

TUDOR

ENGINEERING COMPANY

GOSSIP FROM FAR AND WIDE

WINTER 1969

The Boise Office reports that

. . . . Dave Toothman attended the ground-breaking ceremonies for the Hoff Lumber Company developments in Horseshoe Bend, Idaho on August 28. Idaho Senator Len Jordan, Congressman James McClure, Governor Don Samuelson, in addition to representatives of local, state and federal agencies, were honored guests for the occasion. Tudor Engineering Company provided consulting engineering services for facilities associated with the small log plant which was being dedicated. In addition, Tudor Engineering Company performed the engineering and surveying required for the planning and final design of the new Scenic View Subdivision and its related utilities.

. . . . Louis Riggs, his wife Pat, and their son Jim stopped through Boise at the end of July on their return from the ASCE sponsored National Meeting of Transportation Engineering in Washington, D.C. During their stay in Boise, they were able to see some of Idaho, including some Tudor Engineering Company projects currently underway at Idaho City, Horseshoe Bend, McCall, and Cascade.

. . . . Frank Paden, after spending three and one-half years in the San Francisco office, and then being transferred to Yakima for another year and a half, finally arrived in the Boise office in early July to work on several projects, both in the field and in the office. As we go to press, Frank has completed his tour of making the circuit of Tudor offices, and is now back in San Francisco.

The Caracas Office reports that

. . . . work is now concentrated on the downtown section of line of the Caracas Metro, which includes the two major stations, El Silencio and La Hoyada. Preliminaries for the balance of the line have been completed and submitted.

. . . . with the majority of the work completed, Frank Lerchen and his wife Martha departed Caracas on September 5 to finally settle down in their new house in Tucson. Frank anticipates many hours work setting up his ham radio apparatus and also other numerous planned projects in the house and garden.

. . . . Marius and Julia Bejan returned from a very enjoyable vacation in Europe, which concluded with a very relaxing week in Mallorca. After this, Marius returned to work while Julia visited her family in Quito, Ecuador for several weeks.

. . . . we experienced a typical "whirlwind" visit from Gene Altshuler, during which he established station design para-

meters, as well as produced photo documentary of the activities of the local skin diving club during a weekend at "Bahia La Cienaga." The only time Gene wasn't taking pictures was when he was in the water. Everyone, we're sure, is aware that Gene is an avid photographer and even develops his own pictures. Well, upon his return from Caracas, and while his ever-lovin' Joyce and the children were away on vacation, Gene said his house was just "one big dark room."



. . . . Larry Barr continues to enjoy the excellent local fishing while his wife Helga is in Vienna visiting her family. His efforts (see photo) were finally rewarded on August 24 when he landed both a white marlin and a sailfish; his luck with tarpon, however, has been less successful, for out of a dozen or so fish caught, he's been unable to land one in the boat.

The Honolulu Office reports that

. . . . Bob Craig and his wife, Thelma, departed September 19 on a trip to Iberia. They arrived in Lisbon, Portugal on a chartered polar flight 18 hours after leaving Honolulu. The

Craigs returned on a chartered flight out of Madrid later in October.

... Millie and Tom Ajirogi and their four children recently returned from their annual vacation, where they visited the Islands of Hawaii and Maui. The primary reason for their Hawaii trip was to see Millie's father, who recently had a serious operation. She reports that all is well. While enjoying the Islands, Millie noticed a tremendous growth on both Islands, particularly the Kona district in Hawaii and the Kihei and Lahaina areas on Maui. The family had a wonderful time -- did a lot of swimming, sight-seeing, visiting, eating and "hippie" watching." "We froze while visiting the volcano area in Hawaii and while waiting for the sunset from atop Haleakala, and fried all the rest of time time," said Millie.

... Carolyn Reitter was seen on the beach at Waikiki for a week or so in early September.

The Lima Office reports that ...

... Garretta Lamore continues with her artistic career. In July and August, she exhibited her paintings at the Instituto Cultural Peruano Norteamericano in Lima. Much of Garretta's art work was accomplished overseas when she and Andy resided in Ecuador, Chile and countries in Southeast Asia.

... Andy and Garretta's son, Tom, aged 13, placed third in an apprentice golf tournament, thereby winning a silver cup. Congratulations, Tom!

The Montevideo Office reports ...

... no news! This must indicate that Randy Wilkinson is busy once again in setting up a new office and is getting the International Bridge project underway. An informer (initials F.H.M.), residing in Buenos Aires, tells us that Randy and Jeannine were in B.A. for a few days doin' somethin'! Maybe by the next issue of the Newsletter, we'll have some word of their activities???

The Seattle Office reports that ...

... Mercer Island was recently invaded by Tudorites, and will never be the same again. The planned invasion places four of the Tudor families in strategic locations on the small, but beautiful, Island. Bob Janopaul moved into his home on the southwest side, while Wil Pacheco selected the southeast side. Bob Myrdal, looking over the situation, selected the middle, and at this writing Francois Martin is negotiating for the northern end. The Island is about five miles long, approximately one and one-half miles wide, and covered with greenery and trees. Bob Janopaul tells us that he has very little rain on his side of the Island, but on Wil's side, it's something else.

... Moving farther east across Lake Washington from Seattle, we find Jim MacIsaac at the Quorum (apartments for single adults). Mike and Judy Harrington are in the suburbs of Bellevue where Mike is busily figuring out ways to get in on the action at the Quorum. Al and Judy Rose are now settled in their apartment near Lake Sammamish, also on the east side,

while Glenys Dahl refuses to leave the "Big City of Seattle." Bryce and Judy Ecklein just moved into their home high in the hills north of Seattle.

