasking as we see it."[11]

In 1980, the Eighth Army prepared new regulations to clarify and formalize the program's processes and responsibilities. At POD, Division Engineer Henry J. Hatch insisted that FED should remain directly responsible for design reviews and construction surveillance, as was consistent with its functions in military construction. "I will not be able to rest on this matter until my mission and USFK procedures are compatible," Hatch wrote. Ultimately, in August 1980, the district's oversight role was reaffirmed, making FED responsible for providing technical assistance and general surveillance for the program. In this role, the district was responsible for observing and advising ROK contractors, but it lacked the traditional enforcement authority of controlling contracts and payments. It required "a special sort of 'Engineer-Diplomat' to effectively fill the position," wrote one observer.[12]

Combined Defense Construction quickly became a major part of FED's workload. In 1980, the district had oversight responsibilities over about $18 million in new construction. By 1983, the program had risen into the $70 million–$80 million range, annually. The projects grew in diversity as well as value. By 1984, the program comprised projects of at least three different types: (1) quid-pro-quo, in which the ROK provided equivalent facilities in exchange for real estate given up by U.S. forces; (2) Combined Defense Improvement, which enhanced combat capability for both U.S. and ROK forces; and (3) build-to-lease family housing, in which the ROK government built and owned the facilities but leased them to the U.S. government.[13]

Funding for Combined Defense Construction came in a variety of combinations. Typically, Congress provided special funds for surveillance and site-specific studies, while the ROK government

funded and administered design and construction. However, some projects were cost-shared by the ROK and U.S. governments on a fifty-fifty basis. In either case, the amount paid to FED for construction surveillance and other services was typically much smaller than the construction value. For example, for a $22.4 million aviation center near Camp Long, funded by the ROK government, FED received $3.4 million in U.S. funds for design and construction oversight.[14]

While the ROK usually administered design and construction contracts for Combined Defense Construction, the district sometimes contracted for the design of specialized projects, such as the highly sophisticated Korea Combat Operations Intelligence Center (KCOIC) at Osan Air Base, completed in 1985. In that instance, the U.S. Air Force paid for the design, and the district contracted with an American firm to do the architectural and engineering work. Some projects were owned and maintained wholly by the ROK government, others by U.S. forces, and still others by some combination of the two.[15]

Frequently, Combined Defense projects were different from FED's other work. Practically every project had its own memorandum of understanding (MOU) (typically an international agreement between the U.S. and the ROK), which laid out the scope, design, construction, and management responsibilities for that project. The district, in its oversight role, endeavored to become involved in the negotiations from an early stage. However, since most projects were fast-tracked by the ROK government, there often was little time for a "normal" review process. Moreover, construction often began before the design was complete, resulting in "field design" by contractors during construction. These ad hoc decisions by contractors (or even workers) lacked documentation and complicated FED's efforts to uphold U.S. construction standards.[16]

Quick-turn aircraft facilities at the Suwon Combined Defense Project, 1984.

Projects varied widely. At Suwon Air Base, ROK contractors installed a number of new aircraft shelters and maintenance facilities (for the U.S. Air Force's A-10 aircraft), in addition to housing, a hospital, a post office, and a dining hall. The district was responsible for construction surveillance. Another notable project was the $40 million Telecommunications Plan for the Improvement of Communications in Korea (TPICK), a 280-mile underground fiber-optic duct from Seoul to Pusan that paralleled an express highway, for which FED conducted soil studies, prepared design criteria, and provided supervision. The U.S. and ROK governments shared the construction costs on a fifty-fifty basis. The district also supervised construction of build-to-lease family housing at Yongsan, Osan, and Camp Carroll.[17]

Build-to-lease family housing construction at Yongsan began in 1984, when ROK contractors broke ground on a project to build 300 townhouse-style units at three locations on South Post. In 1985, work began on an additional 100 units at Camp Carroll. Besides housing, the developments featured day-care centers, pools, retail complexes, and other amenities. The ROK government funded and administered the projects, valued at approximately $58 million, and because the sites were on U.S. bases, there were no land-acquisition costs. When the units were finished (some as early as 1985), the ROK government owned the buildings, while the U.S. government leased and operated them under an MOU. The district's roles included helping to negotiate the MOU, develop criteria for design, provide technical assistance and construction surveillance, and translate massive volumes—some of them 700 pages thick—of correspondence, specifications, and other documentation from Korean (written in Hangul characters) to English.[18]

U.S. ARMY PROJECTS

Much of FED's unprecedented workload in the 1980s came from new military construction. Congressional funding for this program, moribund through most of the 1970s, came to life with new vigor. For the Army, FED delivered new troop housing and operational facilities, particularly at camps near the DMZ, with activity especially brisk at Camp Casey. The district even supervised work on North Korean soil, upgrading joint-use facilities at the armistice village of Panmunjom. Farther south, in Seoul, FED orchestrated major new construction at Yongsan, the largest U.S. military base in the ROK, which received a hospital, a large commissary, and numerous other improvements. Camp Carroll (near Daegu, in south-central Korea) also saw heavy construction.

Across the peninsula, troop housing was a point of emphasis. Despite past efforts to improve living conditions for U.S. troops in Korea, much remained to be done. In 1982, Gen. John A. Wickham Jr., commander of U.S. forces in Korea, told Congress that nearly half of all U.S. soldiers in Korea still lived in housing that was "substandard, deteriorating, energy wasting, overaged, and disgraceful." In response, the Army tasked FED with improving housing and other necessities at Army bases across the ROK. The district delivered a host of new facilities to increase combat readiness and to better the lives of U.S. Army personnel and their families.[19]

Work in the "Forward Area"

Army bases near the DMZ required urgent attention. Tin Quonsets from earlier eras abounded,

serving as makeshift quarters, offices, and other facilities as needed. These structures, some dating from the 1950s, often were little more than "arched metal sheds that look more like warehouses than offices or living quarters," wrote one observer. Icy drafts penetrated the buildings during winter, and occupants often faced "a 1,500 yard dash through the snow and near-zero weather to take a shower or use the toilet facilities." In the 1980s, with U.S. ground troops committed to Korea for the foreseeable future, the Army and Congress recognized the need for massive upgrades.[20]

The Army's approach to troop housing in the 1980s had shifted away from the semirelocatable barracks of earlier eras, and toward new, semipermanent structures that used cinder blocks and concrete beams. These buildings provided better insulation, durability, and energy efficiency. By 1983, new barracks were under way at Camps Red Cloud and Kitty Hawk, and Essayons. At the same time, the district launched a major operations and maintenance effort to upgrade buildings not yet scheduled for replacement. Some Quonsets were rehabilitated for the second or third times; other structures were gutted and rebuilt on the inside, leaving only the exteriors intact. From 1981 to 1983, repair and upgrade projects improved approximately 2,200 buildings, mostly near the DMZ.[21]

Troop housing was not the only initiative in the forward area. "Everywhere you go in the 2nd Infantry Division area these days you are bound to see new buildings going up," wrote one observer in 1984, marveling at "a boom of construction activity greater than has been seen there in many years." An early program was the replacement of old maintenance garages for tactical vehicles. From 1981 to 1984, FED oversaw construction worth $25 million for more than forty tactical maintenance shops at various Army encampments, mostly in the forward area. The new shops included roll-up doors in the front and back, heating systems, a pit for working under vehicles, and an overhead lift device. "The new shops are replacing some aging and inefficient maintenance facilities that made life difficult for the soldiers who had to keep the tactical vehicles well maintained," wrote one observer.[22]

Under FED's supervision, Camp Kitty Hawk received an equipment maintenance shop and a water tower; Camps Greaves and Hovey got new troop aid stations; and Camps Howze and Casey benefited from new dining halls. In addition to these projects, mostly built in 1984 and 1985, FED delivered a new aircraft maintenance building at Camp Stanley in 1987. By the decade's end, the district also delivered a club for non-commissioned officers (NCOs) at Camp Stanley, a petroleum, oil, and lubricants (POL) warehouse at Camp Castle, a medical/dental clinic at Camp Edwards, and other facilities. Likewise, in 1987, Camp Page received a new commissary, a medical/dental clinic, a central utility plant, and new living quarters; with a 144,000-square-foot aviation hangar, a vehicle maintenance shop, and a flight-control tower to follow, in support of the 309th Attack Helicopter Battalion. These projects, and others like them, improved the war-readiness and quality of lives for soldiers stationed in the forward area.[23]

The district's construction boom was especially evident at Camp Casey, where FED oversaw construction of a medical center, a live-ammunition firing range, and numerous bridges. Construction on the $2.3 million, 23,000-square-foot Camp Casey Troop Medical Clinic began in late 1983 and was

Camp Casey medical clinic in 1985.

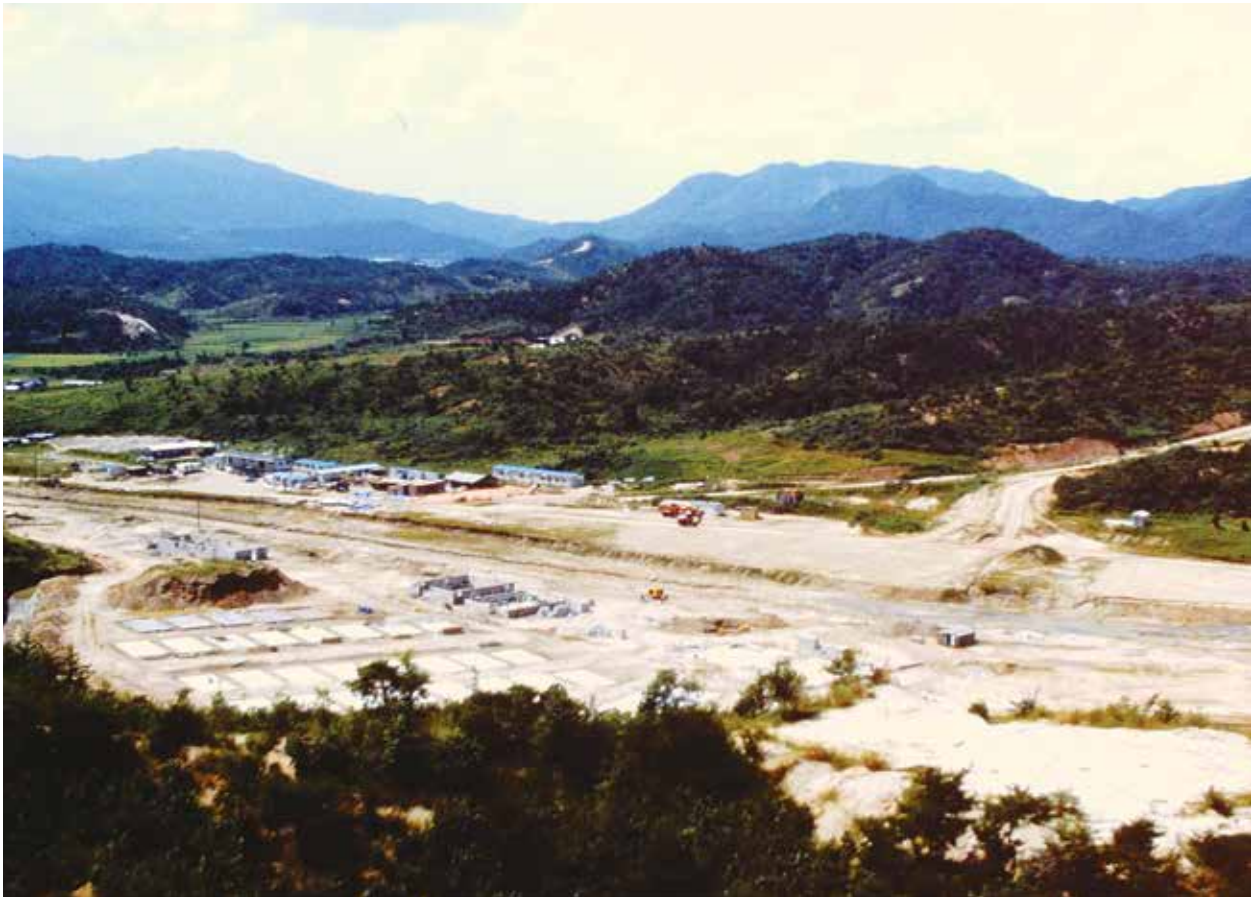
USACE personnel discuss progress of barracks construction at Camp Casey, 1988.

finished by April 1985. As the largest medical facility north of Seoul, it included a helipad and provided preliminary treatment of patients. Another improvement was the replacement of deteriorated wooden bridges with six reinforced concrete bridges, each capable of supporting tanks and 50-ton vehicles. District contractors completed the last bridge by September 1986, developing bypass routes to avoid cutting off parts of the camp during construction.[24]

Work at Camp Casey stayed strong throughout the 1980s, with some forty-two buildings under construction in late 1988. Concrete equipment and dump trucks moved in constant rhythm, with more than 500 personnel and vehicles active at the site at times. By 1986, FED contractors had finished the Gateway Club, replacing a thirty-year-old, deteriorating Quonset-style building. The camp also received new living quarters, infrastructure upgrades, and a sewage treatment plant. Troops from the 2nd Infantry Division handled the demolition and removal of existing buildings. Ultimately, the project provided housing for more than 5,000 soldiers, two clubs with some 19,000 square feet of total floor space, and an igloo-type ammunition storage facility. [25]

One unique installation near Camp Casey was the U.S. Army Multi-Purpose Range Complex, or the Rodriguez Range, begun in 1985. POD prepared design criteria for the $7.6 million range, which could handle live-fire exercises for many weapons systems, including "combined arms" exercises for both ground and aviation firepower. It also had the capacity to simulate tank and helicopter attacks. The 1,450-acre site featured a number of targets, moving and stationary, for infantry and armor exercises. The range also contained everything necessary for a battalion-sized element to bivouac in the event of wartime operations. With completion of the Rodriguez Range in 1988, FED delivered an important asset to the 2nd Infantry Division.[26]

Of special interest was FED's activity at Panmunjom, the so-called armistice village, site of periodic Korean Military Armistice Commission talks. As part of a broader $4.3 million renovation of 118 buildings in the Camp Giant area, the work at Panmunjom involved rehabilitation of three important buildings, T-1, T-2, and T-3, originally intended as temporary, which had fallen into disrepair. Korean Military Armistice Commission meetings took place in T-2, while the other two buildings provided offices for observing neutral nations and housing for joint-duty officers.[27]



The Rodriguez Live Fire Complex under construction, 1986.

A North Korean guard stands watch at the Joint Security Area in Panmunjom.

Buildings at Panmunjom, on the border with North Korea.

The buildings at Panmunjom straddled the centerline of the DMZ, with half in South Korea and half in North. As a result, much of the construction was in North Korean territory. Contractors worked under the supervision of American, ROK, and North Korean guards, passing through many checkpoints every day. The buildings were totally renovated, with warm-air furnaces replacing space heaters. To oversee the progress, FED supervisors routinely made the eight-mile journey to Panmunjom through numerous security checkpoints to keep the work on schedule for delivery in 1983, with follow-on activity in 1986–1987.[28]

Other Army Construction

The district forged ahead with military construction for the Army at bases across Korea. In particular, Camp Carroll (in south-central Korea) was a hub of

U.S. military and South Korean officials participate in a ribbon cutting ceremony in Panmunjom.

activity. In addition to build-to-lease family housing under the Combined Defense program and numerous building upgrades, FED spearheaded major new construction. In 1988, Camp Carroll's active-duty population was set to double with the arrival of the 307th Signal Battalion and the 6th Medical Supply, Optical, and Maintenance (MEDSOM) Battalion. In preparation, FED oversaw construction of additional troop housing, vehicle hardstands, and a new administrative building. By 1988, the district had delivered a tactical equipment shop, a MEDSOM maintenance facility, laboratories, and a sewage treatment plant. In 1989, FED also turned over a medical warehouse to store the equipment needed for a complete evacuation hospital—in the event of hostilities, a hospital unit could deploy from the United States and set up a new treatment facility within hours.[29]

Upgraded troop facilities at Camp Carroll, 1982.

Workers at a Camp Carroll construction site.

Camp Humphreys was among the other Army bases to benefit from the district's 1980s military construction boom. In 1986, FED delivered a new $1.6 million combined club for enlisted soldiers and NCOs. At the same time, FED contractors worked on aircraft shelters, a tactical maintenance facility, troop housing, and physical security improvements (such as fencing, lighting, and guard towers). In 1987, the district also provided a $3 million medical/dental clinic at Camp Humphreys, used by the 43rd Mobile Army Surgical Hospital (MASH)—the real-life unit that inspired the 1970s television series. After decades of treating patients in Quonset huts and other outdated buildings, the unit benefited from a facility that brought together clinical, administrative, and supply facilities in a single location. Other military construction at the camp included a practice range, a communications-support building, and a liquid-fuel storage complex.[30]

Elsewhere, district contractors broke ground at Camp Long, a mountain installation in north-central Korea, in 1988 for troop housing, a medical/dental clinic, and an administration and supply building. Farther south, at Camp Walker, FED oversaw construction of a $3.7 million hardened command and control facility, built partially underground with special communications and security features as part of the contingency headquarters for the Eighth Army in the event of hostilities. The district also oversaw construction of a new Army Milk Plant, at K-16 Air Base, to

FED District Engineer Frederick A. Perrenot (far left) discusses Camp Humphreys projects with (left to right) Capt. Bruce Fink, POD Commander Robert M. Bunker, and USACE Commander Joseph K. Bratton.

supply dairy products—milk, cottage cheese, yogurt, ice cream, and popsicles—for some 40,000 U.S. troops, civilians, and family members in Korea. Construction started in 1981, and the plant started production in 1985, replacing an older facility at Camp Baker.[31]

In Seoul, the district led major Army construction efforts at Yongsan Garrison, the largest U.S. military base in Korea. Among the improvements was a new $1.3 million, eighteen-chair dental clinic, started in late 1981 and finished in April 1983. Later that year, FED contractors added an obstetrics and gynecology clinic to the 121st Evacuation Hospital at Yongsan. In 1984, the district awarded a design contract for a new $18.5 million commissary on Yongsan's South Post, to replace the existing facility built in 1959. Completed in 1988, the commissary had more than 200,000 square feet of floor space and a 300-car parking area, a key amenity in central Seoul. The structure combined storage, sales, and administration under one roof, and was, at the time, the largest single commissary building in the world.[32]

Master Planning

Master planning during the 1980s emerged as a major service line for the Army. As the district's military construction programs replaced older buildings across Korea, its operations and maintenance services turned toward surveying, mapping, and maintenance planning for permanent and semipermanent facilities throughout the country. In 1985, the district established a Master Planning Section to accomplish this task. Staffed with engineers and urban planners from Korea, Saudi Arabia, Hawaii, and Alaska, the section provided aerial surveys, facility mapping, maintenance planning, and other studies. Although master planning began as an Army initiative, future objectives included service to the Air Force and Navy as well.[33]

In essence, master planning "says what an installation is, what an installation is capable of supporting, where the installation is going in the near and long term future, and what the installation needs to do to get there," wrote Phillip Kimball of the FED Master Planning Section. The district advised installation commanders that a master plan was "the primary building block for installation development," enabling commanders to make the best and most efficient uses of their resources, present and future. The district's surge in military construction in the 1980s had rendered many facility plans outdated or obsolete, if they existed at all. For the new facilities going forward, Kimball observed, "things just don't happen, there has to be a plan."[34]

In the mid-1980s, the district's largest master-planning initiative focused on mapping Army installations. This "mammoth project" required aerial photography and ground surveys, resulting in Mylar maps depicting entire compounds—systems for water, sewer, electric, fuel, gas, lighting, telecommunications, transportation, heating and cooling, drainage, landscaping, and future construction plans. In 1986, FED supported the 1st Signal Brigade by mapping fifty-nine communications sites across the ROK, depicting the facilities' equipment layouts and electronics systems. By 1988, the expertise of FED's Master Planning Section branched outside of Korea. The Japan Engineer District requested a special study of physical security for a series of installations in Okinawa, followed by a request for master plans for eleven bases. The district's in-house expertise was an asset, as the 1990s would be leaner times.[35]

U.S. ENGINEER FAMILY IN KOREA

The U.S. Army Corps of Engineers was the largest American engineering organization in Korea, but it was not the only one. The district collaborated with other U.S. engineering elements on the peninsula, including the Eighth U.S. Army Office of the Engineer, which programmed and coordinated all Army construction projects; engineer troop units, such as the 2nd Engineer Group; the Facilities Engineer Activity Korea (FEAK), responsible for operation and maintenance of real property; the Seventh Air Force Directorate of Engineering and Services, which assisted with planning and land acquisition actions; and the 554th Civil Engineering Squadron, Heavy Repair (Red Horse), a highly mobile, deployable Air Force engineering team.[36]

The district worked closely with these U.S. engineering organizations, often by means of an MOU that defined the responsibilities for each organization for a given project or program. For example, construction at Camp Humphreys in the 1980s required cooperation among the FED, Eighth U.S. Army Office of the Engineer, engineer troop units, and FEAK. For other projects, especially in the Forward Area, the construction battalions of the 2nd Engineer Group functioned as contractors for FED, assisting with demolition and construction of troop complexes and facilities.[37]

In other cases, coordination among the engineer family in Korea was less formal, but no less effective. The "Castle Club," for example, was a group representing the senior military engineers in Korea, which met weekly during the 1980s to discuss activities and organizational issues among the different entities. Sponsored by the USFK Engineers Office, the Castle Club helped U.S. military engineers in Korea function as a single family.[38]

FED also worked closely with engineer elements of the Korean military, including the Republic of Korea Army (ROKA) Chief of Engineers, Republic of Korea Ministry of National Defense (ROK-MND) Bureau of Installations engineers, and personnel from the Korean Augmentation to the United States Army (KATUSA). Together, these U.S. and international partners formed a close engineering family on the Korean peninsula.[39]

U.S. AIR FORCE PROJECTS

In the 1980s, the U.S. Air Force also had a robust military construction program in Korea. In 1980, the Air Force launched $16 million worth of work to modernize operational capabilities at Osan, Kunsan, Pusan, and Daegu air bases. Throughout the decade, the district led successive waves of construction at a number of air bases, which received new operational facilities, infrastructure upgrades, and new living quarters. As FED's personnel increased to handle the overall workload, many new arrivals brought experience from working on air bases in Saudi Arabia and Israel. As the decade progressed, the breadth of FED's Air Force construction increased to include advanced aircraft shelters, hospitals, and other specialized facilities.[40]

Osan Air Base

Osan Air Base, about 40 miles south of Seoul, received major upgrades. Aircraft shelters were a top priority—with each of the Air Force's F-16 fighters costing around $16 million, protection of aircraft on the ground was essential. The Air Force required shelters that could withstand a near-miss blast, fragment penetration, and napalm bombardment. In 1983, after two years of construction worth more than $10 million, FED delivered nine next-generation aircraft shelters, each measuring 30 feet high and 121 feet long. The Quonset-shaped structures were closed at one end; the other end was fitted with two-sided, 170-ton sliding doors that stayed operational in all weather, and could be opened in a minute and a half. District Engineer Perrenot observed that the massive doors worked "like Swiss watches." The district oversaw construction of four additional aircraft shelters at Osan starting in 1985.[41]

Quick-turn aircraft shelter under construction at Osan Air Base, June 1983, with FED's Howard Elliott in the foreground.

Osan Air Base aircraft shelters under construction.

Among the district's major achievements at Osan was the repair of the 9,000-foot-long runway, which required closure of the base for 100 days. All operational units were temporarily transferred elsewhere. The base was so important that no delay could be allowed. By summer of 1983, the district had awarded six contracts to repair the runway, taxiways, lighting system, control tower, and two Strategic Air Command hangars, as well as the Military Airlift Command terminal. The project also called for nearly a mile of new pavement to eliminate "choke points" and improve aircraft traffic flow. Work began on 1 August 1983, with contractors using wetsuits, plastic tents, and special lighting to continue work under any conditions. By October, the project was virtually complete with a week to spare, and planes were again using Osan by the first week of November—exactly at the 100-day mark. The district's accomplishment drew praise from Air Force leaders and the chief of engineers, while Bunker, the POD commander, congratulated FED on its "outstanding performance."[42]

Workers for FED contractor Pum Yang pour new asphalt pavement for the runway at Osan Air Base, during the 100-day shutdown in summer 1983.

The district followed this success with its largest overall construction project to date: a 108,000-square-foot, $19.2 million medical center at Osan. The facility was a prototype, built to withstand conventional, chemical, and biological attacks. The "Osan concept"—later used in Japan, Turkey, and Europe—was overseen by POD. Much of the facility was below ground to protect it from blasts. The lower level was airtight and had a chemically filtered air supply. The facility's infrastructure and utilities systems allowed it to operate uninterrupted for seven days without external support. In wartime, the hospital's 30-bed capacity could be expanded to 234 beds. It also featured one of the largest U.S. military dental clinics in Korea. Construction began in April 1984, and by 1987, the facility had services for family practice, optometry, immunization, mental health, and a modern pharmacy. The district and POD coordinated with Air Force personnel for a postconstruction "shakedown period" to bring the facility to full operation.[43]

Osan remained a hub of activity throughout the 1980s. The district administered nearly $14 million worth of construction to attach doors to fifty existing aircraft shelters in 1983 and also, around the same time, a $10 million project for "quick-turn" aircraft facilities (open at both ends for rapid refueling and takeoff). Other construction included a new elementary school, an officers' club, a supply warehouse, and a library. The district also delivered numerous new barracks and billets, including two-story units in 1983 and four-story housing units for officers, NCOs, and airmen in 1988. At the decade's end, FED had overseen thirty-one active contracts at Osan, including work on eight dormitories, each housing 216 enlisted individuals. The district also directed infrastructure upgrades,

The interior of an airman's dormitory, Osan Air Base, 1980s.

Inside the Officers Club at Osan Air Base.

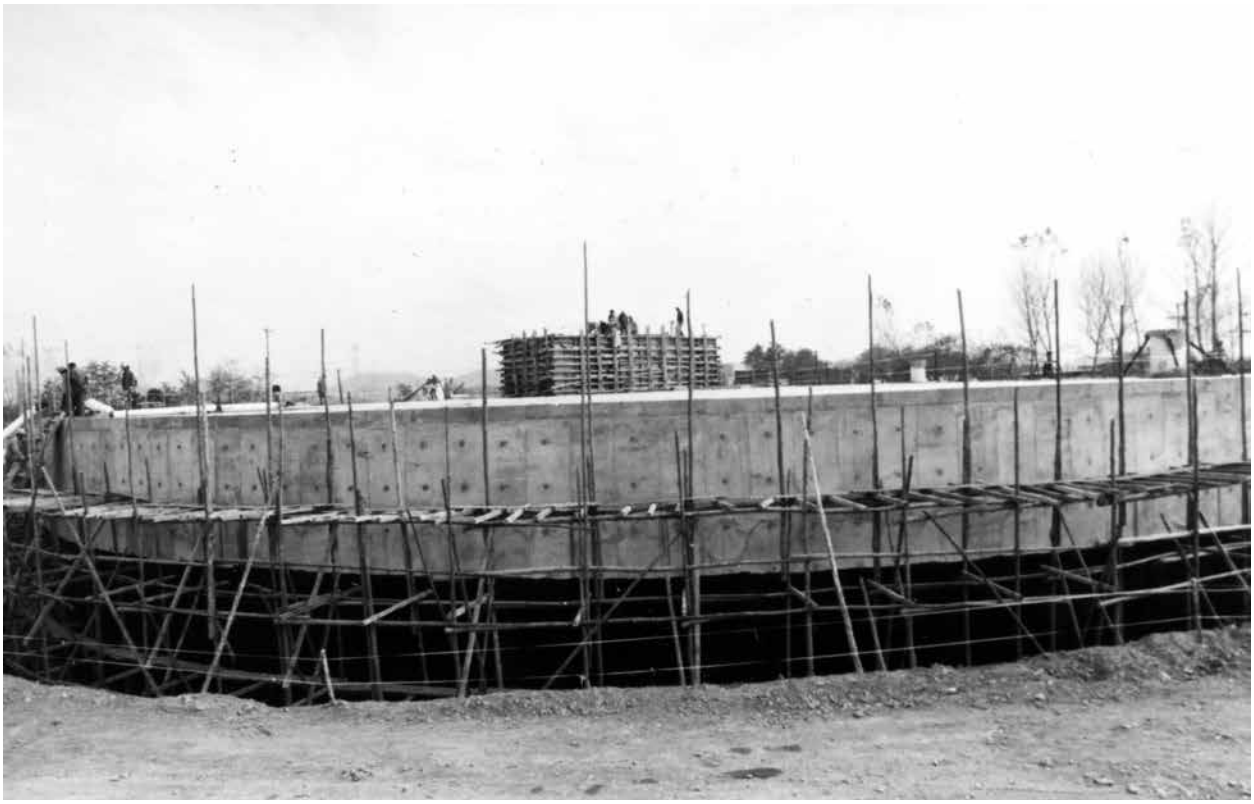
renovation of the passenger terminal, a war reserve material warehouse, and an addition to the headquarters of the Seventh Air Force.[44]

Other Air Force Construction

Housing at air bases across Korea was another priority. Deputy FED Commander Walter Birchfield recalled that Air Force housing had "always been in much

better shape than the army's," largely because the Air Force, unlike the Army, had always planned to remain in Korea.[45] In 1984, the district delivered two Air Force dormitories at Kunsan Air Base, marking the successful start of a massive undertaking: placement of living quarters worth nearly $100 million at Kunsan, Osan, Daegu, and Sachon air bases over a three-year period. At Kunsan, on the west coast of the Korean peninsula, some dormitories utilized solar panels for hot water, while others benefited from exterior insulation. Kunsan received additional dormitories in 1986 and 1987—many of them completed early, much to the satisfaction of Air Force personnel at the base. "Believe me," wrote Colonel Sidney Wise, commander of the 8th Tactical Fighter Wing, "their morale has been greatly enhanced by your efforts."[46]

Another significant program was the district's modernization of Air Force POL infrastructure. At bases across Korea, buried metal storage tanks were suffering from age and corrosion from alkaline soils. The Air Force sought to upgrade POL storage facilities to prevent contamination, minimize the risk of ignition, and secure its fuel supply. At Osan, Suwon, Daegu, Kunsan, and Kwanju air bases, FED spearheaded efforts to install new underground storage tanks. Starting in 1983, POD oversaw design work for the program, and by 1985, construction was under way on jet fuel tanks at all the bases (typically holding 100,000 gallons), plus auxiliary storage tanks (typically holding 10,000–20,000 gallons). By the decade's close, FED had helped the Air Force secure its aviation fuel supply in Korea.[47]



Construction of a 100,000-barrel jet fuel storage tank at Kwangju Air Base, 1983.

Aircraft shelters at Kunsan Air Base, 1987.

At some air bases, FED orchestrated a variety of other improvements. At Kunsan, for example, district contractors attached doors to existing aircraft shelters, rehabilitated the runway and taxiways, improved the lighting system, and built a traffic management facility, a repair shop, and a fire station/weather observation facility—all in addition to fuel storage tanks, barracks, a dining hall, and a bookstore. Most of the work was completed or started by 1986. Another notable achievement was the district's successful oversight of a $10 million, 500-bed Air Force emergency contingency hospital at Gimhae Airport in Pusan. Most of the construction occurred during 1987 and 1988. Through these and other projects, FED improved air defenses in Korea and the daily lives of Air Force personnel and their families.[48]

FED's Aviation Detachment was deactivated on 30 September 1988 after nearly twenty years of tireless service. The district's aviation history formally began in October 1968, when POD requested aircraft for FED from the Department of the Army. In the two decades that followed, FED aviators—themselves qualified engineers—transported an estimated 49,000 passengers a total of nearly 3.5 million miles across Korea. Retired Lieutenant Colonel Edward S. (Sid) Chambers Jr., who served in the Aviation Detachment from 1978 to 1980, recalled that the unit "provided transportation of people, parts, distribution, and anything that a helicopter could carry to every FED field office throughout South Korea." They also conducted aerial reconnaissance, assisted with wartime contingency exercises, and did it all with an impeccable safety record.[49]

Korea's mountainous topography (and later its severe traffic congestion) was well suited for rotary-wing aircraft—helicopters were the "last chance taxis" for wounded troops in the Korean War. Almost immediately, FED recognized the value of helicopter travel. A two-hour drive from Seoul to Camp Red Cloud, for example, became a twenty-minute trip in the air. By the early 1960s, the district's projects were scattered across the peninsula, with dozens of communications sites located on remote mountaintops. Elsewhere, roads beyond Seoul were unreliable. Before FED received its own aircraft in 1968, the Eighth Army provided air travel for FED personnel.[50]

By 1969, FED was using two OH-23D helicopters of its own, plus a fixed-wing U6A utility plane on loan from the Army. It received a third helicopter that year, but the aircraft that arrived was "almost unusable." With an emergency construction program in full swing, FED "pooled" its helicopters with the Eighth Army for mutual support. The district requested additional aircraft but did not receive them. Even so, FED's Aviation Division enabled rapid response to field needs, and saved district personnel considerable time and expense.[51]

FED aviators served in dual capacities as airmen and engineers, assisting with project design and inspection of projects throughout South Korea. It was this quality that kept "Castle Airlines" distinct from other aviation elements in Korea. The unit consisted of only a handful of pilots and

One of FED's two UH-1H helicopters, circa 1986.

First flight of FED's C-12, 1985. The plane was built in 1973. FED aviators were the pilots for "Castle Airlines."

enlisted maintenance specialists—perhaps five to eight officers and an equal number of enlisted maintenance specialists, including two female crew chiefs in the late 1970s. Crew members took pride in their work and modified the aircraft with "little things like the FED logo painted on the aircraft nose cover, customized red vinyl cushioned seats, red carpet on the cabin floor, and steps for the aircraft main cabin area." Belonging as they did to a small unit, pilots and crew members helped each other with jobs to make sure aircraft were ready for each mission.[52]

The Aviation Detachment received eleven safety awards for accident-free flying—the unit went without a single incident from at least 1974 to its deactivation. The FED crews had a reputation for endless endurance and flawless safety. Nor was the job always routine.

FED Project Engineer Harvey Robinson, who traversed Korea by helicopter practically every week in the 1970s, recalled a particularly harrowing flight from south of Camp Humphreys north to Seoul:

> One time we got lost in a fog, and I mean really thick fog. . . . [T]he way [the pilots] would travel back to Seoul was by the highway. There was one highway. They have one interstate. But it had [power] poles on it, too; you had to be careful. . . . But they couldn't find the [highway], they weren't sure where they were. We literally landed in a rice paddy. The villagers came up and these pilots took out their map and wanted the villagers to show them where—they had never seen a map in their life. They had no idea what they were looking at. But anyway, we took off. We finally went to the coast and started going north on the coast. And you come to these gun emplacements, the guys with machine guns. Well, I hope they know who we are, going on this thing. So we finally got back into Yongsan with our helicopter. Oh yeah, there were some very exciting times.[53]

Another occasion involved emergency response: in 1984, a FED helicopter picked up a semiconscious ROK airman from a remote radar site and transported him, by improvised route, to a military hospital in Seoul for treatment of appendicitis. Then, the pilot and his usual passengers resumed their trip to K-16 Air Base. In other instances, helicopters took FED experts for aerial reconnaissance surveys of runways and rivers. At times, the detachment also participated in wartime readiness exercises with the Eighth Army, flying low to simulate combat conditions, and working seven days a week, sometimes logging twelve- and fifteen-hour days. Chambers recalled flying over 700 hours during his two years with the Aviation Detachment.[54]

In 1985, FED received its own C-12 fixed-wing plane, an eight-passenger aircraft that offered greater speed and range than the district's two UH-1H helicopters, built in 1968 and 1974. The aircraft enabled trips to Kunsan, Daegu, and Kwangju all in one day. In addition, by 1986, the detachment was also flying in Japan to support the Japan Engineer District, which supervised work on a number of separate islands. District aviators also transported military leaders and other visiting dignitaries. Based at the FED Aviation Office at K-16 Airfield in Sungnam, the detachment sometimes made supply runs to classified drilling sites near the DMZ, where teams worked to detect North Korean tunnel activity.[55]

In early 1988, District Engineer Howard Boone made a case for keeping the Aviation Detachment within FED, but it was not to be. Boone argued that the inaccessibility of many projects would mean increased travel times, which in turn would erode any cost savings. He considered the district's air capability "an essential resource" for its success. However, FED was the last district in USACE still to have its own aircraft. In 1988, the C-12 was sent to Japan, the two Hueys were mothballed, and the aviators went to Army aviation units.[56] A writer for FED's *East Gate Edition* offered a fitting salute:

> There were many occasions when our aviators and support crews put in long hours to accommodate Construction Division personnel. The thrill of flying over and under wires, around mountain tops and putting down in rice paddies as each environmental or mechanical challenge was met and conquered will linger for a lifetime.[57]

Chapel at Chinhae Naval Base, 1985.

ADDITIONAL PROGRAMS

In addition to its work for the Army and Air Force, FED handled projects for the U.S. Navy in Chinhae and Yongsan. The district also oversaw programs that benefited all military branches in Korea, such as DOD schools, gymnasiums and recreational facilities, and temporary housing for U.S. personnel and their families in Seoul. In addition, all U.S. forces benefited from facility upgrades achieved through operation and maintenance funds.

Work for the Navy in the 1980s centered on Chinhae Naval Base on Korea's southern coast. Between 1985 and 1987, FED oversaw construction of new facilities as well as renovation of old structures. Among the new buildings was a

Family housing at Chinhae Naval Base, 1986.

4,000-square-foot chapel dedicated in July 1985, complete with classrooms, offices, and a kitchen. District contractors also built a multipurpose room for the base's elementary school, as well as a new fire station (the old one was in a 1950s Quonset hut), a post office, warehouses, a maintenance building, and a pyrotechnic facility. The renovations at Chinhae focused on forty-four family-housing units, which entailed careful scheduling and coordination to minimize disruption to occupants. Improvements to the base's commissary, snack bar, and service clubs rounded out the upgrades. Elsewhere, at Yongsan, FED supervised major additions to the U.S. Naval Forces Korea building, which nearly doubled its usable workspace.[58]

The district's $20 million program to improve DOD schools benefited U.S. forces throughout Korea. From 1980 to 1984, every school in the DOD system in Korea received renovations, additions, or new construction. The program started in late 1980, with a new gym and music rooms for a school in Seoul, and continued with the opening of a new Seoul high school in 1982. The district also oversaw new school construction at Osan, Pusan, Daegu, and elsewhere. The 1984 completion of Seoul American Elementary School marked the success of the project, but not the end of school construction for FED. Already, more upgrades were scheduled to accommodate the more than 3,000 students enrolled in the system. As these improvements continued through the decade, the district also contributed to school safety by leading the removal of asbestos tiles and insulation from some facilities.[59]

No less important was FED's contribution to improving recreation and fitness centers across Korea. By 1983, the district had embarked upon a $20 million program to build or refurbish gymnasiums at fourteen separate bases, including a $1.4 million renovation of the gym at Osan Air Base, and a number of new amenities in the forward area. District personnel worked on the design, and the projects were substantially complete by 1985. Some bases received bowling alleys, activities centers, or other additions. In 1988, Congress approved the use of non-appropriated funds by the U.S. Army to build a swimming pool, and entertainment centers, service clubs, activity centers, bowling alleys, and sports fields at a number of bases.[60]

Water supply, tunnel detection, and petroleum infrastructure also received attention from FED in the 1980s. Most prominently, the district's Hydrology and Construction Section remained active in drilling and maintaining water wells. Army and Air Force military construction programs called for upgrading the water supplies at numerous bases, resulting in more than 50 new wells at sites across the peninsula, bringing the total number of FED wells above 400—these supplied essentially all water consumed by U.S. forces in Korea. Tunnel detection also remained an active program, as FED drilling teams continued to search for illegal North Korean tunnels throughout the decade. In addition, FED made occasional repairs and improvements to Korea's petroleum distribution infrastructure. For example, in 1983, FED oversaw repairs on a stretch of the trans-Korea pipeline near Chochiwon. In this delicate operation, district contractors managed to perform the repairs without disrupting the flow.[61]

HAN RIVER BASIN STUDIES[62]

The district's first foray into civil works involved studies on the Han River for the ROK government. In 1978, the Korean Ministry of Construction approached several engineering agencies worldwide about making a comprehensive survey of the basin, an area of 9,570 square miles (draining approximately one-third of the ROK). Seoul used the river for both drinking water and navigation.

The Han River was only partially developed, with five hydropower dams and numerous small reservoirs, diversion weirs, and pumping plants. In 1971, the U.S. Bureau of Reclamation had done a reconnaissance study of development potential, but subsequent urbanization and economic growth expanded these possibilities greatly. The Corps, with its long tradition of expertise in water resources, was chosen by the ROK Ministry of Construction to conduct a comprehensive survey of the river's potential for transportation, hydropower, and other uses.

Led by the district, the study team included specialists and support from other USACE districts, divisions, and experiment stations. Budgetary constraints delayed the study and reduced its scope. In December 1980, the district produced a preliminary feasibility study for a navigable waterway system connecting Seoul with inland valleys of the South Han River, where concrete aggregates (sand, gravel, and cement clinker) were plentiful. The study found that such a plan would, indeed, be feasible using a system of locks and reservoirs. The Korean Ministry of Construction asked the Corps to conduct a supplemental study.

In December 1981, the district delivered a second report, this one a reconnaissance study of specific sites. This information enabled the study team to estimate hydropower production, and to address flood flow effects, geotechnical aspects, and other considerations. Computer modeling enabled district personnel to project three alternatives to the plan presented in 1980. This supplemental study bolstered the conclusion of the first: inland navigation and hydropower development on the Han River were feasible technically, economically, and environmentally. The Corps conducted further investigations on the Han River in 1988.

Led by the district, these studies truly were Corps-wide efforts—involving specialists and support staff from numerous other USACE districts, divisions, and experiment stations. Ultimately, the investigations produced a wealth of information on navigation, flood hydrology, and reservoir regulation for one of Korea's most vital waterways.

A high-profile project benefiting all U.S. forces was Dragon Hill Lodge, proposed by the Army to provide "transient billeting" for soldiers processing into and out of Korea. The Yongsan area was, by necessity, the main administrative location for troops arriving and departing the country, but Seoul had a serious shortage of general housing. While U.S. forces stationed in the city were adequately provided for, those just arriving or preparing to leave were forced to live in hotels. An Army-owned lodge at Yongsan offered a solution, but some congressional representatives saw the plan as "a luxury hotel" and objected to the cost. Ultimately, the Army paid for the project entirely with non-appropriated funds—monies raised by Army "clubs, bowling centers, package beverage stores, golf courses and slot machines throughout Korea," with profits directed back to the Army's morale and welfare programs.[63]

Construction on Dragon Hill Lodge began in late 1987. The design called for a nine-story, 277-room complex, complete with kitchenettes, a child-care facility, three restaurants, shops, and other basic amenities. The lodge was within walking distance to Yongsan Garrison facilities, including schools, a post exchange, and the Seoul Army Hospital. The district was responsible for supervising both design and construction. The main lodge was substantially complete by 1990, although construction of an annex continued for several years after. The facility provided temporary lodging for DOD personnel and their families, serving as "home" during the weeks spent processing into or out of Korea. Yongsan also received a $2.8 million chapel on South Post in 1987, as well as a new Main Post Club, which required a seventeen-hour continuous concrete placement utilizing fifty ready-mix trucks. The $3.7 million

Exterior of Dragon Hill lodge.

Interior of the Dragon Hill Lodge just prior to completion.