... When someone says the name Judy, everybody answers, or have you noticed?

Judy Harrington
Judy Rose
Judy Ecklein

... Jim MacIsaac, after many hours of nite and weekend work, finished up a crash project for his "ole ala-mata," The Puget Sound Governmental Conference. Now Jim, with eyes open, is busily providing Bob Myrdal with traffic analysis for the City of Tacoma projects.

... "Two more weeks ... just two more weeks!" That's what the Seattle staff has been hearing since August 15th when they were to be moving into their new quarters on the 14th Floor of the Dexter-Horton Building. Now that the two weeks times three are up, the last bit of information from the Great Northwest is that the office has finally moved, and that the refurbishing has been completed and is very attractive.

THE HELGESSONS REPORT

During the month of June, Agnes and Les Helgesson flapped their wings and flew over the pole to Copenhagen for a tour of the Scandinavian Countries of Denmark, Norway, and Sweden. In Copenhagen, they picked up a car and drove over 2,100 miles throughout the three countries. In Oslo, they attended the 1969 General Assembly Meeting of the International Federation of Consulting Engineers, whereupon they ran into ex-Tudorites Tor Karlsen and Per Landfald, who now reside in Oslo. Both Tor and Per worked for Tudor during the days of the design of the Sand Island Bascule Bridge (now called the Kalihi Channel Bridge), the Lunalilo Freeway, and the Tagus River Bridge (now known as the Salazar Bridge). Tor is now Executive Director of the Association of Consulting Engineers of Norway, while Per is with a consulting engineering firm in Oslo. Both Tor and Per want to be remembered to their old friends at Tudor.

While Agnes and Les were in Sweden, they were entertained by over 40 cousins of Les' at several parties held in four different cities. Agnes reports that it was the greatest trip they ever made, and that the scenery was gorgeous, both along the fjords and in the high mountains.

ELECTION RESULTS

As this Newsletter goes to press, we wish to congratulate George B. Szabo, "sewer engineer" for his landslide victory in being elected as Director of the Board for the Richardson Bay Sanitary District in Marin County. For George, this is only the beginning of his political career.

In addition, we extend our congratulations to Walt Anton on his recent election as Chairman of the Hydraulics Group of the San Francisco Section of ASCE.

TUDOR

ENGINEERING COMPANY

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Newsletter

Winter 1969





THIS ISSUE'S . . .

. . . front cover of the Tudor Engineering Company Winter 1969 Newsletter depicts a completed section of the Bay Area Rapid Transit system's award winning standard aerial structure which is to carry BART over 30 percent of its 75 mile length. Developed to encompass all facets of structural adequacy, architectural aesthetics and economy of design and construction, the standard aerial structure is one of many major achievements to be accomplished during the development of the BART system.

. . . back cover of the Newsletter shows the newly constructed Kearny Street Grade Separation in Richmond, California. Designed and constructed in conjunction with the BART project, the structure provides for present and future transportation requirements. Financed in part by the BART District, the Southern Pacific Company, State gasoline tax funds, and the City of Richmond, the ten-span, 672-foot structure carries a four-lane divided street over the existing Southern Pacific Company railroad tracks, and future roadbed of the BART system. The \$780,000 project was completed in September, 1968 under a construction contract administered by the City of Richmond.



GRADE SEPARATION STRUCTURES

Since 1959, when Parsons Brinckerhoff-Tudor-Bechtel (PB-T-B) were first engaged as general engineering consultants to the BART District to perform preliminary engineering and planning studies, the \$1.3 billion project has steadily developed to where today, almost 90 percent of the project has been engineered and designed, and over 55 percent has been constructed.

In September, the East Bay Cities of Fremont and Union City witnessed the start of construction of the BART project with the award of three construction contracts for earthwork and structures. Included in the three contracts are seven grade separation structures which will separate the BART system from other modes of transportation.

Under the supervision of **Paul Potter**, Chief Engineer, and **Dudley Auger**, Project Manager, Tudor Engineering Company has been responsible for the planning, design and supervision of construction of over 40 special grade separation structures involved on the BART project. These structures will eventually provide for the separation of transit with streets, roads, highways, railroads, and, in some instances, pedestrian traffic. In addition to special grade separation structures, the Company was also responsible for developing the design of the standard aerial structure, which in 1967 received awards from the Prestressed Concrete Institute and the Portland Cement Association for architecture and engineering design excellence.

While the BART project required extensive use of structures to isolate the system from other transportation modes, Tudor Engineering Company has, since its founding in 1950, been engaged on numerous other projects involving grade separation structures. Retained by various governmental, state, county and city agencies, the Company has provided consulting engineering services for projects located throughout the western United States and abroad. These services have entailed traffic and planning studies, preliminary engineering, design, preparation of construction contract documents, and construction supervision. In many instances, the Company has assisted local clients in obtaining priority listings of their projects with the State of California Public Utilities Commission. Many of the projects undertaken involved major separation structures, such as interchanges, street, highway, and railroad separations, and pedestrian overpasses.

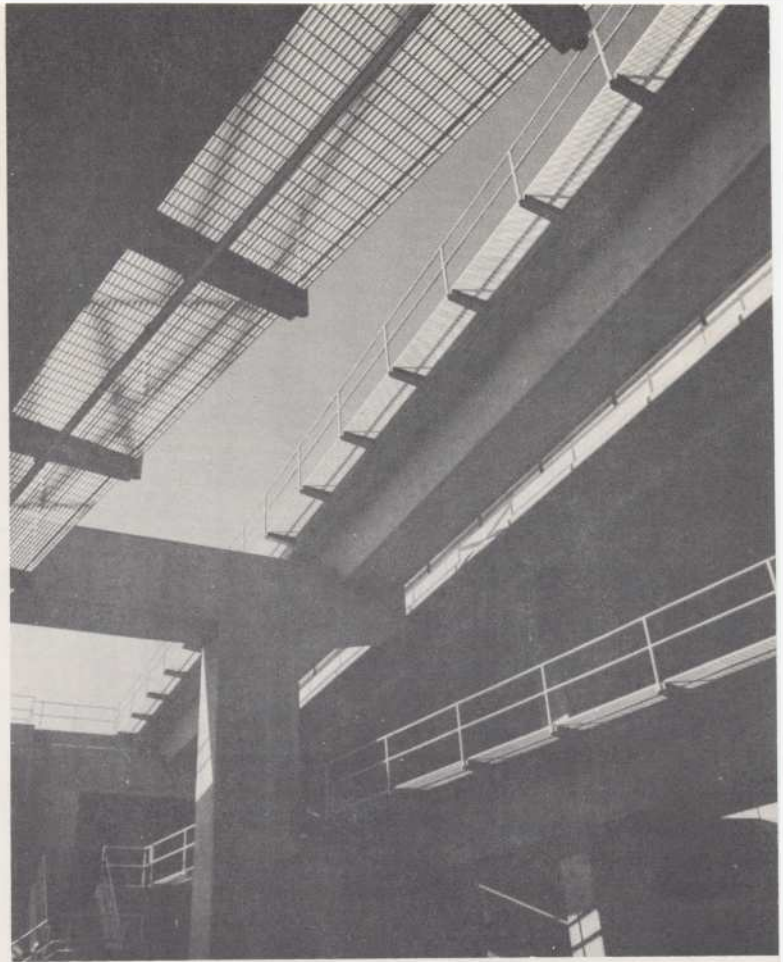
One of the Company's more recent projects was performed for the State of Idaho Department of Highways. Located along a two and three-quarter mile section of Interstate Route 90 in northern Idaho, the project entailed the preparation of geometric layouts, designs, and construction contract documents for seven structures, five of which were interchange or highway separations. Financed in part with federal funds, and subject to approval of the Bureau of Public Roads, the structures are being constructed under separate contracts administered by the State's Department of Highways.

The next few pages describe a selected portion of the Company's activities in the planning, design, and construction of grade separation structures.

**BART AERIAL STRUCTURE
45th STREET UNDERCROSSING
Oakland, California**

One of the more complex structures utilizing the BART standard aerial structure is the 45th Street Undercrossing located in downtown Oakland. The facility, contained entirely within the median of the Grove-Shafter Freeway (State Highway 24), separates the Contra Costa County and the Berkeley-Richmond transit routes with vehicular cross traffic at 45th Street. The complex series of structures consist of two separate levels of BART standard aerial structure which carries six transit tracks over the depressed 45th Street. The structures contain over 854 lineal feet of standard aerial girder which were constructed under a State of California Division of Highways' administered contract at a total cost of \$381,000.

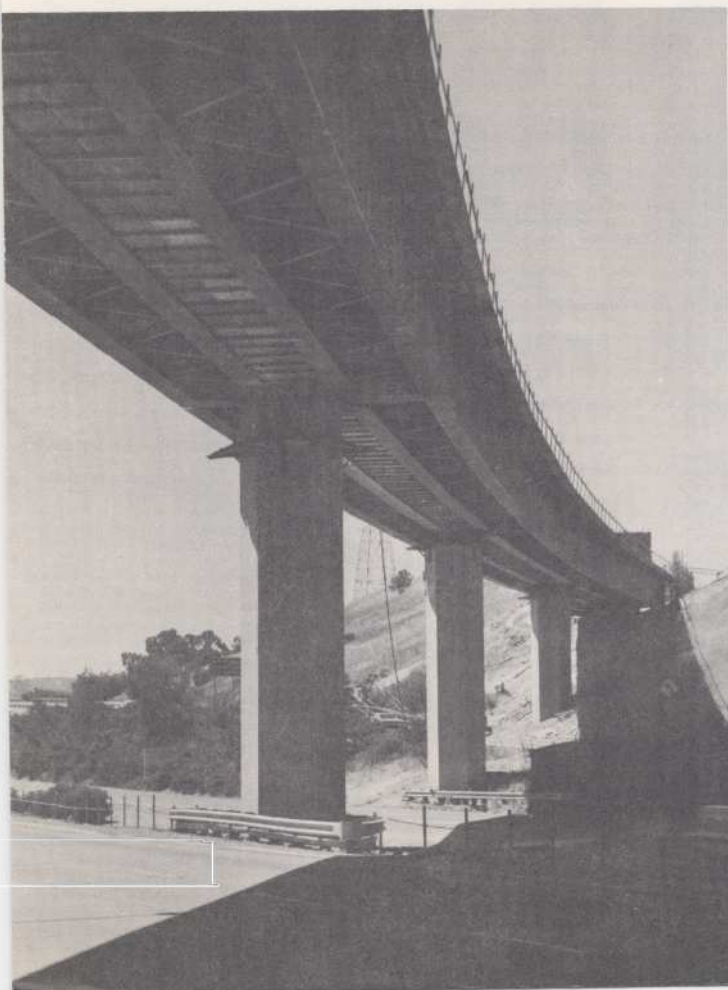
The photograph at right depicts the two levels of BART aerial structure with the top level paralleling the eastbound lanes of the Grove-Shafter Freeway passing over 45th Street.