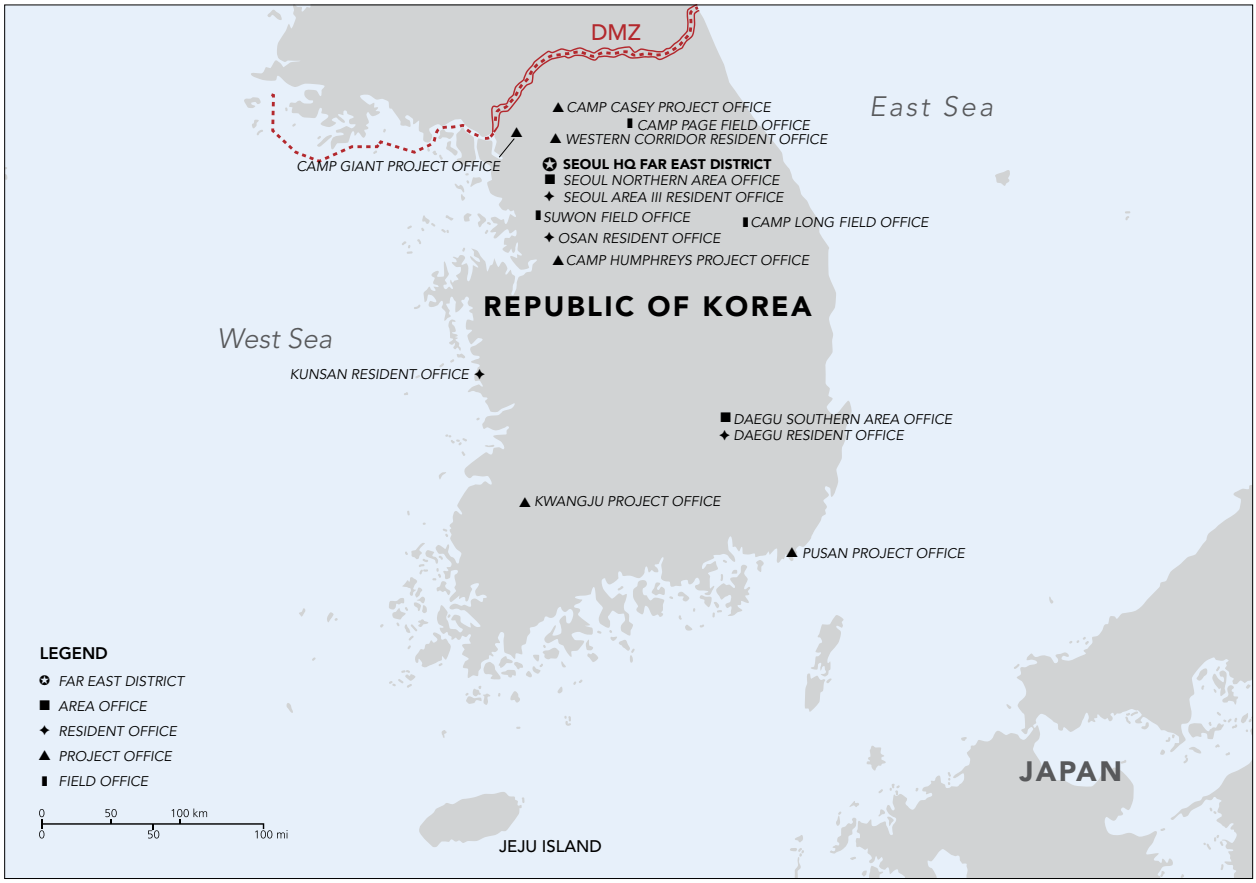
Hide-a-Way Club, planned for completion in 1988, featured a dining room, cocktail lounges, recreation rooms, and a discotheque.[64]

The district's Operations and Maintenance program—including repair and upgrades to existing facilities—was the largest in the Corps, with 4,100 buildings completed or under contract by 1985. The program mainly served the Army, but the Air Force and Navy also received benefits. The work encompassed barracks, dining halls, commissaries, theaters, utilities, and practically everything else. In the early 1980s, the work tended toward "quick fix" projects—short-term upgrades to the vast inventory of "temporary" U.S. buildings in Korea, most of which had long outlasted their intended periods of functionality. These projects, one employee recalled, were "expeditiously designed and contracted for construction through FED." Later in the decade, as new military construction increasingly displaced older buildings, the district's program turned toward designs for maintenance, repair, and upgrade of permanent or semipermanent buildings. In 1987, FED received an award of excellence, Installation Support Program of the Year, for its efforts.[65]

A DISTRICT IN TRANSITION

By the late 1980s, FED personnel could look back on their accomplishments with pride. The district had

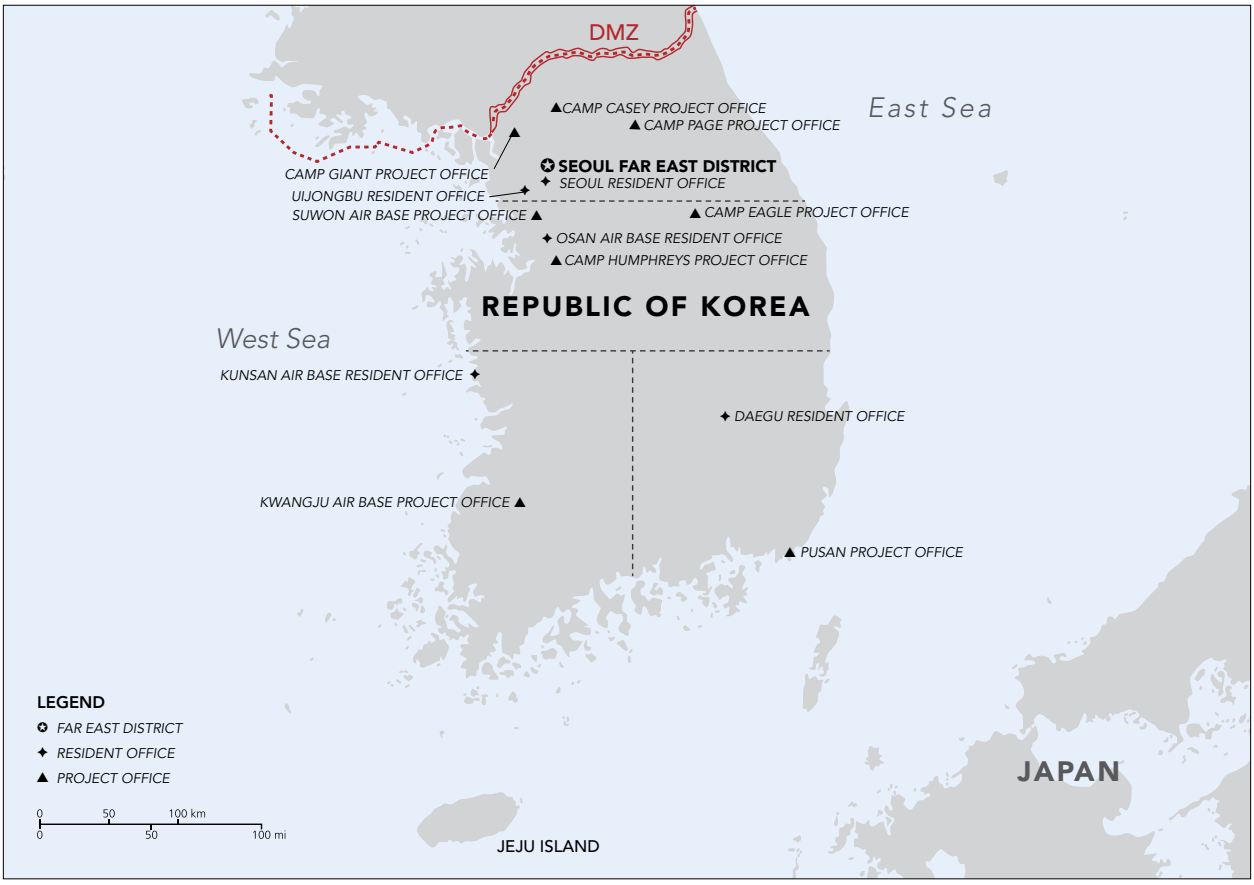
USACE FED office locations in 1984.



overseen its largest workload ever, with construction placement reaching an all-time high in 1987. The district improved the lives of U.S. personnel and their families while also increasing combat readiness in Korea. A surge in new military construction had resulted in a multitude of projects for the Army, Air Force, and other customers. Ultimately, the district delivered modern living quarters, diverse operational facilities, schools and recreation facilities, infrastructure upgrades, and many other improvements across Korea. At the same time, FED supervised Combined Defense Construction projects, bringing USACE standards to projects run by the ROK government. The district also supported a robust operations and maintenance program, whereby FED not only updated and rehabilitated older buildings but also branched into the field of master planning, helping U.S. forces maintain and manage the ever-growing capacity and complexity of their bases and facilities.

To accomplish these tasks, FED more than doubled its staff between 1980 and 1986. Despite high personnel turbulence owing to rapid growth and revolving tours of duty, the district maintained an excellent safety record and high user-agency satisfaction. A 1988 survey report showed that eighty percent of FED's customers were well-satisfied with the district's performance, while only six percent

USACE FED office locations at the end of the 1980s.



indicated the opposite. Most of the respondents also felt that FED's services had improved over the years. "Overwhelmingly," one analyst noted, "they agree that when choosing a design/construction agent, generally, the Corps of Engineers would be used."[66]

Despite this success, challenges loomed on the horizon. In 1987, the growth of FED's workload leveled off. District Engineer Howard E. Boone foresaw "an era of diminishing resources," which would require steep reductions in the district's costs and size. Such changes, he acknowledged, would be the "most difficult for an organization to face." Still, FED delivered $200 million in construction in 1988, thanks in part to congressional approval of the Army's construction requests using non-appropriated funds. Even so, a drastic decline in the district's workload was imminent. While the district had 500 employees in 1989, Boone estimated that the following year's workload would support only 350 or fewer. Indeed, the federal government made deep cuts to defense spending in 1989, including reductions in military construction. Boone urged his staff to "search for all ways to improve the efficiency of our service."[67]

Safety remained a focus, and the district maintained an excellent safety record throughout the 1980s.

COMPUTERS AND COMMUNICATIONS

Advances in computers and communications revolutionized work environments in the 1980s, and FED was no exception. In 1978, the district had no automated data processing equipment. Employees maintained financial and project data on manual ledgers, which in 1979 had entries for approximately 4,000 accounts. In 1980, the district began to automate funds control using a connection to computers at the Korea Institute of Science and Technology, and by 1981, FED utilized a custom database to produce construction progress reports, using a computer terminal at the FED compound. The district also made space to acquire a Wang word processor. At the same time, POD was converting its own project data from manual ledgers and punch cards to Configuration Management Information System (CMIS) between 1980 and 1984.[68]

The arrival of personal computers (PCs) brought further changes, giving end users the ability to create their own reports and to access, manipulate, and share data. In addition, new software helped solve other engineering and technical problems, opening the door to computer-assisted design and drafting (CADD) later in the decade. PC technology, wrote one FED employee, opened a "new world of self-sufficiency in automation." However, new users faced the byzantine realm of 1980s mainframes, multiplexers, terminals, printer ribbons, diskettes, ASCII files, and a host of hardware and software, which only sometimes were found to be compatible. In 1986, FED's Information Management Office reorganized to support district personnel in computer literacy.[69]

By 1987, the district had made considerable strides in digital technology. A POD satellite link, established in 1986, allowed a file-transfer system in 1987 that connected FED and POD computers. The district had more than 100 PCs (IBMs, Wangs, and Zeniths), and utilized two mainframes (a Honeywell DPS/8 and a Harris 800) located in Honolulu, Hawaii. FED also provided computer manuals in English and Hangul and offered classes on using software (such as Multimate, Dbase III, and Enable). In addition, local area networks (LANs) allowed individual PCs to share information with one another.[70]

Other communications tools also benefited FED. In the past, international telephone service from Korea had been costly and unreliable, with succinct (sometimes incomplete) phone calls carefully planned through operators. Such communications became immeasurably easier with FED's 1986 connection to the POD satellite link. The district also acquired a "telecopier," or facsimile (fax) machine, allowing printed material to be transmitted rapidly. Some employees took advantage of "electronic mail service," or email, to conduct routine correspondence cheaply and efficiently. Ultimately, FED's utilization of computers and other digital technology improved the accuracy of the district's data, the productivity of its personnel, and the speed of its communications.[71]

Computers at FED, 1989.

KOREA IN TRANSITION

By the end of the decade, Korea, too, was in transition. As District Engineer Boone noted, "FED's vitality is much the same as that of the growing and developing Nation in which we serve." For the ROK, the 1980s was a time of political upheaval. Following the 1979 assassination of President Park, a military coup led by Chun Doo-hwan took control of the ROK government. Massive demonstrations roiled Seoul, and hundreds of thousands of citizens took to the street to protest martial law and demand political reforms. In Kwangju, a city at the southwestern edge of the peninsula, these protests turned into a mass uprising. In May 1980, the ROK government sent soldiers to regain control. Over a ten-day period, hundreds of South Korean civilians were killed. The Kwangju incident, wrote one historian, is "widely remembered as one of the most infamous events in modern Korean history."[72]

Kwangju inflamed anti-American sentiment among many Koreans, some of whom saw the United States as complicit, as its leaders ultimately had command of all military forces in the ROK. Some Koreans also came to see a "glaring contradiction" in the American presence overall: although America had brought democratic ideals to South Korea, those same aspirations had been muzzled in the ROK for decades by U.S.-backed military dictators. Not long after Kwangju, the Reagan administration invited President Chun Doo-hwan to visit the White House, reinforcing an image for some that the United States was not only tolerating but actively supporting still another military dictatorship in the ROK.[73]

During the 1980s, political activism became "almost a rite of passage" for Korean students. In addition to protesting the Chun regime, students railed against symbols of American presence. In 1982, student radicals burned the U.S. Information Service (USIS) office in Pusan. One historian wrote: "Every American facility, even libraries, took on the appearance of armed fortresses." In 1985, Korean students briefly occupied the USIS building in Seoul, demanding a withdrawal of U.S. forces and an apology for the Kwangju incident . The FED compound was a target of firebombing on at least two occasions, although no injuries or major damage occurred.[74]

With the Summer Olympics planned for Seoul in 1988, the regime came under increasing international scrutiny, compounding internal pressures for democratic reform. In 1987, large-scale protests once again erupted in Seoul, with even white-collar citizens participating. In response, President Chun agreed to allow a popular vote for president for the first time in sixteen years. In December 1987, Chun's handpicked successor, Roe Tae Woo—another military leader—won the election against a split opposition. The election heralded the first steps toward lasting democratic reforms in the ROK, which would develop more fully in the coming decades.[75]

In 1988, the Roe administration expressed a desire to relocate U.S. forces out of the Seoul metropolitan area. "The intent," wrote District Engineer Boone, "is to reduce the visibility of U.S. Forces for political purposes and reduce congestion in the metropolitan area." U.S. officials agreed to the idea in principle, on three conditions: (1) no cost to U.S. taxpayers, (2) equal or better facilities in exchange, and (3) no degradation of operational readiness. Although the plan included thirteen U.S. installations in the metropolitan area, the main focus would be Yongsan Garrison in central Seoul. Although the U.S. and ROK governments continued

to discuss the prospect of "Yongsan Relocation," a viable plan did not coalesce for more than a decade. Eventually, however, it would reshape FED and all U.S. forces in Korea.[76]

NOTES

[1] USACE-FED, Program Growth, circa 15 May 1982, PAO-FED Historical Files; Col. Frederick A. Perrenot, District Engineer, "Prose and Cons," *East Gate Edition* 1, no. 1 (March 1983): 2; "Col. Larry Fulton Bids District Farewell," *East Gate Edition* 4, no. 40 (July 1986): 1–2.

[2] FED Public Affairs, "History of the Far East District," *East Gate Edition* 22, no. 6 (June 2013): 5; "Col. Perrenot Ends 3-Year Command," *East Gate Edition* 2, no. 15 (May 1984): 1.

[3] Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 5, PAO-FED Historical Files; Colonel Howard E. Boone, "Commander's Corner," *East Gate Edition* 5, no. 54 (October 1987): 2; FED Public Affairs, "History of the Far East District," *East Gate Edition* 22, no. 6 (June 2013): 5.

[4] Colonel Howard E. Boone, "Commander's Corner," *East Gate Edition* 5, no. 48 (April 1987): 2.

[5] USACE-FED, "Procurement and Supply," August 1985, PAO-FED Historical Files.

[6] Murray Rothstein, U.S. Office of Inspector General, Finding MC-K-D-01, "Acquisition of Construction Projects in ROK by Competitive Procedures," September 1984, PAO-FED Historical Files.

[7] USACE-FED, "Construction Contractors Prequalification Procedures," circa 1985, PAO-FED Historical Files.

[8] Song Zobrist, "A Brief Look at P&S Division," *East Gate Edition* 3, no. 29 (August1985): 4; "Fiscal Year 85 Ends on a High Note," *East Gate Edition* 3, no. 31 (October 1985): 1; Colonel Howard Boone, FED District Engineer, "Commander's Corner," *East Gate Edition* 5, no. 59 (April 1988): 2.

[9] USACE-FED, Douglas L. Owings, FED Acting District Engineer, to Henry J. Hatch, POD Division Engineer, 27 February 1981, 8–9; Draft History, "Support to the Armed Forces: Military Construction in the 1980s," 6–7, FED-PAO Historical Files.

[10] Colonel Howard Boone, FED District Engineer, "Commander's Corner," *East Gate Edition* 5, no. 54 (October 1987): 2; "FED Stressing Construction Quality," *East Gate Edition* 2, no. 14 (April 1984): 1; "'Construction Quality' Workshops Held," *East Gate Edition* 2, no. 16 (June 1984): 3; "Exterior Insulation Demonstration Given at FED," *East Gate Edition* 3, no. 26 (May 1985): 3; "Sample Walls Aid Construction Quality," *East Gate Edition* 2, no. 20 (November 1984): 3; Yang Song Hui, Area III Resident Office, "Area III RO Conducts Asbestos Hazards Training," *East Gate Edition* 5, no. 47 (March 1987): 4.

[11] USACE-FED, Robert D. Carpenter, FED District Engineer, to Henry J. Hatch, POD Division Engineer, 7 March 1980, 3; Douglas L. Owings, FED Acting District Engineer, to Henry J. Hatch, POD Division Engineer, 27 February 1981, 3, PAO-FED Historical Files; Thompson, *Pacific Ocean Engineers*, 372.

[12] Thompson, *Pacific Ocean Engineers*, 372; USACE-FED, ROKG-MND CDIP Regulations, 22 March 1983; "Command Brief," circa 1984, 11, PAO-FED Historical Files.

[13] "Suwon Work Nearly Complete," *East Gate Edition* 1, no. 5 (July 1983): 3; "Combined Defense Work is Big FED Job," *East Gate Edition* 2, no. 15 (May 1984): 4–5.

[14] "R-401 Continues to Grow at Wonju," *East Gate Edition* 6, no. 61 (June 1988), 5; "Combined Defense Work is Big FED Job," *East Gate Edition* 2, no. 15 (May 1984): 4–5; USACE-FED, "Combined Defense, TPICK," circa 1985, PAO-FED Historical Files; "KCOIC, the Concrete Giant," *East Gate Edition* 2, no. 22 (January 1985): 3; USACE-FED, Draft History, "Support to the Armed Forces: Military Construction in the 1980s," 16, PAO-FED Historical Files.

[15] "Combined Defense Work is Big FED Job," *East Gate Edition* 2, no. 15 (May 1984): 4–5; USACE-FED, "Combined Defense, TPICK," circa 1985, PAO-FED Historical Files; "KCOIC, the Concrete Giant," *East Gate Edition* 2, no. 22 (January 1985): 3; USACE-FED, Draft History, "Support to the Armed Forces: Military Construction in the 1980s," 16, PAO-FED Historical Files.

[16] "Combined Defense Work is Big FED Job," *East Gate Edition* 2, no. 15 (May 1984): 4–5.

[17] Suwon Work Nearly Complete," *East Gate Edition* 1, no. 5 (July 1983): 3; Wayne Kelly, Combined Defense Engineering Center Section, "Hello, This Is Your Phone Company Calling," *East Gate Edition* 3, no. 29 (August 1985): 3–4; "Around the Corps," *Engineer Update* (October 1985); "Combined Defense Work is Big FED Job," *East Gate Edition* 2, no. 15 (May 1984): 4–5; USACE-FED, "Information Paper: "210 Military Family Housing Units, Osan Air Base," 30 October 1989, PAO-FED Historical Files.

[18] "New Yongsan Housing Project Starts," *East Gate Edition* 2, no. 17 (August 1984): 1; "Housing to be Built at Camp Carroll," *East Gate Edition* 3, no. 30 (September

1985): 1; "New South Post Quarters Dedicated," *East Gate Edition* 3, no. 34 (January 1986): 1.

[19] Wickham quoted in USACE-FED, Lt. Col. Walter D. Birchfield, FED Deputy Commander, interview by Randall A. Martin, Unit Historian, 3 June 1985, 1.

[20] USACE-FED, Lt. Col. Walter D. Birchfield, FED Deputy Commander, interview by Randall A. Martin, Unit Historian, 3 June 1985, 1; John P. Jones, USACE Public Affairs, "Far East Enjoys Building Boom," *Engineer Update* (March 1983): 6.

[21] USACE-FED, "US Army Engineer District, Far East, Supports Improvement in Quality of Life for USFK Personnel," circa 29 June 1981; Lt. Col. Walter D. Birchfield, FED Deputy Commander, interview by Randall A. Martin, Unit Historian, 3 June 1985, 1, FED-PAO Historical Files; "Uijongbu Project Office Renewing Cp Red Cloud," *East Gate Edition* 1, no. 4 (June 1983): 3; "New Housing Replaces Old Quonset Hut," *East Gate Edition* 4, no. 40 (July 1986): 3; Colonel Howard Boone, "Commander's Corner," *East Gate Edition* 5, no. 52 (August 1987): 2; John P. Jones, USACE Public Affairs, "Far East Enjoys Building Boom," *Engineer Update* (March 1983): 6.

[22] USACE-FED, News Release, 21 June 1984, PAO-FED Historical Files; "FED Replacing Tactical Equipment Shops," *East Gate Edition* 2, no. 19 (October 1984): 1.

[23] USACE-FED, News Release, 21 June 1984, PAO-FED Historical Files; "Big Day at Camp Stanley," *East Gate Edition* 5, no. 50 (June 1987): 1; "Santa FED???" *East Gate Edition* 6, no. 66 (January 1989): 9; "Construction in High Gear at Camp Page," *East Gate Edition* 5, no. 53 (September 1987): 1.

[24] "New Casey Med Center Started," *East Gate Edition* 1, no. 8 (October 1983): 1; "Camp Casey Troops Medical Clinic Opens," *East Gate Edition* 3, no. 25 (April 1985): 1; "Camp Casey—A Hub of Construction Activity," *East Gate Edition* 4, no. 37 (April 1986): 3; "Six Bridges Completed at Camp Casey," *East Gate Edition* 4, no. 41 (September 1986): 1.

[25] Leroy Noerper, Casey Project Office, "Casey Projects Thrive," *East Gate Edition* 6, no. 65 (December 1988): 4; "Work Begins on $1.4 Million 2nd Infantry Division Ammunition Storage Facility at Camp Casey," *East Gate Edition* 6, no. 64 (November 1988): 3; "Camp Casey—A Hub of Construction Activity," *East Gate Edition* 4, no. 37 (April 1986): 3.

[26] USACE-FED, Draft History, "Support to the Armed Forces: Military Construction in the 1980s," 3, 8, PAO-FED Historical Files; "Rodriguez Range Construction Completed," *East Gate Edition* 5, no. 58 (January 1988): 5.

[27] "District Begins Panmunjom Renovation," *East Gate Edition* 1, no. 5 (July 1983): 1; Ross R. Fredenberg, "Far East District Renovates Peace Talks Site," *Engineer Update* (September 1983).

[28] "District Begins Panmunjom Renovation," 1; Fredenberg, "Far East District Renovates Peace Talks Site;" "In Memory . . . Rebecca Beal Scruton and 1st Lt. Mark Barrett," *East Gate Edition* 5, no. 49 (May 1987): 1-2.

[29] "Camp Carroll Projects Completed Early," *East Gate Edition* 5, no. 47 (March 1987): 6; "Waegwan P.O. Key Player in Carroll Projects," *East Gate Edition* 5, no. 58 (January 1988): 1–2; "New Medical Warehouse at Camp Carroll," *East Gate Edition* 6, no. 67 (February 1989): 9.

[30] "New EM/NCO Club Opens at Camp Humphreys," *East Gate Edition* 4, no. 36 (March 1986): 3; Captain James P. Youngert, "Humphreys Gets New Med/Dental Facility," *East Gate Edition* 5, no. 51 (July 1987): 3; "Humphreys Project Office Working," *East Gate Edition* 5, no. 59 (April 1988): 1.

[31] Thomas R. Hudspeth, "Birth of a New Base at Wonju," *East Gate Edition* 5, no. 58 (March 1988): 1; David C. Beaty, "Cp Walker Gets New Command Center," *East Gate Edition* 5, no. 56 (December 1987): 3; "New EUSA Milk Plant Begins Production," *East Gate Edition* 3, no. 28 (July 1985): 1.

[32] USACE-FED, Remarks for OB/GYN Dedication Ceremony, 121st Evacuation Hospital, 28 June 1983; Remarks-South Post Dental Clinic Dedication, 16 March 1983, FED-PAO Historical Files; "FED Presents Brand," *East Gate Edition* 1, no. 2 (April 1983): 4; "FED Begins Yongsan Commissary Design," *East Gate Edition* 2, no. 13 (March 1984): 1; "Construction Begins on Yongsan Commissary," *East Gate Edition* 4, no. 37 (April 1986): 1; "Long Awaited Commissary Opening," *East Gate Edition* 6, no. 61 (June 1989): 1.

[33] "Master Planning Comes to Korea," *East Gate Edition* 3, no. 31 (October 1985): 3; Howard Blood, Facilities Engineer Support Section, "FESS—History, Challenge, and Change," *East Gate Edition* 4, no. 38 (May 1986): 4.

[34] Phillip Kimball, Master Planning Section, "Master Planning Gets into First Gear," *East Gate Edition* 3, no. 33 (December 1985): 6; USACE-FED, "User's Manual: A Guide for Installation Commanders and Facility Engineers for Engineering Support," Master Planning, 26 August 1986, PAO-FED Historical Files.

[35] USACE-FED, "Master Planning," "New Additions," October 1985, PAO-FED Historical Files; Craig Leiby, Facilities Engineer Support Section, "FED Supports 1st Signal Brigade," *East Gate Edition* 4, no. 39 (June 1986): 3; Gary Kettler, "FED Supports JED, Okinawa," *East Gate Edition* 6, no. 67 (February 1989): 12.

[36] USACE-FED, "FED Information/Itinerary for Major General G.K. Withers, Jr.," circa 1987, PAO-FED Historical Files.

[37] USACE-FED, Memorandum of Understanding, "FY82 Exigent Minor Military Construction (MCA) Projects, Camp Humphreys, Korea," May 14, 1982, PAO-FED Historical Files.

[38] "Col. Fulton's farewell to FED," *East Gate Edition* (July 1986), 2; USACE-FED, "Historical Interview with Lt. Col. Walter D. Birchfield, Deputy Commander, FED," June 3, 1985, 6, PAO-FED Historical Files.

[39] USACE-FED, "FED Information/Itinerary for Major General G.K. Withers, Jr.," circa 1987, PAO-FED Historical Files; USACE-FED, "Briefing on Support to U.S. Forces, Korea," July 1984, PAO-FED Historical Files.

[40] USACE-FED, Organizational Histories, Section III, U.S. Army Corps of Engineers, Far East District [circa 1980], 5; Draft History, "Support to the Armed Forces: Military Construction in the 1980s," 3, 8, PAO-FED Historical Files.

[41] USACE-FED, Fact Sheet, "Aircraft Shelters, Osan AB," 16 February 1983, PAO-FED Historical Files; John P. Jones, USACE Public Affairs, "Far East Enjoys Building Boom," *Engineer Update* (March 1983): 6; "Osan Aircraft Shelters, Taegu School Dedicated," *East Gate Edition* 1, no. 1 (March 1983): 1; USACE-FED, Draft History, "Support to the Armed Forces: Military Construction in the 1980s," 15, PAO-FED Historical Files; "Ground-Breaking at Osan Air Base," *East Gate Edition* 3, no. 31 (October 1985): 5.

[42] "FED Begins 100-Day Effort at Osan," *East Gate Edition* 1, no. 6 (August 1983): 1; "Osan Air Base Runway Finished Early," *East Gate Edition* 1, no. 8 (October 1983): 1; "Ribbon Cutting Ceremony on Osan Work," *East Gate Edition* 1, no. 9 (November 1983): 1; "Osan Work Gets Chief's Congrats," *East Gate Edition* 2, no. 13 (March 1984): 2; "FED-Air Force Cooperation Works," *East Gate Edition* 2, no. 19 (October 1984): 3.

[43] USACE-FED, Draft History, "Support to the Armed Forces: Military Construction in the 1980s," 6, PAO-FED Historical Files; "Osan Project is FED's Largest One Yet," *East Gate Edition* 2, no. 14 (April 1984): 1; "Customer Care and Health Care," *East Gate Edition* 5, no. 49 (May 1987): 4.

[44] "Osan Air Base: A Hub of Construction," *East Gate Edition* 3, no. 27 (June 1985): 3; "Air Force Construction in Full Swing at Osan," *East Gate Edition* 1, no. 3 (May 1983): 1; "644 Billets Dedicated at Osan Air Base," *East Gate Edition* 5, no. 60 (May 1988): 1; Captain Calvin Evans, "Osan Prepares for Big Year," *East Gate Edition* 6, no. 65 (December 1988): 13.

[45] USACE-FED, Lt. Col. Walter D. Birchfield, FED Deputy Commander, interview by Randall A. Martin, Unit Historian, 3 June 1985, 2.

[46] USACE-FED, "Remarks, New UEPH's Ribbon-Cutting, Kunsan Air Base," no date [circa 1983], PAO-FED Historical Files; "FED Begins Air Force Dormitory Program," *East Gate Edition* 1, no. 11 (January 1984): 1; USACE-FED, "Kunsan AFB," circa 1985, PAO-FED Historical Files; Captain Greg May, Kunsan Resident Office, "Kunsan Receives Four Dormitories Early," *East Gate Edition* 4, no. 44 (December 1986): 4; "Seven UEPH's Completed at Kunsan," *East Gate Edition* 5, no. 48 (April 1987): 1.

[47] USACE-FED, Draft History, "Support to the Armed Forces: Military Construction in the 1980s," 16, PAO-FED Historical Files; "Kwangju Office Supports Air Force," *East Gate Edition* 1, no. 10 (December 1983): 3.

[48] "Kunsan Off: Busy Outpost on Yellow Sea," *East Gate Edition* 5, no. 48 (September 1983): 3; "Kunsan Air Base Runway Finished Early," *East Gate Edition* 3, no. 32 (November 1985): 3; USACE-FED, "Remarks, Stars and Stripes Bookstore Ribbon Cutting," 7 March 1984, PAO-FED Historical Files; "Fire Station Completed at Kunsan Air Base," *East Gate Edition* 4, no. 36 (March 1986): 1; Mike Heffernan, Pusan Project Office, "Kimhae Contingency Hospital Storybook Dirt Job," *East Gate Edition* 4, no. 46 (January 1987): 3. Gimhae was formerly spelled as Kimhae.

[49] Al Bertaux, "Aviation Era Ends," East Gate Edition 6, no. 62 (September 1988): 3; Bowen, S*upplement to the History of United States Army Engineer District, Far East*, 24; "Aviation Office Aids Engineering Division," *East Gate Edition* 1, no. 12 (February 1984): 3; Edward S. (Sid) Chambers, Jr., e-mail to Stephen Satkowski, February 2014, PAO-FED Historical Files.

[50] Whitmore, *History of the United States Army Engineer District, Far East*, 27; Al Bertaux, "Aviation Era Ends," East Gate Edition 6, no. 62 (September 1988): 3; "FED Maintains Own Record Airlines," *East Gate Edition* 4, no. 46 (January 1987): 1.

[51] Whitmore, History of the United States Army Engineer District, Far East, 83; Llayll A. Fry, Assistant District Engineer, Analysis of Far East District Air Support, circa August 1969, PAO-FED Historical Files.

[52] Unpublished Draft, "History of the Corps of Engineers, Far East District," 22; "FED Maintains Own Record Airlines," *East Gate Edition* 4, no. 46 (January 1987): 1; Edward S. (Sid) Chambers, Jr., e-mail to Stephen Satkowski, February 2014, PAO-FED Historical Files.

[53] Harvey Robinson, interview by Joshua Pollarine, 7 October 2016, transcript, 32–33.

[54] "Corps Chopper Rescues ROK Airman," *East Gate Edition* 1, no. 11 (January 1984): 1; "FED Marks 10 Years Accident Free Flying," *East Gate Edition* 2, no. 23 (February 1985): 1; "Aviation Detachment Goes to War for Team Spirit 1985," *East Gate Edition* 3, no. 25 (April 1985): 3; Edward S. (Sid) Chambers, Jr., email to Stephen Satkowski, February 2014, PAO-FED Historical Files.

[55] "One of FED's Helicopters is Replaced," *East Gate Edition* 2, no. 18 (September 1984): 3; "Aviation Detachment Completes 11 Years Accident Free Flying," *East Gate Edition* 4, no. 37 (April 1986): 1; R. Michener, "Aviation Helps a Helping Corps," East Gate Edition 5, no. 48 (April 1987): 3; "Long-Awaited C-12 Soon to Arrive," *East Gate Edition* 3, no. 32 (November 1985): 1; "FED Maintains Own Record Airlines," *East Gate Edition* 4, no. 46 (January 1987): 1.

[56] Colonel Howard E. Boone, District Engineer, to Commander, Pacific Ocean Division, Justification for Army Aircraft, 29 February 1988; R. Michener, "Aviation Helps a Helping Corps," *East Gate Edition* 5, no. 48 (April 1987): 3.

[57] Al Bertaux, "Aviation Era Ends," *East Gate Edition* 6, no. 62 (September 1988): 3.

[58] "Chinhae Naval Base Receiving Facelift," *East Gate Edition* 3, no. 29 (August 1985): 3; USACE-FED, Organizational Histories, Chinhae Naval Base, circa 1985, PAO-FED Historical Files; Mike Heffernan, Pusan Project Office, "Chinhae Family Housing Renovation a Tough Project," *East Gate Edition* 4, no. 46 (February 1987): 1-2; "Navy Chief Petty Officers' Club Completed," *East Gate Edition* 5, no. 54 (October 1987): 4; "U.S. Naval Forces Korea Building Opens," *East Gate Edition* 3, no. 29 (August 1985): 1.

[59] "FED Supports DOD Schools," *East Gate Edition* 1, no. 7 (September 1983): 1; "FED-Built Seoul Elementary School Opens," *East Gate Edition* 2, no. 18 (September 1984): 1; USACE-FED, Lt. Col. Walter D. Birchfield, FED Deputy Commander, interview by Randall A. Martin, Unit Historian, 3 June 1985, 9; Dianne Yancey, "DoDDS, Engineers Combine to Make Schools Safer," *The Seoul World* (no date), 1, 3.

[60] "Around the Corps: Building Gyms," *Engineer Update* (December 1983); "Gym Construction to Aid Troop Fitness," *East Gate Edition* 1, no. 6 (August 1983): 1; Michael Cooney, "Hard Work Pays Off for NAF Construction Projects," *East Gate Edition* 5, no. 58 (March 1988): 4.

[61] USACE-FED, Information Paper, FED Drilling Program, 17 May 1985, PAO-FED Historical Files; Department of the Army, Memorandum of Understanding between Eighth United States Army and U.S. Army Engineer District-Far East, unsigned, circa 1989; "FED Wells Quench USFK Thirst," *East Gate Edition* 2, no. 17 (April 1984): 3; "Chochiwon Project Keeps the Fuel Coming," *East Gate Edition* 1, no. 1 (March 1983): 4-5.

[62] Contributing USACE organizations included the Office of the Chief of Engineers, Waterways Experiment Station (Vicksburg, MS), Hydrologic Engineering Center (Davis, CA), Pacific Ocean Division, and the St. Louis, St. Paul, Fort Worth, and Portland Districts. USACE-FED, POD Draft History, "Chapter One: The Pacific Ocean Division in the Late 1970s," circa 1990, 11-14; Jim Dexter to Bong S. Yoo, 9 November 2001; Robert M. Bunker, FED District Engineer, to POD Division Engineer, Han River Basin Interim Report, 7 September 1978; "Corps Assistance to the Republic of Korea Water Resources Development, Han River Basin," circa 1978, PAO-FED Historical Files.

[63] Rick Maze, "House Panel Critical of Army's Hotel, Club Plans," *Army Times* (11 November 1985), 38; USACE-FED, Q&A for Dragon Hill Press Conference, 22 October 1987, 1-3; Speech for Gen. Menetrey at the Ground Breaking for Yongsan Transient Facility, 22 October 1987, PAO-FED Historical Files.

[64] "Yongsan Dragon Hill Lodge Under Way," *East Gate Edition* 5, no. 55 (November 1987): 1; "Far East to Build Large Hotel," *Engineer Update* (December 1987): 7; USACE-FED, Yongsan Transient Facility Project Supplemental Information. circa 22 October 1987, PAO-FED Historical Files; Community, Family, and Soldier Support Command, Korea, News Release, "Yongsan Transient Facility Groundbreaking," circa 22 October 1987; "Yongsan South Post Chapel Dedicated," *East Gate Edition* 5, no. 54 (October 1987): 1; James Cox, "Concrete Placement History Made by Ssangyong," *East Gate Edition* 5, no. 49 (May 1987): 3.

[65] Howard Blood, Facilities Engineer Support Section, "FESS—History, Challenge, and Change," *East Gate Edition* 4, no. 38 (May 1986): 4; USACE-FED, Point Paper, Chief of Staff's Visit to Far East District, 7 September 1983; "US Army Engineer District, Far East, Supports Improvement in Quality of Life for USFK Personnel," circa 29 June 1981, PAO-FED Historical Files; "FED Wins Award of Excellence," *East Gate Edition* 5, no. 47 (March 1987): 1.

[66] USACE-FED, Point Paper, Chief of Staff's Visit to Far East District, 7 September 1983, PAO-FED Historical Files; Colonel Howard E. Boone, "Commander's Corner," *East Gate Edition* 5, no. 51 (July 1987): 2; Colonel Howard E. Boone, "Commander's Corner," *East Gate Edition* 6, no.

64 (November 1988): 15; Terry N. Randolph, Chief, FED Management/Manpower Branch, "Report of Customer Care Survey," First Draft, 28 January 1988, PAO-FED Historical Files.

[67] Colonel Howard E. Boone, "Commander's Corner," *East Gate Edition* 5, no. 48 (April 1987): 2; Colonel Howard E. Boone, "Commander's Corner," *East Gate Edition* 5, no. 56 (December 1987): 2; Colonel Howard E. Boone, "Commander's Corner," *East Gate Edition* 5, no. 55 (January 1988), 2; Colonel Howard E. Boone, "Commander's Corner," and Russel E. Milnes, "U.S. Military Bases in Trouble," reprinted from The Constructor (May 1988), *East Gate Edition* 5, no. 51 (July 1987): 11-13; Colonel Howard E. Boone, "Commander's Corner," *East Gate Edition* 6, no. 67 (February 1989): 2.

[68] Unpublished Draft, "History of the Corps of Engineers, Far East District, 1978-1997: 1978," July 1997, 31; Unpublished Draft, "History of the Corps of Engineers, Far East District, 1978-1997: 1979," July 1997, 22, PAO-FED Historical Files; Roland Laberge, interview by John Lonnquest, 15 March 2016, transcript, 3-6.

[69] USACE-FED, POD Draft History, "Chapter Five: Information, Resource, and Information Management [*sic*]," circa 1990, 3-4; "FED Automation—Where is it Going?" *East Gate Edition* 2, no. 23 (February 1985), 3; "Automation Becomes a Reality in Korea," *East Gate Edition* 3, no. 26 (May 1985): 1.

[70] "Information Management Office News," *East Gate Edition* 4, no. 43 (November 1986): 5; "Information Management Office News," *East Gate Edition* 4, no. 46 (February 1987): 6; Bob Thomas, "IMO News," East Gate Edition 5, no. 52 (August 1987): 7; Howard E. Boone, "Commander's Corner," *East Gate Edition* 5, no. 53 (September 1987): 2.

[71] Bong Su (Paul) Yoo, interview by John Lonnquest, 10 March 2016; USACE-FED, POD Draft History, "Chapter Five: Information, Resource, and Information Management [*sic*]," circa 1990, 3-4; "Information Management Office News," *East Gate Edition* 5, no. 48 (April 1987): 8.

[72] Colonel Howard E. Boone, "Commander's Corner," *East Gate Edition* 5, no. 50 (June 1987): 2; Brazinsky, *Nation Building in South Korea*, 236; Schober, *Base Encounters*, 51–53. The actual number of civilian casualties at Kwangju is unknown; some estimates are in the thousands.

[73] Olsen, *Korea, the Divided Nation*, 85; Seth, *A Concise History of Modern Korea*, 189, 192.

[74] Seth, *A Concise History of Modern Korea*, 186, 202-3; Brazinsky, *Nation Building in South Korea*, 244; "FED Compound Again the Target," East Gate Edition 6, no. 67 (February 1989): 15.

[75] Olsen, *Korea, the Divided Nation*, 87; Kim, *The History of Korea*, 173.

[76] USACE-FED, "Information Paper: "Yongsan Relocation," 17 October 1989, PAO-FED Historical Files.

FAR EAST DISTRICT

ECONOMY AND EFFICIENCY

1990–1999

The district anticipated that change was on the way as the decade of the 1990s began. The surge of the 1980s, the busiest decade in the district's history, was slowing. What the Far East District (FED) could not foresee, however, was that the decline in military construction appropriations in the late 1980s would lead to a complete halt. In effect, the district's primary source of funding was cut off.

The military construction (MILCON) moratorium imposed by Congress in 1990 created profound challenges for the district. FED had to find ways to stay solvent while upholding its mission of supporting U.S. Forces in Korea (USFK). This led to significant changes at FED throughout the decade. District leaders reduced staff, reorganized, and sought other avenues of funding, programs, and projects. Economy, efficiency, innovation, and responsiveness became the keys to the district's existence.

The district further responded by expanding its Host Nation Funded Construction program to supplement its workload and provide the services required by USFK. FED diversified its programs, broadening their scope to include environmental projects in an increasingly eco-conscious world, lengthened its reach to assist other districts within Pacific Ocean Division (POD), and strengthened its partnership with the U.S. Air Force. These efforts were successful. By the middle of the decade, the district had stabilized its operations, laying the groundwork for a solid future.

More unforeseen changes were on the way. Military construction funding returned in the mid-1990s. The district again found ways to adapt to change, this time to adjust to the rebound in work. At the same time, it maintained the expanded scope of programs laid out during the moratorium. A massive influx of work brought on by natural disasters at the end of the decade led to the greatest placement of contracts in the district's history. The challenges posed by the 1990s, and FED's ability to successfully innovate and respond, prepared the district well to forge ahead into the next millennium.

MORATORIUM ON MILITARY CONSTRUCTION

District Engineer Boone's concern over a decreasing workload toward the end of the 1980s was not unwarranted. Early in the 1990s, cuts to defense spending led to a total moratorium in congressional appropriations

for MILCON that persisted through the middle of the decade. This created significant changes and challenges for the district and its personnel. A drive to "do more with less" resulted in drastic reductions in staff, halted planned projects, and motivated FED staff to find alternative means to get the job done.[1] Despite budget cuts, U.S. forces still needed the district's support for war-readiness and quality-of-life improvements for U.S. military personnel on the peninsula.

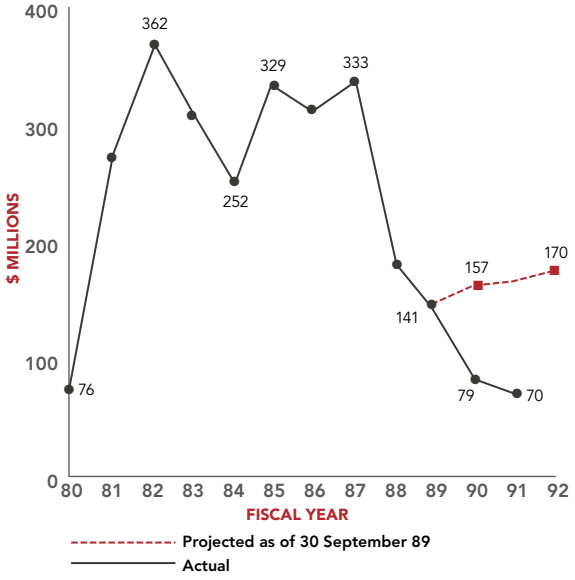
In January 1990, citing "continuing changes in the world situation and constraints on resources available for national defense," Secretary of Defense Dick Cheney instituted a complete moratorium on MILCON funding.[2] This moratorium was extended outside the continental United States through 1993, with repercussions affecting FED's workload through the mid-1990s. As Congress sought to reduce spending during the administration of President George H. W. Bush, the Department of Defense considered reductions in its budgets—particularly in response to the ostensible end of the Cold War in 1989, and including Base Realignment and Closures (BRAC) to respond to cuts in defense spending overall.[3] Secretary Cheney announced the moratorium, claiming that it was an effort "to further exercise careful stewardship of taxpayer funds devoted to military construction, in light of the coming changes in the force structure and disposition of the U.S. Armed Forces."[4] The moratorium initially lasted through April 1991, but the department again paused military construction funding in 1993. Military constructed was not reinstated department-wide until fiscal year 1994.[5]

In the interim, the district was forced to find ways to adjust to this drastic change in what, up until the 1990s, was FED's primary mission and main source of funding. As District Engineer Colonel Mark Potter wrote in January 1990, "We had anticipated Congress cutting the FY90 Military Construction Program in Korea, but the magnitude of the cut was completely unexpected." Potter went on to state that he could "only assume that this will continue in future years."[6]

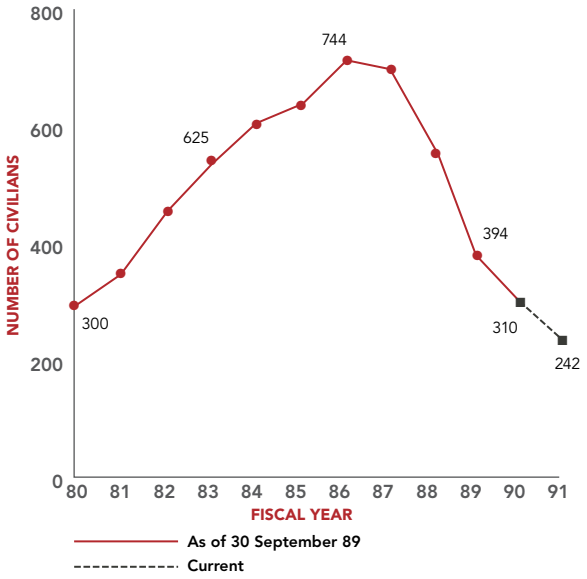
To adjust its staff to the funding cuts, the district submitted a request for a reduction in force (RIF) to the secretary of the Army in August 1990, receiving approval early the following year. From a civilian work force of 374 at end of 1989 (and a high of over 700 employees in the mid-1980s), the number dropped to 248 at the close of 1990.[7] Further reductions occurred in subsequent years—although total civilian strength remained around 200—until a significant rebound in the district's workload came in the mid-1990s.[8]

The loss of MILCON funding had significant ramifications within the district's divisions and departments, not just in personnel, but also in programs, projects, and the ability to get the job

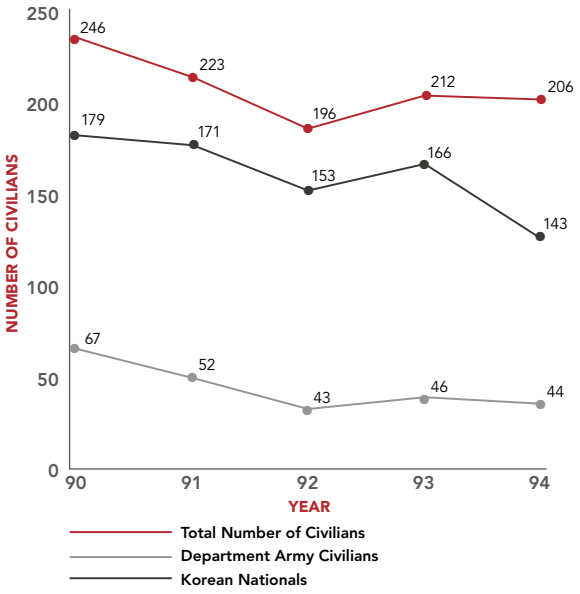
Program workload, 1980–1991.



Civilian workforce, 1980–1991.

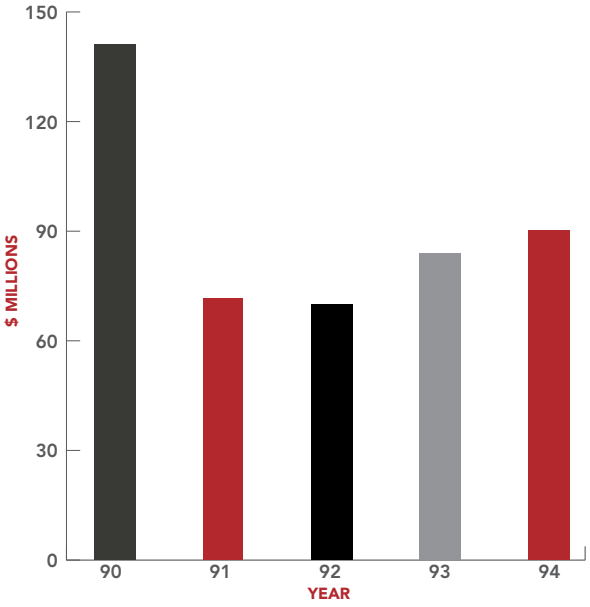


Civilian personnel during the MILCON moratorium, 1990–1994.



done. As Deputy District Engineer Jon Iwata remembered years later, "in 1990, we hit a brick wall."[9] The moratorium abruptly reduced FED's workload and, consequently, income. Other projects already under way still required personnel to accomplish the mission, and "due to the nature of the projects and the type of construction, the level of effort required to accomplish the work remained relatively high."[10] The district's Engineering Division reported at the close of 1991 that the moratorium "played havoc with our ability to effectively manage a dwindling program and salvage what remains for future construction."[11] Subsequently, the group flatly stated in 1992, "MILCON is no longer programmed into the operations of Engineering Division."[12] The losses to FED in contract work were noticeable as well. Within the first year of the moratorium, the district lost an estimated "$10.85 million of construction work placement"—an equivalent of fourteen work-years.[13]

Workload during the MILCON moratorium, 1990–1994.