**BART AERIAL STRUCTURE
INTERSTATE ROUTE 680
Walnut Creek, California**

Another special structure required on the Contra Costa County transit route of BART is the two-track aerial structure which spans both Interstate Route 680 and State Highway 24 in Walnut Creek. The structure has a total length of 860 feet with six spans, which vary in length from 121 feet to 162 feet. Excessive span lengths and the horizontal curvature of the track alignment precluded the use of standard aerial girders for this structure. The superstructure consists of a concrete deck supported by two horizontally curved steel plate girders for each track. The superstructure spanning the two roadways is supported on reinforced concrete hexagonal pier columns. Because the structure crosses the Calaveras Fault, special design considerations were required to provide both horizontal and vertical displacements at one abutment of the structure.

The construction photograph at left shows the aerial structure spanning Interstate Route 680 in the foreground, prior to its completion in November, 1969.



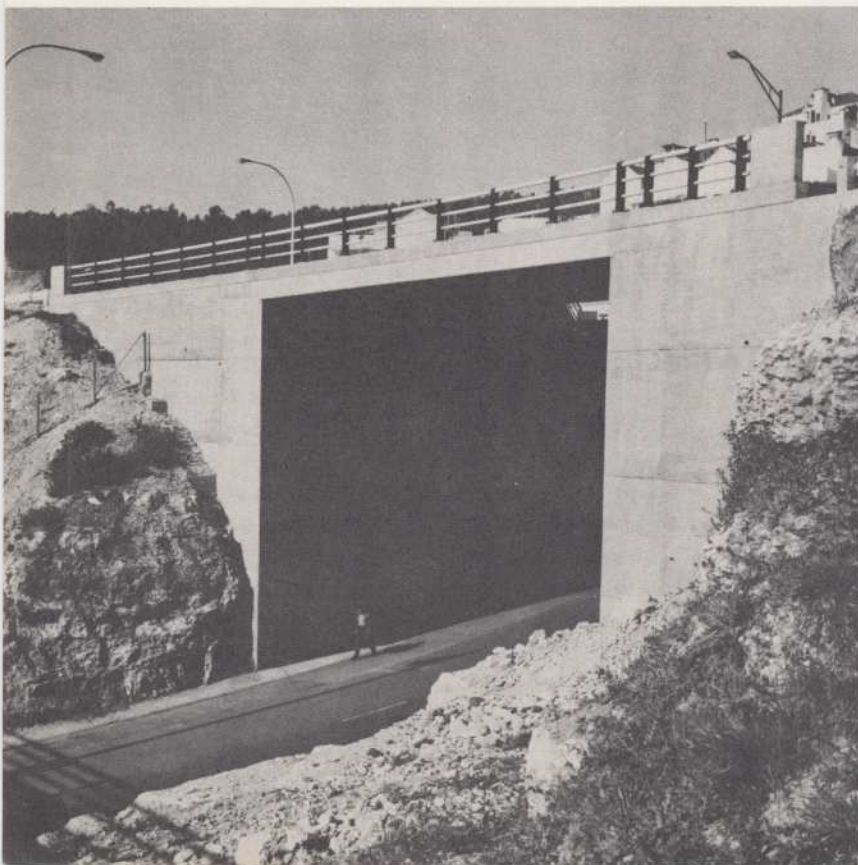


NUUANU HIGHWAY LUNALILO FREEWAY

Honolulu, Hawaii

Under separate contracts with the State of Hawaii, Tudor Engineering Company, in joint venture with two Honolulu firms, performed surveys, designed, and prepared contract plans and specifications, including cost estimates, for 2.6 miles of the Lunalilo Freeway and 1.6 miles of the Nuuanu Highway (now referred to as the Pali Highway) in and about downtown Honolulu. Associated with the \$17,000,000 projects were 26 structures for which Tudor Engineering Company was responsible for designing. These structures include a three-level interchange with two major structures, one of which carries four lanes of Nuuanu Highway traffic over the depressed Lunalilo Freeway; 14 other structures, including five pedestrian overpasses along the Lunalilo Freeway; and three separation structures along the Nuuanu Highway. These freeway and highway sections are now a part of the Hawaii Interstate H-1, State Highways 72 and 61 which connect Honolulu to other communities on the Island of Oahu.

The photograph at left looks eastward towards Diamond Head and depicts a portion of the Lunalilo Freeway. The structures in the foreground carry Nuuanu Avenue, Nuuanu Highway, and Queen Emma Avenue traffic over the depressed Lunalilo Freeway.