Graph of estimated construction placement totals based on data in FED-PAO Annual Reports

The early 1990s were a period of turmoil and transition for FED, mainly due to the MILCON moratorium. It was not until 1994 that the district reported the return of MILCON work, albeit with late starts to the projects.[14] That year, the district's workload turned a corner. "Nearly five years after the most significant downsizing the district had experienced in a decade, signs of impending growth appeared."[15] The upward trend set FED "on a steady climb" that would continue for the remainder of the decade.[16]

MANAGING THE MILCON MORATORIUM

The effects of the MILCON moratorium were not entirely negative. The need to "do more with less" resulted in innovations in the ways FED did business and fulfilled its missions.[17] Changes included RIFs and other cost-saving measures. But district personnel also realized the need to stabilize their self-described "spiralling [*sic*] downward trend in workload" through other means.[18] FED received monies for projects through channels such as non-appropriated funds and operations and maintenance funding (although this, too, was somewhat reduced), and it also began a shift toward a more diversified workload and an increased focus on projects funded by the Korean government—Host Nation Funded Construction—which was especially important during the moratorium. FED's Dick Byron recalled that, during his nearly two-decade career as a district program manager, "going from being a heavy MILCON focus and a slight host nation focus to becoming a major host nation focus and a slight MILCON focus was probably the most significant change."[19]

Host Nation Funded Construction Program Expansion

Leading into 1990, Host Nation Funded Construction consisted solely of Combined Defense Improvement Projects (CDIP), strictly for "building or upgrading warfighting facilities."[20] With the MILCON moratorium enacted in 1990, FED leaders recognized the need to supplement funding for quality-of-life projects such as barracks, schools, and infrastructure—improvements not covered under CDIP. District Engineer Colonel Potter noted that "[t]he apparent lack of future MILCON funding will make reform [to the CDIP program] essential." To that end, the district submitted its first request for barracks funding to the Korean Ministry of National Defense as part of its CDIP solicitation in 1990.[21]

Soon after, the ROK and USFK reached an accord whereby the Korean government "agreed to increase its cost-sharing support beginning FY91 to partially help offset MILCON losses and O&M funding cuts," effectively establishing the Republic of Korea Funded Construction (ROKFC) program.[22] Since, at the time of establishment, the Korean government's fiscal year ran on a calendar year basis (January through December), the agreement gave an immediate boost to FED's program. Together, the two construction programs—CDIP and ROKFC—comprised the Host Nation Funded Construction program. This funding partnership would only strengthen throughout the decade, even after the return of MILCON monies. Further, until a congressional appropriation for MILCON in fiscal year 1995, the "program had been the only funding source available for major construction in Korea since FY90."[23] The coordination between FED and the Korean government provided a successful supplement to the challenges posed by the MILCON moratorium.

Standard-design barracks under construction at Camp Stanley, 1996.

The terms of the newly established ROKFC program varied significantly from the CDIP program already in place from the prior decade. In addition to FED's ability to contract for projects not directly in support of warfighting capabilities, ROKFC was a cash program: the Korean government provided funds directly to the United States.[24] Adding to the ease of access to Korean government funds, President George H. W. Bush enacted Public Law 102-190 in December 1991. The law authorized "the U.S. Army to accept funds directly from the Republic of Korea," facilitating the transfer of monies that could then be funneled to work on the ground.[25]

Unlike the CDIP program, the cash basis for funding provided the U.S. military in Korea much greater control over projects, contracts, and the quality of construction. Through CDIP, the Korean government issued the construction contracts, which reduced the district's ability to enforce quality standards. At times, recalled Project Manager Joe Clancy, the district encountered situations in which the ROK's apparent objective was "to get it done to complete that agreement, where the Corps' objective is get it done right."[26] Under ROKFC, the military received the funds to contract directly, including monies for design and construction, and for equipment and offshore materials. This allowed FED greater control over projects partially funded by the Korean government, giving the district greater leverage to enforce its standards for construction safety and quality.[27]

The district instituted the new program during 1991, shifting its MILCON program toward ROKFC. The program improved as the years went by, and funding increased. With the addition of ROKFC to the Host Nation Funded Construction program, funding doubled between 1990 and 1991 alone, allowing the district to supplement its workload in the wake of lost MILCON funds. By the end of 1993, FED staff reported that the Combined Defense Construction program was among the district's main sources of funding. Within a few short years, it appeared to those within FED that the downward

trend initiated by the moratorium had "bottomed out," and FED's workload was again on the rise. Host Nation Funded Construction, through both CDIP and ROKFC, increased throughout the decade, from $53.7 million in contributions from the Korean government in fiscal year 1991 to $87 million in 1995, and reaching $115 million in 1998.[28]

Significant projects exemplified work completed under the Host Nation Funded Construction program in the early 1990s. One of the first projects under the newly implemented ROKFC was a new military mail terminal at Gimpo International Airport in Seoul. FED leaders noted the importance of the project, claiming that it could "be a turning point for any future ROK funded and US managed projects." Launched in 1991, the project involved numerous components; among them were "loading docks, mail conveyors, X-ray equipment, HVAC, all utilities, paved parking and roads" along with offices, break rooms, and a security guard post. FED oversaw all contracting requirements delivering the new $3.2 million terminal in 1993.[29]

Significant quality-of-life projects at Camps Casey and Red Cloud included the construction of five new 176-man unaccompanied enlisted personnel housing (UEPH) barracks—three at Casey and two at Red Cloud. Built under a single floor plan, each 40,000-square-foot building was four stories high. Similarly, FED oversaw construction of a dormitory at Osan Air Base.[30]

Also during the MILCON moratorium, FED managed construction of a new $13 million high school at Osan Air Base, completed in August 1995, in time for the start of the 1995–1996 school year. Constructed on a compressed design and construction schedule of twenty-six months, the district delivered

POD Commander Gen, Williams inspects new Unaccompanied Enlisted Personnel Housing with Resident Engineer Capt. Evans at Osan Air Base, 1990.

the project on time and within budget. The new campus served 250 students and contained classrooms, a media center, auditorium, gymnasium, an athletic field and multipurpose courts. Embracing the technological advances of the 1990s, each classroom was wired to a LAN system. The project was significant not only for its contemporary design, but also in that it was the first high school for Osan students, saving them a "three to four hour commute each day to and from school in Seoul." The project greatly improved the quality of life for students and families during deployments to Korea.[31]

The district completed a number of notable projects under CDIP. One such project was an Aerial Delivery Rigging Area at Gimhae Air Base for the Army's 4th Quartermaster Group. The 71,000-square-foot facility allowed the military to prepare parachutes for aerial drops of materials and equipment. The $5.6 million building included a 100-foot-high parachute drying tower. Throughout

the project, FED maintained a close working relationship and "spirit of cooperation" with Korea's Ministry of National Defense inspectors. The district delivered the facility to the Army in 1991.[32]

At Camp Red Cloud, FED completed a Combined Field Army Bunker Expansion. The $7 million project involved constructing a new semihardened bunker and connecting it to an older bunker through a tunnel. A second phase renovated the existing bunker to complete the project. Farther south at Osan, the district planned and designed a partial renovation of the airfield and an entire replacement of taxiway "A" beginning in 1991. The taxiway work required removal of the mile-long strip of existing pavement and laying 19 inches of new concrete. Construction included "shoulder work and airfield lighting," and the district completed the $9 million CDIP project in just over eight months in 1995.[33]

The Corps completed other Host Nation Funded Construction during the MILCON moratorium throughout the peninsula. CDIP accomplished by FED included a command post at Songnam, two tank maintenance facilities at Camp Casey, and a new Apache Combat flight simulator at Camp Humphreys. Through ROKFC, the district delivered barracks at Camp Coiner, bachelor officers' quarters for the Navy at Chinhae, quarters and an operations facility at Pohang, and environmental protection systems throughout the 2nd Infantry Division's area of operations.[34] Completed with supplemental Host Nation funds, these projects helped keep the district fiscally afloat during the moratorium.

Yongsan Relocation

In contrast to the successful partnering on other Host Nation Funded Construction projects, the Yongsan Relocation—one of the most ambitious late 1980s programs proposed—started, sputtered, and ultimately stalled in the 1990s. The USFK commander in chief and the ROK minister of national defense (MND) signed a memorandum of agreement (MOA) and an MOU on 25 June 1990. These documents outlined the general concepts behind the proposed program. The Korean government would carry all costs for the relocation and award construction contracts, while the United States would manage master planning, design new facilities, and oversee construction. The governments agreed to finish construction by 1996.[35]

The relocation was to occur in two parts. First, after the national defense ministry had constructed an interim course, the United States would turn over the land occupied by the Yongsan golf course. Later, when replacement facilities for USFK were complete, the rest of the Yongsan Garrison in Seoul would be handed over to the Korean government. The Korean government, interested in constructing a city park, prioritized transfer of the golf course property, and FED designed project plans that included a wall separating the park from the land retained by the Army.[36]

It was at this point that the program began to encounter obstacles. In late 1991, USFK and MND finalized an engineering MOA for the relocation of U.S. forces. Because of disagreements over master planning and design, however, the MOA remained unsigned at the close of 1992. Part of the dispute centered on costs. The U.S. estimated $400 million for the planning and design components, but MND suggested a budget closer to $50 million. Sentiment within FED was that "U.S. standards can never be achieved in master planning and design for this amount." The early inability to reach a consensus quickly pushed the projected relocation to 1997.[37]

Although the overall program slowed, the golf course relocation forged ahead, in part owing to a planned turnover of the property in 1992. Throughout that year, MND oversaw construction of the wall. It did not go as planned, FED reported: "Poorly executed construction by MND resulted in delays in the turnover and more than 100 deficiencies in the wall construction." This result had larger ramifications. FED officials noted, "There remains little solid incentive to relocate out of Seoul—especially if construction of replacement facilities is done to CDIP/MND standards and the U.S. acquires a massive O&M burden upon completion."[38]

The district's need to make an immediate decision was postponed when, in 1993, the citizens of Korea elected a new civilian government to replace the militarily aligned administrations that had governed for thirty-two years. After reviewing the Yongsan Relocation proposals, "and in view of the high cost of the project," the new government "decided to defer the move indefinitely."[39] The decision effectively stalemated the program for the remainder of the decade. The Yongsan Relocation would, however, come to play a major part in FED's future in the decades ahead.

Shifting Gears

Corps leadership, from the FED commander to the top brass in Washington, D.C., remained optimistic about the district's future on the peninsula in spite of the temporary decline in MILCON. Assuming command of FED in August 1991, in the midst of the moratorium, Colonel Bart Bohn believed the "near-term future of the district will include a stable workload and a stable workforce."[40] These sentiments echoed those expressed up the chain of command. But leadership also advised that the loss of MILCON, in the words of POD commander Colonel Ralph Locurcio, would require FED to change focus and assume new challenges. Locurcio affirmed that "[t]he opportunity for FED to remain stable—even to grow—is there, but we will have to shift gears and learn new tools to provide the support our customers will need in the future."[41] Chief of Engineers Lieutenant General H. J. Hatch conveyed similar support for the district's future role, claiming that "the opportunities for the Far East District in the future are 'solid.'"[42]

New opportunities included an expanded environmental engineering program "to comply with the Secretary of Defense directive that DoD be leaders, worldwide, in a concern for the environment."[43] Additionally, FED opened other opportunities for funding by "getting out and beating the bushes and beating the drums," recalled Transportation Branch chief Ken Pickler. These efforts resulted in a strengthened partnership with the Air Force, work for the 2nd Infantry Division, well-drilling, and assistance to other engineer districts.[44] Combined with ongoing projects within the district's program in the early 1990s, FED's workload weathered the storm of the MILCON moratorium and generated capabilities for new programs that continued throughout the decade.

The district's environmental work developed in the form of underground storage tank surveys, asbestos removal, hazardous waste sampling and analysis, and water and soil contamination abatement. By 1992, FED had completed an underground storage tank survey for all Army installations on the peninsula. The survey inventoried more than 2,100 tanks to help determine the extent of their corrosion and leakage potential.[45] Including U.S. Air Force installa-

tions newly added to its workload, FED reported 272 "known failures" associated with underground tanks at military installations on the peninsula by the end of 1994.[46] District personnel also conducted surveys of electrical transformers and equipment for polychlorinated biphenyls (PCBs). The reviews included "sampling and chemical analysis." FED completed its first PCB project at Camp Carroll in 1991, surveying nearly four hundred transformers.[47]

In 1991, FED staff developed an Asbestos Abatement Requirements Contract for all of USFK to "provide quick mobilization of all the proper equipment and trained personnel for asbestos abatement with the issuance of delivery orders based on previously bid unit prices."[48] Additionally, FED maintained a "rapid deployment support team for asbestos sampling and testing." In the contract's first year, the district awarded twenty-five projects for asbestos removal worth $760,000.[49]

Asbestos removal projects in the early part the decade included a rapid response to the 20th Support Group at Camp Henry when a fire destroyed two headquarters buildings. FED oversaw the removal of asbestos-laden debris to remediate contamination of the site. The district's work resulted in cost savings to the 20th of $300,000 and "resulted in efficient procedures being established for future removal work."[50]

The district conducted another successful asbestos abatement during the summer of 1992. FED contractors removed wall panels and floor tiles throughout USFK's elementary and high school campus buildings at Yongsan, and then reconstructed the affected buildings. Work commenced at the start of summer break and required completion before the beginning of the next school year—a window of sixty days. Due to the nature of the project, which involved buildings where schoolchildren spent many hours, the work attracted close attention "not only from the customer, but from parents, community leaders and service oriented agencies." Modifications to the project midway through the summer threatened to derail the schedule, but through a cooperative effort

An FED contractor pries asbestos laden material from a wall in the 1990s.

Asbestos abatement work in the 1990s.

by FED and the contractors, the team completed the $375,000 contract "without even one hour of time growth." It was so successful that during the abatement, the project was used as a training site for the FED-sponsored "Asbestos Hazard Supervisor's Course."[51] The district's asbestos abatement program completed additional projects as the decade wore on.

The district extended its environmental work to Camp Carroll during 1992 in response to water contamination and a general water shortage. Initially responding to the issue of the water shortage toward the end of the summer, samples taken from the wells at the camp were analyzed, revealing "high levels of trichloroethylene [a carcinogen] and perchloroethylene," found in "several essential wells." Camp Carroll already faced the daunting prospect of spending $17,000 daily to supply potable water from a neighboring Army post. The contamination discovery required considerable effort in a compressed time frame. FED designed an aeration tower that would remove the concentrated contaminants from the existing wells by the process of air stripping. Staff fast-tracked the design and construction schedule, and then reduced that time by twenty-five percent, "chopping an additional three months off." The finished project, completed just 171 days after award, provided Camp Carroll with a tower that could produce 576,000 gallons of safe water per day, successfully mitigating the contamination.[52]

FED provided a rapid response to Camp Casey due to a similar water shortage. The post obtained water from multiple sources—the nearby city of Tongduchon, streams that flowed through the camp, and from wells. Over time, Tongduchon's need for water increased, resulting in the city's restricting use by Camp Casey and calling for the post to eliminate its consumption of city water altogether. Consequently, the camp contracted FED to drill supplemental wells. On 8 December 1993, "the Camp notified FED that several of the wells had gone dry." Exacerbating the issue, just eight days later, the city called for further reductions in the post's water consumption. Camp Casey started rationing water. FED took quick action and "mobilized all available crews," including teams for environmental sampling, well drilling, and well construction. Within weeks, FED had drilled one new well and managed to get four former wells into operation, providing sorely needed water supplies. Following the emergency action, FED continued to drill new wells at Camp Casey to supplement its water sources.[53] This experience would serve the district well toward the end of the decade, when devastating floods destroyed groundwater drinking wells, necessitating emergency repairs elsewhere in Korea.

Further augmenting the district's workload was an effort with the U.S. Air Force to develop a Simplified Acquisition of Base Engineering Requirements (SABER) contracting program. SABER was "a form of Job Order Contracting" designed to expedite execution of smaller, routine operations and maintenance projects.[54] Utilized by the Air Force throughout the continental U.S., the contracting program was the first of its kind outside U.S. borders and covered Osan and Kunsan Air Force bases.[55] Under SABER, FED provided all "contract administration and supervision."[56] The Air Force and FED implemented SABER in July 1990, and within the same fiscal year, the district awarded eleven projects worth more than $950,000. The program quickly grew to cover numerous projects, including thirty-five projects worth more than $3 million in fiscal year 1991 alone, and

A Far East District well-drilling rig in operation, 1999.

nearly forty projects in 1994. The SABER program continued through 1998, when the Air Force chose to partner with the Army for a single, Korea-wide job order contracting program.[57] FED reported that SABER was a "great success" and "strengthened an already strong partnership with the Air Force."[58]

The district further supplemented its workload during the MILCON moratorium by fulfilling requests from the 2nd Infantry Division and other engineering elements within POD. The command of the 2nd Infantry Division tasked FED with assisting in the relocation of its headquarters from Camp Casey to Camp Red Cloud throughout 1992.[59] The work involved roughly twenty projects. The district participated in developing plans for the "repair, renovation, and upgrade of existing facilities" at Camp Red Cloud to facilitate the move and prepare the post for an influx of personnel.[60] As David Honbo with FED noted, the project gave the district "much needed work during this period of funds shortage and defense cutbacks."[61]

During this period, the district also expanded its reach beyond the peninsula to increase its workload. Unlike FED, the Hawaii Engineer District (HED) faced a large project load, and from 1990 through 1992, it enlisted FED's assistance for work at Schofield Barracks in Hawaii. FED conducted analyses and drafted reports for an off-site water system improvements package and completed final designs for a maintenance shop and a warehouse—projects valued at more than $10 million. HED recognized FED's prior experience with similar projects in Korea,

Runway repairs at Kunsan Air Base, 1990.

making the district a suitable candidate to take on the task. FED also answered the call from POD to provide personnel to assist with "urgent mission needs" in the Technical Engineering Division in Hawaii. Similarly, FED supplied an acting chief for the design section of the Japan Engineering District in Okinawa until the position could be filled permanently. These actions helped FED maintain "fiscal solvency" during the downturn in MILCON.[62]

The high-profile Dragon Hill Lodge project, a carryover from the prior decade, also complemented the district's workload during this time. Although the project was fast-tracked and slated for completion in May 1990, more than 100 contract modifications and 191 change items had caused the construction schedule to lag slightly behind schedule. Perceiving delays to the scheduled completion date, the hotel held a "soft opening" on 2 April 1990, but was able to hold its grand opening on 15 June. Construction modifications remained following the grand opening, but by the end of the year, only two were outstanding, and neither affected the capability of the lodge to provide first-class accommodations for its guests.[63] The facility included computerized mechanical systems that utilized a $1.5 million Energy Monitoring Control System that could run "everything from hot water and steam boilers to chillers, air handling units and ventilating units."[64] The $43 million, 277-room hotel, with its accompanying restaurants, cocktail lounges, shops, conference rooms, and recreational amenities, was a "showcase facility" that regularly maintained "guest room occupancy near 100%."[65] Hawaii Senator Daniel Akaka, a World War II veteran of the USACE, commended FED on "an accomplishment in which the Corps should take pride."[66]

As work on the lodge neared completion in 1990, construction was already under way on an annex to the hotel. The Korean government funded the project

Reception desk at Dragon Hill Lodge as construction nears completion, 1990.

as part of an exchange for the Naija Hotel in downtown Seoul that had been in operation under USFK since 1948. FED conducted design and construction oversight on the project.[67] Hampered by limited funding, the project required a redesign following phase two of the three-phase plan, posing significant challenges for the district to create a design that would fall within budget. FED developed seven options for the USFK commander. Their efforts were successful. Following selection of the final design that ultimately completed the project with the funds available, construction proceeded on the annex and finished in 1993. The five-story addition included conference rooms and twenty guest rooms on its top two floors, connected directly to Dragon Hill Lodge. The balance of the building was committed to a full fitness center complete with locker rooms, shower facilities, exercise rooms, racquetball courts, and saunas. At its opening in 1993, then USFK Chief of Staff Lieutenant General William Crouch remarked that the annex would "improve the quality of life for all of us who reside here in Korea."[68]

Guests enjoy the spacious interior and impressive décor of the newly completed Dragon Hill Lodge, 1990.

Similar improvements assisting family members of those stationed in Korea included a new child development center at Camp George near Daegu. Billed at the time as "the most modern child care facility in Korea," the project was not without challenges. District engineers dealt with numerous modifications during construction "to accommodate ever changing end user's requirements and stringent child safety regulations." Despite the difficulties, contractors completed construction within a year and FED turned it over to Camp George in March 1992.[69]

FED also continued barracks renovation work, including work at Camps Casey and Hovey. The district oversaw the repair and upgrade of fifteen units at the installations, consisting of ten bachelors' enlisted quarters (BEQs) and five bachelor officers' quarters (BOQs). The BEQs were two-story buildings, while the BOQs had one story. Renovations involved tearing out the inside of each building and installing new electrical, mechanical, plumbing, and ventilation components. The upgrades included the significant improvement of air conditioning to bolster the quality of life for soldiers enduring the hot, humid Korean summers.[70]

To assist with operations on the battlefield, the district took on such projects as munitions storage and a battle simulation center. At Camp Stanley, FED completed construction of a $7 million underground munitions storage area. This project involved blasting and excavation to construct underground facilities that included parking areas for 2nd Infantry Division vehicles. The parking areas connected to a ventilation system, allowing soldiers to conduct maintenance on warfighting machines underground.[71]

The district employed operations and maintenance funds to complete a battle simulation center at Camp Casey. FED oversaw construction and installation of twenty-eight relocatable modules that contained "computerized work stations used in the conduct of simulated warfare exercises." The project provided a facility for battalion-level command through squad-level training in combat tactics without deploying to the field, saving the Army money it would have spent to send soldiers out on the ground. The chief of the center claimed the new simulator was "one of the best training support facilities the 2nd Infantry Division has received in over 20 years," a strong testament to the district's work.[72]

Munitions storage bunker in the 1990s.

To soldiers on the battlefield, supplies from behind the lines can be just as critical as the weapons they carry. Critical supplies included blood. In the early 1990s, FED oversaw the construction of a frozen blood storage facility for the 18th Medical Command at Camp Carroll—the first such facility in Korea. The district reported that liquid blood is usable for a maximum of thirty-five days, but blood frozen to negative 176 degrees Fahrenheit was stable for seventeen years. On a peninsula threatened daily by war, the ability to have potentially lifesaving supplies on hand was significant. The project was poised to set the standard for future blood-storage facilities at military installations throughout Korea.[73]

Successful completion of such projects exemplified the expertise of district engineers to design and construct projects not just above ground, but underground and in the field. Beyond that, however, the success of the district during a period marked by funding shortages and loss of projects proved the capability of FED to tackle the challenges presented and to thrive while shifting gears, remaining responsive, and continuing to provide the excellence expected of the district's work. Colonel Locurcio, the POD commander, praising district personnel for their ability to pivot effectively from a heavy reliance on MILCON, stated "It takes people with ideas, with determination and with an innovative spirit to do better tomorrow. You've shown that you have that." Overcoming these challenges positioned the district well for later growth as MILCON funding returned and FED's workload was again on the rise.[74]

Another way the district attempted to work within the confines of the moratorium was by aligning more closely with FED's primary architectural and engineering (A/E) firms and by streamlining its organizational structure. FED partnered with two main A/E groups operating under USFK's SOFA as invited contractors working in Korea with U.S. government organizations. The firm of Thomas J. Davis started working with FED in 1979, while the second firm, AMKOR, began collaborating with the district in 1982.[75] FED recognized that moving the firms to the FED compound would improve communications and cut costs. Following approval by the U.S. Eighth Army, the move occurred between December 1991 and January 1992. Relocating the groups to the compound saved an estimated $330,000 per year in rental costs that the firms paid to lease office space. The savings, in turn, were recognized by FED's user agencies (USFK) "in the form of reduced design costs."[76]

The district underwent several reorganizations in the 1990s. In 1992, Engineer Regulation (ER) 5-7-1 created the Program and Project Management Division (PPMD), designed to provide better service to contracting agencies and to streamline project management. At FED, this "required a major district reorganization to realign project funds management from Construction Division to the new PPMD." Staff shifted to fill the newly created positions within the division. The change established management of projects by area, with project managers in those areas serving as the "primary point[s] of contact" and "sole facilitator[s] for project issues and problem resolutions."[77] The Corps expanded this concept in 1998 under ER 5-1-11, extending the focus on project management to programs. In short, FED's work was split "into two categories: process and product," simplifying management for district personnel and facilitating easier communication with contracting agencies. The latter regulation moved the Corps toward a project management business process. PPMD handled business matters throughout the life of a project, while other FED personnel executed the job.[78]

Other reorganizations occurred in response to FED's shifting missions. In 1994, and utilizing ongoing changes under the move to PPMD, Colonel Robert Martin, the district engineer, established the Environmental Unit to manage FED's growing environmental program. That same year, POD issued orders to reorganize FED's Military Branch during the MILCON moratorium. The initiative renamed and combined sections under a new Engineering Services Branch. Among the restructured sections, the Combined Defense Projects Management Office became the Host Nation Section, reflecting the increase in projects within the Host Nation Funded Construction program.[79]

The district strove for excellence not only in its projects, but in how it conducted business. Streamlining its organizational structure and program processes produced efficient and effective results. The actions taken during the 1990s cut costs, improved management practices, and opened better lines of communication with FED's user agencies.

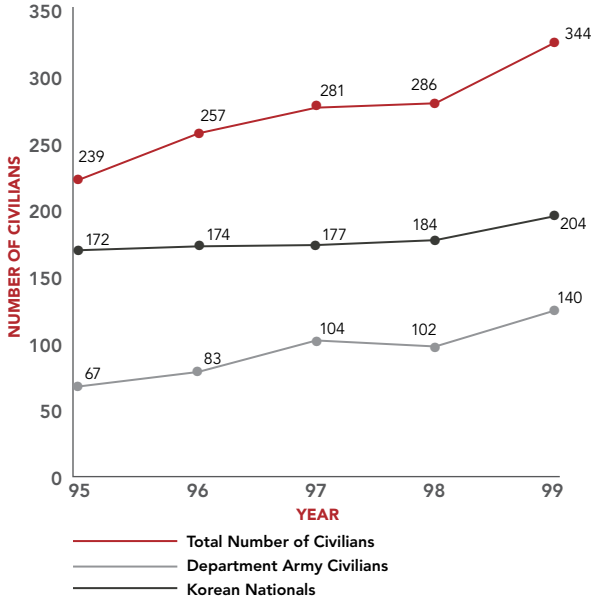
RETURN OF MILCON AND ROUNDING OUT THE DECADE

Having stabilized its programs and project base by expanding its capabilities, the district was well situated to maintain its work through the remainder of the decade. FED adjusted staff numbers to sustainable levels and secured additional funding streams to preserve solvency. The district's work appeared secure in the environment imposed by the MILCON moratorium, although less robust than in recent memory and attended by the normal ebb and flow of project work. Toward the middle of the decade, having determined adjustments to the BRAC program and the effects on the Department of Defense's budgets, the secretary of defense reinstated military construction appropriations. MILCON returned to the district's programs and eventually led to the largest placement of project funds in FED's history, in part as a result of "the growing backlog of construction requirements caused by the moratorium."[80] The district's workload would once again be on the rise.

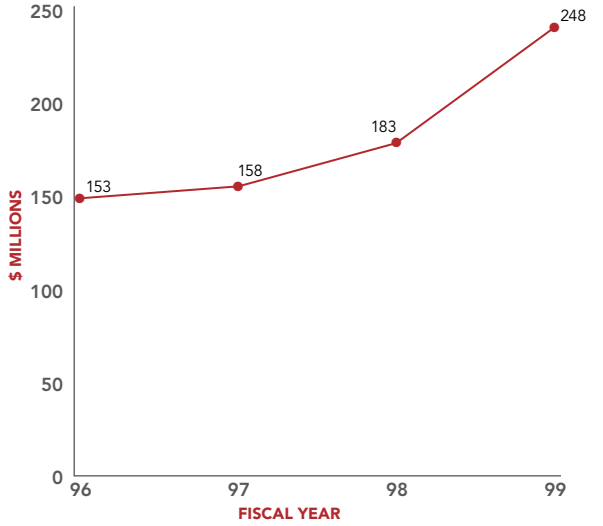
The district first noted the rebound in its funding and workload in 1994, but regarded the change cautiously. FED reported that "[n]early five years after the most significant downsizing the district had experienced in a decade, signs of impending moderate growth appeared in 1994."[81] That trend prevailed through 1996, and the district grew judiciously in response to an uptick in programs.[82] But by 1997, it was clear to those at FED that their mission was back in full force. That year, the district claimed "the largest dollar volume of contract awards for FED in over a decade."[83] The decade's final years were even better. Fiscal year 1998 was "another record year" in contract placement.[84] In 1999, the district's construction program grew for the fourth consecutive year.[85] The district's workload was booming.

Both staffing levels and the overall value of contracts reflected the rapid rebound. In 1994, "after a hiatus of several years," the return of MILCON not only bolstered FED programs, but "created a turmoil in technical management."[86] The district needed more staff to handle the sudden increase in work following the earlier significant reduction-in-force cuts. From lows in staffing levels just above 200 a few years earlier, FED had rebounded to 257 personnel by 1996. The district rounded out the decade with 344 people working to manage FED's projects and programs throughout the country. Contract placement revealed similar exponential increases. In 1997 alone, FED managed $250 million in MILCON. The district awarded over $300 million in contracts in both 1998 and 1999.[87]

Workforce in the late 1990s.



Workload in the late 1990s.



Based on data in Col. David J. Rehbein, "From the Commander," *East Gate Edition* 10, no. 2 (February 2000), 2.

Other factors contributed to the district's financial success. The Department of Defense Appropriation Act of FY97, for example, "changed how funds could be carried from one fiscal year to another." Previously, in-house funds could not be carried over from one fiscal year to the next. At the close of a fiscal year, FED would return all unspent funds to the contracting agency and the agency would then provide new funds for the next fiscal year. This protracted process often led to delays in district funding and threatened to derail contract schedules. The change allowed FED to retain appropriated funds for immediate obligation in a subsequent fiscal year, "ensuring that sufficient funds were available" to cover in-house costs.[88]

A major influx to district funding followed on the heels of tragedy. In 1998, floods ravaged the ROK, especially northern areas near the DMZ, causing hundreds of millions of dollars in damage to USFK installations. Fortunately for USFK and FED, Congress responded in kind. Appropriations totaling roughly $150 million in emergency MILCON and operations and maintenance monies for fiscal year 1999 not only bolstered FED's workload, but provided the funds to get the job done.[89]

The return of MILCON funding, coupled with the emergency response to the 1998 flooding, decidedly increased the district's workload on the peninsula. But the work did not differ from the first half of the decade so much in scope as it did in magnitude. FED continued to provide similar services in programs and projects as it had throughout the 1980s and 1990s. Coupled with the increased Host Nation Funded Construction and the more recent addition of the environmental mission, the district forged ahead with more projects like barracks renovation and construction; commissaries, enlisted clubs, child care centers, and numerous other quality-of-life improvements; well drilling; and war-preparedness design and construction services. It also conducted master planning at Camps Humphreys and Carroll to update plans over a decade old and to create computerized base maps with overlays for utilities.[90] The latter part of the decade included notable projects all over the southern half of the Korean peninsula, many of which illustrated the district's work toward the end of the century.

Host Nation Funded Construction projects continued throughout the 1990s under both the CDIP and ROKFC programs. CDIP projects provided facilities, such as two 100,000-square-foot warehouses at Camp Carroll, and barracks projects that sometimes required complicated coordination to complete. For example, barracks construction at K-16 Air Base involved rebuilding a parking apron for helicopters while also minimizing the effects of construction

activities on a flight simulator located less than 20 yards from the project, two dissimilar considerations equally important to the barracks' successful completion. FED oversaw the construction of a temporary airfield plowed out by a component of the Navy Construction Battalion, while contractors adjusted work schedules so as not to interfere with operations of the flight simulator. FED rounded out the $6.5 million, 200-person barracks project with a rebuilt parking apron for the Air Force.[91]

At Osan Air Base, the district took on a ROKFC unaccompanied officer personnel housing (UOPH) project initially proposed during the MILCON moratorium. Changes in the Air Force's programming priorities delayed design for the project until 1994. Siting issues dragged the design process out for another two years, but in 1997, FED awarded the $7.7 million project for construction. The facility provided "individual apartment-type" housing for eighty-six officers, and each unit provided "updated and efficient living quarters for officers at Osan Air Base," a much-needed quality of life improvement.[92]

The district maintained and expanded its environmental work throughout the decade, applying experience gained through prior projects. At Camp Carroll in 1997, FED oversaw the removal of two underground storage tanks and, after soil testing revealed high levels of malathion (an insecticide),

Groundbreaking for Republic of Korea-funded construction of Unaccompanied Officer Personnel Housing at Osan Air Base, November 1997.

the removal of 1,000 cubic yards of dirt from the site. FED's expertise facilitated the installation of an underground water line at the post.[93]

Asbestos abatement remained an ongoing concern for the district. In 1997, routine housing renovations at Camp Henry revealed asbestos-laden ceilings and district personnel participated in the abatement process for five buildings, conducting compliance checks while also keeping an eye on "other safety and occupational health standards, such as electrical safety, scaffolding, and heat stress," all part of FED's ongoing concern and responsibility for safety.[94] Similarly, at the close of 1999, FED reported the completion of asbestos surveys for "hundreds of USFK buildings," which included "asbestos removal requirements." The district's asbestos work involved final monitoring of "all air and bulk asbestos samples analyses in support of asbestos abatement actions" at military installations across Korea.[95]

Continuing its ongoing mission throughout the 1990s, FED reported drilling five to ten new wells annually while maintaining existing wells.[96] The importance of the program could be seen in numbers. Water from wells overseen by FED "delivered 16 million gallons of drinking water each day, at a yearly savings of $22.4 million over the cost of municipal or hauled water." In the course of its regular duty, the district maintained and conducted emergency repairs for nearly 250 wells at USFK installations. In 1996, FED's Water Well Program received the Federal Organization Excellence Award, winning over fourteen other nominated organizations.[97]

Following its reestablishment as part of FED's regular project program, MILCON focused on Army and Air Force barracks. FED completed projects at numerous installations, including Camps Humphreys, Hovey, Casey, Red Cloud, and Yongsan, and Osan Air Base. The district's MILCON program achieved a milestone in fiscal year 1998, becoming the largest MILCON program by dollar amount in the entire Corps of Engineers. Among notable accomplishments was the first "1 + 1" dormitory at Osan. The new construction provided suites with two bedrooms, a shared bathroom, and a shared kitchen. The dormitory was four stories tall and contained 78 units for 156 enlisted personnel. FED turned the $8.8 million project over to the Air Force in 1999, with four additional planned Air Force dormitories on the way.[98]

An entire new generation of barracks for the Army was under way in the latter part of the 1990s. FED delivered a $5.2 million structure to the 2nd Infantry Division at Camp Red Cloud in 1997. The new design of the four-story barracks included a lounge and television room on the third and fourth floors, and exercise and laundry rooms and a kitchen on the lower floors. This project was the first of eighteen planned for the Army, ensuring that FED's MILCON would keep the district busy in the coming years.[99]

New barracks at Osan Air Base in the 1990s.

Other construction projects during this flurry of activity included a child development center and a community services building at Yongsan, community activity centers at Humphreys and Red Cloud, a new dining facility and the MiG ALLEYS bowling center at Osan, a collocated club at Kunsan, and the installation of air-conditioning systems in barracks, among many other projects aimed at improving the quality of life for soldiers and their families stationed in Korea. The district also completed a headquarters building for the Defense Logistics Agency at Camp Walker.[100] But in the midst of this construction boom, FED encountered one of its largest undertakings that would round out the decade—disaster response to the floods that hit north of Seoul in 1998.

Seoul Floods

In early August 1998, torrential monsoon rains battered the Korean peninsula. More than 40 inches of rain fell within the span of a week. The area from Seoul north to the DMZ was hardest hit. Massive flooding ensued, wreaking havoc on USFK installations in the region. Camps Red Cloud, Casey, Howze, Hovey, Stanley, and Nimble all suffered extensive damage, as mudslides, floodwaters, and debris destroyed facilities. Two Korean soldiers died in their billets under a landslide at Camp Tango. FED's Seoul compound was hit as well. Floodwaters inundated buildings and the motor pool.[101]

The damage to USFK installations required FED's rapid response. The district quickly mobilized and sent teams into the field even before the rains had stopped. Nearly thirty personnel went out to conduct damage surveys and assess the destruction. They completed initial assessments within two weeks and submitted a cost estimate to Eighth Army in under a month. The picture was grim. FED estimated the total loss at over $250 million.

Children participate in the groundbreaking ceremony for the child development center at Yongsan in 1997.

Installations across the country's northern region sustained damage to barracks, offices, equipment, and infrastructure.[102] FED would take on the enormous task of repairing the damage.

In response to the need for emergency funds, Congress executed special appropriations for the 1999 fiscal year, and FED received approximately $150 million in emergency MILCON and operations and maintenance funding for the recovery effort.[103] There was a caveat—the funding amount had to be awarded within one year. With that, the district's workload instantly doubled while its allotted time to project completion was halved. As one source noted, the need to design and award all projects within a year's time posed "a significant challenge for the FED team," in no small part because the average time to design and award a MILCON project was "one-and-a-half to two years."[104]

The district forged ahead to complete numerous components of the flood recovery effort within the compressed time line. Initial tasks included the damage surveys, risk assessments, geotechnical investigations, site evaluations, and testing flood debris for asbestos. The affected installations also required emergency well repairs. FED, utilizing experience gained through emergency well repairs years earlier, went into action. Four crews worked on eighty flood-damaged wells to restore safe drinking water. At Camp Casey, the situation was critical. Although close to Tongduchon, there was no city water available during the flood emergency, rendering "[a] reliable source of clean groundwater . . . a vital commodity for daily installation activities."[105]

The well repair crews faced a daunting task. Prioritizing in part based on accessibility within the flood-damaged areas and in part by availability of electricity, the district worked its way across the region restoring wells. The work for just one well involved many arduous steps: "clearing site debris and mud; removing well pipe and servicing the submersible pump; flushing and chlorinating the well; and repairing electric control panels, valves, flow meter and other accessories." The water underwent safety standards testing before the project could be deemed complete. FED's rapid response managed to get all but one well back in operation by the end of September, and fell short of a 100-percent completion rate only because the final well was totally inaccessible.[106]

Work in the field continued through the remainder of the year. In December, FED sent a team to the flood-ravaged areas to conduct a hydrology and hydraulics survey. The district noted that the goal was to develop a plan to prevent such damage from happening again and to provide "assurance we are protecting the investment in new facilities from future flood events."[107] Other preventive actions in the wake of the floods included lining channels with concrete and laying riprap (rocks to reduce erosion) along the stream at Camp Casey. The efforts were not in vain. In 1999, FED reported that more rain fell in a similar period that summer than when the floods hit in 1998. As a result of the preventive work, "Camp Casey saw only minor isolated damage."[108]

Back at the FED compound, district staff scrambled to meet the demands of the flood recovery effort. FED established a flood section with three project managers and set to work on cost engineering, designs, and construction contracts. Nearly fifty temporary-duty personnel from across the USACE answered the call for volunteers to assist FED in its efforts. Staff canceled vacations and worked overtime to meet the expedited schedule. During the process,

Groundbreaking ceremony for a community service center and library at Camp Howze, 1999. The projects were part of the fiscal year 1999 emergency flood appropriations.

the chief of the Design Branch noted that FED "should be starting designs for next year's projects, but we aren't able to work on them because we are dedicating all of our resources to the FY99 program."[109]

The dedicated effort and teamwork of the district and the Corps paid off. FED awarded the first contract for two new BOQs at Camps Casey and Hovey on 30 March 1999. The groundbreaking for the first flood recovery construction project occurred three months later on 29 June. By the beginning of July, FED deemed design and construction contract awards for eighty percent of the flood program complete, an outstanding accomplishment: the ambitious program illustrated the extent of the destruction. The flood recovery effort required that FED complete design and construction projects within a year for five 200-person barracks, four 48-person bachelor officers' quarters, a community service center, a division school, two education centers, three libraries, a battalion dispensary, twelve company operations facilities, ten administrative facilities, three armored vehicle maintenance facilities, two fire stations, three director of public works shops, and four warehouses. As it had done throughout its history, FED took the challenge in stride and successfully accomplished its mission.[110]

The Past Prepares the Future

The district had weathered the storm of the MILCON moratorium in the early 1990s and effectively used this challenging period as an opportunity to expand its skills and expertise in projects and programs of other types. This experience served the district well in the latter half of the decade. The return of MILCON bolstered what FED had developed as a solid program of projects during the moratorium. Additional work required additional manpower, and the district grew from the influx of funds and projects. The flood recovery effort, coupled with the district's already robust workload, ensured that FED would have its hands full in the years ahead. With the funds made available by the 1999 fiscal year emergency appropriation, the district's planned MILCON and flood recovery efforts reflected a fifty-percent increase for the year 2000 alone.[111]

Looking back on its growth, the strength of its programs, and its placement and funding for projects yet to be completed, FED staff acknowledged at the close of the decade that those factors "were all good indicators of a fiscally healthy, extended future for the district here in Korea."[112] The district's future was indeed secure, and more work was on the way. What was not foreseen at the time, particularly with so much work already on FED's full plate, was that the largest undertaking in the district's history—the renewal of the Yongsan Relocation Program (YRP)—was about to come alive. The district's successful management of the project boom in the late 1990s provided a solid foundation for taking on the massive program that lay ahead.

Throughout the 1990s, FED's Information Management Office continued its efforts to keep the district up to speed with the rapidly evolving world of digital and information technologies. Expanded use and increased proficiency in CADD, implementation of the Corps of Engineers Financial Management System (CEFMS), and the adoption of Geographic Information System (GIS) and Global Positioning System (GPS) technologies greatly enhanced the district's efficiency.

The district underwent a moderately paced transition to CADD at the start of the decade. The process took time to acquire and provide enough equipment to support the various divisions and for personnel to adjust to the new technology. Initially, some found CADD cumbersome, claiming that the program took longer to create topographic maps than doing them by hand. But the district also realized that embracing CADD was good for business; it allowed FED to be more competitive and saved contracting agencies money.[113] Persistence paid off. At the end of 1994, the district reported, "After almost three years of effort and CADD training, branch capability improved considerably in the state-of-the-art software, and consequently, improved the quality of design at cost savings."[114] Proficiency increased, and within a few short years FED crews were using CADD on laptops in the field for initial site surveys, which "greatly simplified subsequent office editing," saving time and money.[115] By 1999, district staff was giving presentations to high school students on the use of CADD.[116]

In 1997, the district began implementing a new, Corps-wide financial management system, CEFMS, to replace the "old, archaic method," in place for more than twenty years. After a blackout period from February through March, FED came back online with the new system in place, but the process was not smooth. Designed for continental U.S. systems, it had not been tested for foreign currency. FED and the Japan District were the guinea pigs, obliged to create a multicurrency format.[117] After ironing out initial problems, CEFMS proved a success, and at the closeout of the 1998 fiscal year, FED reported that "all went smoothly."[118] The system also allowed sharing of real-time information for projects, bringing "administrative and financial management in line as a full partner in the production process."[119]

Other improvements in information technologies included adoption of electronic bid sets (EBS), making solicitations and contracts more easily accessible to the district and to contractors. Using EBS allowed all necessary information for project packages to be shared on compact discs, negating hard copies and saving space and money.[120] Toward the end of the decade, FED embraced the increasingly accessible technologies of GIS and GPS. The district utilized the tools for mapping, surveys, and to analyze geotechnical, environmental, and engineering data.[121]

Keeping up with changes in technology throughout the 1990s was a primary focus of the district, as new advances added efficiency and precision to FED's work. Staying up to date with technological trends also increased the district's marketability. The strong effort to adjust and learn, and to utilize new tools, situated FED well for the coming decades when technology would evolve at an even greater pace.

NOTES

[1] USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 10, PAO-FED Historical Files.

[2] "Corps Infrastructure Initiatives," *Corps Facts* 1, no. 3 (10 January 1991), found in *Far East District Employee Newsletter* 2, no. 1 (January/February 1991), 5.

[3] USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 16, PAO-FED Historical Files; Pamela Porter, "Pentagon Expects to Lift Moratorium," *Kokomo (Ind.) Tribune*, 10 March 1991, 2.

[4] A. J. Plunkett, "Military Freeze May Delay Area Projects," *Daily Press (Virginia)*, 26 January 1990.

[5] House Committee on Armed Services, *National Defense Authorization Act for Fiscal Year 1993*, 102d Congress, 2d session, 19 May 1992, H. Rept. 102-527, 302; House Committee on Armed Services, *National Defense Authorization Act for Fiscal Year 1994*, 103d Congress, 1st session, 30 July 1993, H. Rept. 103-200, 364.

[6] Mark W. Potter, COL, EN, Commanding, Memorandum for Commander, U.S. Army Engineer Division, Pacific Ocean, 12 January 1990, 1, PAO-FED Historical Files.

[7] "Leaders in Customer Care," U.S. Army Corps of Engineers, Far East District, no date [circa 31 July 1990], no page number [page 17 of 20], PAO-FED Historical Files; Mark W. Potter, COL, EN, Commanding, "Far East District Annual Historical Report (1990)," Memorandum thru Commander, U.S. Army Engineer Division, Pacific Ocean, for HQDA (CE-HO), 9 July 1991, 2–3, PAO-FED Historical Files.

[8] FED would close out the 1990s at 344 personnel. "Leaders in Customer Care," U.S. Army Corps of Engineers, Far East District, no date [circa 31 July 1990], no page number [page 17 of 20], PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 40, PAO-FED Historical Files.

[9] Jon Iwata interview by John Lonnquest, 8 March 2016, Seoul, Korea, transcript, 13.

[10] Mark W. Potter, COL, EN, Commanding, "Far East District Annual Historical Report (1990)," Memorandum thru Commander, U.S. Army Engineer Division, Pacific Ocean, for HQDA (CE-HO), 9 July 1991, 3, PAO-FED Historical Files.

[11] USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1992], 1, PAO-FED Historical Files.

[12] USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 15, PAO-FED Historical Files.

[13] Mark W. Potter, COL, EN, Commanding, Memorandum for Commander, U.S. Army Engineer Division, Pacific Ocean, 15 January 1991, 1, PAO-FED Historical Files.

[14] USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 13, PAO-FED Historical Files.

[15] USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 4, PAO-FED Historical Files.

[16] Jon Iwata interview by John Lonnquest, 8 March 2016, Seoul, Korea, transcript, 14.

[17] USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 10, PAO-FED Historical Files.

[18] Mark W. Potter, COL, EN, Commanding, "Far East District Annual Historical Report (1990)," Memorandum thru Commander, U.S. Army Engineer Division, Pacific Ocean, for HQDA (CE-HO), 9 July 1991, 11, PAO-FED Historical Files.

[19] Dick Byron interview by John Lonnquest, 3 March 2016, Honolulu, HI, transcript, 47.

[20] Assistant Chief of Staff, Resource Management, U.S. Forces Korea, "U.S. Forces in the Republic of Korea, 1998," no date [circa 1998], 49, PAO-FED Historical Files.

[21] Mark W. Potter, COL, EN, Commanding, Memorandum for BG Gill, 16 August 1990, 1–2, PAO-FED Historical Files.

[22] Assistant Chief of Staff, Resource Management, U.S. Forces Korea, "U.S. Forces in the Republic of Korea, 1998," no date [circa 1998], 55, PAO-FED Historical Files.

[23] Assistant Chief of Staff, Resource Management, U.S. Forces Korea, "U.S. Forces in the Republic of Korea, 1998," no date [circa 1998], 49, 54–55, PAO-FED Historical Files.

[24] Assistant Chief of Staff, Resource Management, U.S. Forces Korea, "U.S. Forces in the Republic of Korea, 1998," no date [circa 1998], 55, PAO-FED Historical Files.

[25] USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1992], 6, PAO-FED Historical Files.

[26] Joseph Clancy telephone interview by Joshua Pollarine, 5 October 2016, transcript, 18.

[27] Assistant Chief of Staff, Resource Management, U.S. Forces Korea, "U.S. Forces in the Republic of Korea, 1998," no date [circa 1998], 49–50, 54–55, PAO-FED Historical Files.

[28] USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa

January 1992], 6, PAO-FED Historical Files; USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 1, PAO-FED Historical Files; USACE-FED, "1993 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1994], 5, 30, PAO-FED Historical Files ; Assistant Chief of Staff, Resource Management, U.S. Forces Korea, "U.S. Forces in the Republic of Korea, 1998," no date [circa 1998], 49, PAO-FED Historical Files.

[29] Hank K. Lee, Information Paper, Military Mail Terminal (MMT), Kimpo International Airport, Seoul, Korea, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 19, PAO-FED Historical Files; USACE-FED, "1993 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1994], 30, PAO-FED Historical Files.

[30] Jay R. Long, Information Paper, ROK Funded Construction, 2nd Infantry Division Barracks, Camp Casey and Camp Red Cloud, Korea, in "Far East Engineer District, Information Papers for Gen Locurcio, POD Commander," 16–22 January 1994, no page number, PAO-FED Historical Files; USACE-FED, "1993 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1994], 30, PAO-FED Historical Files.

[31] Robert Losey, "Osan American High School Ready for Classes on Time," *East Gate Edition* 5, no. 6 (December 1995): 6.

[32] "Joint Effort Pays off at Kimhae," *Far East District Employee Newsletter* 2, no. 3 (April 1991), 7. Gimhae was formerly spelled as Kimhae.

[33] Charles H. Hollingsworth, "Uijongbu Office Turns Over Two Major Projects," *Far East District Newsletter* 3, no. 3 (March 1992), 3; Ken Catlow, "Osan AB Taxiway 'A' Combined Defense Improvement Project Helps Keep F-16's Flying," *East Gate Edition* 5, no. 6 (December 1995): 7.

[34] USACE-FED, "1993 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1994], 8, 17, PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 14, 21, 23, PAO-FED Historical Files.

[35] K. D. Kim, Information Paper, Yongsan Relocation Update, in "History Summary, Executive Office, Calendar Year 1990," 11 January 1991, no page number, PAO-FED Historical Files.

[36] Mark W. Potter, COL, EN, Commanding, Memorandum for Commander, US Army Engineer Division, Pacific Ocean, 15 January 1991, 3, PAO-FED Historical Files; USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1992], 6, PAO-FED Historical Files; USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 2, PAO-FED Historical Files.

[37] USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 2, PAO-FED Historical Files.

[38] USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 2, PAO-FED Historical Files.

[39] USACE-FED, "1993 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1994], 1, PAO-FED Historical Files.

[40] "Far East District Future Looks Stable," *Far East District Employee Newsletter* 2, no. 5 (August 1991), 2.

[41] "Changing Workload on FED's Horizon," *Far East District Newsletter* 3, no. 2 (February 1992), 1.

[42] "Hatch Terms District Future Solid," *Far East District Newsletter* 2, no. 6 (September 1991), 1.

[43] "Hatch Terms District Future Solid," *Far East District Newsletter* 2, no. 6 (September 1991), 1.

[44] Ken Pickler interview by John Lonnquest, 9 March 2016, Seoul, Korea, transcript, 38.

[45] Robert E. Losey, Information Paper, Environmental Program for USFK, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 3, PAO-FED Historical Files; USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1992], 4, PAO-FED Historical Files.

[46] USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 16, PAO-FED Historical Files.

[47] Robert E. Losey, Information Paper, Environmental Program for USFK, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 3, PAO-FED Historical Files; USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1992], 4, PAO-FED Historical Files.

[48] Robert E. Losey, Information Paper, Environmental Program for USFK, in "Welcome to the Far East Engineer

District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 3, PAO-FED Historical Files.

[49] USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 18, PAO-FED Historical Files.

[50] USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 17–18, PAO-FED Historical Files.

[51] John Handy, "School Asbestos Project–High Visibility Success," *East Gate Edition* 3, no. 9 (September 1992): 5, 7.

[52] Patrick H. Caraway, "Southern Resident Office Team Spearheads Fast-Track Solution to Camp Carroll's Water Woes," *East Gate Edition* 3, no. 9 (September 1992): 3; USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 17, PAO-FED Historical Files.

[53] Lockamy, Fact Sheet, Camp Casey Water Shortage, in "Far East Engineer District, Information Papers for Gen Locurcio, POD Commander," 16–22 January 1994, no page number, PAO-FED Historical Files.

[54] Michael Fenn, Information Paper, Simplified Acquisition of Base Engineering Requirements (SABER) Contracting in Korea, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 9, PAO-FED Historical Files.

[55] Mark W. Potter, COL, EN, Commanding, Memorandum for Commander, US Army Engineer Division, Pacific Ocean, 15 January 1991, 4, PAO-FED Historical Files.

[56] Mark W. Potter, COL, EN, Commanding, "Far East District Annual Historical Report (1990)," Memorandum thru Commander, U.S. Army Engineer Division, Pacific Ocean, for HQDA (CE-HO), 7, 9 July 1991, PAO-FED Historical Files.

[57] Ken Catlow, "Diversity in Business: SABER – Air Force Small Contracts System May Be Wave of the Future," East Gate Edition 5, no. 6 (December 1995): 6; Mark W. Potter, COL, EN, Commanding, Memorandum for Commander, US Army Engineer Division, Pacific Ocean, 15 January 1991, 4, PAO-FED Historical Files; USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1992], iii, PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 16, PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 29, PAO-FED Historical Files.

[58] Mark W. Potter, COL, EN, Commanding, Memorandum for Commander, US Army Engineer Division, Pacific Ocean, 15 January 1991, 4, PAO-FED Historical Files; USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1992], iii, PAO-FED Historical Files.

[59] David M. Honbo, Information Paper, Headquarters 2d Infantry Division (2ID) Relocation to Camp Red Cloud, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 6, PAO-FED Historical Files.

[60] USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1992], 3–4, PAO-FED Historical Files.

[61] David M. Honbo, Information Paper, Headquarters 2d Infantry Division (2ID) Relocation to Camp Red Cloud, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 6, PAO-FED Historical Files.

[62] Mark W. Potter, COL, EN, Commanding, "Far East District Annual Historical Report (1990)," Memorandum thru Commander, U.S. Army Engineer Division, Pacific Ocean, for HQDA (CE-HO), 9 July 1991, 11, PAO-FED Historical Files; USACE-FED, "1991 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1992], 2, PAO-FED Historical Files; USACE-FED, "1992 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1993], 16, PAO-FED Historical Files.

[63] Richard H. Hoff, Information Paper, Dragon Hill Lodge, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 7, PAO-FED Historical Files.

[64] Mark W. Potter, COL, EN, Commanding, "Far East District Annual Historical Report (1990)," Memorandum thru Commander, U.S. Army Engineer Division, Pacific Ocean, for HQDA (CE-HO), 9 July 1991, 10, PAO-FED Historical Files.

[65] Richard H. Hoff, Information Paper, Dragon Hill Lodge, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 7, PAO-FED Historical Files.

[66] Daniel K. Akaka, U.S. Senator, to Michael P. W. Stone, Secretary of the Army, 19 August 1991, 1, PAO-FED

Historical Files.

[67] Richard Brown, "DHL Annex under Construction," *The Seoul Word*, 3 April 1992, no page number, PAO-FED Historical Files.

[68] Richard H. Hoff, Information Paper, Dragon Hill Lodge Annex, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 8, PAO-FED Historical Files; "Dragon Hill Lodge Fitness Center Completed," *East Gate Edition* 4, no. 4 (December 1993): 3–4.

[69] USACE-FED, "1993 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1994], 11, PAO-FED Historical Files.

[70] Stephen J. F. Shank, "Bachelor Quarters Get $5 M Facelift at Casey and Hovey," *Far East District Newsletter* 3, no. 3 (March 1992), 3.

[71] Charles H. Hollingsworth, "Uijongbu Office Turns Over Two Major Projects," *Far East District Newsletter* 3, no. 3 (March 1992), 3.

[72] Stephen J. F. Shank, "2nd ID Gets More Battle for the Buck," *Far East District Newsletter* 3, no. 3 (March 1992), 1.

[73] Robert J. Dugan, "DoD Medics Tour Frozen Blood Facility," *Far East District Newsletter* 3, no. 3 (March 1992), 1.

[74] "Changing Workload on FED's Horizon," *Far East District Newsletter* 3, no. 2 (February 1992), 1.

[75] "The Far East District: Building for Peace for 50 Years," *East Gate Edition* 17, no. 2 (June 2007): 9.

[76] Kenny K. Lee, Information Paper, Relocation of SOFA A/E's, in "Welcome to the Far East Engineer District, Colonel (P) Ralph V. Locurcio, Commander, Pacific Ocean Division, U.S. Army Corps of Engineers," January 1992, 2, PAO-FED Historical Files.

[77] USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 2–3, 9–10, PAO-FED Historical Files.

[78] "PPMD Reorganizes in Accordance With New Regulation," *East Gate Edition* 8, no. 3 (April 1998): 4.

[79] Charles S. Markham, "District Environmental Program More Clearly Defined," *East Gate Edition* 5, no. 12 (October 1994): 9; USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 12, PAO-FED Historical Files.

[80] House Committee on Armed Services, *National Defense Authorization Act for Fiscal Year 1993*, 102d Congress, 2d session, 19 May 1992, H. Rept. 102-527, 298; House Committee on Armed Services, *National Defense Authorization Act for Fiscal Year 1994*, 103d Congress, 1st session, 30 July 1993, H. Rept. 103-200, 364–366.

[81] USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 2, PAO-FED Historical Files.

[82] USACE-FED, "Annual Historical Report, 1996, Far East District," no date [circa January 1997], 2, PAO-FED Historical Files.

[83] USACE-FED, "Annual Historical Report, 1997, Far East District," no date [circa January 1998], 6, PAO-FED Historical Files.

[84] USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 9, PAO-FED Historical Files.

[85] USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 3, PAO-FED Historical Files.

[86] USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 11, PAO-FED Historical Files.

[87] USACE-FED, "Annual Historical Report, 1996, Far East District," no date [circa January 1997], 30, PAO-FED Historical Files; FED, "Annual Historical Report, 1997, Far East District," no date [circa January 1998], 9, PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 4, PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 3, PAO-FED Historical Files.

[88] USACE-FED, "Annual Historical Report, 1997, Far East District," no date [circa January 1998], 10, PAO-FED Historical Files.

[89] USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 3, PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 3, PAO-FED Historical Files.

[90] USACE-FED, "Annual Historical Report, 1997, Far East District," no date [circa January 1998], 7, PAO-FED Historical Files.

[91] Gloria Stanley, "CDIP Apache Fielding Barracks Ribbon Cutting Ceremony at K-16," *East Gate Edition* 9, no. 8 (August 1999): 6–7.

[92] Lynn Ray and Fred Davis, "Groundbreaking Ceremony at Osan," *East Gate Edition* 7, no. 7 (December 1997): 11.

[93] Seung C. Baek, "Remediation of Malathion Contaminated Soil at Camp Carroll Nears Completion," *East Gate Edition* 7, no. 2 (August 1997): 14.

[94] "Asbestos Removal, A Necessity for Camp Henry

Family Housing Renovation Project," *East Gate Edition* 8, no. 8 (September 1998): 7.

[95] USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 17, PAO-FED Historical Files.

[96] "FED Celebrates National Engineers Week, 22-28 February 1998," *East Gate Edition* 8, no. 2 (March 1998): 10.

[97] USACE-FED, "Annual Historical Report, 1997, Far East District," no date [circa January 1998], 19, PAO-FED Historical Files; "FED Unit Wins Award for Organizational Excellence," *East Gate Edition* 7, no. 1 (June 1997): 4.

[98] USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 3, PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1997, Far East District," no date [circa January 1998], 6, PAO-FED Historical Files; Frank Davis, "Central Resident Office Set to Go on Osan's First 1+1 Dorm," *East Gate Edition* 7, no. 2 (August 1997): 9; "A Ribbon Cutting and Two Ground Breakings at Osan Air Base," *East Gate Edition* 9, no. 6 (June 1999): 1, 6.

[99] "New Generation of MCA Barracks Completed," *East Gate Edition* 7, no. 2 (August 1997): 9.

[100] "Ribbon Cutting Ceremony for Child Development Center," *East Gate Edition* 8, no. 8 (October 1998): 7; Gloria Stanley, "ACS Groundbreaking," *East Gate Edition* 8, no. 11 (December 1998): 5; "New CAC at Humphreys," East Gate Edition 9, no. 2 (February 1999): 1; "Camp Red Cloud Celebrates the Grand Opening of 'Mitchell's,'" *East Gate Edition* 9, no. 12 (December 1999): 1; USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 11, PAO-FED Historical Files; "MiG ALLEYS Bowling Center Grand Opening at Osan," *East Gate Edition* 10, no. 1 (January 2000): 1; "District Meets Air Conditioning Challenge," *East Gate Edition* 7, no. 2 (August 1997): 4; "Ribbon Cutting for DLA Headquarters Building at Camp Walker," *East Gate Edition* 9, no. 8 (August 1999): 7.

[101] "FED Deploys Augmentation Team to Camp Casey," *East Gate Edition* 8, no. 7 (August 1998): 7; USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 9, 19, PAO-FED Historical Files; "Flooding Inundates U.S. Installations in South Korea," *East Gate Edition* 8, no. 7 (August 1998): 6.

[102] "Flooding Inundates U.S. Installations in South Korea," *East Gate Edition* 8, no. 7 (August 1998): 6; USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 9, PAO-FED Historical Files.

[103] Accounts of the amounts received vary. In 1998, FED reported $181 million in special appropriations, but in 1999 had adjusted that number to $135 million. The August 1999 issue of *East Gate Edition* cited $150 million. USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 9, PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 7, PAO-FED Historical Files; Gloria Stanley, "One Year and Lots of Teamwork Later," *East Gate Edition* 9, no. 8 (August 1999): 8.

[104] "FED Deploys Teams to Flooded Installations to Assess Damages," *East Gate Edition* 9, no. 1 (January 1999): 9; Gloria Stanley, "One Year and Lots of Teamwork Later," *East Gate Edition* 9, no. 8 (August 1999): 5.

[105] USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 19, PAO-FED Historical Files; "FED Performs Emergency Repair of 80 Groundwater Drinking Wells," *East Gate Edition* 8, no. 8 (September 1998): 1, 5.

[106] "FED Performs Emergency Repair of 80 Groundwater-Drinking Wells," *East Gate Edition* 8, no. 8 (September 1998): 5.

[107] Gloria Stanley, "FED Conducts H&H Study," *East Gate Edition* 8, no. 11 (December 1998): 8.

[108] USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 20, PAO-FED Historical Files.

[109] Gloria Stanley, "One Year and Lots of Teamwork Later," *East Gate Edition* 9, no. 8 (August 1999): 5.

[110] "Construction to Begin on First Flood Recovery Project," *East Gate Edition* 9, no. 7 (July 1999): 1; Gloria Stanley, "One Year and Lots of Teamwork Later," *East Gate Edition* 9, no. 8 (August 1999): 5, 8.

[111] Gloria Stanley, "One Year and Lots of Teamwork Later," *East Gate Edition* 9, no. 8 (August 1999): 8.

[112] USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 3, PAO-FED Historical Files.

[113] Kenny Lee, Fact Sheet, Computer-Aided Design and Drafting (CADD), in "Far East Engineer District, Information Papers for Gen Locurcio, POD Commander," 16–22 January 1994, no page number, PAO-FED Historical Files; "1993 Annual Historical Report, Far East District, U.S. Army Corps of Engineers," no date [circa January 1994], 16, PAO-FED Historical Files.

[114] USACE-FED, "Annual Historical Report, 1994, Far East District," no date [circa January 1995], 12, PAO-FED Historical Files.

[115] USACE-FED, "Annual Historical Report, 1997, Far East District," no date [circa January 1998], 17, PAO-FED

Historical Files.

[116] USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 12, PAO-FED Historical Files.

[117] USACE-FED, "Annual Historical Report, 1997, Far East District," no date [circa January 1998], 9, PAO-FED Historical Files.

[118] USACE-FED, "Annual Historical Report, 1998, Far East District," no date [circa January 1999], 47, PAO-FED Historical Files.

[119] Anita Alcantara, "CEFMS Will Be Here Soon…… Are You Ready?" *East Gate Edition* 6, no. 2 (November 1996): 5.

[120] Nancy Tullis, "Building for Peace on the Frontiers of Freedom, and With Electronic Bid Sets Yet!," *East Gate Edition* 7, no. 4 (December 1997): 10.

[121] USACE-FED, "Annual Historical Report, 1997, Far East District," no date [circa January 1998], 17–18, PAO-FED Historical Files; USACE-FED, "Annual Historical Report, 1999, Far East District," no date [circa January 2000], 13, PAO-FED Historical Files.

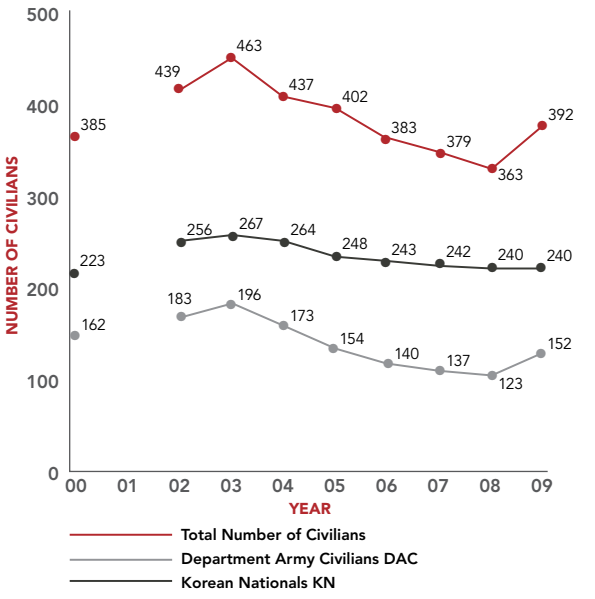
FAR EAST DISTRICT

A CHANGING WORLD

2000–2009

The district entered the twenty-first century with a surging workload. In 2000, the Far East District (FED) awarded $293 million worth of construction—a forty-seven percent increase over the previous year, in part due to the ongoing flood recovery projects, and marking the fifth consecutive year of program growth. Particularly robust were projects funded by military construction (MILCON) appropriations, which were designed both to enhance Army and Air Force warfighting capabilities and to improve the quality of life for U.S. soldiers and their families. FED also maintained a healthy operations and maintenance program and continued to oversee projects funded by the Republic of Korea (ROK). The district's budgetary windfalls reflected the overall growth of the Department of Defense's budgets throughout the early 2000s. The department's budget increased thirty-one percent between 2000 and 2014, with "an annual average growth rate of 1.9 percent." Operation and maintenance appropriations more than doubled during that period, and MILCON funding increased twenty-four percent.[1] To handle the extra work, the district hired 41 new employees, for a total workforce exceeding 400 members. In terms of both workload and personnel, the upward trends of the late 1990s accelerated into the new millennium.[2]

FED workforce, early 2000s.



Having survived the diminished workloads of the early 1990s, FED expanded into new roles during the 2000s. To begin the decade, the district showed strength and consistency—boasting the best safety

record in the Corps and the lowest MILCON design costs of any of the forty-one districts of the U.S. Army Corps of Engineers (USACE). By 2001, FED was managing more than 400 projects worth more than $400 million. Starting in 2003, the district added companies to its list of prequalified contractors, thus broadening the competitive base for construction awards. In addition, it began hosting orientation sessions for all prequalified contractors. The Construction Division's Yi Tong-hui noted that "in previous years, new [prequalified] contractors had to learn the USACE way of doing business from their predecessors or by firsthand experience." To improve this situation, FED offered better contractor preparation and training.[3]

However, even as the district's programs continued to gain momentum, global changes jolted the trajectory. The events of 11 September 2001, precipitated geopolitical tremors that would alter the district's mission for years to come. Support for the Global War on Terrorism became USACE's top priority. Many FED employees represented the Corps in Afghanistan and Iraq, where they rebuilt essential infrastructure in devastated and often dangerous locations. Their compatriots back in Korea took extra work on behalf of their deployed colleagues. At the same time, the district became more involved in environmental services and disaster relief, deploying personnel to other countries after tsunamis, landslides, and hurricanes.[4]

To manage its operations more effectively, the district implemented USACE 2012, a Corps-wide initiative to streamline and integrate resources across the organization. At the heart of USACE 2012 was the concept of "One Corps"—the idea that because each USACE element, including FED, had distinct responsibilities, together they formed an interdependent, interlocking whole. The initiative encouraged Corps divisions to build centers of expertise, or "Regional Business Centers," and to share these strengths through Regional Integration Teams. USACE 2012 envisioned linkages throughout the Corps by specialized groups called Communities of Practice. As an example, a project engineer in Korea could tap into a global network of other USACE project engineers to help solve a particular problem. In the words of FED Commander Francis Kosich, "2012 aligns, eliminates stovepipes and redundancies, and offers a powerful networking source for tapping into the entire Corps regardless of your specialty and/or particular challenge."[5]

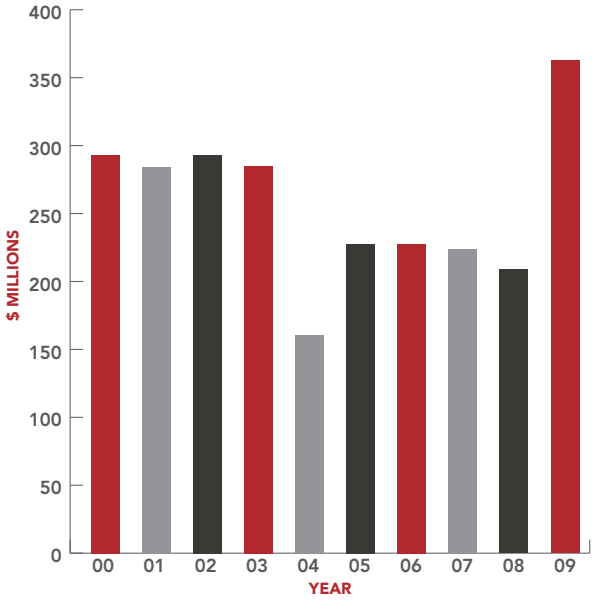
The district also implemented other creative measures. In 2005, it initiated a new contractual process, Multiple Award Task Order Contracts (MATOC). Normally, FED awarded design and construction contracts separately. Under MATOC, the district contracted with six joint venture design and construction firms, allowing greater flexibility in executing design-build contracts. Another tool was the "charrette" process—an intensive, on-site, planning and decision-making session among all stakeholders in a given project. Charrettes incorporated many viewpoints and allowed for a common vision among all interested parties. The results included greater efficiency, lower costs, and a better product. The process added one more option for FED to handle a rising workload of ever greater complexity.[6]

Even with a strong workload, FED came to face major uncertainties about the future of the U.S.-ROK alliance, particularly questions about the stationing of American forces. In 2002, ROK President Roh Moo-hyun began a push to reduce Korea's dependence on the U.S. military. He found willing supporters

in the George W. Bush administration: "It is time to rearrange the relationship and put the burden on the South Koreans," U.S. Defense Secretary Donald H. Rumsfeld wrote in 2002. "We do need to rearrange our footprint there." Over the next several years, the United States reduced its troop presence from approximately 39,000 soldiers to 28,000 and made plans to realign its forces and facilities, during which time many FED projects were placed on hold. The district's workload declined as these projects were suspended or canceled because of potential troop relocation, and the value of total construction awarded by FED dropped from $338 million (2002) to $184 million (2004).[7]

Ultimately, the U.S.-ROK alliance negotiations resulted in a massive construction boom for the district, its largest ever. The Yongsan Relocation Program complemented the Land Partnership Plan, a related initiative aimed at consolidation of American installations across the peninsula. Most significantly, the United States agreed to move its forces out of Yongsan Garrison, South Korea's largest American base, which occupied almost an entire square mile in central Seoul. In exchange, the ROK agreed to provide additional land surrounding Camp Humphreys, where, under FED supervision, a new hub for U.S. forces took shape. Together with Kunsan and Osan air bases, FED began to transform Camp Humphreys into a major center of U.S. military activity, creating a new city from the ground up. Ultimately, the new garrison at Humphreys would occupy 3,454 acres, housing precisely 1,111 families, or about 45,500 people. By the late 2000s, the Yongsan Relocation Program was not only the district's most expansive endeavor, but also the largest military construction program in the entire Corps of Engineers.[8]

FED workload, 2000–2009

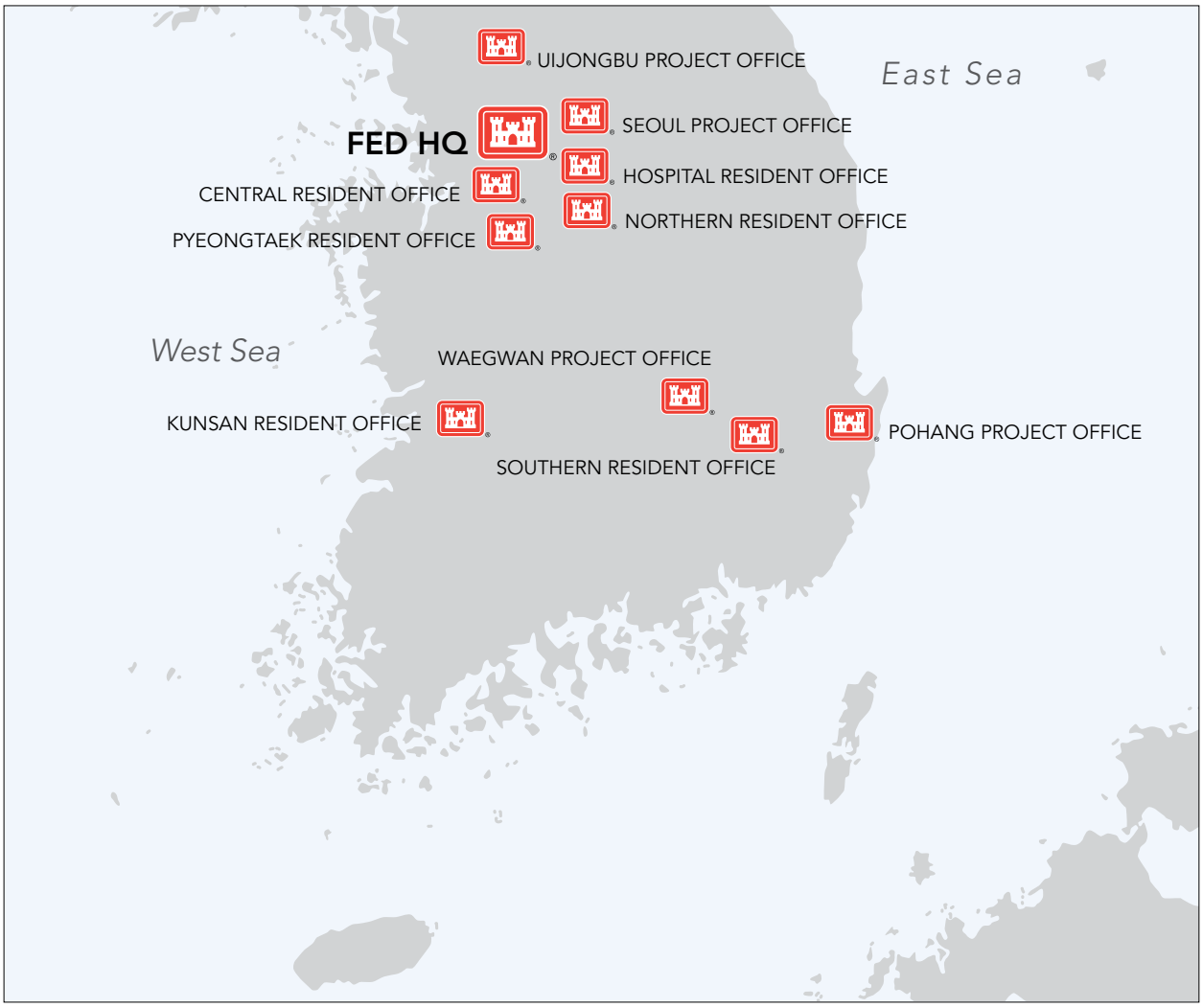


Graph of estimated construction placement totals based on data in FED-PAO Annual Reports

FOCUS ON QUALITY OF LIFE

A major focus throughout the 2000s—indeed, over the district's entire history—was improving the quality of life for U.S. service members and their families. Since the 1950s, FED had built and renovated barracks, family housing, schools, fitness centers, and other amenities across the peninsula. However, just as the U.S. military presence in Korea was an ongoing national commitment, so too was the task of maintaining and modernizing the facilities where American personnel lived, worked, and relaxed. The conditions, wrote FED Commander Gregory Kuhr, remained "well below the standards they are accustomed to back in the U.S. Quonset huts, barracks with gang latrines, poorly heated and cooled buildings, [and] motor pools without hard stands" were all too common. Although FED had made great strides in improving these conditions

USACE FED office locations ca. 2007.



over the years, the work was never done. Over time, U.S. facilities became old and outdated, necessitating new and better solutions for the future.[9]

Yongsan Garrison in Seoul was a microcosm of FED's activities. It symbolized the dual nature of FED's commitment to U.S. forces in Korea: to quality of life and to war-readiness. The garrison's defense structures were located mostly on the Main Post, while family-oriented facilities were on the South Post. The garrison showed other trends as well. For example, new construction designs were increasingly tall and compact, making the best use of limited real estate. In addition, much new construction at Yongsan was funded by the Korean government, meaning that, in the event of U.S. troop removal, the ROK would already own the buildings. At Yongsan—and across the Korean peninsula—FED delivered barracks, family housing, health facilities, schools, and recreational assets.[10]

Barracks and Dormitories

Early in the 2000s, barracks upgrades for the Army and Air Force made up a significant portion of FED's workload. In 2000, for example, the district oversaw some $53 million worth of barracks upgrades, and by 2001, FED had delivered major renovations on fifteen barracks at Yongsan alone. The district also oversaw renovations of buildings at Pyeongtaek and Daegu, giving soldiers comfortable living quarters, complete with laundry rooms, recreation areas, and upgraded utilities.[11]

In 2003, the barracks renewal program surged, with major work at Camp Casey, where a total of eighteen units were slated for renovation. Project leaders viewed the upgrade effort as "one of the most successful FED programs in the Casey Enclave," in which older buildings were given new life through cost-effective overhauls. The district also performed rehabilitation on Navy facilities, supervising the renovation of bachelor quarters at Yongsan. In many places, upgrades such as these occurred simultaneously with new barracks construction, providing a vital stopgap that stretched the value of U.S. construction dollars in Korea.[12]

New barracks construction, or "whole barracks renewal," afforded FED the opportunity to improve designs, materials, and techniques. At Camp Humphreys, for example, the district delivered three new barracks in 2000, providing improved living conditions for 632 soldiers. Each building was four stories high and featured mud room, exercise room, barracks kitchen, game room, and lounge. Living quarters were based on the Army's "Modified 2+2" layout: two soldiers to a room, each with its own separated sink and latrine. In older barrack designs, two rooms typically shared one bathroom—essentially, the 2+2 design doubled the number of bathrooms.[13]

The construction of new barracks at Camp Humphreys also featured an exterior nsulation finishing system. In this method, workers covered the concrete block structures with wire mesh and a two-inch coat of Styrofoam insulation, sealed by a layer of high-tech, colored concrete. The technique resulted in a stucco-like finish that never required painting, and it added to the interior square footage by insulating the building from the exterior. It also allowed contractors to install interior drywall flush against the structural concrete, making the walls virtually "soldier proof"—impossible to kick in. The project involved the installation of associated utilities, communications infrastructure, security systems, parking, storm drainage, and other improvements. FED also delivered new barracks at Yongsan Garrison and at Camps Carroll, Hovey, Henry, and elsewhere.[14]

The district's Air Force program was no less intensive. In 2004, FED delivered a $9 million officers' dormitory at Osan Air Base, followed by three standard dormitories for enlisted men completed in late 2004 and 2005. These five-story structures featured reinforced connections to prevent "progressive collapse," as well as blast-resistant doors and windows. By 2007, FED had delivered seven dormitories at Osan, having a total value of $72.8 million and providing 1,005 rooms for Air Force personnel. The eight-story Readiness Dormitory, the tallest building at Osan Air Base, cost $25.2 million alone. All the dormitories, including one turned over in 2009, incorporated an arrangement called the Collective Protection System to safeguard against chemical, biological, and radiological agents, enabling personnel to function without masks or other protective gear.[15]

A new dormitory at Osan Air Base, 2006.

At Kunsan Air Base, FED delivered a four-story, ROK-funded dormitory in 2005, followed by an eight-story dormitory at the air base in 2007. Other dormitories at the base received upgrades and repairs concurrent with new construction. Three additional dormitories were under way at Kunsan by 2008, providing more than 1,500 rooms at a total value of nearly $70 million. The district also oversaw development of a nine-story dormitory at K-16 Air Base, completed in 2007. The tower, built for unaccompanied Air Force officers, was the first project in the ROK completed under the build-to-lease concept—wherein private developers financed and constructed a facility for the exclusive use of U.S. military, which in turn leased the building on a "pay as you go" basis. The build-to-lease concept reduced up-front costs to the U.S. Army and provided maximum flexibility in stationing forces.[16]

Family Housing

A major goal for U.S. military leaders across the ROK was "to vanquish the notion that coming to Korea is a hardship tour," remarked General Thomas A. Schwartz, commander at Yongsan Garrison. In 2000, however, some ninety-five percent of U.S. service members in Korea were on unaccompanied tours—but frequently not by choice. Many had families, but an overall lack of family housing led to separation from loved ones. Eighth Army leaders set a goal of increasing accompanied personnel in Korea to twenty-five percent by 2010. To help bring this vision to life, the district oversaw major family-housing projects at Yongsan Garrison, Camp Humphreys, and Osan Air Base.[17]

At Yongsan, FED awarded a family-housing project in 2002 on a design-build basis—the first such contract for new construction in the ROK—meaning that the developer (Pumyang Construction) was responsible for both design and construction of the facility, while FED provided supervision and oversight. A particular challenge of design-build was "not knowing what the end of the project is going to look like," said Ronald Hodges of FED's Northern Resident Office. Nevertheless, in June 2004 U.S. personnel

New family housing completed at Camp Humphreys, 2006.

celebrated the opening of Burke Towers, two five-story structures that provided housing for sixty families, complete with two parking garages, a basketball court, a playground, and a picnic area. Originally, planners had envisioned a ten-year program to construct 1,066 family-housing units at Yongsan, but the decision to relocate U.S. forces out of Seoul would shift the emphasis to Camp Humphreys and elsewhere.[18]

The second major location for family housing was Camp Humphreys, where a separate, $11.2 million program was under way. Workers broke ground in May 2000 for the first of three buildings, originally designed as a sixty-unit complex. U.S. military leaders, however, decided to increase the living area in each unit, resulting in a fifty-two-unit building and a ten-month delay to implement the revisions. In September 2003, FED delivered the first tower and awarded a construction contract for the second. By 2004, construction had begun on two identical eight-story, forty-eight-unit towers, with an ROK-funded underground garage for parking. In addition to these family-housing units at Camp Humphreys, more were yet to come. In all, they represented the U.S. Army's effort to "make Korea the assignment of choice" in overseas tours.[19]

The new family housing at Camp Humphreys created a need for other quality-of-life facilities. In 2006, FED coordinated the conversion of two old barracks and a metal building into a fully renovated elementary school, complete with new interiors, infrastructure, and landscaping. The same year, the district delivered a one-of-a-kind family aquatics center, which featured an Olympic-size swimming pool, a diving well, water slides, a splash pool, concession areas, and a performance stage. These additions were followed by a fitness center, a child development center, and other projects under the Yongsan Relocation Program, an initiative that would remake Camp Humphreys into a new metropolis.[20]

The district's third location for family housing was Osan Air Base, where families had been living in small, aging units, located on leased property near the base. In October 2003, FED launched a three-phase program worth approximately $92 million to

build three new high-rise apartment towers on the base. The first tower, a nine-story, 112-unit concrete structure, was completed in April 2006. The remaining two towers (ten and thirteen stories high, with 104 and 112 units, respectively) were ready for occupancy by 2008, giving many residents panoramic views of the Osan area and its flight lines. Also included in the project were three general officers' quarters, ten senior offices' quarters, a parking garage, a swimming pool, and a housing warehouse. Overall, the program added 341 new family-housing quarters to the air base.[21]

121st Brian Allgood Army Community Hospital

Across the peninsula, the district presided over the construction of a range of quality-of-life construction for U.S. forces: health care centers, recreational facilities, schools, and infrastructure upgrades. One of the largest and most challenging undertakings was the refurbishment of the 121st General Hospital in Seoul. This facility, originally the 121st Evacuation Hospital, had served continuously in Korea since arriving in 1950 as a semimobile hospital, and as a permanent facility constructed under FED's supervision in 1959. Re-designated the 121st General Hospital in 1994, the facility had undergone several renovations over the decades. Yet it required major upgrades in the 2000s to meet standards set by the Joint Commission on Accreditation of Healthcare Organizations, including fire safety, indoor clean air, and asbestos. In addition, the hospital required more space and better efficiency to keep pace with the increasing needs of the U.S. military family.[22]

Completed family housing construction at Osan Air Base, 2007.

So large and complex was the hospital renewal effort that FED established a Hospital Resident Office devoted exclusively to that program. The district's task involved demolition and replacement of the hospital's oldest section, followed by major renovations of the more recent additions. Work had to be carefully phased in order to keep the hospital operational at all times, with construction areas isolated from active patient areas by fire-rated, environmentally sealed construction partitions. General Leon J. LaPorte, USFK Commander, recognized that hospital reconstruction, with its many technical aspects, was "the most complex construction project there is."[23]

The district awarded the first phase of the project in June 2001. Demolition of the old wing was complete by spring 2002, and FED oversaw construction of a new utility plant and a larger, two-story addition to replace the old structure. When work concluded in April 2006, the $39.1 million project provided a 122,637-square-foot addition (to replace the old wing, approximately 97,000 square feet), upgrading the hospital with a combined ambulatory care clinic, a garden area, top-flight operating rooms, and an intensive care unit.[24]

Phase 2, awarded in 2005, was a $26 million, project using operations and maintenance funds to upgrade numerous medical departments. The Emergency Department, for example, received a new decontamination room to handle nuclear, biological, and chemical emergencies. Also included were new overnight rooms, research labs, X-ray facilities, and an emergency room. In addition, the hospital was fitted with blast-resistant doors, and vehicle stand-off distances were among the antiterrorism measures considered in the overall design. FED completed the second phase in November 2009. The final phase, which proceeded into 2010, was a $4.3 million upgrade to clinical areas. Through FED's renewal effort, the old 121st Evacuation Hospital was transformed into the Brian Allgood Army Community Hospital.[25]

Health, Recreation, and Other Projects

The district enhanced housing improvements for U.S. forces with other amenities to boost their quality of life. In Seoul, noted one observer, there were "upgrades, renewals, renovations, and new construction in almost every corner of the Yongsan South Post and Main Post." In conjunction with barracks improvements and family housing, FED supervised construction of a fitness complex, a community activity center, four multipurpose sporting fields, and a replacement for the existing Balboni Theater. In addition, the district delivered supporting infrastructure as needed: utilities, communications, lighting, fire protection, fuel-storage tanks, parking, drainage, landscaping, and more.[26]

One high-profile project was an overpass connecting Yongsan Garrison's Main Post and South Post. The $10.3 million project was designed to increase force protection—personnel would no longer have to show identification twice as they passed between gates—and also to ease traffic congestion on Itaewon Ro, the main road between the posts. Construction began in early 2003, and despite heavy weather, FED delivered the project on 31 December 2003, six months ahead of schedule. Capable of accommodating vehicles as large as commercial buses, the two-lane vehicle and pedestrian overpass included a heating system to melt snow and ice in winter months. In 2004, the district awarded a follow-on contract to provide a vehicle search area to this vital linkage.[27]

The Yongsan overpass allowed USFK to cross the base with ease, negating the numerous checkpoints used before the overpass was installed.

Elsewhere on the peninsula, Camps Walker and Carroll were also beneficiaries of FED quality-of-life projects. At Camp Walker (near Daegu), the district oversaw a new health care clinic built between 2000 and 2003. FED contractors converted two old buildings (one a former commissary) into a modern health clinic, complete with an urgent-care center, trauma rooms, and other medical services. Camp Walker also received a top-to-bottom renovation of its dental clinic, originally built in 1959. Starting in late 2004, District contractors replaced about ninety-five percent of the original building. In early 2006, the Bodine Dental Clinic opened as one of the largest dental clinics in Korea. Also at Camp Walker, FED oversaw a new Army lodging building for temporary support personnel, a new water tower, and other improvements. Additionally, the district oversaw an $8.2 million replacement of Daegu Elementary/High School with a new two-story building, including a gym addition, completed in August 2007.[28]

At Camp Carroll, FED delivered a new child development center in 2003 and a lodging facility for temporary and in-process personnel in 2006. That year, the district began an extensive recreation-improvement project, using non-appropriated funding provided by the Army. Over the next several years,

The Strike Zone bowling center at Camp Carroll, 2008.

contractors at Camp Carroll completed a swimming pool (2007), a multipurpose athletic field (2007), a bowling center and dining club (2008), and a community activity center (2009). Together, these projects represented significant improvements in the quality of life for U.S. personnel and their families.[29]

Osan Air Base was another prime location for quality-of-life upgrades. For example, FED delivered a new $4 million bowling center in early 2000. Another high-visibility project was the Turumi Lodge, a 350-room building for in-process personnel and guests, opened in March 2003. Constructed beginning in late 2000 using non-appropriated Air Force funds, the lodge was likened to a "first class, five-star hotel," which FED Commander Frank Kosich called the "best looking lodge on the peninsula." The district also supervised an addition to the Osan fitness center, completed in 2003, and it orchestrated a two-year renovation of the Osan commissary, which reopened in 2005. FED also delivered an indoor swimming pool complex in 2006, to complement the three new family-housing towers under construction at the air base.[30]

Throughout the 2000s, FED was responsible for still other improvements at U.S. installations across Korea. From an activity center at Camp Page to infrastructure upgrades at K-16 Air Base, the district provided what was needed, where it was needed, and when it was needed. By the mid-2000s, FED had launched a raft of other quality-of-life projects at Camp Humphreys as part of the YRP. [31]

FOCUS ON WARFIGHTING CAPABILITIES

Many FED projects in the 2000s directly supported the warfighting capabilities of U.S. forces in Korea. At Yongsan, the district undertook a new headquarters for the Eighth Army, while maintaining and improving training grounds in the forward area.. By the mid-2000s, FED's warfighting projects were sited in fewer bases than in years past. As the U.S. military realigned its forces in Korea, projects tended to focus on enduring hubs of activity, particularly Osan and Kunsan air bases. Projects at Chinhae and other locations rounded out the workload. Even as a major realignment of U.S.

forces began by 2004, FED remained committed to keeping American soldiers ready to fight.

Yongsan Garrison

Among the district's first war-readiness projects of the decade was a $2.7 million renovation of the Eighth Army Headquarters at Yongsan. Originally built by Japanese forces in the 1920s, the building in 2002 still showed on its gables the black star of the Imperial Army. FED sought to preserve the historical character of the classic two-story brick building, while at the same time completely refurbishing the interior to make way for open-bay workspaces and a grand lobby with marble flooring. The district issued its notice to proceed in September 2001, and demolition of the interior began January 2002.[32]

The old Eighth Army Headquarters at Yongsan, 1974, with a Japanese imperial black star on the dormer.