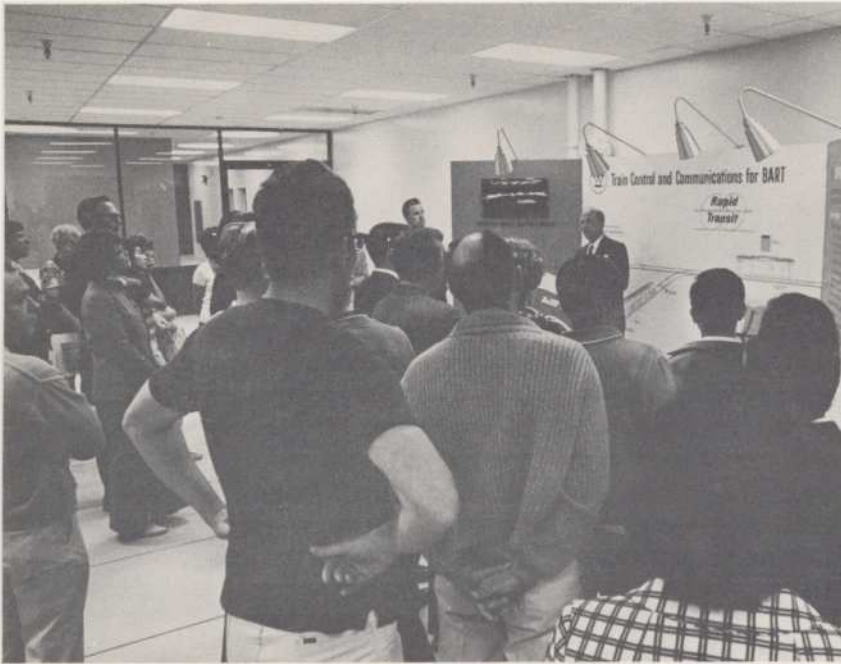
APPROACH STRUCTURES SALAZAR BRIDGE

Lisbon, Portugal

In association with United States Steel International, Inc.; Morrison-Knudsen Company, Inc.; Steinman, Boynton, Gronquist and London; and Compadec (of Paris), Tudor Engineering Company was retained to prepare the project feasibility report and to design the two suspension bridge tower piers for the Salazar Bridge which spans the Tagus River at Lisbon. The approach structures designed by Tudor Engineering Company are a part of the highway system and connections to the main bridge. The approaches consist of a 940 meter (3,080 foot) viaduct structure, 41 highway structures, and approximately 30 km (18.7 miles) of highway. Of the 41 highway structures, 26 are highway grade separation type structures. One such structure is shown at the left.

Other services for which Tudor Engineering Company performed were: survey controls for location of the main bridge piers and access approaches and construction supervision for the approach structures and highways.

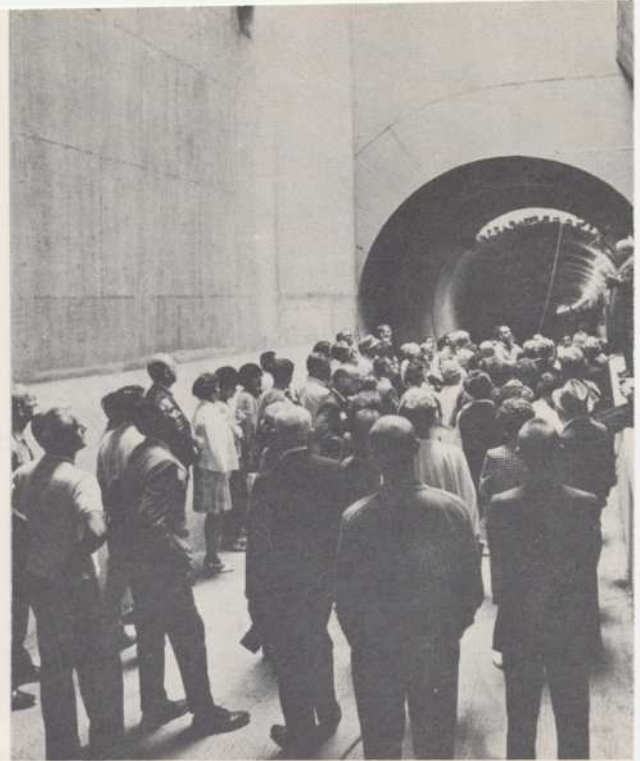
**TUDOR ENGINEERING COMPANY
THIRD ANNUAL BART FIELD TRIP**



On September 6, approximately 120 Tudorites, their wives, husbands and guests, gathered at the Lake Merritt Station Parking Lot in Oakland to commence the third annual Tudor Engineering Company sponsored tour of BART facilities under construction.

Under the able guidance of Program Director **Stanley J. Innes**, the trip started with a tour of the Lake Merritt Station and the adjoining six-story BART Administration Building, which will eventually house all operations of the BART system. While **Tallie B. Maule**, Chief Architect for PB-T-B explained to one group the architectural features of the station, Mr. J. W. Brownson, Project Manager for Westinghouse Electric Corporation, described the complex train control and communications systems, which are presently being installed by Westinghouse.

Leaving the Lake Merritt Station in three chartered buses, the tour group proceeded south to the San Leandro Station area. Upon arrival, the group was greeted by **Mr. H. J. Wittwer**, Resident Engineer, who invited us to view a replica of the BART car and the prototype fare collection equipment which will be used throughout the BART system. Crossing San Leandro Boulevard, the group entered the San Leandro Station where Mr. Wittwer explained the unique features of this aerial station.



Back aboard the chartered buses, the tour continued to West Oakland to view the Oakland Ventilation Building which houses the flexible joint of the eastward end of the transbay tube. Following a brief description of the structure, **Mr. Harold Wombacker**, Resident Engineer, invited those who were hardy enough to step some 35 feet below to view the interior of the structure and its interface with the transbay tube. While the photo above was taken prior to emerging from the structure, we're happy to report that all were able to climb the 70 stairs back to ground level.