The Eighth Army Headquarters renovation was also remarkable for being the first "design-build" renovation undertaken by FED. The concept—also in use for new family housing at Yongsan—called for a private contractor to design and build the project, with FED in a supervisory role. Close coordination was essential. In one instance, the contractor's specifications did not require a sprinkler system, but the district saw the sprinklers as necessary. Good communication helped resolve such issues, and, despite user-requested modifications, multiple contractor involvement, and a compressed timeline, the new headquarters opened on 31 August 2002, on time and displaying excellent quality.[33]

FED also had an opportunity to use cutting-edge technology to combat a serious problem affecting the Yongsan Command Center Complex: water, which nearly saturated the walls in the basements and tunnels below the complex. During monsoon seasons, some tunnels flooded owing to seepage through cracks in the ceilings and walls. Some areas required bimonthly painting because of efflorescence (a white, fuzzy film), and black fungal growth on walls and on air vents was not uncommon. To combat the water-related problems, FED teamed with USACE's Construction Engineering Research Laboratory to install "electro-osmotic pulse technology," or EOP, a system utilizing electrical fields to draw water into surrounding soils. The system's installation was complete by May 2002.[34]

Another high-profile project at Yongsan involved the relocation of a U.S. military helipad. The impetus came from the National Museum of Korea, scheduled to move from Gyeongbok Palace to Yongsan in 2005. Curators and ROK officials had long expressed concern that vibrations from the

A new helipad installed at Yongsan, 2006.

existing helipad could damage artifacts, and that the helipad's close proximity (located in front of the museum) would create noise and security problems. After nearly seven years of negotiations, the U.S. and ROK governments agreed in May 2004 on a plan to move the pad, construct a new air-traffic control tower, and build a 21-foot sound-dampening wall. Funded by the ROK, the helipad reopened for use by U.S. and South Korean Forces in May 2005, and supporting facilities were complete by June 2006. The project enabled the return of 2.6 acres at Yongsan to the ROK government.[35]

Forward Area

In the forward area, near the DMZ, the district worked to improve training facilities in remote and rugged terrain. In 2000, FED made $6.7 million worth of upgrades at the live-fire range complex at the U.S. Army's Korea Training Center. Flooding in 1998 had damaged the complex's target-movers, soaked the underground wiring system, and submerged the transformers. The district's upgrades included reinforced box culverts for improved flood control, as well as multiple new live-firing positions. FED also delivered a maintenance facility, an after-action review facility, a dining hall, and four barracks.[36]

By mid-decade, under the Yongsan Relocation Plan, most U.S. personnel in the forward area were preparing to move south to Camp Humphreys. However, there remained plans to keep U.S. troops at Camp Casey, and also a need for "facility sustainment" operations at training facilities to keep U.S. troops ready for combat. In 2006, FED managed some $10 million in improvements to facilities and infrastructure at Warrior Base and the Rodriguez Range. The district managed fast-paced contracts for water system upgrades, utilities, and new buildings to replace the "tent cities" used by thousands of troops during annual training rotations. At Warrior Base, FED delivered a helipad, vehicle fueling and wash stations, and other support facilities and upgrades through 2009.[37]

Live fire exercises at Rodriguez Range, 2009. *Credit: U.S. Army photo by SGT Erik McCulley. UNC - CFC - USFK Flickr.*

At the Rodriguez Range, the district supervised construction of an urban assault course, consisting of five separate training stations, turning over the improvements in April 2007. FED also worked on the $6.3 million Yongpyong Digital Multipurpose Training Range and Live Fire Shoot House—custom training and simulation facilities for U.S. troops—and the attendant infrastructure. The district also supervised the $2.9 million installation of noise-abatement walls on the perimeter of the Rodriguez complex, completed in January 2009. FED further contributed to improvements at Camp Casey (dam repairs in 2005), Camp Red Cloud (road widening in 2007), the New Mexico Range (training facilities in 2007), and a few communications projects at remote mountaintop sites.[38]

Osan and Suwon Air Bases

Osan and Suwon air bases received warfighting upgrades in the 2000s, including runway repairs, aircraft shelters, munition storage igloos, Patriot missile support facilities, and administrative and operational buildings. At Osan, no problem was more persistent than runway deterioration. The runway was more than fifty years old and required continual repair work, administered by FED. In 2003, the district delivered new lighting and wider taxiways at Osan, but the repairs were unending. In 2006, contractors performed full-depth removal on more than 100 slabs on the main runway and taxiways. Smaller repairs were also needed, in addition to new joints, sealing, and airfield markings. Maintenance work continued throughout the decade at Osan to extend the runway's useful life, with plans pending for a second runway.[39]

Some defense improvements at Osan and Suwon were funded and awarded by the ROK, with FED in a supervisory role. Such was the case with third-generation hardened aircraft shelters at Osan to house A-10 aircraft. Between 2004 and 2007, the district oversaw six new shelters, each featuring 18-inch-thick reinforced concrete walls, fire suppression, and a backup generator. FED also supervised the renovation of twenty-two older aircraft shelters, providing new lighting, better electrical service, and structural maintenance. In 2006, Osan also received twelve modular, earth-covered munitions storage igloos.[40]

Osan and Suwon were also sites of new Patriot missile facilities. At Osan, FED delivered a $4 million vehicle maintenance facility for Patriot batteries

Preflight checks on an A-10 Thunderbolt aircraft during a security exercise at Osan Air Base, 2008. *Credit: U.S. Air Force photo by Staff Sgt. Lakisha Croley. UNC - CFC - USFK Flickr.*

in 2004, while Suwon received a series of Patriot launcher revetments (for long-term equipment protection) in 2005, accompanied by supporting structures such as a tactical operations center and a ready room. These improvements, funded by the ROK government, were followed by additional revetments at Osan and Suwon in 2006 and 2007.[41]

Administrative and operational facilities included the $6.2 million 35th Squadron Operations Facility at Osan. Completed in December 2003, it could withstand bomb blasts, chemical attacks, and other assaults. The district completed a two-story, secure facility within the structure in 2009. Also notable was Osan's $8.8 million vehicle maintenance facility—the largest of its kind at any Air Force installation—which FED turned over in September 2005, well ahead of schedule. Other projects at Osan included the renovation of the Seventh Air Force Headquarters building (2008), a $17.2 million addition to an existing aircraft operations and maintenance facility (2008), and a $3.6 million war-gaming facility (2009). The district also awarded a contract to build a consolidated deployment-processing center/passenger terminal.[42]

A maintenance and operations facility completed at Osan Air Base, 2005.

Kunsan and Kwangju Air Bases

Other defense construction occurred at Kunsan and Kwangju air bases, which received upgrades to aircraft shelters, better communications infrastructure, new missile facilities, and numerous other improvements. An urgent project emerged early at Kunsan, which in 2003 still relied on a deteriorated light-gauge railroad to receive munitions. The old spur could not keep pace with advances in containerized shipping and aircraft technology. Consequently, the Air Force required a new spur and offloading area to handle the concentrated weight of containerized ammunition delivery systems (CADS), which could endure all weather. FED had only two months to complete the project design and less than six months to award the construction. The project was ready by January 2004, and the district kept Kunsan ready for combat.[43]

Between 2004 and 2006, FED oversaw a host of significant projects at Kunsan, starting with the construction of thirty standard munitions storage igloos. Each was built on a reinforced concrete slab and was fitted with precast walls and roof panels, metal doors, an earthen berm, and an intrusion-detection system. The district turned over this $17.9 million project in September 2004. FED also took on a program to repair a number of hardened aircraft shelters at the base. Contractors replaced drive units and controllers for the heavy shelter doors, in addition to upgrading floors, door tracks, and security systems. The $7 million project was finished in October 2006. The district oversaw other projects at Kunsan funded by the ROK. These included a $1.3 million facility to handle POL, completed in April 2006; a $2.8 million replacement of the existing radar approach control (RAPCON) facility, completed in November 2006;

and construction of a $4.6 million missile-maintenance facility (for missile receiving, assembly, testing, and storage), completed in August 2006.[44]

Later in the decade, FED managed an assortment of smaller projects at the air bases. At Kwangju in 2007, for example, the district supervised the replacement of the taxiway lights around the aircraft ramp, which required new underground electrical conduits, manholes, and control wires. Kunsan, meanwhile, received an upgrade to its electrical switch station in 2006, as well as taxiway repairs (2008), a new microwave tower (2008), and a vehicle inspection facility (2009). The district also oversaw construction of a tactical operation center for a Patriot battery site at Kunsan, which began in 2009 with ROK funding.[45]

Other Projects

The district supervised a number of war-readiness programs that were unusual in their nature or location. One such initiative was a $32 million renovation of twenty-five aircraft hangars throughout Korea, a project requested in 2000 by the 19th Theater Support Command. FED contractors first surveyed the hangars to determine what repairs were needed for the electrical, mechanical, architectural, plumbing, and fire-safety systems at each facility. By 2002, the renovations were proceeding. Since only three hangars could be "down" at any time, FED had to sequence the repair work carefully.[46]

The hangar renovations substantially improved working conditions for U.S. personnel. Workers went

Members from the 35th Aircraft Maintenance Unit tow an F-16 Fighting Falcon into a hangar. *Credit: U.S. Air Force photo by Senior Airman Jonathan Steffen.*

The new headquarters for U.S. Naval Forces in Korea, at Chinhae, 2009.

from "having to wear heavy coats inside the hangars," noted FED Resident Engineer Greg Reiff, "to working in 'shirtsleeves' in the middle of winter due to the improvements in the insulation and heating systems. They told us they had to use flashlights out in the open hangar bay before, to see their tools, manuals, and parts. Now they don't." Many of the hangars under the initiative were at Camp Humphreys and Camp Page.[47]

FED also oversaw new hangar construction, funded by the ROK to support helicopter maintenance operations. The first hangar, at Pohang Navy Base, provided a weatherproof environment for the removal and replacement of rotor heads, aircraft engines, and rotor blades. The 24,000-square-foot building cost $32 million and was complete by 2004. The same year, FED supervised another ROK-funded hangar at K-2 Air Base in Daegu. Construction involved renovation of an existing structure in addition to new facility, delivered in May 2005.[48]

Other projects included building a sensitive compartmented information facility in Chinhae, completed in 2004, and "hardening" of tactical communications infrastructure at Command Post Tango, an $11.8 million project designed to allow the facility to survive military or terrorist attacks, scheduled for completion in 2005. At Camp Carroll, FED supervised construction of a $15 million, 52,000-square-foot vehicle maintenance center. Finished in 2008, the facility was equipped with sixteen maintenance bays, four 30-ton cranes, and eight 50-ton floor lifts. In 2009, FED delivered a new headquarters building for the Navy at Camp Mujuk, as well as a new Navy administrative headquarters at Chinhae.[49]

Many FED members volunteered to help rebuild Iraq.

FED AND THE GLOBAL WAR ON TERRORISM

The terrorist attacks of 11 September 2001 shook FED no less than the rest of the world. Reactions among district employees were equally varied, ranging from shock and outrage to defiance and resolution. In the United States, USACE personnel were among the first to react in the aftermath of the crisis. Wrote Chief of Engineers Robert B. Flowers: "From the moment of the attack, our team immediately responded in New York and at the Pentagon, doing what was needed and what was right." The terrorist attacks—and the subsequent American military interventions in Afghanistan and Iraq—added new responsibilities to the district's mission.[50]

Following major U.S. actions in those countries, the Corps helped to rebuild devastated infrastructures, which had, in many cases, also suffered from decades of mismanagement and neglect. Between 2001 and 2004, more than 1,700 military and civilian USACE personnel had deployed to Iraq and Afghanistan to support U.S. efforts. Throughout the Corps, USACE leaders urged their employees to volunteer for temporary assignments, with either the Gulf Region Division or the Afghanistan Engineer District. As incentives, USACE offered hazard and danger pay; premium pay for nights, holidays, and overtime; a relocation bonus; and other financial benefits. However, most FED members who volunteered did so for personal reasons.[51]

Among the first FED employees to volunteer was Kim Yong S., who arrived in Iraq by late 2003 in the wake of the country's U.S. occupation. In-processing began at Fort Bliss, Texas, with medical exams, safety and cultural briefings, uniforms, and gear. After arriving in Baghdad, Kim spent nights in makeshift quarters, or "hooches" (in his case, a converted office building), and days working in a cramped trailer. Workdays were at least twelve hours, often longer. As an electrical engineer, Kim helped design several power plants and distribution systems.[52]

By late 2004, at least five FED volunteers had returned safely to Korea. Among them were Edward Flint, a civil engineer who performed structural assessments of buildings, among other tasks;

Jimmie Moore, who worked on restoring oil infrastructure; and Doshin Park, who worked on aircraft parking projects and hospital renovations. Back in Korea, some FED employees took on additional work to cover for their colleagues, while others supported the volunteers by developing engineering solutions for application in Iraq or Afghanistan. "The people who pick up the workload for the volunteers are hometown heroes," remarked District Commander Janice L. Dombi. "Volunteers of all skills are required in the war and FED is committed to supporting this mission."[53]

In Iraq, USACE and FED volunteers undertook a wide range of programs, including both community projects (such as schools, clinics, hospitals, rail stations, and police stations) and larger public works (including power facilities, roads and bridges, border crossings and forts, and communications and utilities systems). By 2005, USACE had delivered more than a thousand projects in Iraq, worth approximately $1.1 billion. As a result of this huge workload, the pace was often furious and the work sometimes dangerous. Nevertheless, FED's Larry Drape described his assignment as "one of the most enlightening experiences of my life, both personally and professionally."[54]

In Afghanistan, conditions were somewhat different from Iraq. The country had little to no infrastructure, and USACE focused on building facilities for the Afghan National Army and Afghan Nation Police. FED's Donovan D. Ollar served as resident engineer for the Kandahar Resident Office (later an area office), located a treacherous eight- to ten-hour drive south of Afghanistan Engineer District headquarters in Kabul. His main task was to build temporary bases for Afghan soldiers. The first step was to build a secure perimeter using fabric-lined, wire frameworks filled with dirt and rocks for blast protection. Next, sites were swept for unexploded ordnance and old Soviet mines. Only then could buildings and infrastructure take shape. Each camp had to be self-sufficient, with its own power plant and wells. The basic task order for a temporary base was around $50 million.[55]

Another FED member, Captain Daniel Galvan, was in charge of building approximately $70 million worth of small forward-operating stations for the Afghan National Police. The sites covered an area of about 750 miles in seven provinces, providing security in border areas and at critical road intersections. Like many other facilities in Afghanistan, they had to be totally self-sufficient. Galvan worked with local Afghan construction firms, teaching them USACE standards and techniques. It reminded him of Korea. "Many days I found myself thinking about FED and how it must have been some 50 years ago when FED first started," he wrote. The Afghanistan Engineer District, he added, "faces the same challenges and with time will get the same rewards as FED enjoys."[56]

By 2007, a total of forty-six military and civilian FED employees had been deployed to support the Global War on Terrorism. In particular, the district's soldiers (of which there were seven at any time) typically completed at least one six-month deployment in Iraq or Afghanistan, and often returned for two or three tours. Other district employees picked up the slack. One FED volunteer, Jorge Rosa, brought back an American flag flown in Kabul to show his gratitude, presenting it to District Commander Dombi. "Hoisting the American flag in the face of the enemy epitomized the dedication and commitment of all Corps employees to the Global War on Terrorism," Rosa said.[57]

FED members who served in Afghanistan, 2008.

The Global War on Terrorism wrought other changes as well. In construction, FED incorporated antiterrorism protections into planning (such as vehicle stand-off distances), and also used materials and methods to protect U.S. soldiers and civilians (such as blast-resistant doors and windows). The district also incorporated antiterrorist/force protection upgrades at U.S. military installations. At Osan Air Base, for example, FED provided vehicle barriers, surveillance systems, and enhanced search capabilities, including kennels for bomb-sniffing dogs. Additionally, the district offered new services, such as Force Protection Surveys—designed to help base commanders and facility managers identify vulnerabilities and minimize the risk of mass casualties. The district's culture also changed, especially its attitude toward contingency planning. "Maybe it was 9/11, maybe it was the War on Global Terrorism, or maybe it was Iraq," mused Patrick Crays, FED's acting chief of Security, Plans, and Operations, "but change occurred largely due to the efforts of the Command Group."[58]

WAR-READINESS EXERCISES

Regular military exercises have been a way of life in South Korea since the end of the Korean War. ROK and U.S. forces jointly rehearse numerous contingency operations regularly, to be ready in case of conflict. FED, unlike most other USACE districts, must be able to respond quickly in a wartime emergency, earning FED the title of "The Corps' Maneuver District." The district began formally participating in contingency exercises as early as the 1970s, when FED began developing contingency plans to guide its actions in the event of hostilities. In such a scenario, the district's support would be vital—from repairing damaged infrastructure to maintaining communications systems to building emergency bases—in short, providing to U.S. forces the wherewithal to prevail.[59]

In 1979, the district compiled its first official list of noncombatants associated with FED, in order to facilitate their evacuation if necessary. The district also participated in war-readiness exercises, such as Proud Spirit and Ulchi-Focus Lens (UFL), which helped FED identify areas for improvement in order to ensure a smooth transition to wartime footing. Weapons, ammunition, and bayonets were assigned to designated district personnel, and in 1981, these items were relocated from Camp Coiner to the FED compound, where they were held under twenty-four-hour security.[60]

By the 1980s, Exercise UFL was the largest U.S. command-post exercise in the world. Sometimes district personnel participated in field-training drills, such as evacuation operations for noncombatants, while other exercises were administrative in nature, ensuring a smooth transition under duress for decision-making and communications. The district continues to participate in this exercise, renamed Ulchi Freedom Guardian (UFG).[61]

In addition to UFL/UFG, beginning in 1996, FED joined the U.S. military's annual Reception, Staging, Onward Movement and Integration (RSOI) exercise, further formalizing FED's operational role, should war erupt on the Korean peninsula. The RSOI exercise was designed to prepare USFK to receive additional troops and equipment and successfully integrate them into its operational and force structure, ensuring a seamless transition to war. FED commander Colonel Francis Kosich wrote that the district held "a unique position, that of being able to provide engineering capability in the early stages of war on the peninsula."[62]

The Global War on Terrorism brought a cultural shift to the district's approach. Traditionally, only a handful of FED support personnel had participated in contingency planning and preparations, but by 2003, more than 160 mission-essential civilians were involved. All division chiefs were required to participate in the two-week-long

Sgt. Neil Hagy (right), a 501st Special Troops Battalion master driver, checks in family members at the noncombatant evacuation operations tracking system station during a NEO exercise, Courageous Channel, at Kelly Gym at Camp Walker, 2011. *Credit: Photo by Sgt. Daniel Wallace. US Army Online Images.*

UFL exercise—a military crash course that trained FED managers in wartime operations. "On a daily basis, all of the district's top leadership had the distinct pleasure of sleeping in tent-city and eating in the chow hall with some of our Nation's finest troops," noted Patrick Crays, Office of Security, Plans, and Operations. This commitment from FED leadership filtered down to training at an individual level, a responsibility taken on by district division and branch supervisors.[63]

As part of its war-readiness preparations, the district has improved its ability to handle rapid troop buildups. For example, a Theater Construction Management System (TCMS) database contains standard designs for everything from medical facilities to troop housing to prisoner-of-war (POW) camps, which need only be adapted for specific sites. FED also keeps a database of local materials that can be substituted for some of the U.S. materials used in TCMS designs. The district also has a specially trained Base Development Team (BDT) to respond to requests for engineering projects during contingencies. In addition, FED staff work with contractors to source local materials, use GIS data and commercial imagery to identify building sites, and have FEST for on-the-ground reconnaissance and assessment. FED's Information Management Office uses tele-engineering systems to securely communicate and share information with USACE and other relevant units on and off the peninsula.[64]

Because the majority of its employees are civilians, the district also participates in the semiannual Exercise Courageous Channel, which simulates a noncombatant evacuation operation (NEO) in the case of a natural disaster or wartime emergency. During an evacuation, U.S. military dependents and nonessential FED civilian personnel are expected to report to an evacuation site with required documentation such as passports, powers of attorney, and inventories of household goods. In 2000, more than 1,500 people reported to just one Evacuation Control Center (ECC) in Seoul. During a real emergency, noncombatants would be evacuated from the Korean peninsula to Japan or the United States.[65]

These readiness exercises, coupled with FED's regular construction and engineering activities, ensure that the district is always prepared to "build for peace, but think war."[66]

EMERGENCY DISASTER RELIEF

In the aftermath of the 1998 Seoul floods, FED had executed a major disaster relief program in Korea. In the 2000s, the district would again be called upon to provide critical services to victims of natural disasters—but this time not on the Korean peninsula. Instead, FED personnel answered the call in Guam, Thailand, Indonesia, Sri Lanka, the Philippines, and the U.S. Gulf Coast, responding to a series of devastating typhoons, tsunamis, landslides, and hurricanes. During these times of crisis, district personnel stepped out of their normal routines to provide assistance to people in need. Working alongside their USACE colleagues from other districts worldwide, more than a dozen FED volunteers deployed their skills and talents wherever the need was greatest.[67]

In 2002, Typhoon Chata'an flattened islands in the South Pacific, including Guam and the Micronesian island of Chuuk. Within twenty-four hours, Ken Pickler, FED's chief of transportation, was on his way, along with eighty-five other USACE employees from twelve districts. Their task was to restore power, provide generators, remove debris, and distribute ice and water. Pickler's talents as a logician were essential: the Pacific Ocean Division, working with the Federal Emergency Management Agency (FEMA), tasked him with assessing the size of the team required, determining the quantity and type of supplies, and dispatching responders to the right places. He was also responsible for staging operations and maintaining property records.[68]

Upon arriving in Guam, Pickler found his hotel room packed with other guests, from the

Damage in Dededo, Guam, caused by Supertyphoon Pongsona, 2002. Typhoon Chata'an hit the island the same year. *Credit: FEMA News photo by Andrea Booher.*

Landslide in the Philippines, 2005.

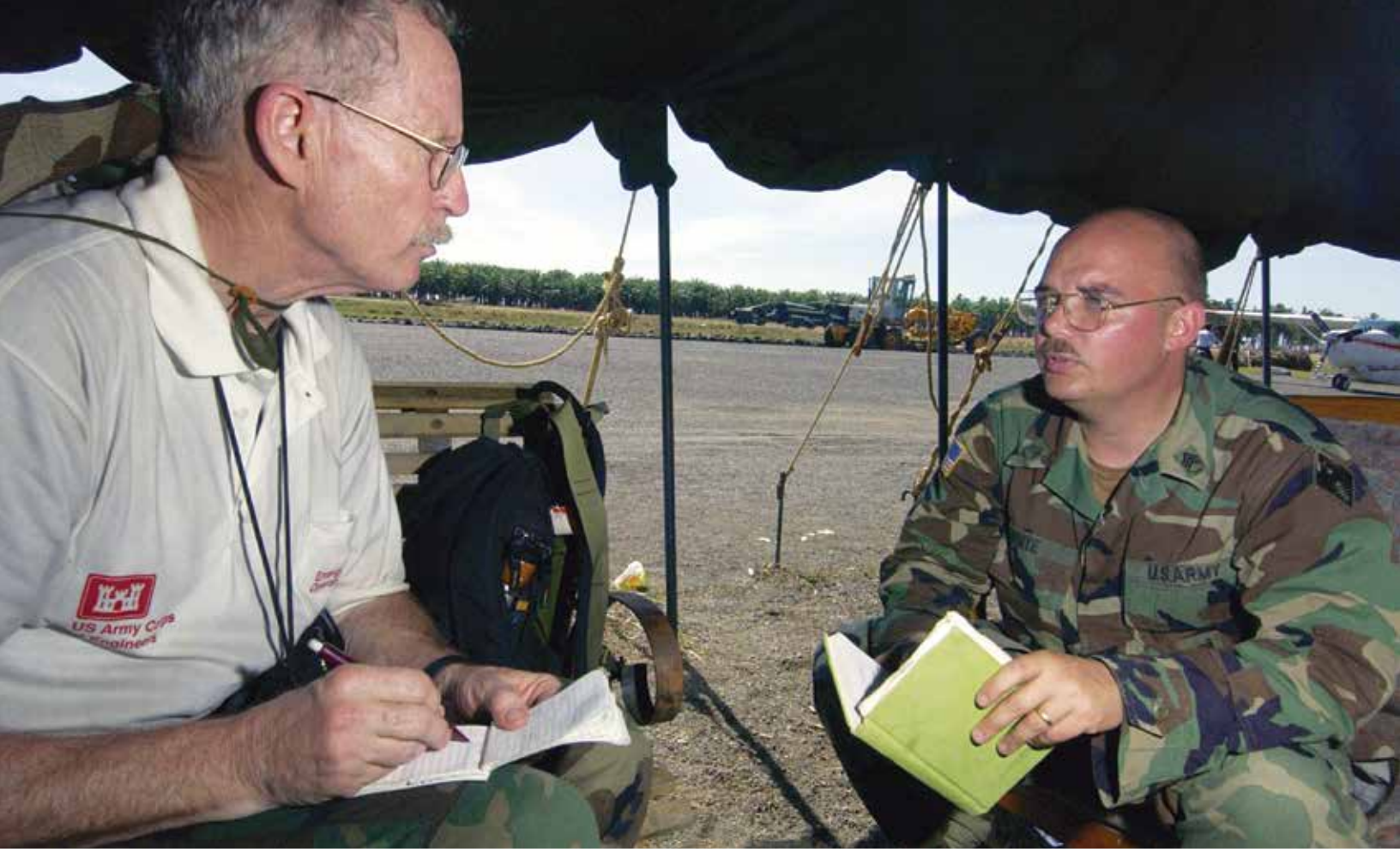
bed to the floor, as people congregated wherever there was still power and water. In Guam, most of the work involved infrastructure repairs to water, sewage, and electrical systems. On Chuuk Island, the typhoon had triggered landslides, and many homes were destroyed. People were desperate for basic necessities, and USACE helped to provide tents, water, and rice. Pickler's team worked twelve- to fourteen-hour days for fifty-seven straight days. By the time he left, the communities were regaining their footing. "I'm a logician," he said simply, "and when there is a need out there is when I'm at my best."[69]

In 2005, the district's disaster-response capabilities were tested around the globe. In the Philippines, FED personnel participated in landslide recovery operations, while in Thailand and Indonesia, tsunami recovery was the priority. One district volunteer was Edward Flint, a civil engineer from the Geotechnical and Environmental Engineering Branch. He arrived in Thailand in February 2005 to survey the damage before proceeding to Meulaboh, Indonesia, on the island of Sumatra. His assignment was to perform aerial damage surveys of Cut Nyak Dien airfield and other areas. Flint wrote:

> [W]e passed over surreal scenes of disaster that words cannot really describe. I can only say that from my perspective it seemed like a giant eraser had removed all traces of civilization along vast expanses of the Sumatra coast leaving only a dirty wet plain of brackish water, laid over coconut trees, and remnants of bridge abutments. Traces of the coastal highway appeared sporadically in between and very little other signs of the previous bustling society that inhabited this stretch of equatorial land. Once in a while curls of smoke reached into the sky from the survivors burning the leftover debris.

The mission proved to be valuable, as Flint's team identified more than ninety bridges or causeways that were either demolished or needed major repairs. He recalled the episode as "sobering surpassing other natural disasters I have experienced during my tenure as a Corps employee." He also traveled to Sri Lanka with other USACE volunteers to assess damage to port and harbor facilities, a water purification plant, and other facilities.[70]

Surveying tsunami damage, 2004.



U.S. Army Staff Sgt. Gary White (right) and Edward Flint, a geotechnical engineer, both with USACE, discuss their findings during an airfield assessment at the Cut Nyak Dien Airfield, Meulabah, Indonesia, 2005. *Credit: NARA RG 330, Combined Military Service Digital Photographic Files, 1982 - 2007.*

Closer to home for many Americans were the devastating North Atlantic hurricanes of the 2005 season. That year, more than 3,400 USACE personnel deployed to assist Gulf Coast communities from Florida to Texas, as a succession of major storms—Katrina, Rita, Wilma, and Ophelia—battered the U.S. coast. District volunteers deployed to flooded Baton Rouge and greater New Orleans for recovery efforts after Hurricane Katrina. One FED member recalled working twelve-hour days, seven days a week, for forty-five days to support debris-removal teams. "But we didn't mind," explained Ron Castanaga of the Construction Division. "People came to us and touched our hands to express their appreciation especially when they found out we came all the way from South Korea." He recalled the experience as "exhilarating." District volunteers provided a range of services, including operational audits to prevent fraud, waste, and abuse during the recovery effort.[71]

In Florida, FED volunteers deployed in the aftermath of Hurricane Wilma. In towns such as Clewiston and Naples, district personnel and other USACE members went door to door "blue roofing." In Operation Blue Roof, assigned by FEMA to the Corps, USACE personnel assisted storm victims by installing blue plastic sheeting on damaged residential roofs, allowing people to remain in their homes while awaiting repairs. District volunteers assessed damage to verify which structures qualified for the program, and they inspected contractor performance to ensure quality work. The work was not without hazards. Tom Kwiat of the Programs and Project Management Division summarized the dangers: "Downed trees, debris, some areas of flooding, some houses in very remote

Destruction from Hurricane Wilma, 2005.

locations with unpaved 'washboard' roads, dogs, biting ants, mosquitos in the evening . . . and there were some neighborhoods that were considered dangerous. So we had to be alert at all times."[72]

Despite the hardships, FED remained committed to disaster relief, even when the disaster was thousands of miles away. District Commander Janice Dombi took to having office calls with each FED volunteer—the "firefighters," she called them—prior to their individual deployments. She also praised the efforts of those employees who stayed behind to pick up the slack for their missing colleagues. At the same time, still other personnel were absent in support of the Global War on Terrorism, thereby doubling the strain on the staff in Korea. Through it all, the district performed as it always had: with determination, resilience, and dedication.[73]

LABORATORIES AND ENVIRONMENTAL SERVICES

With rising environmental consciousness and continued industrial growth in the ROK, FED's environmental mission expanded as well. On 1 October 2000, the district officially established

Operation Blue Roof helped to prevent further damage to structures as a result of Hurricane Katrina. *Credit: John Fleck / FEMA*

the Geotechnical and Environmental Engineering (Geotech) Branch within the Engineering Division. This new branch combined geotechnical engineering and water-well drilling services (previously performed under the old Foundations and Materials Branch) with environmental and laboratory services. In this regard, the Geotech Branch was

unique among USACE districts: it provided in-house field investigations and drilling services alongside comprehensive laboratory-testing capabilities for construction materials, soils, and asbestos.[74]

The branch had an Environmental Services Section, a Water Well Services Section, and a Data Management Section. Environmental services included site contamination investigations, testing for asbestos and lead-based paints, worker exposure issues, chemical analysis, water and soil studies, and hazardous waste sampling. The Environmental Services Section also furnished site-remediation designs, field monitoring, environmental training, and interpretation of environmental laws and regulations. In short, the section handled virtually any environmental issue related to construction, as well as some strictly environmental projects at U.S. installations, such as groundwater pollution near the Noksapyeong subway station in Seoul. By 2003, the Geotech Branch also had become the primary source for asbestos laboratory analysis for Army, Air Force, and Navy forces in Korea.[75]

In data management, the branch's services included web-based GIS mapping. Available in 2002 for use by U.S. forces and USACE personnel, the system provided satellite imagery, installation and topographic maps, soil boring locations, water well data, and the locations of underground fuel tanks. These features were also linked to pertinent geotechnical and environmental reports. "It's exciting because we are dealing with state-of-the-art technology," said FED geologist Pak Song-hyon. The Data Management Section also provided support for facility-management requirements across U.S. installations in Korea.[76]

The branch also continued FED's historic mission of providing and maintaining water wells for U.S. facilities. As of 2003, the Water Well Services Section maintained wells at all fifty U.S. installations across the Korean peninsula. Because U.S. forces were dependent on these wells for their water supplies—in total, some 10 million gallons of potable water daily—proper repair and maintenance was often urgent and always essential. "Sometimes people call my cell phone on Sundays or holidays, asking us to come up to some mountainous site outside Seoul because they don't have water," remarked section leader O Chin-sok. "And often we spend six or seven hours just driving there and the same amount of time to fix the problem." But regardless of the site location or time of need, FED never failed to deliver water-well services to meet customers' requirements.[77]

The Geotech Branch performed 119 foundation and pavement designs in 2000 alone. In addition, it encountered contaminated soil during foundation explorations for many design projects, and the branch's environmental engineers and chemists coordinated with clients to develop site remediation strategies. The branch also assisted USFK with removal and replacement of old fuel tanks, thereby preventing leakage, waste, and contamination across the peninsula. The branch's work was far-ranging, from inspection of a subway line in Seoul to a C-12 crash site near Pyeongtaek; from pile-driving off the Kunsan coast to biopile soil remediation at Camp Walker. This diversity of projects and sites reflected the growing need for the branch's services.[78]

By 2005, all three testing laboratories in the Geotechnical Branch—Asbestos, Chemistry, and Materials Testing—were fully accredited by USACE and outside organizations. In each case, FED's labs underwent rigorous checks on their written programs, quality-assurance plans, testing methods

and equipment, lab management, and the qualifications of district personnel. The first accreditation occurred in June 2003, when the USACE Materials Testing Center validated FED's Materials Testing Laboratory. This milestone was matched in September 2004 by FED's Chemistry Lab, validated by USACE's Hazardous, Toxic and Radioactive Waste Mandatory Center of Expertise. Finally, on July 1, 2005, FED's Asbestos Lab earned the Industrial Hygiene Laboratory Accreditation from the American Industrial Hygiene Association. "Accreditation gives our customers great confidence in the reliability and accuracy of this vital, health-related testing activity," said Geotech Branch Chief Doug Bliss, who worked at FED for a combined seventeen years. The district's laboratories and environmental services represented one more way in which FED provided excellent service to its customers.[79]

KOREA RELOCATION PROGRAM

In the mid-2000s, a single program came to dominate the district's workload: the $10.7 billion Korea Relocation Program, the product of decades of negotiations between the governments of the United States and the ROK. In essence, it was designed to strengthen the alliance by consolidating U.S. forces, returning land to the Korean government, and providing U.S. service members and their families with first-class living accommodations. To accomplish these goals, FED spearheaded one of the most ambitious re-stationing projects in USACE history.[80]

The Korea Relocation Program was a massive undertaking in both scope and budget. It envisioned concentrating U.S. forces into two enduring hubs: (1) the Southeastern Hub based at U.S. Army Garrison Daegu and Chinhae Naval Base and (2) the Southwestern Hub based at Camp Humphreys and Osan Air Base. Most U.S. facilities north of the Han River—including those in Seoul and in areas near the DMZ—would be relocated to Camp Humphreys, where FED would build the equivalent of a medium-sized American city from the ground up. In addition to significant engineering hurdles, the program presented an administrative challenge of considerable scale, involving the coordination of international government agencies and scores of private contractors. For all these responsibilities, FED was uniquely equipped.[81]

Land Partnership Plan (LPP) and Yongsan Relocation Plan (YRP)

The idea to consolidate U.S. forces in Korea was not new. Historically, there had been well over a hundred American military installations and sites scattered across the peninsula, their locations driven more by Korean War exigencies than by long-term strategic planning. By 2002, there still remained 104 U.S. bases and sites in Korea. This arrangement was notoriously expensive and inefficient—something FED knew all too well from its continual efforts to control overhead costs. Moreover, military technology, troop mobility, and Korea itself had changed dramatically since the 1950s, making U.S. base locations increasingly untenable.[82]

Intense urbanization in Korea magnified the problem, as U.S. camps and training areas that had once been isolated were swallowed by urban sprawl. Nowhere was this trend more pronounced than at Yongsan Garrison, Korea's largest U.S. base, which had been encircled by residential and commercial high-rises in modern Seoul. The garrison became a city within a city, with its own hospital, fire station,

police force, stores, schools, theaters, restaurants, recreational facilities, and utilities. It also employed more than 3,500 U.S. military and civilian personnel, plus more than 7,000 Korean military and civilian personnel. In addition, at least 3,500 lived on the property or in adjacent neighborhoods.[83]

As early as 1987, ROK and U.S. officials had contemplated relocating Yongsan Garrison and returning the land to the Korean government. In 1991, the allies reached an agreement to move U.S. troops out of Yongsan by 1996. However, due to high costs and the lack of viable alternatives for re-stationing U.S. personnel and facilities, the plan was scuttled in 1993. By the early 2000s, FED was making significant improvements at Yongsan, including barracks upgrades, a hospital renovation, new family housing, and recreational amenities. At the same time, the U.S. and ROK studied alternative locations for American forces.[84]

Global currents also moved toward realignment. Bilateral discussions in Korea fit within a broader reconfiguration of American forces. Changing force capabilities, strategic considerations, and budgetary constraints all militated toward greater efficiency. In addition, popular sentiment in Korea increased the pressure for change. "We are irritating the South Korean people," wrote U.S. Defense Secretary Donald H. Rumsfeld in 2002. "What we need to do is have a smaller footprint, fewer people, and have them arranged not so much in populated areas." The prospect of realignment also offered an opportunity to raise living conditions for U.S. personnel and families in Korea to the highest level.[85]

U.S. Secretary of Defense Donald H. Rumsfeld at Collier Field House, at Yongsan Garrison, 2005. *Credit: NARA RG 330, Combined Military Service Digital Photographic Files, 1982 - 2007.*

The first breakthrough came on 29 March 2002, when the ROK and U.S. governments signed the Land Partnership Plan (LPP). In essence, the plan was designed to do three things: consolidate numerous U.S. installations and training areas, enhance U.S. and ROK combat readiness, and improve public safety. Specifically, the LPP called for a reduction in the number of major U.S. bases (from forty-one to twenty-three, in exchange for ROK-provided land and new facilities); the return of most U.S. training areas to the ROK (in exchange for guaranteed American use of Korean ranges and training complexes); and "safety easements" to reduce the risk of accidental injury or death to civilians from military exercises or ordnance. The cost would be shared by the ROK and U.S. governments. FED Commander Francis Kosich hailed the LPP as "an historic landmark in the stationing of the U.S. military in Korea." The district facilitated the plan by starting a long-range master plan for future locations of U.S. facilities on the peninsula.[86]

Although the LPP was a major step forward, it did not resolve all relocation issues. Most significantly, it did not address the U.S. presence at Yongsan Garrison and elsewhere in metropolitan Seoul. In 2003, U.S. and ROK representatives entered into intensive negotiations to find a solution. Meanwhile, the district moved ahead with family-housing projects at Yongsan and Osan as part of the LLP. However, other projects were suspended or canceled, creating uncertainty about the district's position. Although a substantial workload appeared imminent, it remained unclear what shape the future would take.[87]

As negotiations continued, attention turned to the town of Pyeongtaek, near Camp Humphreys, about 40 miles south of Seoul. Although Pyeongtaek had a few high-rise buildings, the outlying area was a pastoral setting of rice fields, grape arbors, and cattle pastures. At Camp Humphreys, activity buzzed in anticipation of a big buildup. In 2003, FED was already leading some construction there, including a new commissary and a youth center. Also, to address the chronic housing shortage for approximately 4,000 U.S. service members and civilians already stationed at Camp Humphreys, the district launched construction of an eighty-room lodge, a new barracks, and the first stages of a 148-unit family-housing development. Major Anthony Mitchell noted in 2003 that "it would be hard to believe that this installation is just a few years removed from 'Quonset Hut' city."[88]

In October 2004, the U.S. and ROK governments signed the YRP, an agreement to relocate U.S. forces in greater Seoul to the rural area near Pyeongtaek and Camp Humphreys. The ROK agreed to provide land, facilities, and funding for the move. The relocation was to be completed by the end of 2008—subject to available funding and coordination between the ROK and local and regional authorities. The YRP also stipulated that all new construction would be built to American standards and requirements, ensuring that FED would have a major role in the transition.[89]

In practical terms, the YRP provided for relocation of U.S. service personnel scattered in and around metropolitan Seoul, while the LPP repositioned troops elsewhere, particularly those of the 2nd Infantry Division stationed north of Seoul. Both programs were intended to realign U.S. units strategically, reduce the overall number of U.S. camps on the peninsula, and return U.S. military land to the ROK government. Moreover, the programs represented an opportunity to provide new accommodations and amenities to U.S. service personnel

and their families. FED took responsibility for managing or supervising nearly every project stemming from these agreements.[90]

By 2005, relocation had begun at Kunsan Air Base, where the FED oversaw construction of a brigade headquarters, dormitories, and other improvements. Yet these activities would be dwarfed by the massive undertaking at Camp Humphreys. In 2004, the district worked to develop a master plan to transform the garrison—conducting flood studies, environmental assessments, utilities analysis, and siting of facilities. By 2005, the district had established the Korea Program Relocation Office (KPRO) to help carry out the transformation. Overall, for some 44,000 troops, family members, local employees, and contractors, U.S. Army Garrison Humphreys was planned as a comfortable and convenient place to work and live.[91]

Transforming U.S. Army Garrison Humphreys

As late as 2006, there were still skeptics who doubted whether the Korea Relocation Program would actually occur. After all, since the 1980s, previous initiatives to relocate U.S. forces out of Seoul had collapsed because of high costs and political-military difficulties. This time was different. "The Korean government is actually purchasing land at Camp Humphreys," observed FED Deputy District Engineer Mark J. Cain. "There is no logical reason to purchase land at this location unless we are relocating." FED's master plan for Camp Humphreys included family housing, soldiers' quarters, quality-of-life amenities, and specialized facilities such as a hospital, headquarters buildings, and command centers. "We are about to make history," Cain added. "This is an undertaking of real significance, a once in a lifetime opportunity."[92]

In 2005, on the original Camp Humphreys site, FED contractors were at work on the first six-story Army barracks in Korea. The $28 million project, completed in November 2006, was a twin barracks-dining facility in the camp's Zoeckler Station area. The combined facility could accommodate 408 soldiers in two buildings, and the 800-person dining facility (Red Dragon Inn) replaced the old Flaming Dragon, in service since 1963. At the ribbon-cutting, FED Deputy Commander John Loefstedt marveled that the land had once been a mosquito-breeding swamp. "But today it is home to the beautiful new barracks-dining facility complex . . . a true symbol of the Army's commitment to improve the quality of life for soldiers stationed here in Korea."[93]

Equally impressive were the family-housing towers going up at Humphreys. With thirty-three towers scheduled to be built at the garrison, some 2,500 additional families would call Humphreys home. "For 50 years this has been a single soldiers post," said Colonel John E. Dumoulin Jr., the garrison's commander. In July 2007, with the opening of a forty-two-family tower, major changes were undeniable. Gone were the rows of leaky tin Quonsets—more like sheds than homes, ovens in the summer and ice boxes in the winter. They were replaced by playgrounds, barbeque pits, and a school down the street. One new tenant, Major Lan Dalat, observed that, for soldiers serving in Korea, family housing encouraged more commitment, continuity, and peace of mind. "It's a major benefit," he said, "being with my wife and kids." For unaccompanied personnel, construction also focused on multistory towers, reflecting the strategy of "building up instead of out" to maximize the usage of the land available.[94]

An elementary school at Camp Humphreys, 2007.

Outside the old garrison, a different kind of transformation was taking shape. By 2006, the Korean government had acquired 2,328 acres adjacent to Camp Humphreys to allow for its expansion.[95] The acquisition nearly tripled the installation's size, from 1,210 acres to 3,528 acres—an area larger than Los Angeles International Airport.[96] The site was sectioned into parcels, with the United States responsible for 775 acres (Parcel 1 and Parcel 2A) and the ROK responsible for 1,553 acres (Parcel K and Parcel B). On the U.S. parcels, FED provided full contract management and quality assurance; on the ROK parcels, the district provided "construction surveillance," an oversight role designed to ensure the quality of the work. On 17 November 2006, FED awarded its first land-development contract at Humphreys, for the 205-acre Parcel 1.[97]

The newly acquired land extended west from Camp Humphreys to a crook in the Anseong River, a floodplain subject to periodic inundations. To make it fit for construction, FED contractors brought in some 17.6 million cubic meters of engineered fill, raising the elevation about 13 feet above the river. The land was first excavated to remove its original

subsoil, after which truckloads of fill material were added to a depth of more than 8 feet. Between 1,500 and 2,500 dump trucks arrived daily for more than a year, bringing in soil from other construction sites in the greater Pyeongtaek area and beyond. To expedite settling of the fine-grained clay and silt prevalent at the site—a process that can take years—contractors used prefabricated vertical drains (PVDs) to draw water from the fill, thereby reducing the settling time to a matter of months and allowing construction to begin more quickly. A low levee secured the site against a hundred-year flood event.[98]

Land being prepared for new construction at Camp Humphreys in 2008.

New barracks at Camp Humphreys, 2008.

The district faced challenges in administration and logistics, as well as engineering. The transformation of Camp Humphreys was funded almost entirely by the ROK government, meaning that a lack of funds could hold up the process. In addition, as a result of negotiations between the ROK and U.S. governments, management of the program involved not only FED but also the Korean MND, USFK, and a Program Management Consortium of private developers. The district, under an engineering MOU, was responsible for developing design criteria, ensuring design quality, and managing all phases of design for special facilities. Yet actual facility design went to local architect-engineering firms, many of which had limited experience in designing U.S. military facilities.[99]

Local materials presented another challenge. While the ROK government encouraged the use of Korean building materials whenever possible (a goal FED supported), district personnel nevertheless had to ensure the items met stringent U.S. standards for quality and safety, requiring an intimate familiarity with specifications and testing methods necessary to certify conformance. Moreover, the vast scale of the undertaking—some 600 buildings, roads, utility infrastructure, and an eighteen-hole golf course for flood mitigation—required vast reservoirs of expertise, labor, and supplies. By late 2006, it was clear that the YRP's initial goal of completion by 2008 was too ambitious. The limited availability of key contractors and materials, in addition to the limited availability of ROK funding, augured that the relocation program would take longer than initially expected.[100]

The formal groundbreaking for the Humphreys expansion came on 13 November 2007. Construction activity was constant. The new land parcels would ultimately require some 40 miles each of water,

sewer, gas, and electric lines, together with 42 miles of new communication pathways, 988 miles of cable, and 504 miles of conduit. New water towers, treatment plants, and substations were also required. In addition, the project entailed the demolition of more than 300 outdated facilities occupying approximately 1.9 million square feet. "The amazing pace of construction at USAG [U.S. Army Garrison] Humphreys demonstrates the success of two commitments," remarked FED Commander Don Degidio Jr. "Our first commitment is the needs of our service members and their families. We have also achieved great collaboration between the United States of America and our allies in the Republic of Korea."[101]

Collaboration took many forms at USAG Humphreys, much of it orchestrated by FED. Donny Davidson, deputy director of the FED Construction Division, explained: "In the case of U.S. funded contracts, we administer the contract for the federal government. We make sure they get what they pay for when it's ready to be handed over to the new tenant. With [ROK] funded construction, we serve in a construction surveillance (oversight) role, which serves to maintain quality of work." Companies contributing their labor and expertise to the program included Hanwha, eTEC, SKEC, Daewoo, GS Engineering & Construction, Daelim Industrial Co., and others.[102]

Contractors work on utility pipes at U.S. Army Garrison Humphreys, 2012.

Exterior view of the Humphreys Community Fitness Center, 2008.

At the original Camp Humphreys site, construction gained momentum. By 2008, several gymnasium complexes were under way or completed, including an $18.9 million "super gym" featuring three regulation-size basketball courts, an indoor overhead running track, an advanced climbing wall, saunas, and other amenities. The district also oversaw an addition to the camp's lodge (comparable in quality to a five-star hotel), several barracks projects, and an education center. In addition, FED provided construction surveillance for land development on Parcel K, the first YRP project awarded by the ROK government. Construction surveillance entailed FED inspections, review, and testing of ROK-administered construction. Unlike its traditional quality-assurance program, the district had no contractual authority over ROK contractors, but rather had to cultivate relationships with ROK government entities to ensure construction quality and contractor performance.[103]

By 2009, the construction surge at USAG Humphreys was in full force, with FED administering twenty contracts valued at more than $1.3 billion.


Interior of part of the fitness center at Camp Humphreys in 2008.

The district also awarded the largest single contract in its history—a $479 million design-build contract to SK Engineering and Construction. The undertaking was actually several projects rolled into a single contract: land development and utility infrastructure on Parcel 2A, and the rehabilitation of roads and utility systems at the old Humphreys garrison. The work included fill placement and compacting, as well as systems for water supply, drainage, sewage,

electrical, natural gas, and communications. District personnel also joined a "partnering workshop" with representatives from SK Engineering and USAG Humphreys Department of Public Works, to build personal relationships, improve communications, and manage any future conflicts.[104]

The Korea Relocation Project has supported one of FED's central missions: to provide direct support to USFK through planning, engineering, design, and construction management services. The program's success hinged as much on teamwork as leadership, with the United States, the ROK, and private industry all playing important roles. To that end, FED orchestrated and facilitated the cooperation necessary to achieve ambitious goals.[105] In the words of Brig. Gen. Kang Chang-koo, the Director General of Program Management, Korean MND, USFK Relocation Office: "Many challenges, big and small, lie ahead of us, but I'm not worried because we as a team are strong enough to accomplish our mission."[106]

FOCUS ON EXCELLENCE

For the district in the 2000s, success brought recognition. In 2000, FED received the prestigious Army Directorate of Public Works Installation Support District of the Year Award, reflecting the district's commitment to safety, workmanship, and quality assurance. Already, FED boasted the best safety record in the Corps, a remarkable achievement considering that when the district was founded, construction safety standards were virtually nonexistent in Korea. At the same time, the district was forging ahead in other areas, winning accolades from its customers and standardizing its business processes.[107]

The district and its staff received a series of awards from the Pacific Air Force Command (PACAF). Fred Davis, assistant chief of the Construction Division, netted the PACAF 2000 award as Civilian Project Manager of the Year in Construction. "The team is what makes it happen," said Davis, who managed $54 million in Air Force construction. PACAF leaders took note. "This is significant—they chose an Army guy for an Air Force award," quipped Colonel David Rehbein at the presentation ceremony. It would not be the last time.[108]

In 2001, PACAF named FED Design Agent of the Year for its delivery of four projects at Osan and Kunsan air bases. The Air Force also selected FED's Colleen Chamberlain as its worldwide Civilian Project Manager of the Year in Design. She noted FED's exceptionally fast-paced execution and mentorship by senior staff. "Because our work directly supports frontline U.S. service members, we have to be innovative to execute quickly. What I learned in FED in one year would normally take a [project manager] three years stateside to learn."[109]

Air Force accolades kept coming in 2002, when FED won PACAF's award for Construction Agent of the Year. In achieving this honor, the district consistently met construction milestones on fifty-four projects, with several major projects delivered ahead of schedule. And with funding coming from a variety of sources—MILCON, Host Nation, non-appropriated funds, and operations and maintenance—the district also completed some projects below cost, and minimized cost increases despite numerous contract modification requested by the Air Force.[110]

In addition, FED and its contractors employed innovative techniques, such as using high-strength concrete to speed construction, and "micro-tunneling" to burrow under an active runway to replace water-line infrastructure without affecting

base operations. In 2007, the district also earned awards for Air Force Design Excellence for a community activity center and a high-rise dormitory at Kunsan Air Base. These awards recognized FED's contributions to the Air Force mission worldwide through design and project management. In all these areas, the Air Force recognized FED's commitment to excellence.[111]

Quality Management and Standardized Practices

In 2003, FED became the first district in the entire Corps to have all its business processes certified by the International Standards Organization (ISO), the world's largest developer of standards to promote quality, safety, reliability, and efficiency. Receiving the ISO certification (ISO-9001) was a major achievement for the district, but the process of documenting FED's business practices began internally as a means of helping district employees achieve excellence—and perform their jobs effectively on a day-to-day basis.[112]

Standardized practices were especially important to an organization like FED, where frequent turnover was a way of life among both district personnel and their counterparts in USFK. District Commander Janice Dombi noted that "turnover here in Korea is so fast that we are constantly educating people on the way USACE works." Internally, too, the complexities of many jobs at FED were intricate and specialized, making standardization and careful documentation particularly desirable. "When I showed up at the district," recalled FED program manager Dick Byron, who started at FED in 1997, "my personal experience was my supervisor at the time handed me a stack of handwritten papers and said, 'This is how we do work.'" The district endeavored to find a better way.[113]

To improve documentation and standardization, the district in 2001 implemented a Project Management Business Process (PMBP), which called for each employee to follow a standard set of procedures for each project. The steps included developing a Project Management Plan, executing work according to the plan, checking performance through an After Action Review, and incorporating lessons learned to improve future projects. The district supplemented its PMBP in 2002 with a quality management system (QMS) to document processes, establish quality objectives, and measure performance for continuous improvement.[114]

Even though FED had been successful in the past, full documentation of all its processes was a major step forward. From logistics to contingency, project execution to resource management, the district went through the painstaking process of documenting everything it did. Further, it made those documents available to project managers and incoming personnel, giving employees procedures to rely upon for doing their work. From there, district leadership sought certification of the processes from ISO, lending an internationally recognized "stamp of approval" that FED maintained through periodic recertification audits. District Commander Dombi noted that "ISO 9001 certification is important because it shows customers we're concerned with our practices, we're trustworthy, and their best value for performing work."[115]

The district continued to shine in other ways as well. FED maintained its clockwork performance in keeping overhead low and awarding the annual rush of contracts at the end of each fiscal year. Not

all USACE districts experienced this perennial log-jam. At FED, the run-up to 30 September was called "year end," a hectic rush that frequently collided with Korea's Chuseok holidays. The busy season occurred because so many of the district's USFK customers worked with funding that expired at the end of the fiscal year. These user agencies often sought FED's assistance in programming funds with little time to spare.[116]

For FED, August and September typically unleashed an avalanche of designs, specifications, cost estimates, solicitations, negotiations, and contract awards. Based on FED's proven ability to execute programs rapidly, "our customers come to the district and expect us (almost as a matter of routine) to award design and construction contracts to obligate their funds," wrote Deputy District Engineer Jon Iwata. The successful results, wrote District Commander Gregory Kuhr, were reflections of "FED's superb commitment to mission accomplishment."[117]

NOTES

[1] David Arthur and Daniel Frisk, "Growth in DoD's Budget From 2000 to 2014," Congressional Budget Office, November 2014, 1, 4.

[2] USACE-FED, "Annual Historical Report, 2000, Far East District," February 2001, 2, PAO-FED Historical Files.

[3] Colonel Gregory Kuhr, "From the Commander," *East Gate Edition* 11, no. 4 (April 2001): 2; Kuhr, "From the Commander," *East Gate Edition* 12, no. 2 (February 2002): 2; Julie Park, "Learning the USACE Way of Doing Business," *East Gate Edition* 13, no. 5 (May 2003): 7, 15.

[4] Chong Yun Kim, "POD Commander Addresses Corps' Priorities During the Town Hall Meeting with FED Employees," *East Gate Edition* 14, no. 9 (December 2004): 10-12; Lieutenant General Robert B. Flowers, Chief of Engineers, "2002 Engineer Day Message," *East Gate Edition* 12, no. 6 (June 2002): 10.

[5] Colonel Francis Kosich, "From the Commander," *East Gate Edition* 14, no. 1 (January 2004): 2; Chong Yun Kim, FED Public Affairs Office, "Town Hall Meeting with the 51st Chief of Engineers," *East Gate Edition* 15, no. 1 (January/February 2005): 7.

[6] USACE-FED, "FY02 Year in Review," 11; "FY05 Year in Review," 2; "2006 Products and Services Guide," 8, PAO-FED Historical Files.

[7] Rumsfeld quotation in Evan Ramstad, "Rumsfeld Seized Roh's Election to Change Alliance," *Wall Street Journal*, 8 February 2011; Schober, *Base Encounters*, 29–30; Seth, *A Concise History of Modern Korea*, 60, 179; Allen Chin, Deputy for Programs and Project Management, "Future of the Alliance (FOTA) in Korea—Planning for Uncertainty," *East Gate Edition* 13, no. 10 (November/December 2003): 5; Allen Chin, "What is the Future of the Far East District?" *East Gate Edition* 14, no. 8 (October/November 2004): 4.

[8] Patrick Bray, FED Public Affairs, "Director of Military Programs Tours USAG Humphreys," *East Gate Edition* 20, no. 4 (October 2011): 8-9; Anna Fifield, "Timely Move to Massive U.S. Garrison in S. Korea," *Washington Post*, 30 July 2017, sec. A-1.

[9] Colonel Gregory Kuhr, "From the Commander," *East Gate Edition* 10, no. 6 (July 2000): 2.

[10] Patrick Forrest, "Situational Awareness Tour Hits Yongsan," *East Gate Edition* 11, no. 3 (March 2001): 9–10.

[11] USACE-FED, "Annual Historical Report, 2000, Far East District," February 2001, 2, PAO-FED Historical Files; Colonel David J. Rehbein, "From the Commander," *East Gate Edition* 10, no. 1 (January 2000): 2; Patrick Forrest, "Situational Awareness Tour Hits Yongsan," *East Gate Edition* 11, no. 3 (March 2001): 9–10; USACE-FED, "Far East District, FY02 Year in Review," 9, PAO-FED Historical Files.

[12] USACE-FED, "FY03 Year in Review," 4, PAO-FED Historical Files; "Ribbon Cutting Updates: Navy Bachelor Quarters Modernization," *East Gate Edition* 14, no. 8 (October/November 2004): 24.

[13] Patrick Forrest, "6th Cav Gets New Barracks for Xmas," *East Gate Edition* 111, no. 1 (January 2001): 1, 10.

[14] Patrick Forrest, "6th Cav Gets New Barracks for Xmas," *East Gate Edition* 111, no. 1 (January 2001): 1, 10; USACE-FED, "FY03 Year in Review," 10 and "FY04 Year in Review," 10, PAO-FED Historical Files.

[15] Besides the Readiness Dormitory, other enlisted-personnel complexes built at Osan in the 2000s included the Ball Field Dormitory, the Golf Course Dormitories, Osan-ni Dorm, Comm Site Dorm, and Building 1472. USACE-FED, "FY04 Year in Review," 8; "FY05 Year in Review," 10; "FY06 Year in Review," 11; "FY07 Year in Review," 13; "FY09 Year in Review," 13, PAO-FED Historical Files.

[16] FED also experimented with a program to lease apartments off-post for military families (Korea Rental Housing Program). The district enlisted a real-estate specialist from the Sacramento District help develop the program. In 2003, FED concluded leases on eleven apartments, but FED's participation in this type of activity did not continue in subsequent years. Julie Park, "Dormitory Construction in Kunsan Air Base Breaks New Ground," *East Gate Edition* 13, no. 4 (April 2003): 13; David McNally, USAG-Yongsan Public Affairs, "Army Unveils New Housing for Unaccompanied Officers," *East Gate Edition* 17, no. 4 (September/October 2007): 16; USACE-FED, "FY03 Year in Review," 15; "FY04 Year in Review," 13; "FY05 Year in Review," 20; "FY07 Year in Review," 6, 20; "FY08 Year in Review," 20; "FY09 Year in Review," 19, PAO-FED Historical Files.

[17] USACE-FED, "FY02 Year in Review," 10, PAO-FED Historical File; Colonel Gregory Kuhr, "From the Commander," *East Gate Edition* 10, no. 6 (July 2000): 2.

[18] USACE-FED, "FY02 Year in Review," 7; and "FY04 Year in Review," 7, PAO-FED Historical Files; Patrick Forrest, "Situational Awareness Tour Hits Yongsan," *East Gate Edition* 11, no. 3 (March 2001): 9–10; Julie Park, "Discovering Northern Resident Office," *East Gate Edition* 12, no. 11 (November 2002): 11; Chong Yun Kim, FED Public Affairs Office, *East Gate Edition* 14, no. 6 (August 2004): 10-11.

[19] "Groundbreaking Ceremony for Camp Humphreys Family Housing," *East Gate Edition* 10, no. 5 (May/June 2000): 1; "General Schwartz Visits the Construction Site of Camp Humphreys New Family Housing," *East Gate Edition* 11, no. 9 (October 2001): 5; Julie Park, "Camp Humphreys Welcomes the New Army Family Housing (AFH):" *East Gate Edition* 13, no. 9 (September/October 2003): 6; USACE-FED, "FY02 Year in Review," 7; "FY03 Year in Review," 7; "FY04 Year in Review," 7; "FY05 Year in Review," 14; "FY06 Year in Review," 7; "FY07 Year in Review," 9, PAO-FED Historical Files.

[20] "General Schwartz Visits the Construction Site of Camp Humphreys New Family Housing," *East Gate Edition* 11, no. 9 (October 2001): 5; USACE-FED, "FY06 Year in Review," 6; "FY07 Year in Review," 8, PAO-FED Historical Files.

[21] The new buildings were named Seoraksan Tower, Jirisan Tower, and Hallasan Tower. They replaced older family-housing units on leased property, at Mustang Valley Village. USACE-FED, "FY05 Year in Review," 7-8; "FY06 Year in Review," 9-10; "FY07 Year in Review," 11-12; "FY08 Year in Review," 11-12, PAO-FED Historical Files.

[22] Colonel Tom Broyles, Medical Service Corps, "The 121st General Hospital—Leading Edge of Forward Deployed Forces," *U.S. Army Medical Department Journal* (April-June 2000), 24–25; Julie Park, "Groundbreaking at 121 Hospital," *East Gate Edition* 11, no. 11 (December 2001): 6-7; USACE-FED, "FY02 Year in Review," 6, PAO-FED Historical Files.

[23] USACE-FED, "FY02 Year in Review," 6, PAO-FED Historical Files; Julie Park, "Groundbreaking at 121 Hospital," *East Gate Edition* 11, no. 11 (December 2001): 6-7; Julie Park, "Hospital Resident Office," *East Gate Edition* 13, no. 1 (January 2003): 10-11. Quotation in Gloria Stanley, FED Public Affairs Officer, "Yongsan 121st General Hospital Celebrates Phase I Renovation," *East Gate Edition* 15, no. 1 (January/February 2005): 21.

[24] Gloria Stanley, FED Public Affairs Officer, "Yongsan 121st General Hospital Celebrates Phase I Renovation," *East Gate Edition* 15, no. 1 (January/February 2005): 21; USACE-FED, "FY04 Year in Review," 4; "FY05 Year in Review," 6; "FY06 Year in Review," 4, PAO-FED Historical Files.

[25] Julie Park, "Groundbreaking at 121 Hospital," *East Gate Edition* 11, no. 11 (December 2001): 6-7; "FY07 Year in Review," 6-7; "Year in Review, Fiscal Year 2010," 5, PAO-FED Historical Files.

[26] Julie Park, "Discovering Northern Resident Office," *East Gate Edition* 12, no. 11 (November 2002): 8-12.

[27] USACE-FED, "FY04 Year in Review," 3, PAO-FED Historical Files; Julie Park, "Yongsan Overpass Project Kicks Off with Hopes of Connecting More than Two Posts," *East Gate Edition* 13, no. 2 (February 2003): 12; "Yongsan Overpass Progresses, *East Gate Edition* 13, no. 10 (November/December 2003): 8; "Yongsan Overpass Opens 6 Months Ahead of Schedule," *East Gate Edition* 14, no. 1 (January 2004): 1.

[28] Patrick Forrest, "Walker Clinic Groundbreaking Chilling," *East Gate Edition* 10, no. 11 (December 2000): 1, 6; Julie Park, "Camp Walker Health Clinic Opens," *East Gate Edition* 12, no. 8 (August/September 2002): 1, 7; Galen Putnam, Area IV Public Affairs, "Camp Walker Dental Clinic Reopens," *East Gate Edition* 16, no. 1 (January 2006): 14; USACE-FED, "FY07 Year in Review," 18, PAO-FED Historical Files.

[29] USACE-FED, "FY03 Year in Review," 10; "FY06 Year in Review," 15; "FY07 Year in Review," 18; "Year in Review, Fiscal Year 2008," 18; "Year in Review, Fiscal Year 2009, 17,0 PAO-FED Historical Files; "Year in Review," *East Gate Edition* 13, no. 1 (January 2003): 8-9, 13; Julie Park, "Southern Resident Office," *East Gate Edition* 13, no. 10 (November/

December): 10-13; Steven Hoover, Area IV Public Affairs, "Carroll Breaks New Ground on $10.1 Million Project," *East Gate Edition* 16, no. 3 (May/June 2006): 18.

[30] "MiG ALLEYS Bowling Center Grand Opening at Osan," *East Gate Edition* 10, no. 1 (January 2000): 1, 5; Julie Park, "Welcome to the Turumi Lodge!" *East Gate Edition* 13, no. 3 (March 2003): 12; Julie Park, "FED Takes on Osan Air Base," *East Gate Edition* 13, no. 5 (May 2003): 8-11; "Addition/Alteration Fitness Center, Osan AB," *East Gate Heroes Edition* (May 2003): 1; "Grand Reopening, Osan Air Base Commissary," *East Gate Edition* 15, no. 5 (September/October 2005): 13; Ana Farrulla, FED Public Affairs Office, "Osan Mustang Indoor Pool Complex Opens," *East Gate Edition* 16, no. 3 (May/June 2006): 10-11.

[31] Gloria Stanley, FED Public Affairs Office, "A Groundbreaking, a Groundbreaking, and yes, one more Groundbreaking!" *East Gate Edition* 10, no. 10 (November/December 2000): 1, 10.

[32] Patrick Forrest, "Situational Awareness Tour Hits Yongsan," *East Gate Edition* 11, no. 3 (March 2001): 9; Julie Park, "8th Army HQ Gets Makeover," *East Gate Edition* 12, no. 2 (February 2002): 1; USACE-FED, "FY02 Year in Review," 4, PAO-FED Historical Files.

[33] Julie Park, "8th Army HQ Gets Makeover," *East Gate Edition* 12, no. 2 (February 2002): 1-6; Allen Chin, Deputy for Programs and Project Management, "Teamwork at the 8th Army HQ Building Renovation," *East Gate Edition* 12, no. 9 (September 2002): 5; "Renovate Eight Army Headquarter (HQ) Building, Yongsan," *East Gate Heroes Edition* (May 2003): 2.

[34] Gloria Stanley, FED Public Affairs Officer, "Command Center Complex at Yongsan Garrison Gets System to Dry Basements and Tunnels," *East Gate Edition* 12, no. 6 (June 2002): 8-9.

[35] Chong Yun Kim, FED Public Affairs Office, "New U.S. Military Helipad Construction at Yongsan Begins," *East Gate Edition* 14, no. 8 (October/November 2004): 6-7; "New USFK Yongsan Helipad Opens," *East Gate Edition* 15, no. 3 (May/June 2005), 8-9; USACE-FED, "FY04 Year in Review," 6; "FY05 Year in Review," 4; "FY06 Year in Review," 4, PAO-FED Historical Files.

[36] Gloria Stanley, FED Public Affairs Officer, "Live Fire Range Complex Upgrade at KTC," *East Gate Edition* 10, no. 2 (February 2000): 1, 5.

[37] USACE-FED, "FY06 Year in Review," 3; "FY08 Year in Review," 3; "FY09 Year in Review," 3, PAO-FED Historical Files.

[38] USACE-FED, "FY05 Year in Review," 3; "FY07 Year in Review," 3-5; "FY08 Year in Review," 3-4; "FY09 Year in Review," 3-4, PAO-FED Historical Files.

[39] USACE-FED, "FY03 Year in Review," 8; "FY06 Year in Review," 13; "FY07 Year in Review," 15; "Year in Review, Fiscal Year 2008," 16; "Year in Review, Fiscal Year 2009," 16, PAO-FED Historical Files.

[40] USACE-FED, "FY03 Year in Review," 8; "FY04 Year in Review," 8; "FY05 Year in Review," 13; "FY06 Year in Review," 14; "FY07 Year in Review," 16-17, PAO-FED Historical Files; Anna Fifield, "Timely Move to Massive U.S. Garrison in S. Korea," *Washington Post*, 30 July 2017, sec. A-1.

[41] Kim Chong-Yun, FED Public Affairs Office, "Korean Ministry of National Defense Engineers Visit Patriot Launcher Project Site," *East Gate Edition* 16, no. 1 (January 2006): 6; USACE-FED, "FY03 Year in Review," 9; "FY04 Year in Review," 8; "FY05 Year in Review," 13; "FY06 Year in Review," 13; "FY07 Year in Review," 16-17, PAO-FED Historical Files.

[42] Sandra Yoshikawa, "Osan Air Base Has New Vehicle Maintenance Facility," *East Gate Edition* 15, no. 4 (September/October 2005): 8; USACE-FED, "FY03 Year in Review," 9; "FY06 Year in Review," 13; "FY07 Year in Review," 14; "FY08 Year in Review," 15; "FY09 Year in Review," 11-12, 15, PAO-FED Historical Files.

[43] "Upgrade Railroad and Munitions Off-Load Area Project, Kunsan AB," *East Gate Heroes Edition* (May 2003): 3.

[44] USACE-FED, "FY04 Year in Review," 9; "FY06 Year in Review," 16-17; "FY07 Year in Review," 21-22, PAO-FED Historical Files.

[45] USACE-FED, "FY07 Year in Review," 21; "Year in Review, Fiscal Year 2008," 21; "Year in Review, Fiscal Year 2009," 19-21, PAO-FED Historical Files.

[46] Julie Park, "Hanging with the Hangars," *East Gate Edition* 12, no. 3 (March 2002): 1, 6-7.

[47] Julie Park, "Hanging with the Hangars," *East Gate Edition* 12, no. 3 (March 2002): 6-7.

[48] USACE-FED, "FY04 Year in Review," 11; "FY05 Year in Review," 17, PAO-FED Historical Files.

[49] USACE-FED, "FY04 Year in Review," 10; "FY05 Year in Review," 5; "Year in Review, Fiscal Year 2009," PAO-FED Historical Files; Kim Chong-Yun, FED Public Affairs Office, "Camp Carroll Maintenance Facility Dedicated to an Engineer Korean War Medal of Honor Recipient," *East Gate Edition* 18, no. 2 (May/June 2008): 16-17.

[50] "FED Team Speaks Out," *East Gate Edition* 11, no. 9 (October 2001): 1, 9; Lieutenant General Robert B. Flowers, Chief of Engineers, "2002 Engineer Day Message," *East Gate Edition* 12, no. 6 (June 2002): 10.

[51] Lieutenant Robert B. Flowers, Chief of Engineers, "Iraq and Afghanistan Volunteer Opportunities," *East Gate Edition* 14, no. 5 (July 2004): 5; "FED Helps Fight the Global War on Terrorism," *East Gate Edition* 17, no. 2 (June 2007): 30.

[52] "Mr. Kim, Yong S. Returns from an Adventure in Iraq," *East Gate Edition* 14, no. 3 (March/April 2004): 8, 12.

[53] Chong Yun Kim, FED Public Affairs Office, "Helping Fight the GWOT: Far East District Employees Volunteer to Work in Iraq and Afghanistan," *East Gate Edition* 14, no. 8 (October/November 2004): 12-15.

[54] Larry Drape, Secretarial General Staff, Gulf Region Division, "Part of History," *East Gate Edition* 15, no. 2 (March/April 2005): 16-19; Larry Drape, "The Journey's Almost Over," *East Gate Edition* 15, no. 3 (May/June 2005): 12-14; George Ward, FED Construction Division, "What I Learned in Iraq," *East Gate Edition* 16, no. 1 (January 2006): 3.

[55] Ollar also deployed to the Philippines in support of the Global War on Terrorism to administer construction, perform site surveys, and advise Special Forces personnel. Major Donovan D. Ollar, Project Engineer, Osan Air Base, "Operation Enduring Freedom Joint Special Operations Task Force—Philippines," *East Gate Edition* 14, no. 4 (May/June 2004): 8-9; Major Donovan D. Ollar, Resident Engineer, Kandahar Resident Office, "Rebuilding Afghanistan One Brick at a Time," *East Gate Edition* 14, no. 8 (October/November 2004): 16-17, 21; Sanghun "Steve" Kim, Afghanistan Engineer District, "Engineering Experience in Afghanistan," *East Gate Edition* 18, no. 3 (August/September/October 2008): 13.

[56] Quoted in Captain Daniel Galvan, USACE Afghanistan Engineer District, "Leaving Afghanistan," *East Gate Edition* 17, no. 1 (January/February 2007): 8-9.

[57] "FED Helps Fight the Global War on Terrorism," *East Gate Edition* 17, no. 2 (June 2007): 30; Kim Chong-Yun, FED Public Affairs Office, " 'Old Glory' Flown Proudly in Afghanistan," *East Gate Edition* 15, no. 5 (September/October 2005): 7.

[58] USACE-FED, "CY2003 Annual History Report," 72; "2006 Products and Services Guide," May 2006, 16, PAO-FED Historical Files; Julie Park, "Groundbreaking at 121 Hospital," *East Gate Edition* 11, no. 11 (December 2001): 6-7; "Grand Opening of Main Gate at Osan Air Base, *East Gate Edition* 14, no. 5 (July 2004): 15.

[59] USACE-FED, "Emergency Operations Manager," circa 1980, PAO-FED Historical Files; Gloria Stanley, "Far East District-The Corps' Maneuver District," draft, April 5, 1999, PAO-FED Historical Files; LTC Charles S. Markham, "The 2IC's Corner," *East Gate Edition* 10, no. 5 (May/June 2000): 4.

[60] USACE-FED, Unpublished Draft, "History of the Corps of Engineers, Far East District, 1978-1997: 1979," July 1997, 26; Douglas L. Owings, FED Acting District Engineer, to Henry J. Hatch, POD Division Engineer, 27 February 1981, 4, 8; PAO-FED Historical Files; Yi Yong-un, "Who is Ulchi Mundeok?" *East Gate Edition* 21, no. 8 (August 2012): 11.

[61] Roger Rodriguez, Emergency Operations Manager, "FED Takes Part in Ulchi-Focus Lens," *East Gate Edition* 1, no. 7 (September 1983): 3; "FED Plays Role in Ulchi-Focus Lens," *East Gate Edition* 2, no. 19 (October 1984): 5.

[62] Patrick Forrest, "RSO&I: FED AT WAR!," *East Gate Edition* 11, no. 4 (May 2001): 6; Gloria Stanley, "Far East District–The Corps' Maneuver District," draft, April 5, 1999, PAO-FED Historical Files; "Information Paper: FED Participation in Reception, Staging, Onward Movement & Integration (RSO&I)," June 5, 1998, PAO-FED Historical Files; Col Francis Kosich, "From the Commander," *East Gate Edition* 13, no. 3 (March 2003): 2.

[63] USACE-FED, "CY2003 Annual History Report," 72-77, PAO-FED Historical Files.

[64] Patrick Forrest, "RSO&I: FED AT WAR!," *East Gate Edition* 11, no. 4 (May 2001): 7; Julie Park, "We Are the War Fighters!" *East Gate Edition* 12, no. 12 (December 2002): 12; Gloria Stanley, "Far East District Supports USFK during RSOI," *East Gate Edition* 15, no. 2 (March/April 2005): 5; Joe Campbell, "Army Engineers Demonstrate Contingency Capabilities," *East Gate Edition* 16, no. 3 (May/June 2006): 8; "Information Paper: FED Participation in Reception, Staging, "Onward Movement & Integration (RSO&I)," June 5, 1998, PAO-FED Historical Files.

[65] "Courageous Channel 00-1 NEO Exercise and FED," *East Gate Edition* 10, no. 4 (April 2000): 6; LTC Charles Markham, "The Deputy's Word," *East Gate Edition* 11, no. 3 (March 2001): 4.

[66] LTC Charles Markham, "The Deputy's Word," *East Gate Edition* 11, no. 4 (April 2001): 4.

[67] "FED Helping Those in Need," *East Gate Edition* 17, no. 2 (June 2007): 34-37; Kim Chong-yun, "FED Responds to Hurricane Katrina and Wilma Relief Effort," *East Gate Edition* 15, no. 6 (November/December 2005): 10.

[68] Julie Park, "Logician at His Best," *East Gate Edition* 12, no. 10 (October 2002): 15.

[69] Park, "Logician at His Best," 15.

[70] Edward E. Flint, "Dateline: Seoul, South Korea," *East Gate Edition* 15, no. 2 (March/April 2005): 10-11.

[71] Kim Chong-yun, "FED Responds to Hurricane Katrina and Wilma Relief Effort," *East Gate Edition* 15, no. 6 (November/December 2005): 10; USACE Public Affairs,

"2005 Hurricane Season in Review," *East Gate Edition* 15, no. 6 (November/December 2005): 16; William Crisfield, "Operation Task Force Hope: Hurricane Katrina Disaster Relief Operations," *East Gate Edition* 16, no. 1 (January 2006): 8-9.

[72] William Crisfield, "Operation Task Force Hope: Hurricane Katrina Disaster Relief Operations," *East Gate Edition* 16, no. 1 (January 2006): 8-9; Tom Kwiat, "Hurricane Wilma Recovery Effort," *East Gate Edition* 16, no. 1 (January 2006): 12-13.

[73] Colonel Janice L. Dombi, "From the Commander," *East Gate Edition* 15, no. 5 (September/October 2005): 2, 11.

[74] USACE-FED, "Annual Historical Report, 2000, Far East District," February 2001, 11, PAO-FED Historical Files; Julie Park, "Exploring the Great Engineering Division, Part II, Geotechnical and Environmental Engineering Branch," *East Gate Edition* 13, no. 3 (March 2003): 7.

[75] Julie Park, "Exploring the Great Engineering Division, Part II, Geotechnical and Environmental Engineering Branch," *East Gate Edition* 13, no. 3 (March 2003): 10.

[76] Julie Park, "Exploring the Great Engineering Division, Part II, Geotechnical and Environmental Engineering Branch," *East Gate Edition* 13, no. 3 (March 2003): 16.

[77] Julie Park, "Exploring the Great Engineering Division, Part II, Geotechnical and Environmental Engineering Branch," *East Gate Edition* 13, no. 3 (March 2003): 10, 16; Paul Yoo, Engineering Division, "Engineering Perspective of FED," *East Gate Edition* 15, no. 6 (November/December 2005): 7.

[78] USACE-FED, "Annual Historical Report 2000, Far East District," 2; "FY03 Year in Review," 12-13, 15, PAO-FED Historical Files; "Underground Storage Tank (UST) Removal and Replacement Project, Camp Casey and Enclaves," *East Gate Edition, Heroes Edition* (May 2003), 4.

[79] Chong Yun Kim, FED Public Affairs Office, "FED Asbestos Lab Obtains Industrial Hygiene Laboratory Accreditation Effective July 1, 2005," *East Gate Edition* 15, no. 4 (July 2005): 6-7.

[80] Patrick Bray, "Sustaining the Force: FED Supports Strategic Mission," *East Gate Edition* (January 2012): 6–7; Patrick Bray, "Transformation Construction in Korea: Consolidating and Relocating for Troops and Families," *East Gate Edition* (February 2012): 12–15.

[81] Stephen Satkowski, "New 'Footprint' Emerging in the Republic of Korea for U.S. Military," *East Gate Edition* (Fall 2014): 4–7; R. Slade Walters, "U.S. Forces Korea Transformation Update," 12 January 2010, www.army.mil/article/32794.

[82] Chang-hee Nam, "Relocating the U.S. Forces in South Korea: Strained Alliance, Emerging Partnership in the Changing Defense Posture," *Asian Survey* 46, no. 4 (2006): 618, 623.

[83] U.S. General Accounting Office (GAO), "Defense Infrastructure: Basing Uncertainties Necessitate Reevaluation of U.S. Construction Plans in South Korea," July 2003, 3, 6, 14.

[84] U.S. GAO, "Defense Infrastructure," 14-15, 17; Anna Fifield, "Timely Move to Massive U.S. Garrison in S. Korea," *Washington Post*, 30 July 2017, sec. A-1.

[85] Chang-hee Nam, "Relocating the U.S. Forces in South Korea," 622. Quotation in Evan Ramstad, "Rumsfeld Seized Roh's Election to Change Alliance," *Wall Street Journal*, 8 February 2011, http://blogs .wsj.com/korearealtime; Schober, *Base Encounters*, 60, 179; U.S. GAO, "Defense Infrastructure," 5.

[86] U.S. GAO, "Defense Infrastructure," 7-8; USACE-FED, "FY02 Year in Review," 2, PAO-FED Historical Files. See also Colonel Gregory Kuhr, "From the Commander," *East Gate Edition* 12, no. 3 (March 2002): 2.

[87] Chang-hee Nam, "Relocating the U.S. Forces in South Korea," 624; U.S. GAO, "Defense Infrastructure," 17; Julie Park, "Far East District Awards and Breaks Ground for Yongsan Family Housing Contract," *East Gate Edition* 12, no. 5 (May 2002): 6-7; "Osan Housing Phase I Project Construction Begins," *East Gate Edition* 14, no. 3 (March/April 2004): 9; Allen Chin, Deputy for Programs and Project Management, "What is the Future of the Far East District?" *East Gate Edition* 14, no. 8 (October/November 2004): 4; USACE-FED, "FY04 Year in Review," 2, PAO-FED Historical Files.

[88] Julie Park, "Camp Humphreys is the Place to Be," *East Gate Edition* 13, no. 7 (July 2003): 8-11; "Double Groundbreaking Day at Camp Humphreys: DeCA Commissary and New Barracks," *East Gate Edition* 14, no. 1 (January 2004): 5; Major Anthony Mitchell, "Delivering Quality Projects on Time and to Standard," *East Gate Edition* 14, no. 3 (March/April 2004): 5, 10.

[89] "Agreement between the United States of America and the Republic of Korea on the Relocation of United States Forces from the Seoul Metropolitan Area," 26 October 2004, U.S. Department of State Archives.

[90] Stephen Satkowski, "New 'Footprint' Emerging in the Republic of Korea for U.S. Military," *East Gate Edition* (Fall 2014): 4; Patrick Bray, "Transformation Construction in Korea," *East Gate Edition* (February 2012): 12.

[91] USACE-FED, "FY04 Year in Review," PAO-FED, 2; Allen Chin, Deputy for Programs and Project Management,

"What is the Future of the Far East District?" *East Gate Edition* 14, no. 8 (October/November 2004): 4; Jon Iwata, Deputy District Engineer for Programs and Project Management, "The DPM Report," *East Gate Edition* 15, no. 5 (September/October 2005): 4; Paul Yoo, FED Engineering Division, "Engineering Perspective of FED," *East Gate Edition* 15, no. 6 (November/December 2005): 4, 7; Mark J. Cain, Deputy District Engineer for Relocation, "Camp Humphreys Relocation Effort," *East Gate Edition* 16, no. 2 (February/March 2006): 4, 22; Patrick Bray, "Transformation Construction in Korea," *East Gate Edition* (February 2012): 15; Stephen Satkowski, "New 'Footprint' Emerging in the Republic of Korea for U.S. Military," *East Gate Edition* (Fall 2014): 4.

[92] Mark J. Cain, Deputy District Engineer for Relocation, "Camp Humphreys Relocation Effort," *East Gate Edition* 16, no. 2 (February/March 2006): 4, 22.

[93] Janet Williams, "New Modified-Design Barracks for Zoeckler Station Area of Camp Humphreys," *East Gate Edition* 15, no. 4 (July/August 2005): 14; Kim Chong-yun, "Camp Humphreys' First-of-Its-Kind Barracks-Dining Facility Complex Opened," *East Gate Edition* 16, no. 5 (October/November 2006): 6-7.

[94] Andre D. Butler, "Community Members Cut Ribbon on New Family Housing Tower," *East Gate Edition* 17, no. 3 (July/August 2007): 8-9; Bob McElroy, "FED, Humphreys, Hanwa Break Ground for New Barracks," *East Gate Edition* 18, no. 3 (August/September/October 2008): 16-17.

[95] Land acquisition by the ROK encountered resistance from Korean villagers and activists. In May 2006, a group of demonstrators refused to leave the government-purchased area, congregating in the rice-farming village of Daechuri. Using clubs, water cannons, and helicopters, thousands of ROK police and unarmed soldiers stormed the hamlet, driving the protesters off the land. According to ROK authorities, at least 117 police officers and 93 protesters were injured. Subsequently, the area was enclosed with an 18-mile razor wire fence. Choe Sang-hun, "Koreans Protest U.S. Base Plans," *New York Times*, 4 May 2006.

[96] Stephen Satkowski, "New 'Footprint' Emerging in the Republic of Korea for U.S. Military," *East Gate Edition* (Fall 2014): 5.

[97] Mark J. Cain, Deputy District Engineer for Relocation, "Camp Humphreys Relocation Effort II," *East Gate Edition* 16, no. 5 (October/November 2006): 3; Stephen Satkowski, "New 'Footprint' Emerging in the Republic of Korea for U.S. Military," *East Gate Edition* (Fall 2014): 5; Stephen Satkowski, "Construction Division a Key Building Block for Success," *East Gate Edition* (Fall 2013): 4.

[98] Doug Bliss, Engineering Division, "Engineering Rice Paddies into Prime Real Estate at Humphreys Garrison," *East Gate Edition* 17, no. 4 (September/October 2007): 4, 18; Patrick Bray, "Transformation Construction in Korea," *East Gate Edition* (February 2012): 12-13; Stephen Satkowski, "New 'Footprint' Emerging in the Republic of Korea for U.S. Military," *East Gate Edition* (Fall 2014): 5.

[99] Paul Yoo, "Engineering Perspective of Camp Humphreys Relocation," *East Gate Edition* 17, no. 1 (January/February 2007): 3-4.

[100] Mark J. Cain, "Camp Humphreys Relocation Effort II," *East Gate Edition* 16, no. 5 (October/November 2006): 3; Paul Yoo, "Engineering Perspective of Camp Humphreys Relocation," *East Gate Edition* 17, no. 1 (January/February 2007): 3-4; Joe Campbell, "Update Korea," *East Gate Edition* 17, no. 4 (September/October 2007): 6.

[101] Kim Chong-yun, "Ground Broken for Start of Humphreys Military Base Expansion," *East Gate Edition* 18, no. 1 (January 2008): 6-7; Patrick Bray, "Transformation Construction in Korea," *East Gate Edition* (February 2012): 12-13; Stephen Satkowski, "New 'Footprint' Emerging in the Republic of Korea for U.S. Military," *East Gate Edition* (Fall 2014): 5.

[102] Stephen Satkowski, "Construction Division a Key Building Block for Success," *East Gate Edition* (Fall 2013): 14.

[103] USACE-FED, "Year in Review, Fiscal Year 2008," 7-10, PAO-FED Historical Files; George Ward, "Quality Assurance or Construction Surveillance?" *East Gate Edition* 19, no. 1 (July 2009): 4.

[104] USACE-FED, "Year in Review, Fiscal Year 2009," PAO-FED Historical Files; Fred Davis, "Partnering Workshop for the Land Development/Utility Infrastructure Contract;" *East Gate Edition* 19, no. 1 (July 2009): 7; FED Public Affairs, "Far East District Awards Largest Contract in its 52-Year History," *East Gate Edition* 19, no. 1 (July 2009): 17.

[105] USACE-FED, "Korea Relocation Program Fact Sheet," December 31, 2015, PAO-FED Historical Files.

[106] Stephen Satkowski, "New 'Footprint' Emerging in the Republic of Korea for U.S. Military," *East Gate Edition* (Fall 2014): 7.

[107] USACE-FED, "Annual Historical Report 2000, Far East District," 2, PAO-FED Historical Files; Colonel Gregory Kuhr, "From the Commander," *East Gate Edition* 11, no. 4 (April 2001): 2;

[108] "PACAF Awardees," *East Gate Edition* 9, no. 11 (November 1999): 1; Colonel Gregory Kuhr, "From the Commander," *East Gate Edition* 10, no. 10 (November/December 2000): 2.

[109] "FED: PACAF's 2001 Design Agent of the Year," *East Gate Edition* 11, no. 4 (May 2001): 5, 8.

[110] Julie Park, "Far East District Wins PACAF Construction Agent of the Year Award," *East Gate Edition* 12, no. 11 (November 2002): 7.

[111] "FED Wins Design Excellence Awards," *East Gate Edition* 16, no. 5 (October/November 2006): 14; Julie Park, "Far East District Wins PACAF Construction Agent of the Year Award," *East Gate Edition* 12, no. 11 (November 2002): 7.

[112] USACE-FED, "FY02 Year in Review," 14, PAO-FED Historical Files; Gloria Stanley, "Far East District Receives International Standards Organization 9001:2000 Certification," *East Gate Edition* 13, no. 10 (November/December 2003): 9; Dick Byron, interview by John Lonnquest, 3 March 2016, Honolulu, HI, transcript, 6-8.

[113] Gloria Stanley, "Commander's First Impressions and Insights," *East Gate Edition* 14, no. 8 (October/November 2004): 10; Dick Byron, interview by John Lonnquest, 3 March 2016, Honolulu, HI, transcript, 7.

[114] USACE-FED, "FY02 Year in Review," 14, PAO-FED Historical Files.

[115] Dick Byron, interview by John Lonnquest, 3 March 2016, Honolulu, HI, transcript, 6-8; Gloria Stanley, "Commander's First Impressions and Insights," East Gate Edition 14, no. 8 (October/November 2004): 9; "Great News: FED Made It!" *East Gate Edition* 16, no. 5 (October/November 2006): 14.

[116] Colonel Gregory Kuhr, "From the Commander," *East Gate Edition* 10, no. 10 (November/December 2000): 2; Allen Chin, Deputy for Programs and Project Management, "The Chin Report: Year End," *East Gate Edition* 12, no. 8 (August/September 2002): 5.

[117] Jon Iwata, Deputy District Engineer for Programs and Project Management, "The DPM Report: Year End Program and Look Ahead into FY 06," *East Gate Edition* 15, no. 4 (July/August 2005): 4; Colonel Gregory Kuhr, "From the Commander," *East Gate Edition* 10, no. 10 (November/December 2000): 2.

FAR EAST DISTRICT

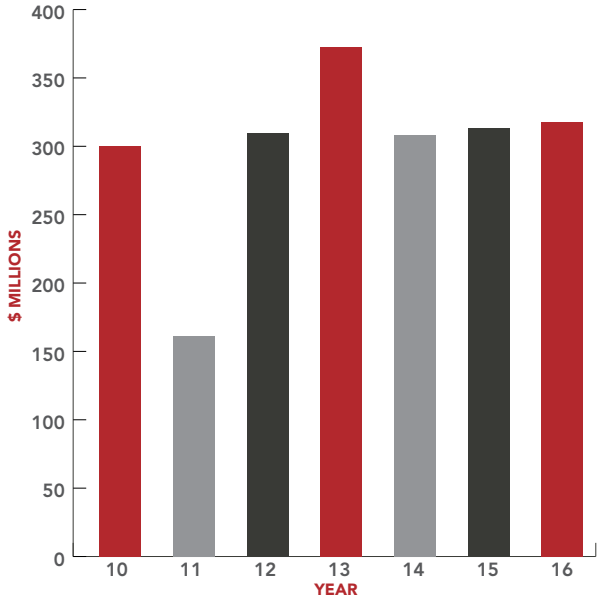
KOREA TRANSFORMATION

2010–2017

The start of the 2010s saw the district busier than ever, with projects related to the Korea Transformation Program dominating the Far East District (FED)'s workload. At the end of fiscal year 2011, the district had completed five projects related to the relocation program, had started construction on twenty-five, and was in the design stage on eighty more. While most of the construction centered on U.S. Army Garrison (USAG) Humphreys, FED built barracks, schools, and other facilities at various U.S. installations in preparation for troop repositioning. By 2016, FED was active at more than 500 sites around the peninsula. In 2017, FED anticipated working on 139 construction projects at Humphreys alone, 68 of which were under construction at the end of 2016.[1]

To accommodate the population shifts away from Seoul, one of the district's biggest tasks was to construct barracks and housing for soldiers and their families. By 2013, FED was building barracks to accommodate nearly 3,500 unaccompanied personnel throughout the peninsula, as well as officers' quarters and family-housing units. In addition to housing, the district was involved in the construction of new headquarters facilities for military branches once centered in Seoul. Since 2010, FED has been involved in construction of new headquarters for U.S. Naval Forces Korea, the Eighth U.S. Army, U.S. Korea Command, and UN Command, among others. Construction on FED's own new headquarters was slated for completion in 2017.[2]

FED workload, 2010–2016.



Graph of estimated workload based on data in FED-PAO Annual Reports

The district's primary mission is to support design and construction activities for U.S. Forces in Korea (USFK). As part of its commitment to service, FED remained dedicated to environmental stewardship, employing green engineering standards in construction projects and responding to environmental concerns through remediation. With construction at USAG Humphreys and other installations in Korea booming, the district demonstrated its commitment to its contracting agencies and the communities it served throughout the 2010s.

KOREA TRANSFORMATION PROGRAM

On 2 September 2011, FED broke ground on the first vertical construction projects at USAG Humphreys—a high school and an elementary school. Amid celebratory toasts and fireworks, the milestone was hailed by dignitaries including General James Thurman, USFK commander, and Kim Kwan-jin, Korean minister of national defense (MND). Kim remarked on several "significant meanings" of the event: it symbolized the robustness of the Republic of Korea-U.S. Alliance, the commitment to U.S. service members in Korea, and the development of Pyeongtaek into an international city. Thurman added that the achievement showed "a dedication to improving the quality of education" for the families of service members at USAG Humphreys. Not only would the schools save students from a forty-five-minute, twice-daily bus ride to and from classrooms at Osan Air Base, the buildings would also provide modern instructional space for 1,600 students, with capacity to expand beyond that. In addition, the high school featured a full-size stadium with Astroturf, an announcer box, and a scoreboard.[3]

Gen. James Thurman (ninth from left), United States Forces Korea Commander, Kim Kwan-jin (tenth from left), Korean Minister of National Defense, and other distinguished guests break ground on a new elementary and high school at U.S. Army Garrison Humphreys, 2011.

In the months that followed, the district initiated planning or construction on other new facilities, including barracks, vehicle maintenance garages, and three multistory apartment towers for family housing. The towers were designed to provide a total of 1,152 units, complete with parking facilities and multi-age playgrounds dubbed "tot lots." Barracks, too, became a marker of progress. By October 2011, six units had already been completed and turned over to the garrison, with many more to follow. Most of the structures were eight stories high, unusual for U.S. Army barracks, and were capable of housing 302 military personnel each. They were laid out according to the Army's "one-plus-one standard plan," which called for a two-person, apartment-style setup that was standard on Army installations worldwide. In time, the proliferation of new barracks became one of the site's most striking features. "When you drive around the existing Camp Humphreys perimeter road, you see the 'new land' and the first thing you notice are those barracks," said FED engineer Steve Kim. "They stand out. You're seeing the beginning of a new city out there."[4]

As the "new city" took shape, work began on several other high-profile facilities and amenities: a new aircraft "super hangar" and a Humphreys downtown area, the main feature of which would be the six-story Brian Allgood Army Community Hospital. In November 2012, completion of the 180,000-square-foot aircraft hangar—supporting the 2nd Combat Aviation Brigade's "fight tonight" readiness—cleared the way for the demolition of older hangars that occupied the footprint of the garrison's future downtown area.[5] Humphreys Downtown was designed to include a 90,000-square-foot commissary with twenty-three checkout lanes, plus a new auditorium,

Barracks construction in full force at USAG Humphreys, 2013.

New family housing, complete with play areas for children, at USAG Humphreys, 2012.

A new, state-of-the-art hospital under construction at USAG Humphreys, 2015.