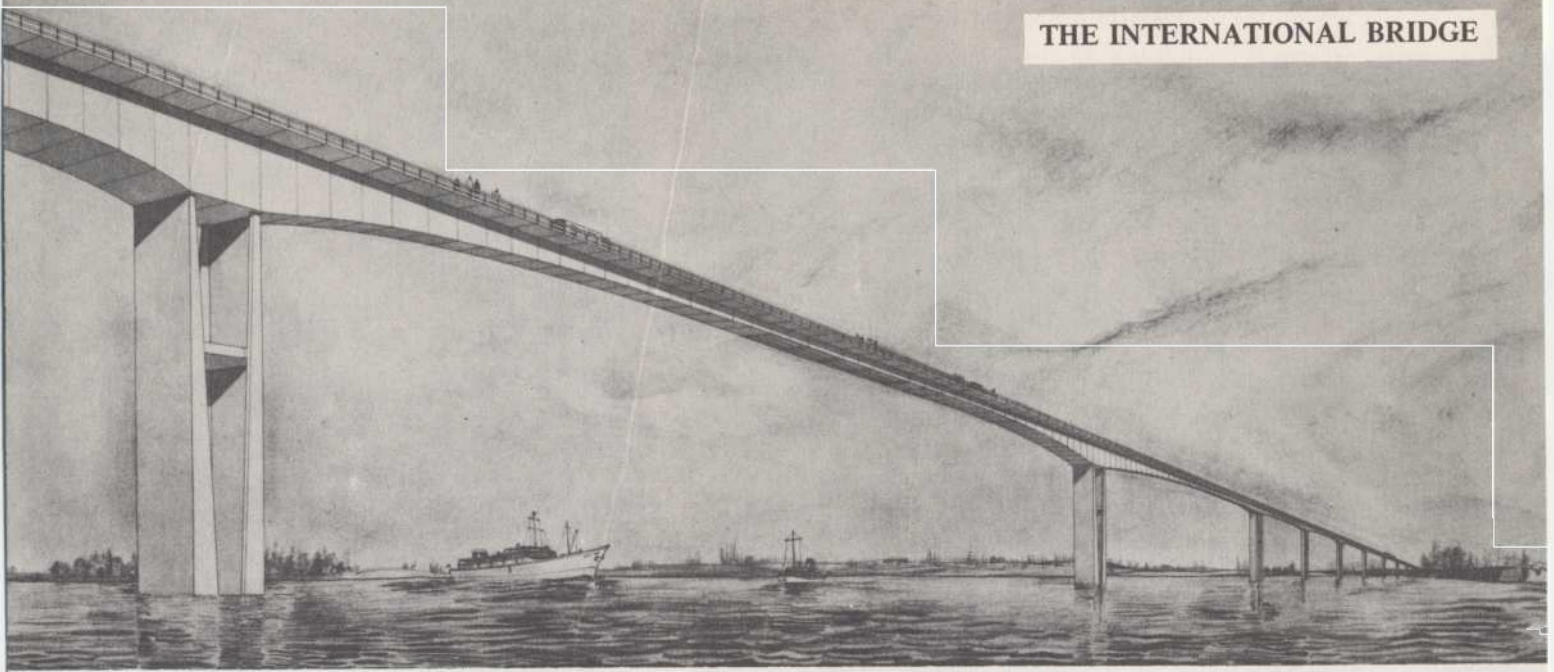
Having completed the physical endurance portion of the BART field trip, the tour proceeded to the MacArthur Station where **Mr. Michael Howell**, Resident Engineer, explained the unique features of this aerial station, which is presently nearing completion.

Maintaining schedule, the tour group reboarded and headed towards the Claremont Hotel where luncheon was served in the Horizon Room. As may be noted in the photo at left, the entire third annual field trip was a complete success, and we wish to commend those individuals who were responsible for its organization and execution. As in the years past, each succeeding tour enables us to realize the greatness of what BART will be for the Bay Area.

Stanley Innes did such an outstanding job of planning and directing the annual BART tour that the arrangements worked equally well in inverse order. He and **Bert LaVigne**, on October 14, hosted an inspection tour for the San Francisco District, U.S. Army Corps of Engineers' staff. In attendance were Colonel Charles Roberts, District Engineer; Wes Cherry; George Reilly; Grant Phillips; Marv Coombs; Bob Riddle; Jerry Trail, and Dave Helmick.



THE INTERNATIONAL BRIDGE



... FIRST MAJOR LINK BETWEEN ARGENTINA AND URUGUAY

In late July, Tudor Engineering Company, in joint venture with Hidrosud Argentina, S.A., c.y de M., entered into a contract with a joint Argentine-Uruguayan commission (Comision Tecnica Mixta de los Puentes entre Argentina y Uruguay — "COMPAU") for economic studies and detail design of the first bridge to connect these two countries. The structure, to be known as the International Bridge, will span the Uruguay River near Fray Bentos, Uruguay, about 100 miles north of Buenos Aires. Associated with the joint venture team are Riccardo Morandi, world famous Italian bridge designer, who will serve as a special consultant; Dames and Moore of San Francisco and Tecnoconsult of Buenos Aires, soils exploration; and Stanford Research Institute of Palo Alto and Cueto Rua, Hamak Morduchowicz, C.A. of Buenos Aires, financial and economic consultants.

Through international competition, several alternative designs were submitted to COMPAU for review and selection. The structure ultimately selected will be a 4.4 km (2.7 mile) long concrete bridge with a record breaking, prestressed concrete box-girder main span of 209 meters (686 feet). This main span will be greater than Germany's Bendorf Bridge across the Rhine River near Klobenz, presently the world's longest span

prestressed concrete cantilever bridge. The main span will have a navigational clearance of 47 meters (154 feet). Adjacent to the main span will be two side spans of 145 meters (476 feet) each, and the remaining portion of the principle structure will have spans of 70 meters (230 feet). Each span will support suspended 40 meter (131 foot) precast prestressed concrete T-beams. The Argentine approach structure will cross 2.5 km (1.5 miles) of alluvial flood plain. The project has an estimated construction cost of \$12,000,000. Design of the project is scheduled for completion in early 1970.