Hospital at U.S. Army Garrison Humphreys, 2017.

chapel, arts-and-crafts center, bowling alley, recreation center, and other conveniences.[6] At the center of it all was the world-class 121st Combat Support Hospital, which broke ground in 2012.[7]

Part of what made this massive construction effort possible was a concerted effort by FED and the Korean MND to source local materials wherever possible. Although the district started keeping a list of usable local materials as early as the 1970s, a 2006 assessment found that only 48.9 percent of materials used in FED construction projects were manufactured locally. District projects must satisfy DOD standards for quality and safety, as well as antiterrorism and force protection requirements, which local materials had not always met. In 2009, FED and MND began hosting a yearly joint conference on local materials, which brought together district contractors, Korean manufacturers, and FED and MND personnel "to exchange information that will help to improve effectiveness and efficiency to increase the use of local materials." In addition to the conferences, FED and MND established a joint local materials evaluation committee to review and validate local materials and equipment to confirm that they met U.S. construction standards. Through 2013, the committee had reviewed more than 250 local construction materials and accepted 120 as suitable for construction. The efforts resulted in localization of items including elevators, boilers, and ceiling tiles. Approximately seventy-five percent of materials used in FED construction projects were sourced locally.[8]

In addition to local materials, the district incorporated Korean design elements into its new projects, representing the partnership between the U.S. and the ROK in architectural form. For example, the plan for the U.S. Korea Command headquarters at USAG

Attendees at a joint ROK/U.S. local construction materials conference, May 2012.

Humphreys included design elements of the Great East Gate, which stood near the FED compound in Seoul. Some buildings also include Korean-style roof tiles and other traditional cultural design elements.[9]

As the Korea Transformation Program grew, funding shifted. According to FED program manager Dick Byron, "the level of investment from U.S. funds dropped significantly, and the level of investment from Korean funds increased astronomically." Under the YRP, the majority of projects were funded through ROK MND in-kind awards. For these projects, the Korean government awarded and managed contracts to design and build facilities for USFK, with oversight from FED. In this role, the district provided "periodic review, testing, and inspection of on-going host nation construction work with qualified and experienced personnel to verify compliance with design documents and specifications." FED did not have contracting authority under this funding design, making it difficult, at times, for district employees to enforce quality standards at construction sites. George Ward, chief of FED's Construction Division, explained: "The Korean government's

Eighth Army headquarters building under construction at USAG Humphreys, 27 August 2015.

priorities are not necessarily the same as the U.S. government when it comes to the contract. Our priority is more quality and schedule. Theirs is more schedule and cost." If deficiencies were found during an inspection, FED had to work closely with its MND counterparts to ensure that USACE's standards were met while also meeting ROK's objective of minimizing costs.[10]

By the conclusion of USAG Humphreys redevelopment, the district will have overseen construction of 655 new and renovated facilities. The garrison was planned to be home to around 45,000 troops, family members, Korean employees, and contractors. According to Lieutenant General Thomas Bostick, U.S. Army Chief of Engineers, in 2014 the program was "the largest single activity in scope and scale that we [USACE] currently have under way when it comes to military construction." By 2014, more than half of FED Construction Division's workforce was tasked to projects at the garrison, and more than half of the district's active contracts involved projects there. Halfway through the decade, and through the efforts of FED and its many employees and contractors, USFK was more than three-quarters of the way toward completion of the YRP and LPP. During 2016, seventeen completed projects were turned over to USAG Humphreys. With construction at Humphreys at its peak in preparation for the arrival of more than ten thousand soldiers, "2016 served as the catalyst for the completion, close out, and full occupation of Camp Humphreys as part of the largest troop movement in history."[11]

Aerial view of the numerous family housing, school, and barracks projects at USAG Humphreys, all part of the massive Yongsan Relocation Project underway throughout the 2000s.

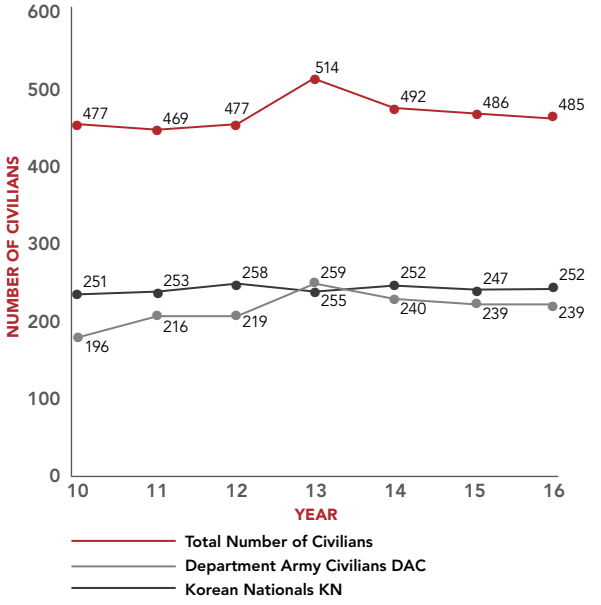
By summer 2017, USAG Humphreys had come to resemble a town in America's heartland—four schools, five churches, a Burger King, an Arby's, and a Taco Bell, plus a grocery store advertising cold Budweiser and a car dealership promoting Ford Mustangs. Everywhere there were apartment buildings, stores, sports fields, and playgrounds. Kids splashed at a waterpark; generals' houses overlooked the greens of an 18-hole golf course. A "warrior zone" offered entertainment: Xboxes and Playstations, pool tables and dart boards, a tavern serving food and drink. In July, the Eighth Army moved its headquarters to Humphreys, joining some 25,000 soldiers, family members, and contractors already on-site. "We've been able to create the facilities needed to keep up with the pace of modern warfare and modern communications technology," observed the garrison commander, Colonel Scott W. Mueller. "We built an entire city from scratch."[12]

SERVICE TO CUSTOMERS

Since 1957, FED remained the primary design and construction agent for the U.S. military in Korea. Throughout its history, the district served a panoply of customers. The U.S. Army's Installation Management Command—Pacific (IMCOM-Pacific) oversaw all Army installations on the peninsula and was, therefore, FED's largest customer. The district also provided planning, technical engineering, design, and construction management services to the U.S. Eighth Army, U.S. Seventh Air Force, U.S. Naval Forces Korea, U.S. Marine Forces Korea, the First Signal Brigade, the Defense Logistics Agency, and the DOD Schools Korea. In fiscal year 2015 alone, FED's Contracting Division awarded 650 actions worth a total of $313.3 million. Despite this large and growing number of projects throughout the peninsula, FED emphasized to its employees that "The most important project in the district is the one you are working on."[13]

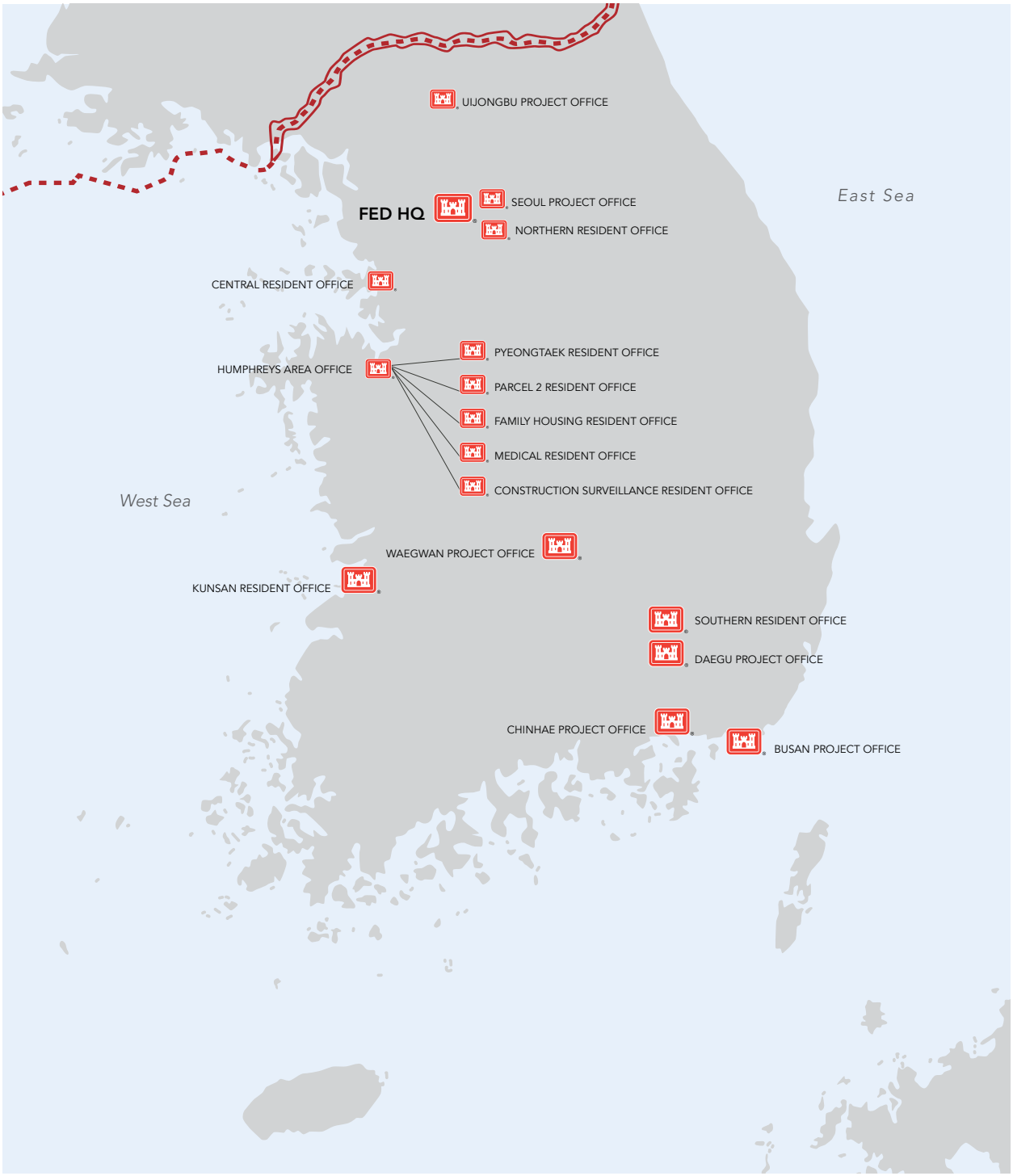
To serve this broad range of customers, the district established resident and project offices across Korea and on all major U.S. installations. The Northern Resident Office, based at USAG Yongsan, oversaw project offices in Uijongbu, at Camp Red Cloud, and in Seoul, which was responsible for projects at Yongsan and K-16. The Central Resident Office was a stand-alone project office, serving the needs of Osan Air Base. Similarly, the Kunsan Resident Office served Kunsan Air Base. The Southern Resident Office, based at Camp Henry, had project offices in Daegu, Busan, Waegwan, and Chinhae. It was responsible for all work south of Pyeongtaek, except any projects at Kunsan Air Base. Finally, in order to facilitate the Korea Transformation Program, the

FED workforce, 2010–2016.



Based on material in FED Annual Reports

USACE FED office locations, 2016.



Based on map in FED Annual Reports

district created the Humphreys Area Office (HAO) to oversee construction at USAG Humphreys. The area office worked closely with KPRO to manage the design and construction efforts at Humphreys.[14]

In a message to FED's contracting agencies in 2011, Colonel Donald Degidio Jr., the commander, wrote, "The Far East District is here to serve you and remain ready and relevant in a changing environment. If you can conceive it and believe it, the Far East District can achieve it."[15] District personnel have consistently delivered on this goal, using technology and creative engineering to create final products of the highest quality. In recognition of this excellent performance, between 2009 and 2013, thirteen FED employees were awarded the de Fleury Medal for their outstanding contributions.[16]

ONGOING COMMITMENT TO DISASTER RESPONSE

Although the majority of FED's focus in the 2010s was on the Korea Transformation Program, the district continued its dedication to disaster response, with district employees participating in recovery efforts in Korea, Japan, and the United States.

After the March 2011 earthquake and tsunami that struck Japan, causing extensive casualties and damaging the Fukushima Daiichi Nuclear Power Plant, FED sent two engineers to assist the Japan Engineer District in its response and recovery efforts. When Tropical Storm Muifa swept across the Korean Peninsula later that year, some areas, including Seoul, received nearly 8 inches of rainfall within a twenty-four-hour period, causing widespread flooding and landslides reminiscent of the 1998 monsoons. A team from FED's Geotech Branch conducted initial reconnaissance of flood and landslide damage at Camps Casey and Hovey north of Seoul. At Camp Hovey, several feet of mud had to be cleared out of some buildings. A mudslide washed away a portion of a channel retaining wall through the two camps on 3 August, necessitating assessment and repair. Portions of the district compound in Seoul were also flooded, though damage was minor.[17]

Hurricane Sandy made landfall in the northeastern United States on 29 October 2012, wreaking havoc throughout the eastern seaboard. Effects of the storm were felt across twenty-four states: at least 162 people were killed, 23,000 people were forced to relocate, and 8.5 million people lost power, some for many weeks. The storm caused nearly $50 billion in property damage. The response and recovery efforts, with heavy involvement from USACE districts around the country, continued for close to two years. In 2013, FED civil engineers Ryan Clark and Naeem Dogar deployed to the New York District for four months to help with Hurricane Sandy recovery. Clark summed up the experience: "Although we composed only a small part of the recovery effort, it felt satisfying to know that we were directly assisting some of the millions of lives affected by Superstorm Sandy that wrought so much damage, destruction, and despair."[18]

ENVIRONMENTAL STEWARDSHIP

As the number of construction projects rapidly grew in the 2010s, FED remained dedicated to its environmental mission, working closely with host nation companies and institutions to mitigate environmental impacts both in new construction and from existing structures. Environmentally proactive in its construction efforts, FED's Environmental Services team responded as needed to specific remediation requests, including offering its expertise to assist a bilateral

investigation of possible contamination from the alleged disposal of Agent Orange at Camp Carroll.

Green Engineering and Construction

Starting in 2006, the Army required all new construction to conform to Leadership in Energy and Environmental Design (LEED) Silver requirements, replacing the Army's in-house rating system Sustainable Project Rating Tool (SPiRiT). LEED ratings were based on how well a building conserved energy, water, and electricity. In the long term, the Army's goal was for all new construction to have net-zero energy consumption by 2030. The Corps was at the forefront of the Army's green engineering efforts, having initiated, in 2012, a pilot study to transform Fort Leonard Wood, Missouri, into a net-zero energy, water, and waste facility.[19]

In FED, all projects funded by the U.S. government were required to have LEED Silver certification, while ROK-funded projects that were under U.S. auspices had to be eligible for this certification. FED hosted LEED workshops for employees and conducted outreach on green engineering practices to area schools, including the Daegu American High School. Outside of formal LEED requirements, FED remained committed to minimizing a project's negative environmental impact, from the design phase through to final construction. "It's a win-win situation," summarized Son Ha, FED Engineering Division design branch chief, "in that we are saving the government money when we use less energy and we are also helping protect the earth."[20]

To be eligible for LEED certification, materials for a project had to be manufactured within 500 miles of the construction site. Since 2006, the district worked to increase its use of local materials from approximately fifty percent to nearly seventy-five percent. Not only were local materials more cost effective for a project, reducing cost and construction time, but sourcing materials from nearby manufacturers also dramatically curtailed the environmental impact of long-distance transport. Although FED had contracted with local construction companies since 1957, much of the materials and equipment used on district projects was shipped from the United States or another offshore location through the early 2000s.[21]

To meet environmental standards, FED designed green features into some buildings. For example, in 2013 the district installed a green roof on the new health and dental clinic at Camp Carroll, the first green roof on a U.S. military facility in Korea. The self-sustaining roof was home to 40,000 plants native to the Daegu area, requiring little extra care or attention. The green roof increased the insulation factor to the building by twenty-five percent, helped reduce and clean storm water runoff, and decreased overall energy use for heating and cooling.[22]

Environmental Response and Remediation

Throughout the 2010s, the district continued its environmental stewardship efforts through response to environmental concerns and proactive remediation. In 2011, for example, FED was involved in a high-profile environmental investigation at Camp Carroll into the alleged burial of containers of the defoliant Agent Orange, which had been used by U.S. forces in the Vietnam War and was notorious for causing human health problems. In May of that year, Vietnam veteran Steve House and two other former soldiers claimed they had participated in the burial of drums of Agent Orange at Camp Carroll decades earlier, in 1978. These serious allegations spurred

USFK and ROK to launch a joint investigation of the claim. Over the course of eight months, the investigative team—led by Dr. Gon Ok of Pukyong National University and Colonel Joseph F. Birchmeier, USFK engineer—interviewed 172 former U.S. soldiers and Korean civilian employees, worked with thirty-two different government agencies, and reviewed U.S. military historical records. The document review suggested that approximately 250 barrels containing unknown chemicals were buried near the helipad at Camp Carroll in 1978; however, the barrels were removed in 1979 or 1980, along with 40 to 60 tons of potentially contaminated soil.[23]

FED engineers played a key role in the investigation. Members of the Geotech Branch provided "expert field, laboratory, and analytical support for an issue of the highest command interest." The field investigation included a geophysical survey using ground-penetrating radar, electrical resistivity, and magnetometers in the area where the barrels were purportedly buried. The team took water and soil samples in specific areas based on the survey results. These samples were then tested for known components of Agent Orange and dioxin by-products. Initial results showed trace amounts of 2,4,5-T, an herbicidal component of Agent Orange, in one groundwater sample, but a retest of the area was negative. FED engineers helped verify the final analytical results.[24]

In December 2011, the ROK-U.S. Joint Investigative Team concluded there was no evidence of Agent Orange having been buried at Camp Carroll and that the area presented no threat to public health. The Korean government, with cooperation from USFK, nonetheless announced it would complete a health assessment to verify there were no health and safety risks to populations living near Camp Carroll.[25]

The next year, FED was again called to respond to an environmental incident when, in June 2012, a U.S. Navy MH-53 helicopter caught fire and crashed in a field near Pohang City. All twelve personnel evacuated the aircraft safely, but the wreck scattered debris and fuel throughout the crash site. The Navy cleared the debris, while the district was tasked with leading the effort to mitigate ground contamination from fuel and other petroleum-based products released from the damaged helicopter. Dr. Shin Hyun-jun and Sarah Woo, of FED's Environmental Services Section, provided technical and contract assistance for negotiations between local authorities in Pohang and the Navy regarding site cleanup and disposal. Between 18 and 20 October, FED contractors removed 350 cubic meters of contaminated soil from the site, under FED's supervision. The contaminated soils were shipped to a licensed off-site facility for treatment and disposal. Summarizing the cleanup efforts, FED's Doug Bliss noted that the district once again demonstrated how "technical expertise and available resources could be applied to successfully resolve a sensitive environmental issue."[26]

In addition to responding to immediate environmental concerns, FED's Environmental Services Section was deeply involved in remediation efforts, from design through construction. During project design, section staff conducted testing on project sites to determine whether or not there was existing ground contamination; if positive results were found, FED provided guidance on necessary mitigation. For example, following an investigation at the site of a planned middle and high school at Camp Walker, FED assisted USFK and ROK government agencies in the removal and disposal of 2,500 cubic meters of contaminated soil.[27]

During construction, FED mitigated environmental impacts by setting up systems that captured runoff caused by topsoil removal during construction. Techniques included building lightweight silk fences to prevent erosion and to capture any soil loosened by construction, and creating absorption sites for rainwater to keep it from leaving the construction zone bearing contaminants. During construction of a second runway at Osan Air Base in 2012, engineers installed sediment traps, open drain swells, and de-silting basins to prevent soil erosion and contamination to a nearby river, illustrating the mitigation techniques developed by the district.[28]

In 2011, the district contracted with Beautiful Environmental Construction Co. to build two-celled biopile systems at two USFK facilities: K-16 Air Base and USAG Yongsan. The contractor completed construction of the two permanent biopile systems in 2012. Biopile systems use naturally occurring living plants, bacteria, or fungi to breakdown hazardous substances in contaminated soil. The systems installed at K-16 and Yongsan

A recently completed runway at Osan Air Base, 2015.

consisted of an impermeable base to reduce migration of leachate liquids from the pile, perforated drainage piping attached to a blower/vacuum to provide airflow through the soil, a plastic tarp cover to prevent damage from precipitation and wind, an in-pile monitoring system, an off-gas treatment system, and a leachate collection sump. At the time two of the most advanced biopile systems in Korea, they were built to treat and remove total petroleum hydrocarbon-diesel-range organic materials from soils produced during the many ongoing construction activities in the area. In November 2012, FED staff provided on-site instruction for the Yongsan Department of Public Works Environmental Division, which eventually operated and maintained the systems.[29]

District engineers took part in a wetland restoration project at USAG Humphreys in 2013. To return the area to its natural filtration function, engineers removed a construction waste berm consisting of 800 cubic meters of concrete debris, rebar, and soil. The enlarged wetland area was replanted with compatible grasses, plants, and shrubs. FED engineers coordinated the installation of a walking path, a pedestrian bridge, and signage containing information about the value of the wetland to the local ecosystem. These remediation projects, as well as the district's timely response to specific environmental incidents, demonstrated FED's dedication to "create great facilities, and at the same time protect our planet and be good stewards of our environment."[30]

BARRACKS BOOM

The 2010s continued the district's focus on soldiers' quality of life, as the peninsula experienced another barracks boom. FED Resident Engineer Greg Reiff estimated that the district had built two or three new barracks each year since he started in 1996. In con-

Professionals from Yongsan Directorate of Public Works Environmental Division explain the biopile process to the environmental experts from Yongsan-gu and Seoul City, May 2013. *Credit: U.S. Army photo by Pfc. Lim Hong-seo. USAG Yongsan Flickr.*

trast, in 2013, Reiff estimated that FED was involved in the construction of "four to five clusters of three to four barracks at a time." The majority of the projects were concentrated at Camp Humphreys, where sixteen barracks were under construction in 2013. Most of the barracks were built to accommodate the standard one-plus-one design for single enlisted housing, with two soldiers sharing a bathroom, kitchen, and common area, but having their own sleeping space and closet.[31]

In addition to the many barracks built at Humphreys, FED worked on the construction of barracks at USAG Daegu, Camp Mujuk, and Osan Air Base, as well as upgrades and renovations at other USFK facilities. On 6 December 2012, FED, the U.S. Navy, and ROK officials held a ribbon-cutting ceremony at a new barracks at Camp Mujuk, near Pohang. The building was part of relocation efforts under the LPP and allowed the Navy to vacate structures at the ROK Marine Corps base and move permanently to Camp Mujuk. The ROK Ministry of Defense–Defense Installations Agency (MND-DIA) contracted Daelim Construction Corp. to build the barracks, with quality assurance from FED. The building would house 110 new occupants and was the first Navy building in Korea to use a geothermal heating system. In 2015, the district began design work on two additional barracks at Camp Mujuk.[32]

Earlier in 2012, FED broke ground on two barracks at USAG Daegu. At Camp Henry, district contractors built a ten-story barracks that would eventually house 298 soldiers from the 19th Expeditionary Sustainment Command. The height was necessary to accommodate space limitations at the site; upon completion in 2014, the building became the tallest structure in FED's Area IV.[33]

Barracks construction at Camp Henry, 2013.

Barracks nearing completion for the U.S. Army at Daegu, 2015.

On 27 June 2012, the district held a groundbreaking ceremony for a new barracks and tactical equipment maintenance facility at Camp Carroll. FED contractors used a new metal form system, called down slab, to mold the concrete walls and floors of the building. The metal forms offered an improvement over the plywood forms traditionally used throughout Korea. FED Sergeant Major David

Breitbach praised the new system, explaining that it "consists of small, lightweight panels and a unique set of jacks to support shoring for easy, accurate installation and a quick, clean and safe removal. It was remarkable to watch a crew remove all of the decking in a matter of minutes for a single room." The technique was found to be not only much faster, but also safer for workers and more cost effective; in addition, it helped reduce construction waste and resulted in a high-quality final product. The district held a ribbon-cutting ceremony for the eight-story building on 22 February 2016. [34]

After three years of construction, on 5 November 2014, a new senior NCO dormitory opened at Osan Air Base. ROK MND-DIA provided in-kind funding for the project, with quality-assurance oversight from FED. The facility provided housing for 277 U.S. Air Force officers in single-occupancy, apartment-style rooms. Colonel Bryan S. Green, FED commander, described the facility as "a perfect example of craft and art coming together to deliver the perfect project on time and on budget."[35]

Construction of barracks at Camp Carroll using a new down slab system, 2014.

OTHER PROJECTS

Although projects at USAG Humphreys dominated the district's construction agenda in the 2010s, new construction at other facilities, as well as ongoing operations and maintenance programs, continued across the peninsula. One unique project FED worked on during this period was a Korean War monument at the UN Memorial Cemetery in Busan. The monument was the first overseas memorial commissioned by the American Battle Monuments Commission (ABMC) to honor the men and women from the United States who fought in the Korean War. The 9-foot-tall granite monument, dedicated

Barracks construction at Camp Carroll, 2015.

in 2013 to coincide with the sixtieth anniversary of the armistice, was inscribed with the words "honor, freedom, peace" below three stars. According to Tom Nosal of the ABMC, "The monument helps tell the story of an alliance between nations that still exists today. . . . It also represents American support for and friendship with South Korea."[36] Other projects FED undertook had purposes more mundane, but nonetheless essential, from training facilities to health clinics to schools.

School Construction

Between 2011, when FED broke ground on the first two schools at USAG Humphreys, and 2017, the district was involved in construction or expansion of six elementary, middle, and high schools, with more planned as the expansion of U.S. facilities on the peninsula continued under the YRP and LLP.

One of the first priorities at the new USAG Humphreys was construction of schools for the children of the more than 40,000 soldiers, civilians, and contractors anticipated to live on base. An elementary school and combined middle and high school were the first two vertical construction projects to break ground at the site. The schools opened to students in August 2013 and January 2014, respectively. During construction of the first two schools, FED began building another elementary school and middle school, both scheduled for completion in early 2017. A third elementary school, completed soon thereafter, gave USAG Humphreys the capacity to educate nearly 5,000 students in modern facilities.[37]

Aerial view of the school campus at USAG Humphreys, 2013.

New sports fields and the high school at USAG Humphreys, 2013.

Col. Craig Cutter, Deputy Commander, 19th Expeditionary Sustainment Command, looks over the Soldier's Creed in the stairwell of Daegu High School.

At some smaller bases, the district converted existing structures into schools. At Camp Walker, FED took a three-story barracks and dining facility and turned it into Daegu High School. From the old barracks, the district created classrooms, science and chemistry laboratories, computer labs, a language lab, and administrative offices at a comparatively low cost of $8 million. Similarly, between January and August 2011, FED completed the expansion of Casey Elementary School at Camp Casey, altering a four-story barracks to incorporate a cafeteria, a computer lab, and additional classrooms. The addition allowed 250 more students to attend Casey Elementary, reducing commutes for many students who previously had to attend school in Seoul.[38]

During construction, the district worked closely with the Department of Defense Education Activity to include innovative design in school construction. In August 2016, the new Osan American Elementary School opened its doors at Osan Air Base. It was the first school in Korea to incorporate "21st century

A new school under construction at Osan Air Base, 2015.

specifications." Guy Kuroiwa, a former project engineer with FED's Central Resident Office, explained that "[t]his design takes away traditional classrooms and replaces them with learning studios in learning hubs. . . . All the studios have a movable glass partition which opens up to the neighborhood and allows for large group learning sessions."[39] Up to 600 students from kindergarten to fifth grade attended the new elementary school during the 2016–2017 school year. The district undertook another twenty-first century school project at Camp Walker, where a new Daegu Middle and High School was slated to open in fall 2017.[40]

U.S. Army Projects

As part of the ongoing transformation of U.S. bases in Korea, the district helped make USAG Daegu—consisting of Camps Walker, Henry, George, and Carroll—into the second largest center for USFK troops on the peninsula. In 2013, FED was involved in twenty-seven projects at Daegu, south of Seoul, valued at approximately a quarter-billion dollars. In addition to new barracks, the district finished construction of a new dining facility at Camp Carroll in 2011. That same year, FED contractors broke ground on a new health and dental clinic at the post. When finished in 2013, the clinic provided services for preventive medicine, after-hours' walk-in care, and dental care, along with radiology, a laboratory, a pharmacy, and other facilities. The clinic was home to the aforementioned first green roof on a U.S. military installation in Korea.[41]

At Camp Walker, FED undertook an overhaul of the electrical and gas systems. The district replaced all overhead power lines with 22,900-volt underground lines, increasing the post's electrical capacity and potential to accommodate future buildings. In 2013, FED engineers converted heating systems in major buildings at Camp Walker to natural gas, helping to decrease utility costs.[42]

Champions' Café dining facility at Camp Carroll, 2011.

Interior view of Champions' Café at Camp Carroll, 2011.

To the north near the DMZ, the district undertook a series of reconfigurations to the Rodriguez Live Fire Complex. Early in 2011, working with leaders of the 2nd Infantry Division, FED began drafting plans to modify the firing range to include both defensive and offensive battle positions. The 2nd Infantry Division requested a more advanced training range for recently acquired M1A2 Abrams tanks and M2A2 Bradley fighting vehicles. By the end of 2012, FED was working on a dozen projects at the complex, including new buildings and drainage improvements. In August 2012, FED delivered a $1.7 million LPP-funded, in-kind vehicle maintenance facility, which included two repair bays, an administration office, communications, electrical, and mechanical rooms, as well as heating, ventilation, and air-conditioning (HVAC) and fire protection systems.[43]

Two drainage improvement projects, at Warrior Valley Range and the Infantry Platoon Battle Area, were completed in December 2012 and February 2013, respectively. Totaling $1,077,000, the two projects repaired, replaced, or upgraded existing stream channels, helping to ensure adequate conditions of the training areas. Between May and September 2013, FED installed several facilities in various areas of the Live Fire Complex, including parking pads, an operations/storage building, range tower, ammunition issue point, guard booth, composting toilet and field latrines, septic tank, and leaching field. In 2015, the district contracted with Seong Bo Construction Co., Ltd., to build a dedicated, vehicle-free running and obstacle course for soldiers. Each of these FED projects served to further improve, in the words of District Commander Colonel Stephen H. Bales, "the training environment for our forces on the peninsula."[44]

Notably, on 20 June 2014, District Commander Bryan S. Green, along with Brigadier General Kang Chang-koo and Lieutenant Colonel Cho Nam-ya, both of the Korean MND, broke ground on the site of the future FED headquarters building at USAG Humphreys. To mark the occasion, Green and representatives from contractor Daelim Industrial, USFK Base Relocation Project Management Office, and the Korea Land and Housing Corporation buried a time capsule containing a guestbook to be opened at the building's ribbon cutting. By March 2017, FED's new home was nearly ninety-five percent complete.[45]

FED Commander Col. Bryan Green and two Korean soldiers employ a three-man shovel to throw dirt on the time capsule at FED's new headquarters groundbreaking, 2014.

Groundbreaking for the new FED headquarters at USAG Humphreys, June 2014.

The FED compound in Seoul was the district's home for sixty years, from 1957 to 2019. The compound was about three blocks from the East Gate—one of the main access points to the ancient walled city of Seoul—in the midst of Dongdaemun, a large and well-established marketplace. Still standing today, the East Gate has been encircled by dense urban expansion and is now in the center of Seoul's fashion district.[46]

From the 1920s to 1945, the FED compound was a Japanese teaching academy, the Kyung Sung Educational School. The district headquarters building was once a gymnasium; the motor-pool parking lot a playground; and the area behind the East Gate Club a Japanese garden. There were two elementary school buildings on the campus, one for Japanese students and another for Koreans, who were instructed in Japanese. At least one FED employee (Kenny Lee, Design Branch chief) attended the school as a child, returning in 1978 by happenstance to work for the district. In the 1980s, retirees from Japan visited the compound to see where they had studied to be teachers long ago.[47]

In 1956, the Korean Construction Agency, FED's forerunner, began using the buildings. At that time, Seoul was much different—only a few cars or pedestrians could be seen downtown, and small streams ran on the north and east sides of the compound. Over the next several decades, the district changed many times over, but the original buildings were the same, although many were repurposed for different uses.[48]

By the 1970s, a few buildings had air conditioning—but most did not. The Seoul Civilian Club (later the East Gate Club) did a booming business, and a theater on the compound showed American movies. A hospital next door (National Medical Center, known to some as "the Scandinavian hospital") provided apartments that housed some civilians. During the energy crisis of 1979, maximum winter temperatures in offices and living quarters were capped at 65 degrees, and other buildings were colder. Periodic inspections enforced the energy controls.[49]

Seoul's historic East Gate, shown here in 1950. *Credit: Official U.S. Navy Photograph, from the All Hands collection at the Naval History and Heritage Command.*

In 1980, the U.S. Eighth Army chief of staff inspected the compound. He questioned whether the compound met fire-safety standards and indicated a need to "get out of the old worn-out buildings," according to the district engineer. In 1983, the district launched a major renovation. New flagpoles went up outside the headquarters building, allowing the Korean flag to fly alongside the United States and USACE flags. On the west side of the compound, the "market" gate received new brick facing, a pedestrian door, and a Korean-style tile roof.[50]

As the renovation gained momentum, FED personnel experienced almost two years of nearly constant shuffling, relocating, and resettling. A number of new buildings went up, and old ones received upgrades. Other changes included air conditioning, new pavement, and a remodeled East Gate Club. The work unearthed a number of old artifacts, displayed in the headquarters building. In addition, the FED motor pool got sixty new pickup trucks and vans, along with a 2,400-gallon fuel truck, to replace the district's aging fleet of sedans and station wagons. By 1985, most elements of the rehab were complete.[51]

The upgraded compound included a restaurant, post exchange, barber shop, photo-processing booth, and laundry shop. The renovated East Gate Club had a dining room, barbeque hut, and cocktail lounge. In addition, a KN mess hall was open six days a week. In 1989, protesters to the U.S. presence in Korea lobbed more than two dozen firebombs over the compound gates, but there were no injuries, and damage was minimal.[52]

The FED compound underwent renovations between 2000 and 2003, including additional office remodels and the replacement of the motor pool building—one of the last Quonset-like structures on the compound. In 2004, the U.S. and ROK governments agreed to the YRP, which triggered plans for the district's relocation from the Seoul metropolitan area to new facilities at Camp Humphreys. The ceremonial groundbreaking for the new headquarters was held on 20 June 2014, with completion of FED's move scheduled for 2018. The new headquarters will consolidate twenty-six separate facilities at FED's Seoul compound into one four-story building.[53]

The FED headquarters building (S-62), February 1977.

The Navy color guard presents the colors during the ribbon-cutting ceremony opening its headquarters in Busan, 2016.

U.S. Navy Projects

The reorganization of U.S. forces under the YRP included relocating many branch and division headquarters, like FED's, from USAG Yongsan in Seoul to other areas. In most cases, the shift was made to dedicated U.S. military installations. The U.S. Navy, however, relocated its command to a Republic of Korea Naval (ROKN) base, making it the only U.S. military headquarters in Korea to be located on a ROK base. In August 2013, leaders from the U.S. and ROK navies broke ground on the new U.S. Naval Forces Korea headquarters at Busan. FED oversaw construction of the facility.[54]

At the ribbon cutting three years later, U.S. and Korean military and civilian leaders spoke about the symbolism of the new U.S. naval headquarters being collocated with the ROK fleet. ROKN Vice Admiral Lee Ki-suk stated, "There is no doubt in my mind that by working together, face-to-face, in the same location in such critical times, we will further solidify the ROK and U.S. alliance, and our combined naval operations capability." General Curtis Scaparrotti, Commander USFK, further emphasized the benefits of the relocation, calling it "an act that symbolizes the traits that make our combined force great; open communication, mutual values, and constant collaboration that were founded right here so many years ago."[55]

U.S. Naval Command headquarters in Busan, 2015.

A recently completed maintenance facility at Kunsan Air Base, 2011.

U.S. Air Force Projects

For the U.S. Air Force, the district worked to improve training and maintenance facilities at Kunsan Air Base. In August 2011, FED and the Air Force broke ground on a distributive mission training (DMT) flight simulation facility at Kunsan. The building's four flight simulators allowed pilots at Kunsan to train with other Air Force pilots around the world. FED and Air Force leadership held a ribbon-cutting ceremony for the facility on 12 December 2013.[56]

Between November 2011 and December 2012, FED completed a three-phase project to construct a new maintenance complex for Kunsan Air Base. Replacing eighteen separate 1970s-era shops spread around the base, the new complex consisted of a

FED works to complete a new flight simulator facility for the U.S. Air Force at Kunsan Air Base, 2012.

fabrication shop and an armament shop (both completed in 2011), as well as an accessory shop (finished in 2012). The 58,000-square-foot complex was located within close proximity of the flight line, allowing personnel to respond more quickly to urgent aircraft maintenance issues.[57]

The 2010s saw the relationship between the United States and the ROK further cemented through the consolidation of U.S. forces under the LLP and YRP. FED's workload continued to increase as construction at USAG Humphreys and other facilities expanded exponentially to meet troop relocation deadlines. While most of the construction focused on Humphreys, the district completed major projects at USAG Daegu, Kunsan, and Osan air bases, and Busan, where a new headquarters was built for U.S. Naval Forces in Korea. With its dedication to its customers, commitment to environmental stewardship, and continued efforts to improve the quality of life for U.S. troops, FED played a crucial role in transforming the infrastructure of U.S. armed forces in Korea, paving the way for future decades of service.

CSM John Troxell, United States Forces Korea command sergeant major, surveys new facilities at USAG Humphreys, October 2013.
Credit: U.S. Army Photo by Sgt. Brian Gibbons. USFK Flickr.

NOTES

[1] USACE-FED, "Year in Review, Fiscal Year 2011," 32; "Year in Review, Fiscal Year 2016," 3, 32, PAO-FED Historical Files; Kwang-Kyu Choe, interview by John Lonnquest, 10 March 2016, transcript, 6.

[2] Jason Chudy, "Korea Sees Barracks Boom," *East Gate Edition* 22, no. 11 (Fall 2013): 16–17; USACE-FED, "Year in Review, Fiscal Year 2016," 3, 16–17, PAO-FED Historical Files.

[3] Patrick Bray, "Far East District Breaks Ground on Two Schools at USAG Humphreys," *East Gate Edition* 20, no. 3 (September 2011): 8–9.

[4] Patrick Bray, "Director of Military Programs Tours USAG Humphreys," *East Gate Edition* 20, no. 4 (October 2011): 8–9; Jason Chudy, "Korea Sees Barracks Boom," *East Gate Edition* 22, no. 11 (Fall 2013): 16–17.

[5] Patrick Bray, "Far East District Completes 'Super Hangar,'" *East Gate Edition* 21, no. 11 (November 2012): 8–9; Patrick Bray, "Downtown Area: Redevelopment Will Turn Old Garrison into New," *East Gate Edition* 21, no. 11 (November 2012): 6.

[6] Steven Hoover, "Groundbreaking for New 'Downtown' Area Conducted at Humphreys," *Far East Edition* 23, no. 11 (Fall 2014): 14–15.

[7] The sixty-eight-bed facility was named after Colonel Brian Allgood, who was killed in Iraq in 2007. Patrick Bray, "New Brian Allgood Army Community Hospital," *East Gate Edition* 21, no. 11 (November 2012): 11–12.

[8] Chris Kim, "Local Materials: A Win-Win for the U.S. and Korea," *East Gate Edition* 22, no. 2 (February 2013): 16–17; Patrick Bray, "FED and Ministry of National Defense Host Local Construction Materials Conference," *East Gate Edition* 20, no. 2 (August 2011): 6–7; "Engineering Division," *East Gate Edition* 22, no. 7 (July 2013): 10.

[9] FED Public Affairs, "When West Meets East: Cultural Integration into Design," *East Gate Edition* 22, no. 2 (February 2013): 18–19.

[10] Dick Byron, interview by John Lonnquest, 3 March 2016, Honolulu, HI, transcript, 47; George Ward, "Construction Surveillance in Korea," *East Gate Edition* 25, no. 4 (Spring 2016): 13; George Ward, interview by Joshua Pollarine, 11 October 2016, transcript, 9; Sam Han, interview by Joshua Pollarine, 7 October 2016, transcript, 2.

[11] Patrick Bray, "Transformation Construction in Korea," *East Gate Edition* 21, no. 2 (February 2012): 15; Stephen Satkowski, "New 'Footprint' Emerging in the Republic of Korea for U.S. Military," *East Gate Edition* 23, no. 11 (Fall 2014): 5; Sam Adkins, "Construction Division Quarterly Report," *East Gate Edition* 23, no. 11 (Fall 2014): 8–9; USACE-FED, "Year in Review, Fiscal Year 2016," 3, 32, PAO-FED Historical Files.

[12] Anna Fifield, "Timely Move to Massive U.S. Garrison in S. Korea," *Washington Post*, 30 July 2017, sec. A-1.

[13] "Renewing our Comitment [sic] to our Customers," *East Gate Edition* 21, no. 2 (February 2012): 7; Patrick Bray, "What We Do . . . for the U.S. Army," *East Gate Edition* 22, no. 2 (February 2013): 6–7; Patrick Bray, "What We Do . . . for the Department of Defense Education Activity," *East Gate Edition* 22, no. 2 (February 2013): 12–13; USACE FED, "Year in Review, Fiscal Year 2015," 4, PAO-FED Historical Files; Patrick Bray, "Col. Schantz Leaves Legacy for FED," *East Gate Edition* 20, no. 1 (July 2011): 8.

[14] Jon Iwata, "What We Do for the Military Services," *East Gate Edition* 22, no. 2 (February 2013): 4–5; USACE FED, "Locations, Resident Offices," accessed 14 April 2017, http://www.pof.usace.army.mil/Locations/Resident-and-Area-Offices; Patrick Beard and Chris Cormier, "KPRO: Working (and Playing) Hard at Humphreys," *East Gate Edition* 21, no. 7 (July 2012): 4–5.

[15] Colonel Donald E. Degidio Jr., "Commander's Corner," *East Gate Edition* 20, no. 1 (July 2011): 3.

[16] "FED Leaders Receive de Fleury Medals," *East Gate Edition* 20, no. 1 (July 2011): 6; Jason Chudy, "Pickler Receives the Bronze Order of the de Fleury Award," *East Gate Edition* 22, no. 8 (October 2013): 3. The de Fleury Award was named after Capt. François de Fleury, a French Army engineer who served with American forces during the Revolutionary War.

[17] "A look back at 2011," *East Gate Edition* 20, no. 5 (December 2011): 12; Patrick Bray, "Heavy Rains Hit Korea," *East Gate Edition* 20, no. 2 (August 2011): 13.

[18] FEMA, *Hurricane Sandy FEMA After-Action Report* (Washington, DC: FEMA, 2013): 1, 6; Ryan Clark and Naeem Dogar, "District Engineers Support Recovery Operations from Hurricane Sandy," *East Gate Edition* 22, no. 11 (Fall 2013): 8.

[19] Lindsey Pruitt, "FED Speaks with Green Engineering Class at Daegu American High School," *East Gate Edition* 21, no. 11 (November 2012): 22–23.

[20] Stephen Satkowski, "Building Strong and Protecting the Environment," *East Gate Edition* 22, no. 11 (Fall 2013): 18; Patrick Bray, "LEED Training at the Far East District," *East Gate Edition* 20, no. 2 (August 2011): 8; Pruitt, "FED Speaks with Green Engineering Class," 22–23.

[21] Patrick Bray, "FED and Ministry of National Defense Host Local Construction Materials Conference," *East Gate*

Edition 20, no. 2 (August 2011): 6–7; Chris Kim, "Local Materials: A Win-Win for the U.S. and Korea," *East Gate Edition* 22, no. 2 (February 2013): 16–17.

[22] Patrick Bray, "Far East District Installs Its First Green Roof," *East Gate Edition* 22, no. 3 (March 2013): 15; Stephen Satkowski, "Building Strong and Protecting the Environment," *East Gate Edition* 22, no. 11 (Fall 2013): 18.

[23] Ashley Rowland, "No Evidence of Buried Chemical Drums, Agent Orange Found in Latest Testing in Korea," Stars and Stripes, 9 September 2011, https://www.stripes.com/news/no-evidence-of-buried-chemical-drums-agent-orange-found-in-latest-testing-in-korea-1.154558#.WO0H4_nytpg; Lee Tae-hoon, "US Army Admits Chemical Dumping," *Korea Times*, 23 May 2011, http://www.koreatimes.co.kr/www/news/nation/2011/05/116_87510.html.

[24] USACE-FED, "Year in Review, Fiscal Year 2011," 37, PAO-FED Historical Files; Ashley Rowland, "8-Month Investigation Turns Up No Agent Orange at S. Korean Base," *Stars and Stripes*, 29 December 2011, https://www.stripes.com/news/8-month-investigation-turns-up-no-agent-orange-at-s-korean-base-1.164696#.WO0g3_krJpg; Walter T. Ham IV, "Team Concludes Agent Orange Investigation in Korea," U.S. Army, 29 December 2011, https://www.army.mil/article/71403/Team_concludes_Agent_Orange_investigation_in_Korea.

[25] Walter T. Ham IV, "Team Concludes Agent Orange Investigation in Korea," U.S. Army, 29 December 2011, https://www.army.mil/article/71403/Team_concludes_Agent_Orange_investigation_in_Korea; Ashley Rowland, "8-Month Investigation Turns Up No Agent Orange at S. Korean Base," *Stars and Stripes*, 29 December 2011, https://www.stripes.com/news/8-month-investigation-turns-up-no-agent-orange-at-s-korean-base-1.164696#.WO0g3_krJpg.

[26] Douglas Bliss, "District Technical Expertise Helps U.S. and Host Nation," *East Gate Edition* 21, no. 10 (October 2012): 4–5.

[27] USACE-FED, "Year in Review, Fiscal Year 2013," 53; "Year in Review, Fiscal Year 2014," 56, PAO-FED Historical Files.

[28] Stephen Satkowski, "Building Strong and Protecting the Environment," *East Gate Edition* 22, no. 11 (Fall 2013): 18; Staff Sergeant Stefanie Torres, "Osan Second Runway under Construction," *East Gate Edition* 21, no. 10 (October 2012): 10–11.

[29] Mark White, "FED Completes Construction of Environmentally-Friendly Contaminated Soil Treatment Facilities," *East Gate Edition* 21, no. 12 (December 2012): 8–9.

[30] Stephen Satkowski, "FED Engineers Take the Lead in Promoting Green Projects," *East Gate Edition* 22, no. 11 (Fall 2013): 19.

[31] Jason Chudy, "Korea Sees Barracks Boom," *East Gate Edition* 22, no. 11 (Fall 2013): 16–17.

[32] Patrick Bray, "New Navy Barracks at Camp Mujuk," *East Gate Edition* 21, no. 12 (December 2012): 6–7; USACE FED, "Year in Review, Fiscal Year 2015," 8, PAO-FED Historical Files.

[33] Patrick Bray, "Far East District Begins Two Barracks at Daegu," *East Gate Edition* 21, no. 6 (June 2012): 16; Stephen Satkowski, "A New 'Skyline' Emerges over Camp Henry," *East Gate Edition* 23, no. 9 (July 2014): 6.