A joint venture office has been established in Montevideo, Uruguay for the development of the economic studies, detail design, and the preparation of construction contract documents. The project is under the overall supervision of Sr. Enrique Cortinas for Hidrosud and Carl W. Otto for Tudor Engineering Company. Robert A. Wilkinson of Tudor Engineering Company and Ing. Alberto Ponce Delgado of Hidrosud are Co-Directors of the project. Currently, the Montevideo office is staffed with approximately 20 technical and administrative personnel. In San Francisco, Ray O'Neil is Project Engineer for the economic and financial studies, and Keith Bull is Project Engineer for the technical aspects of the project.

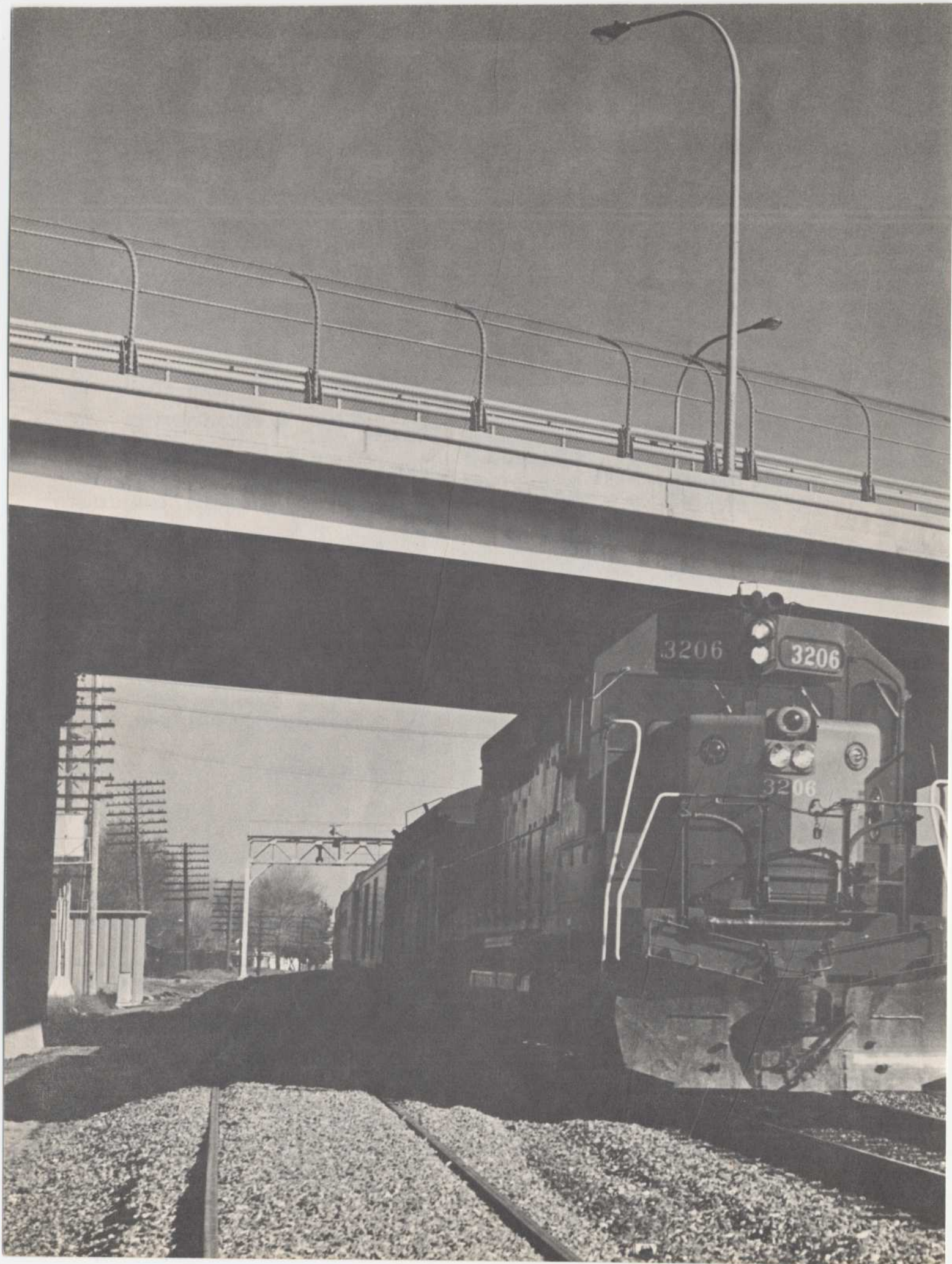
THE TACOMA SPUR AND BAYSIDE DRIVE PROJECTS

In early August, Tudor Engineering Company entered into separate contracts with the City of Tacoma, Department of Public Works, for consulting engineering services to perform traffic surveys, route location studies, and to prepare a design report for two urban arterial projects in downtown Tacoma.

The projects consist of two connecting segments of urban expressway extending from McCarver Street southward to the vicinity of South 7th Street (Bayside Drive project) and thence from South 7th Street to the vicinity of South 11th to South 13th Streets near "A" Street (Tacoma Spur project). The total

length of the two projects combined is approximately 2.5 miles and is estimated to cost approximately \$13,000,000 for construction and right-of-way. The current schedule indicates that the overall timing for completion of the projects, including preliminary engineering, final design and construction supervision, will be approximately four years.