[34] Patrick Bray, "Far East District Begins Two Barracks at Daegu," *East Gate Edition* 21, no. 6 (June 2012): 16; Stephen Satkowski, "Camp Carroll Facility Includes Unique Concrete Mold Construction Method," *East Gate Edition* 23, no. 7 (June 2014): 1–3; Sergeant Major David Breitbach, "Sgt. Major's Corner," *East Gate Edition* 23, no. 11 (Fall 2014): 3; "New Barracks Opened for 2ID Junior Enlisted Soldiers at Camp Carroll," *East Gate Edition* 25, no. 3 (March 2016): 4.

[35] Senior Airman Matthew Lancaster, "Osan Air Base Opens New Senior Noncommissioned Officer Dorm," *East Gate Edition* 23, no. 14 (December 2014): 1.

[36] Jason Chudy, "Far East District Builds a Korean War Monument in Busan," *East Gate Edition* 22, no. 6 (June 2013): 6–7; American Battle Monuments Commission, "Korean War Monument at Busan," accessed 13 April 2017, https://www.abmc.gov/cemeteries-memorials/pacific/korean-war-monument-busan.

[37] Steven Hoover and Carly Hoff, "New Middle/High School Opens on Camp Humphreys," U.S. Army News, 9 January 2014, https://www.army.mil/article/118009/New_Middle_High_School_opens_on_Camp_Humphreys; USACE-FED, "Year in Review, Fiscal Year 2013," 25; "Year in Review, Fiscal Year 2016," 28, PAO-FED Historical Files; U.S. Army, "Ribbon Cutting Ceremony 'Officially' Opens HM/HS,' *U.S. Army News*, May 8, 2014, https://www.army.mil/article/125693/Ribbon_cutting_ceremony__officially__opens_HM_HS/.

[38] Patrick Bray, "Far East District Opens Two School Projects," *East Gate Edition* 20, no. 3 (September 2011): 6–7; USACE-FED, "Year in Review, Fiscal Year 2011," 7, 26, PAO-FED Historical Files.

[39] Stephen Satkowski, "State-of-the-art Osan American Elementary School Opens Incorporating 21st Century

design," *East Gate Edition* 25, no. 12 (September 2016): 1; USACE-FED, "Year in Review, Fiscal Year 2014," 46; "Year in Review, Fiscal Year 2016," 44, PAO-FED Historical Files.

[40] Stephen Satkowski, "District Breaks Ground on New School at Camp Walker," *East Gate Edition* 23, no. 14 (December 2014): 3; USACE-FED, "Year in Review, Fiscal Year 2016," 53, PAO-FED Historical Files.

[41] Patrick Bray, "'Heading South': The Far East District's Southern Resident Office," *East Gate Edition* 22, no. 3 (March 2013): 12–14; "Also at Camp Carroll . . ." *East Gate Edition* 20, no. 4 (November 2011): 10; Patrick Bray, "Groundbreaking for Combined Health and Dental Clinic for Camp Carroll," *East Gate Edition* 20, no. 4 (November 2011): 8–9; Patrick Bray, "Far East District Installs Its First Green Roof," *East Gate Edition* 22, no. 3 (March 2013): 15.

[42] Patrick Bray, "'Heading South': The Far East District's Southern Resident Office," *East Gate Edition* 22, no. 3 (March 2013): 12–14.

[43] "A Look Back at 2011," *East Gate Edition* 20, no. 6 (December 2011): 10–12; Patrick Bray, "Far East District Builds for the Warfighter," *East Gate Edition* 21, no. 11 (November 2012): 16–17.

[44] USACE-FED, "Year in Review, Fiscal Year 2012," 5; "Year in Review, Fiscal Year 2013," 14–15; "Year in Review, Fiscal Year 2015," 4, 16, PAO-FED Historical Files.

[45] Stephen Satkowski, "District Makes History as It Breaks Ground on New Headquarters Building," *East Gate Edition* 23, no. 9 (July 2014): 1; "Project Update, Spring 2017," *East Gate Edition* 26, no. 4 (Spring 2017): 10.

[46] Whitmore, *History of the United States Army Engineer District, Far East*, 85, 120; USACE-FED, Command Brief, circa 1984, 1; "Visit of Major General Gerald E. Galloway, Division Engineer, U.S. Army Engineer Division, Pacific Ocean" [Map of FED Compound] October–November 1960, iii, PAO-FED Historical Files; Joe Campbell, "Welcome," *East Gate Edition* 15, no. 6 (November/December 2005): 7.

[47] Randall Martin, FED Historian, "Kenny Lee, FED, and How It Used to Be," *East Gate Edition* 3, no. 28 (July 1985): 4; "FED Compound Interests Former Students," *East Gate Edition* 1, no. 8 (October 1983): 3.

[48] "28 Years with FED," *East Gate Edition* 2, no. 23 (February 1985): 5.

[49] USACE-FED, Joseph T. Clancy, Jr., "The Way It Was," undated; Unpublished Draft, "History of the Corps of Engineers, Far East District, 1978-1997: 1979," July 1997, 22, PAO-FED Historical Files.

[50] Colonel Robert D. Carpenter, FED District Engineer, to Brig. Gen Henry J. Hatch, POD Division Engineer, 7 March 1980, 9, PAO-FED Historical Files; "Korean, U.S. Flags to Fly at FED," *East Gate Edition* 1, no. 1 (March 1983): 3; "District Entrance to Get Facelift," *East Gate Edition* 1, no. 2 (April 1983): 1.

[51] "District Begins Major Renovation," *East Gate Edition* 1, no. 3 (May 1983): 3; "New FED Vehicles Arrive on Compound," East Gate Edition 1, no. 9 (November 1983): 5; USACE-FED, "FY 85 Highlights," circa October 1985, PAO-FED Historical Files; "District Happenings," *East Gate Edition* 1, no. 7 (September 1983): 6; "Offices Move to New Construction Building," *East Gate Edition* 2, no. 18 (September 1984): 3.

[52] Al Bertaux, "Fire Bombs Inflict Slight Damage," *East Gate Edition* 6, no. 66 (January 1989): 2; "FED Compound Again the Target," *East Gate Edition* 6, no. 67 (February 1989): 15; "Many Services Available on Compound," *East Gate Edition* 2, no. 20 (November 1984): 3.

[53] David J. Rehbein, "From the Commander," *East Gate Edition* 10, no. 1 (January 2000): 2; Patrick Forrest, "Ground Breaks on New FED Motor Pool," *East Gate Edition* 10, no. 9 (October 2000): 6; Patrick Forrest, "Closing FED's Compound Just One Hot Issue at Town Hall Meeting," *East Gate Edition* 10, no. 10 (November/December 2000): 5; Stephen Satkowski, "New 'Footprint' Emerging in Korea for U.S. Military," *Pacific Engineer*, 19 September 2014, http://www.pod.usace.army.mil/Media/News/Article/500065/new-footprint-emerging-in-korea-for-us-military; Stephen Satkowski, "District Marks History as It Breaks Ground on New Headquarters Building," *Year Book: Far East District*, 2015; Ed Minnerly, interview by John Lonnquest, 8 March 2016, transcript, 3.

[54] Commander, Naval Forces Korea Public Affairs, "New Era of US, ROK Navy Alliance Begins in Busan," *East Gate Edition* 25, no. 2 (February 2016): 5–6; "Ground Broken on Naval Forces Korea Headquarters in Busan," *East Gate Edition* 22, no. 8 (October 2013): 4.

[55] Commander, Naval Forces Korea Public Affairs, "New Era of US, ROK Navy Alliance Begins in Busan," *East Gate Edition* 25, no. 2 (February 2016): 5–6.

[56] Patrick Bray, "Far East District Helps Bring Global Training to Kunsan," *East Gate Edition* 20, no. 3 (September 2011): 10; Senior Airman Armando A. Schwier-Morales, "Kunsan Opens Simulator," News, Kunsan Air Base, accessed 13 April 2017, http://www.kunsan.af.mil/News/Article/623501/kunsan-opens-simulator/.

[57] Patrick Bray, "Far East District Cuts Ribbon on Maintenance Complex Phase 1 and 3," *East Gate Edition*

20, no. 4 (November 2011): 6–7; Patrick Bray, "Maintenance Complex Completed at Kunsan," *East Gate Edition* 22, no. 1 (January 2013): 12–13.

FAR EAST DISTRICT

CONCLUSION

"There is only one maneuver district, only one enduring district that defends freedom, day in and day out, directly in harm's way."[1]

—Colonel Blair A. Schantz

Throughout its history, the Far East District (FED) has been unique among U.S. Army Corps of Engineers (USACE) institutions. It is the only district whose personnel are trained for contingency purposes, capable of making an instant transition to wartime operations. Over six decades, FED has been challenged by Korea's geography and by its history. The district was established when Korea still suffered in the aftermath of war. There were shortages of construction supplies and technical expertise, while raw labor was plentiful. FED helped the Republic of Korea (ROK) build its economy, infrastructure, and industry. Despite Korea's rugged terrain, extreme weather, and undeveloped roads, the district oversaw construction across the peninsula, often at remote locations. In both Korea and Japan, FED responded to the shifting requirements of U.S. forces, often under difficult conditions.

FED's service to the U.S. military was twofold: it built the facilities and infrastructure soldiers needed for war-readiness, and it provided the basis for U.S. personnel and their families to live comfortably. The first goal, keeping U.S. forces ready to fight, could not be allowed to fail. The second goal, providing comfortable living for U.S. personnel and families, was not as clear-cut. As successive U.S. administrations debated the appropriate level of American military involvement in Korea—including whether U.S. forces should be present at all—Congress showed hesitancy to invest in long-term, quality-of-life improvements. As a result, tours in Korea were often lonely owing to lack of family housing. Soldiers frequently lived and worked in tin Quonsets left over from the 1950s war. Still, as time went by, FED improved these living conditions considerably, reaching a pinnacle in recent years with the Korea Transformation Program.

The district's workload followed a pattern of boom and bust. Consequently, FED was continually faced with the need to expand or contract its workforce. Often, international trends and events drove these fluctuations. The 1968 Blue House raid, for example, led to a massive construction program in Korea; by the 1970s, austerity prevailed. A major Cold War buildup came in the 1980s, but lean times returned in the 1990s—only to be followed by yet another surge in the 2000s, driven by a major realignment of U.S. forces. During each period of

uncertainty, the district expanded its range of services and found new means of relevance. Then, at times of urgent need, FED became indispensable.

Through all these circumstances, the district relied on its flexibility, perseverance, and people. Flexibility, from the start, was a basic requirement in postwar Korea. FED not only trained Korean companies and workers in American building methods, it also adopted Korean techniques. Over time, USACE projects helped to create markets for high-quality, local construction materials, while FED's contractors helped to transform the ROK into a global economic powerhouse. In addition, the district used inventive contracting methods to adapt to the local business environment. If Korea was "the battle lab for the Army," then FED was a multiservice construction laboratory, where a diverse team of Department of the Army civilians (DACs), Korean nationals (KNs), and U.S. soldier-engineers engaged in a high-pressure process of learning by doing.[2]

Perseverance, as well, took many forms at FED, from a dogged effort to raise safety standards in Korea to countless hours on muddy roads or in helicopter cockpits. Hospitals and high-rises soon emerged, and the district's growth paralleled that of South Korea. Eventually, FED had the best safety record in the Corps, and U.S. personnel had the best housing anywhere. Throughout, the people who worked at FED made it succeed. If KNs provided continuity, experience, and local understanding, then DACs brought new skills and fresh viewpoints. Soldier-engineers served as leaders and liaisons. Although recruitment of personnel was difficult, Korea's enchantment often persuaded new arrivals to extend their tours, or to return later in their careers. Working at FED, some said, was like joining a family. Even as faces changed, the commitment and resilience stayed the same.

The district's activities are but one pillar of the U.S.-ROK alliance. Even so, FED has contributed to the stability, safety, and economic development of a strong South Korea. It has also provided U.S. personnel with the means to live in relative comfort and, should it be necessary, prevail in combat. Even on the precipice of war, the district has built a legacy for peace. Overall, despite the frequent reappearance of crisis on the Korean peninsula, the reality has been a relative stability for more than half a century. Through many changes, the district has remained ready for war, while building for peace. In this way, the Corps' "maneuver district" has not just endured but has thrived, building strong in Korea for sixty years.

NOTES

[1] Quotation by District Engineer Schantz, in Patrick Bray, "Col. Degidio Takes Command of the Far East District," *East Gate Edition* 20, no. 1 (July 2011), 5.

[2] Quotation from Colonel Francis Kosich, in Gloria Stanley, "Getting to Know the District Commander," *East Gate Edition* 12, no. 9 (September 2002): 16.

FAR EAST DISTRICT

ABBREVIATIONS & ACRONYMS

ABMC	American Battle Monuments Commission
A/E	architectural and engineering
BDT	Base Development Team
BEQs	bachelors' enlisted quarters
BMAR	backlog of maintenance and repair
BOQs	bachelor officers' quarters
BRAC	Base Realignment and Closures
CADD	computer-assisted design and drafting
CADS	Containerized Ammunition Delivery Systems
CDIP	Combined Defense Improvement Projects
CEFMS	Corps of Engineers Financial Management System
CMIS	Configuration Management Information System
DACs	Department of the Army civilians
DMT	distributive mission training
DMZ	Demilitarized Zone
DOD	U.S. Department of Defense
DPRK	Democratic People's Republic of Korea, North Korea
EBS	electronic bid sets
ECC	Evacuation Control Center
EL&S	Exploration, Laboratory, and Survey
EOP	electro-osmotic pulse technology
ER	Engineer Regulation
FEAK	Facilities Engineer Activity Korea
FED	Far East District
FEMA	Federal Emergency Management Agency

FEST	Forward Engineer Support Teams
GAO	Government Accountability Office
Geotech	geotechnical and environmental engineering
GIS	Geographic Information System
GPS	Global Positioning System
HAO	Humphreys Area Office
HED	Hawaii Engineer District
HVAC	heating, ventilation, and air conditioning
IBOP	International Balance of Payments (Buy American)
IMCOM-Pacific	Installation Management Command–Pacific
ISO	International Standards Organization
JAO	Japan Area Office
JNs	Japanese nationals
KATUSA	Korean Augmentation to the United States Army
KCA	Korea Construction Agency
KCOIC	Korea Combat Operations Intelligence Center
KNs	Korean nationals
KPRO	Korea Program Relocation Office
LAN(s)	local area network(s)
LEED	Leadership in Energy and Environmental Design (green building rating system)
LPP	Land Partnership Plan
MASH	Mobile Army Surgical Hospital
MATOC	Multiple Award Task Order Contracts
MCA	military construction, Army
MEDSOM	Medical Supply, Optical, and Maintenance
MILCON	military construction
MND	minister of national defense
MND-DIA	Ministry of Defense–Defense Installations Agency
MOA	memorandum of agreement
MOU	memorandum of understanding
MVA	modern volunteer army

NAF	non-appropriated funds
NCO	non-commissioned officer
NEO	noncombatant evacuation operation
OIG	Office of U.S. Inspector General
PACAF	Pacific Air Force Command
PCs	personal computers
PCBs	polychlorinated biphenyls
PMBP	Project Management Business Process
POD	Pacific Ocean Division
POL	petroleum, oil, and lubricants
POW	prisoner of war
PPMD	Program and Project Management Division
PVDs	prefabricated vertical drains
QM	quartermaster
QMS	quality management system
RAPCON	radar approach control
RIF	reduction in force
ROK	Republic of Korea, South Korea
ROKA	Republic of Korea Army
ROKFC	Republic of Korea Funded Construction
ROK-MND	Republic of Korea Ministry of National Defense
ROKN	Republic of Korea Naval
RSOI	Reception, Staging, Onward Movement and Integration
SABER	Simplified Acquisition of Base Engineering Requirements
SOFA	status of forces agreement
SPiRiT	Sustainable Project Rating Tool
TAC	tactical site
TCMS	Theater Construction Management System
TDY	temporary duty
TNT	Tunnel Neutralization Team
TPICK	Telecommunications Plan for the Improvement of Communications in Korea

UEPH	unaccompanied enlisted personnel housing
UFG	Ulchi Freedom Guardian
UFL	Ulchi-Focus Lens
UGCP	underground command post
UN	United Nations
UOPH	unaccompanied officer personnel housing
USACA-J	U.S. Army Construction Agency–Japan
USACA-K	U.S. Army Construction Agency–Korea
USACE	U.S. Army Corps of Engineers
USAG	U.S. Army garrison
USFK	U.S. Forces in Korea
USIS	U.S. Information Service
WESTPAC	Office of Deputy Division Engineer for West Pacific
YRP	Yongsan Relocation Program

FED COMMANDERS

1957–2019

FED COMMANDERS 1957–2019		
Commander	From	To
Colonel Charles S. Kuna 	October 1956	July 1957
Colonel Stephen E. Smith 	July 1957	April 1958
Colonel Ellery W. Niles 	April 1958	April 1959

FED COMMANDERS 1957–2019		
Commander	From	To
Colonel Daniel A. Richards 	April 1959	April 1960
Colonel Herschel E. Linn 	April 1960	March 1961
Colonel William N. Beard 	March 1961	May 1962
Colonel James G. Rawlings (Acting District Engineer) 	May 1962	August 1962

FED COMMANDERS 1957–2019		
Commander	From	To
Colonel Wilmot R. McCutchen 	August 1962	August 1963
Colonel Robert E. Snetzer 	August 1963	August 1965
Colonel William M. Boardman 	August 1965	July 1967
Colonel John J. McCulloch 	July 1967	July 1969

FED COMMANDERS 1957–2019		
Commander	From	To
Colonel Franklin R. Day 	July 1969	June 1970
Colonel Wesley E. Peel 	July 1970	June 1972
Colonel William T. Moore 	June 1972	August 1973
Colonel Ralph T. Garver 	September 1973	July 1975

FED COMMANDERS 1957–2019		
Commander	From	To
Brigadier General Ames S. Albro Jr. 	July 1975	April 1977
Lieutenant Colonel Ronald W. Brass 	April 1977	July 1977
Colonel Robert M. Bunker 	July 1977	June 1979
Colonel Robert D. Carpenter 	July 1979	June 1981

FED COMMANDERS 1957–2019		
Commander	From	To
Colonel Frederick A. Perrenot 	June 1981	June 1984
Colonel Larry B. Fulton 	July 1984	July 1986
Colonel Howard E. Boone 	July 1986	July 1989
Colonel Mark W. Potter 	July 1989	August 1991

FED COMMANDERS 1957–2019		
Commander	From	To
Colonel Bartholomew B. Bohn II 	August 1991	July 1993
Colonel Robert N. Martin 	July 1993	July 1995
Colonel James L. Hickey 	July 1995	July 1998
Colonel David J. Rehbein 	July 1998	June 2000

FED COMMANDERS 1957–2019		
Commander	From	To
Colonel Gregory S. Kuhr 	June 2000	June 2002
Colonel Francis X. Kosich 	June 2002	July 2004
Colonel Janice L. Dombi 	July 2004	July 2007
Colonel Clarence D. Turner 	July 2007	July 2009

FED COMMANDERS 1957–2019		
Commander	From	To
Colonel Blair A. Schantz 	July 2009	July 2011
Colonel Donald E. Degidio Jr. 	July 2011	July 2013
Colonel Bryan S. Green 	July 2013	July 2015
Colonel Stephen H. Bales 	July 2015	July 2017

FED COMMANDERS 1957–2019		
Commander	From	To
Colonel Teresa A. Schlosser 	July 2017	July 2019

BIBLIOGRAPHIC ESSAY

The foundational sources for Far East District (FED) history are U.S. Army Corps of Engineers publications. The most important is Earle Whitmore's *History of the United States Army Engineer District, Far East, 1957 to 1975* (Seoul: FED, 1976). Whitmore was the district's official historian at the time, and her book catalogs FED's inception and early years in exacting detail. Her history is especially strong in recounting the emergency construction programs in Japan and Korea in the 1960s, and we relied heavily on her work. An extension of Whitmore's history is Kim Bowen's *Supplement to the History of United States Army Engineer District, Far East, 1976 to 1977* (Seoul: FED, 1979). Erwin N. Thompson's *Pacific Ocean Engineers* (Honolulu: Pacific Ocean Division, 1985) offers a broader view of FED and other U.S. Army Corps of Engineers (USACE) elements under Pacific Ocean Division (POD), and rounds out the district's early history in the WESTPAC era of the 1970s. Researchers can access these official publications through the USACE Digital Library.

To understand the Korean War, perhaps no book is more significant from a USACE perspective than *Remembering the "Forgotten War," U.S. Army Engineer Officers in Korea* (Alexandria, VA: USACE Office of History, 2005), edited by Barry W. Fowle and John C. Lonnquest. This collection of oral history interviews traces the war's course from beginning to end, with explanatory passages preceding firsthand commentary from soldier-engineers who survived the experience. More broadly, there are several overviews of Korean War literature, which is copious, including Keith D. McFarland, *The Korean War: An Annotated Bibliography* (New York: Garland, 1986); Allan R. Millett, "A Reader's Guide to the Korean War" in *The Journal of Military History 61* (July 1997): 583–97; and Stanley Sandler, *The Korean War, An Encyclopedia* (New York: Garland Publishing, 1995).

Books in English on modern Korean history have been less plentiful than writings on the Korean War, but in recent years a number of valuable studies have emerged. An accessible introduction is Michael J. Seth, *A Concise History of Modern Korea* (Lanham, MD: Rowman & Littlefield Publishers, 2010), which gives an overview from ancient times to the twenty-first century. Another useful starting point is Edward A. Olsen, *Korea, the Divided Nation* (Westport, CT: Praeger Security International,

2005), which encapsulates Korea's political history through the Korean War and into the modern era. Djun Kil Kim, a Korean national writing in English, offers a concise overview in *The History of Korea* (Westport, CT: Greenwood Press, 2005), condensing the peninsula's long, complex history into a single readable volume. A popular history is Bruce Cummings, *Korea's Place in the Sun* (New York: W. W. Norton & Company, 1997), which uses a thematic arrangement to analyze Korea from a political vantage, especially in relation to the United States.

More specialized studies have added to Korea's English-language historiography. From an economic standpoint, two excellent books are Jung-en Woo, *Race to the Swift* (New York: Columbia University Press, 1991) and Eun Mee Kim, *Big Business, Strong State* (Albany: State University of New York Press, 1997), both of which explore the manifold relationships of world politics and economic development in making the modern South Korean state. An interesting international history is Gregg Brazinsky, *Nation Building in South Korea* (Chapel Hill: University of North Carolina Press, 2007), which analyzes U.S.-Korean relations during the Cold War and South Korea's transition from autocracy to democracy. For a more general overview of the Cold War—including Korea's place within it—John Lewis Gaddis presents a comprehensive yet accessible treatment, *The Cold War: A New History* (New York: The Penguin Press, 2005). Finally, Elisabeth Schober's *Base Encounters* (London: Pluto Press, 2016) offers an anthropological exploration of the U.S. military presence in the Republic of Korea (ROK).

Among periodicals, the most important source is the newsletter of the Far East District, the *East Gate Edition*. Established in 1983 and still in publication, the *East Gate Edition* contains a wealth of information about FED's people and projects over more than 30 years. Published monthly (for the most part), almost all issues of the newsletter are available in electronic format through the district's website. Another periodical, valuable for its occasional descriptions of FED projects or activities, is *The Military Engineer*, a journal of the Society of American Military Engineers. Some issues are available in electronic format, while others are available only at libraries. For world developments impacting Korea and the United States, we most often used the *New York Times* and the *Washington Post*. Also of occasional interest: Stars and Stripes, a newspaper for the U.S. military community, in addition to English-language publications such as *Korea Times* and *Korea Herald* in the ROK.

Primary sources consulted for this book came mostly from the district itself. These included administrative records, internal reports and presentations, briefings for visiting commanders or dignitaries, technical reports, special studies and informational bulletins, memoranda, and oral history interviews. The records at FED were housed in the Public Affairs Office in approximately ten four-drawer file cabinets. Binders of slides and packets of photographs were shelved at work stations and in desk drawers throughout the Public Affairs Office. Collectively, the historical materials gleaned from these records are cited in our endnotes as "PAO-FED Historical Files." In 2019, many of the district's historical records were retired to the National Archives at the Seattle Federal Records Center in Washington. Other records were provided to us by the district in digital format. Among the most valuable digital records we received from the district were FED annual reports from 1994 to 2015 (entitled "Annual Historical Report" until

2002 and "Year in Review" after that date). These electronic documents, like the paper documents we encountered at district headquarters in Seoul, are referenced in our endnotes as "PAO-FED Historical Files." We supplemented these records with publicly available government documents, statutes, and international treaties and agreements.

Most photographs in this history were provided by FED. The Public Affairs Office holds numerous binders of slides dating from the 1950s through the 1980s. District photography from that point forward followed the more general trend—slides, to prints, and eventually the adoption of digital photography in the late 1990s. This is all reflected in the holdings of long-time District Photographer Mr. Yo, who maintained an enormous digital collection that he readily shared throughout our research efforts. All the photographs we obtained from the district—whether slides, prints, or digital images—are cited as "PAO-FED Historical Files" in our endnotes. We gathered additional photographs from the National Archives and Records Administration in College Park, Maryland, using two collections: Records of the U.S. Army Signal Corps (Record Group 111) and Records of the U.S. Information Agency (Record Group 306). Both collections have small subsections dealing with activities in Korea.

PRIMARY SOURCES

Manuscripts

Administrative Records. U.S. Army Corps of Engineers, Far East District, Republic of Korea.

Contract Files. U.S. Army Corps of Engineers, Far East District, Republic of Korea.

Documents and Reports. Humphreys Area Office. U.S. Army Corps of Engineers, Far East District, Republic of Korea.

Documents and Reports. Project Offices. U.S. Army Corps of Engineers, Far East District, Republic of Korea.

Documents and Reports. Resident Offices. U.S. Army Corps of Engineers, Far East District, Republic of Korea.

Moorhus, Donita M., and Gregory Graves. "The Limits of Vision: A History of the U.S. Army Corps of Engineers, 1988–1992." January 1999. Unpublished manuscript. Copy provided by the Office of History, U.S. Army Corps of Engineers, Alexandria, VA.

Records of the Office of the Chief of Engineers. Record Group 77. National Archives and Records Administration. Seattle, WA, and Washington, DC.

Records of the Office of the Chief Signal Officer. Record Group 111. National Archives and Records Administration. Seattle, WA, and Washington, DC.

Records of U.S. Army Commands. Record Group 338. National Archives and Records Administration. Seattle, WA, and Washington, DC.

Research Collections. Office of History, U.S. Army Corps of Engineers, Alexandria, VA.

Snetzer, Colonel Robert E. "Camp Carroll, a Case Study of the Korean Construction Industry." Seoul: 8 May 1964.

Oral History Interviews

Bliss, Doug. Interview by Nicolai Kryloff. 9 June 2017.

Byron, Dick. Interview by John Lonnquest. 3 March 2016.

Chin, Allen. Interview by Joshua Pollarine, 9 February 2017.

Choe, Kwang-Kyu. Interview by John Lonnquest. 10 March 2016.

Clancy, Joseph. Interview by Joshua Pollarine, 5 October 2016.

Feighny, Mike. Interview by John Lonnquest. 15 March 2016.

Green, Bryan. Interview by Joshua Pollarine, 15 February 2017.

Han, Sam. Interview by Joshua Pollarine, 7 October 2016.

Iwata, Jon. Interview by John Lonnquest. 8 March 2016.

Karnowski, Thomas. Interview by Joshua Pollarine, 11 October 2016.

Lau, Robert. Interview by John Lonnquest. 2 March 2016.

Laberge, Roland. Interview by John Lonnquest. 15 March 2016.

Minnerly, Ed. Interview by John Lonnquest. 8 March 2016.

Pickler, Ken. Interview by John Lonnquest. 9 March 2016.

Reiff, Greg. Interview by Joshua Pollarine, 30 January 2017.

Robinson, Harvey. Interview by Joshua Pollarine, 7 October 2016.

Ward, George. Interview by Joshua Pollarine, 11 October 2016.

Yi, Yong-ho. Interview by Joshua Pollarine, 5 October 2016.

Yoo, Bong Su (Paul). Interview by John Lonnquest. 10 March 2016.

Newspapers and Periodicals

East Gate Edition (newsletter of the U.S. Army Corps of Engineers, Far East District)

Korea JoongAng Daily

Korea Herald

Korea Times

New York Times

Stars and Stripes

Wall Street Journal

Washington Post

Year in Review (annual publication of the U.S. Army Corps of Engineers, Far East District)

Internet Sources

"2 U.S. soldiers killed in S. Korea flooding." L*os Angeles Times*. 9 August 1998 <http://articles.latimes.com/1998/aug/09/news/mn-11565>.

Associated Press. "Waterways engineers pinpointing tunnels in Korea." 28 May 1987 <http://www.apnewsarchive.com/1987/Waterways-Engineers-Pinpointing-Tunnels-in-Korea/id-a4f8c6409eb335d166fd7c40785b88db>.

"Background Information on USACE 2012" <http://corpslakes.usace.army.mil/employees/strategicplan/2012.cfm>.

"Camp Humphreys, Anjeong-ri, South Korea." <http://www.army-technology.com/projects/camp-humphreys/>.

Carter, Nicole T., and Betsy A. Cody. "The Civil Works Program of the Army Corps of Engineers: A Primer." CRS Report for Congress. 20 September 2006. CRS-2 <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RS20866.pdf>.

Flack, T. D. "Yongsan relocation plan moving forward." *Stars and Stripes*. 10 July 2005 <http://www.stripes.com/news/yongsan-relocation-plan-moving-forward-1.35625>.

Lim, Kwan-bin, Deputy Minister for Policy, ROK Ministry of National Defense. "The USFK Base Relocation Program: Backgrounds and Progress." ROK *Angle*, Korea Institute for Defense Analyses, Issue 75. 22 October 2012 <http://www.kida.re.kr/eng/pcrm/data/data20121022.pdf>.

Prettyman-Beck, Colonel Yvonne J., Chief of Staff, Corps of Engineers. Memorandum for Commanders, Major Subordinate Commands, Districts, Centers and Labs. Subject: Revision of ER 5-1-11, U.S. Army Corps of Engineers (USACE) Business Process. 12 January 2007 <http://planning.usace.army.mil/toolbox/library/ERs/ER5-1-1.pdf>.

Rabiroff, Jon. "U.S. bases hit hard as flooding, landslides wreak havoc in S. Korea." *Stars and Stripes*. 27 July 2011 <http://www.stripes.com/news/pacific/korea/u-s-bases-hit-hard-as-flooding-landslides-wreak-havoc-in-s-korea-1.150380>.

Robson, Seth. "Camp Humphreys expansion project nearing completion." *Stars and Stripes*. 10 December 2015 <http://www.stripes.com/news/camp-humphreys-expansion-project-nearing-completion-1.383063>.

Rowland, Ashley. "Top Army official says Camp Humphreys 'on track' for 2017." *Stars and Stripes*. 23 May 2014 <http://www.stripes.com/news/top-army-official-says-camp-humphreys-on-track-for-2017-1.284123>.

Rowland, Ashley, and Yoo Kyong Chang. "Camp Humphreys construction—largest ever for military – slogs on." *Stars and Stripes*. 15 June 2013 <http://www.stripes.com/news/camp-humphreys-construction-largest-ever-for-military-slogs-on-1.225919>.

"S. Korea flood deaths top 100, rains return." *Reuters–AlertNet*. 6 August 1998 <http://reliefweb.int/report/republic-korea/s-korea-flood-deaths-top-100-rains-return>.

"S. Korean military explores 3 sites for NK infiltration tunnels." *The Dong-a Ilbo*. 11 October 2013 <http://english.donga.com/List/3/all/26/407126/1>.

U.S. Army Corps of Engineers, Office of History. "The U.S. Army Corps of Engineers: A Brief History" <http://www.usace.army.mil/About/History/Brief-History-of-the-Corps/>.

U.S. Army Corps of Engineers. "Civilian Human Capital Strategic Plan, 2009¬–2012." 30 April 2009 <http://www.usace.army.mil/Portals/2/docs/Careers/USACE_Human_Capital_Plan_30Apr09.pdf>.

U.S. Army Corps of Engineers. "Responding to Emergencies: The Role of the U.S. Army Corps of Engineers in Support of the Nation" <https://www.hsdl.org/?view&did=458379>.

U.S. Army Corps of Engineers. "USACE 2012: Aligning the U.S. Army Corps of Engineers for Success in the 21st Century." October 2003 <http://cdm16021.contentdm.oclc.org/cdm/ref/collection/p16021coll6/id/60>.

U.S. Army Corps of Engineers. "Yongsan Relocation Program (YRP) Design Procedures." May 2010 <http://www.kira.or.kr/gongji_2010/5_KRTSB_Instruction_Design_Mgmt_Plan_for_YRP_Projects_EN.pdf>.

U.S. Army Corps of Engineers. Far East District <http://www.pof.usace.army.mil/>.

U.S. Department of Defense. Defense Secretary's Commission on Base Realignment and Closures. "Base Realignment and Closures: Report of the Defense Secretary's Commission." December 1988 <http://www.acq.osd.mil/brac/Downloads/Prior%20BRAC%20Rounds/1988.pdf>.

U.S. Department of the Army, U.S. Army Corps of Engineers. Engineer Regulation No. 10-1-2. "Organization and Functions, U.S. Army Corps of Engineers, Division and District Office." 31 October 1999 <http://synectics.net/public/

library/StreamResource.axd?DSN=pub&Mode=-FileImage_Inline&ID=760>.

United States Forces Korea. <http://www.usfk.mil/>.

Walters, R. Slade. "U.S. Forces Korea Transformation Update." 12 January 2010 <https://www.army.mil/article/32794/>.

"Water Resources Activities in Mongolia." ICIWaRM (International Center for Integrated Water Resources Management) <https://iciwarm.sites.usa.gov/water-resources-activities-in-mongolia/>.

Wikan, Michael E. "The Day We Found the Tunnel." 8 September 2003 <http://www.military.com/NewContent/0,13190,Defensewatch_090803_Tunnel,00.html>.

Statutes

Act of 23 December 1981 (95 Stat. 1359)

Act of 29 December 1981 (95 Stat. 1519)

Act of 28 August 1984 (98 Stat. 1495)

Act of 3 December 1985 (99 Stat. 961)

Act of 14 November 1986 (100 Stat. 3816)

Act of 29 September 1988 (102 Stat. 1918)

Act of 29 November 1989 (103 Stat. 1352)

Act of 18 November 1997 (111 Stat. 1629)

Act of 21 October 1998 (112 Stat. 2461)

Act of 21 October 1998 (112 Stat. 2681)

Act of 5 October 1999 (113 Stat. 512)

Act of 23 October 2002 (116 Stat. 1578)

Act of 24 November 2003 (117 Stat. 1392)

Act of 6 January 2006 (119 Stat. 3136)

Act of 28 January 2008 (122 Stat. 3)

Act of 28 October 2009 (123 Stat. 2190)

Treaties, Agreements, and Government Documents

Agreement between the Engineer Eighth United States Army, Korea, and The Division Engineer, United States Army Engineer Division, Pacific Ocean. 15 May 1975.

Agreement between the United States of America and the Republic of Korea Amending the Agreement under Article IV of the Mutual Defense Treaty between the United States of America and the Republic of Korea, Regarding Facilities and Area and the Status of United States Armed Forces in the Republic of Korea of July 9, 1966, as Amended. 18 January 2001.

Agreement between the United States of America and the Republic of Korea on the Relocation of United States Forces from the Seoul Metropolitan Area. 26 October 2004.

Agreement on Economic Coordination between the Republic of Korea and the Unified Command. Signed 24 May 1952.

Agreement under Article IV, Mutual Defense Treaty between the United States of America and the Republic of Korea, Regarding Facilities and Areas and the Status of United States Armed Forces in the Republic of Korea. Signed 9 July 1966. Entered into force 9 February 1967.

The Korean War Armistice Agreement. 27 July 1953.

Mutual Defense Treaty between the United States of America and the Republic of Korea. Signed 1 October 1953.

U.S. General Accounting Office. *Defense Infrastructure: Basing Uncertainties Necessitate Reevaluation of U.S. Construction Plans in South Korea*. Washington, D.C.: Government Printing Office, 2003.

SECONDARY SOURCES

Books and Articles

44th Engineer Battalion (Construction). *Unit Histories.*

802nd Engineer Battalion (Construction). *Unit Histories.*

Ballard, Robert F., Jr. "Tunnel Detection." Technical Report GL-82-9. Vicksburg, MS: Geotechnical Laboratory, U.S. Army Engineer Waterways Experiment Station, September 1982.

Blanchard, Carroll H. *Korean War Bibliography and Maps of Korea*. Albany, NY: Korean Conflict Research Foundation, 1964.

Bowen, Kim. *Supplement to the History of United States Army Engineer District, Far East, 1976 to 1977.* Seoul: Far East District, 1979.

Brazinsky, Gregg. *Nation Building in South Korea: Koreans, Americans, and the Making of a Democracy.* Chapel Hill: University of North Carolina Press, 2007.

Caldwell, Lynton Keith. *The National Environmental Policy Act: An Agenda for the Future*. Bloomington: Indiana University Press, 1998.

Carter, Jimmy. *Keeping Faith: Memoirs of a President*. Toronto: Bantam Books, 1982.

Clement, Thomas M., Jr., and Glenn Lopez. *Engineering a Victory for our Environment: A Citizen's Guide to the U.S. Army Corps of Engineers*. Prepared by The Institute for the Study of Health and Society for the Environmental Protection Agency. Washington, DC: Government Printing Office, 1972.

"Cost-Benefit Trips Up the Corps." *Business Week* (19 February 1979): 96.

Cummings, Bruce. *Korea's Place in the Sun: A Modern History.* New York: W. W. Norton & Company, 1997.

Edwards, Paul M. *The Pusan Perimeter: An Annotated Bibliography.* Westport, CT: Greenwood 1997.

Fowle, Barry W., and John C. Lonnquest, eds. *Remembering the "Forgotten War" U.S. Army Engineer Officers in Korea*. Alexandria, VA: U.S. Army Corps of Engineers Office of History, 2005.

Gaddis, John Lewis. *The Cold War: A New History.* New York: The Penguin Press, 2005.

Jeffers, Henry A., Jr. *Bridging the Imjin: Construction of Libby and Teal Bridges During the Korean War.* Edited by Charles Hendricks. Fort Belvoir, VA: OCE History Office, 1989.

Jonah, Major Maxwell V. "Korean Construction Enterprise." *The Military Engineer* (September–October 1962).

Jones, Lieutenant Colonel Thomas T. "Korean Ingenuity in Construction." *The Military Engineer* 371 (May–June 1964): 159–164.

Jones, Lieutenant Colonel Thomas T. "Slope Stability in Korea." *The Military Engineer* 378 (July–August 1965): 243–244.

Jones, Lieutenant Colonel Thomas T. "Water Supply from the Shifting Han," *The Military Engineer* 370 (March–April 1964): 96–97.

Jones, Lieutenant Colonel Thomas T. "Water Supply in Korea." *The Military Engineer* 375 (January–February 1965): 8–9.

Kim, Djun Kil. *The History of Korea*. Westport, CT: Greenwood Press, 2005.

Kim, Eun Mee. *Big Business, Strong State: Collusion and Conflict in South Korean Development, 1960–1990*. Albany: State University of New York Press, 1997.

Kraft, Michael E. "U.S. Environmental Policy and Politics: From the 1960s to the 1990s." *Journal of Policy History* 12, no. 1 (2000): 23.

Levkowitz, Alon. "The Republic of Korea and the Middle East: Economics, Diplomacy, and Security."

Korea Economic Institute Academic Paper Series 5, no. 6 (August 2010): 1–9.

Mazmanian, Daniel A., and Jeanne Nienaber. *Can Organizations Change? Environmental Protection, Citizen Participation, and the Corps of Engineers*. Washington, DC: The Brookings Institution, 1979.

McCutchen, Colonel Wilmot R., and Lieutenant Colonel Thomas T. Jones. "Construction in the Far East District." *The Military Engineer* 369 (January–February 1964): 9–12.

McFarland, Keith D. *The Korean War: An Annotated Bibliography*. New York: Garland, 1986

Millett, Allan R. "A Reader's Guide to the Korean War." *The Journal of Military History* 61 (July 1997): 583–597.

Moore, Colonel William T., *USAEDFE District Engineer. History and Organization of the US Army Engineer District, Far East*. 23 May 1973.

Office of the Chief of Engineers, U.S. Army. *Directives*. To Eighth U.S. Army and U.S. Army Engineer District, Far East.

Olsen, Edward A. *Korea, the Divided Nation*. Westport, CT: Praeger Security International, 2005.

Port of Inchon. Inchon Marine Bureau, Ministry of Transportation, Republic of Korea. October 1974.

Reuss, Martin. "Coping with Uncertainty: Social Scientists, Engineers, and Federal Water Resources Planning." *Natural Resources Journal* 32 (Winter 1992): 101–135.

Reuss, Martin. *Shaping Environmental Awareness: The United States Army Corps of Engineers Environmental Advisory Board, 1970–1980*. Washington, DC: Historical Division, Office of Administrative Services, Office of the Chief of Engineers, 1983.

Rich, Major Robert E. "Engineer Activities in Korea." *The Military Engineer* 349 (September–October 1960): 361–363.

Sandler, Stanley. *The Korean War, An Encyclopedia*. New York: Garland Publishing, 1995.

Schober, Elisabeth. *Base Encounters: The US Armed Forces in South Korea*. London: Pluto Press, 2016.

Secret Tunnel Under Panmunjom: North Korea's Third Invasion Passage Discovered. Seoul: Korean Overseas Information Service, October 1978.

Seth, Michael J. *A Concise History of Modern Korea: From the Late Nineteenth Century to the Present*. Lanham, MD: Rowman & Littlefield Publishers, 2010.

Silberman, Edward. "Public Participation in Water Resource Development." *Journal of the Water Resources Planning and Management Division* 103 (May 1977): 111–123.

Steinberg, Bory. "The Federal Perspective." In *Water Resources Administration in the United States: Policy, Practice, and Emerging Issues*. Martin Reuss, ed. 264–273. East Lansing: Michigan State University Press, 1993.

Stine, Jeffrey K. "Regulating Wetlands in the 1970s: The U.S. Army Corps of Engineers and the Environmental Organizations." *Journal of Forest History* 27 (April 1983): 60–75.

Taylor, Serge. *Making Bureaucracies Think: The Environmental Impact Statement Strategy of Administrative Reform*. Stanford, CA: Stanford University Press, 1984.

"The Corps of Engineers Goes Green." *Fortune* 122 (8 October 1990): 160.

Thompson, Erwin N. *Pacific Ocean Engineers: History of the U.S. Army Corps of Engineers in the Pacific, 1905–1980*. Honolulu: Pacific Ocean Division, 1985.

U.S. Army Engineer District, Far East. *Department of Defense Project 32. Kuma Station, Chitose, Japan*. 1 November 1962.

U.S. Army Engineer District, Far East. *Far East District Organization*. 1 December 1967.

U.S. Army Engineer District, Far East. *Guide for Newly Assigned Personnel*. 1965.

U.S. Army Engineer District, Far East. *Japan Area Office*. 1 August 1957.

U.S. Army Engineer District, Far East. *Orientation Brochure for Korea*. 1969.

U.S. Army Engineer District, Far East. *Reorganization of the Construction Division, Far East*. 5 December 1967.

U.S. Army Engineer District, Far East. *Reorganization of the Engineering Division*. 14 December 1976.

U.S. Army Engineer District, Far East. *Seoul Area Engineer Office*. July 1969.

U.S. Army Engineer District, Far East. *Special Projects Office*. September 1972.

U.S. Army Engineer District, Far East. *Special Study, FED-OED Merger*. 9 May 1960.

U.S. Army Engineer District, Far East. *The Book*. 1973.

U.S. Army Engineer District, Far East. *Trans-Korea Project Office*. 1972.

U.S. Army Engineer Division, Pacific Ocean. *Information Bulletin*. 1968 to 1975.

U.S. Army Engineer Division, Pacific Ocean. *Reorganization of Far East and Okinawa District*. June 1960.

U.S. Army Engineer Division, Pacific Ocean. *Troop Housing Program*. 15 September 1975.

Van Hoften, Ellen. *History of the Pacific Ocean Division Corps of Engineers*. Fort Armstrong, Honolulu, HI, 1 January 1972.

Vesecky, J. F, et al. "Tunnel Detection." Technical Report JSR-79-11. Arlington, VA: SRI International, April 1980.

Whitmore, Earle. *History of the United States Army Engineer District, Far East, 1957 to 1975*. Seoul: Far East District, 1976.

Woo, Jung-en. *Race to the Swift: State and Finance in Korean Industrialization*. New York: Columbia University Press, 1991.

Briefings

Garver, Colonel Ralph T. USAEDFE District Engineer. *FED's Role in Korea*. For the Commander's Conference. 25 June 1975.

Kromer, Brigadier General Phillip F. Office of the Engineer, Headquarters, U.S. Army Japan. *Organization for Major Military Construction in Korea and Japan*. 25 July 1957.

LeBlanc, Sergeant First Class Virgia. *Submarine Pipeline*. Pohang, Korea. 6 May 1975.

Sakong, Yun. *Pusan Cold Storage Plant. Pusan, Korea*. 9 September 1975.

U.S. Army Engineer District, Far East. *FED Projects*. For Brigadier General Wesley Peel. Kwanju Air Base, Korea. 3 June 1975.

U.S. Army Engineer District, Far East. *FED Real Estate*. For Colonel E. J. Withers and Mr. Samuel D. Blaeuer, Real Estate, Office of the Chief of Engineers. 10 June 1964.

U.S. Army Engineer District, Far East. *Summary of FED Activities Concerning the Proposed Buildup of Air Force and Army in Korea*. 1968.

U.S. Army Engineer Division, Pacific Ocean. *Mission, Organization and Functions*. For Julian Hartt of the Los Angeles Examiner. 26 May 1958.

Yi, Kwang Il. *Inchon Tidal Basin*. Inchon, Korea. 25 August 1975.

General Orders

Office of the Chief of Engineers, U.S. Army

U.S. Armed Forces Far East/U.S. Eighth Army

U.S. Army Engineer District, Far East

U.S. Army Engineer Division, Pacific Ocean

U.S. Army Engineer Division, Pacific Ocean, Western Pacific

Memoranda

Department of Defense. For the Secretaries of the Military Departments and the Chairman, Joint Chiefs of Staff. *Management of Korea FY 1968 Supplemental Military Construction Program*. 1968.

Memorandum of Understanding between PACAF and The Pacific Ocean Division Engineer Concerning Assignment of All DOD Design and Construction Work in the Far East (Japan, Korea, Taiwan) to the Corps of Engineers. 23 April 1963.

Memorandum of Understanding between U.S. Army Engineer District, Far East, and 2d Engineer Group. 28 January 1976.

Morris, Thomas D., Assistant Secretary of Defense, Installations & Logistics. *Design and Construction in the Far East*. To Secretaries of the Army, Navy, and Air Force. 14 December 1962.

U.S. Army Engineer Division, Pacific Ocean. *Continuing Planning Re: The Accomplishment of Design in the Far East (Korea-Japan-Okinawa)*. 4 August 1975.

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