All phases of the projects are being accomplished in the Seattle Office of Tudor Engineering Company under the supervision of Robert N. Janopaul. Robert W. Myrdal, Project Manager, is assisted by Michael B. Harrington as Project Engineer.



T. T. MACKENZIE RETIRES

On September 3, after almost 19 years of outstanding and loyal service to Tudor Engineering Company, **Tom Mackenzie** officially retired to return to the Great Northwest to supervise the planning and construction of his new home in Bend, Oregon. Over the years, Tom served in various capacities on many of the Company's major projects. For the past five years, up to the time of his retirement, Tom was with Parsons Brinckerhoff-Tudor-Bechtel, where he served as Resident Engineer on several contracts for construction of the BART Test Track and later as Coordinator of traffic and utilities for BART construction in the City of Berkeley. One of Tom's best remembered assignments was during the years 1960 to 1963, when he was Resident Engineer during design and construction of the Palm Springs Aerial Tramway in Palm Springs, California. Among Tom's other accomplishments during his years with the Company include: Project Manager in charge of field engineering and construction inspection of The Dalles, Umatilla and other bridges in Washington and Oregon, and Assistant Project Engineer for route location studies for the Bay Area Rapid Transit project and highway planning studies for Contra Costa County. Prior to joining the Company in 1951, Tom was responsible for the planning and construction of various engineering projects in the Northwest, both in private practice and during World War II while with the Corps of Engineers.



In the evening of July 23, approximately 35 Tudorites, ex-Tudorites, families and friends hosted a farewell dinner party at the home of **Ray O'Neil** for **Tom** and his wife **Barbara**. As a parting token from those who have known and worked with Tom over the years, Barbara and Tom were presented with a set of casserole dishes for their future years of gourmet dining enjoyment. In the photograph above, **Hans Pokorny** reminisces with **Barbara Tudor Mackenzie** about the days they worked and lived in Palm Springs during construction of the Tramway.

While Tom's sense of humor is surely to be missed in the Bay Area, we at Tudor Engineering Company wish both he and Barbara a happy retirement and adventure in living in their new home in Bend.

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NEWSLETTER

James C. Albert

WINTER 1969

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NEWSLETTER

PUBLISHED FOR PERSONNEL OF TUDOR ENGINEERING COMPANY

February, 1969

Travels

Tudor Engineering Company officers and employees have been making their usual frequent trips to places near and far during the past several months. Louis Riggs recently attended the CEAC annual convention in Palm Desert accompanied by his wife, Pat. Louis is a new director of CEAC, so this was his first attendance at the annual convention in this capacity. Art Reitter and his wife, Helen, spent a week in New Orleans at the ASCE National Meeting on Water Resources. Stan Froid has been a regular commuter to Seattle and Honolulu. His most recent trip to Honolulu involved attendance at the Third Pacific Institute of Transportation.

At press time Carl Otto is in Buenos Aires and Montevideo, Uruguay after just returning from a trip to Lima, Buenos Aires, Lima and Guatemala. (He missed Havana on both trips). Matt Harrison recently returned from a trip to Caracas and stopped in Guatemala on the way home. Don Moore leaves shortly for a short visit to Caracas.

NEWS FROM THE NORTHWEST

Seattle

December and January have been relatively quiet periods in the Puget Sound area. However, below the placid surface there appears to be a new job stirring in the Seattle office which will undoubtedly tax the imagination of those involved. An urban design team operation is the focal point of present discussions which, if all goes well, should lead up to a major Tudor Engineering Company undertaking in the Northwest.

January saw the submittal of the printed Lake Washington Bridge Crossings Report to the Highway Commission. By the end of the month, the report had been formally accepted and is soon scheduled for a hearing before the Legislature. Initial reaction by governmental agencies in the area have been very encouraging.

So much for the good news! Snow, ice, and freezing weather set in during the latter part of December and continued throughout most of January. The last week of January the snow got so deep and plentiful that Bob and Randy had to break down and buy a set of chains for the car in order to keep mobile.

The previous week, Bert LaVigne was up in the Seattle office, and he and Bob toured Whidbey Island and Snohomish County slipping and sliding all the way. Maggie kept everyone's spirits up with her daily reports on the really bad weather back in Minnesota.

In mid-January, Francois Martin and Russ Pearson spent some very busy days in Tacoma helping the Whitacre organization with some design details on the Union Avenue Urban Arterial Project. Both of them left just before the "Big Snow." However, it did become cold, snowy, and icy enough for Francois to recall what it was about Montreal that made him decide to come to California.

With the 1st of February came some warm rains (38° F) and the snow and ice gradually disappeared. The natives say that this has been the wettest year on record, the longest cold snap since 1908, and the most snow they've had since anyone can remember. What else can you say than it's "highly unusual weather." With all this precipitation, we're looking forward to a magnificent spring and summer.

Yakima

In early January, Louis Riggs assisted by Paul Potter and Bob Wilkinson, presented the finding of the Whidbey Island Bridge Study, before the Washington Toll Bridge Authority in Olympia. Present were Governor Dan Evans and members of the Washington State Highway Commission, who heard Louis state that ferries were a much less expensive way of moving traffic to Whidbey Island than a bridge.

Paul Potter has recently returned to the San Francisco Office leaving the field work in Yakima in the capable hands of Mike Harrington. The Yakima project will be completed in May of this year.

Boise

Louis and Pat Riggs visited the Boise office the week before Christmas. The weather accommodated by dumping several inches of snow over the area. There were high hopes of a white Christmas in Boise for the first time in over ten years, but came the rains and mild weather and the snow

disappeared. The Riggs had an opportunity of meeting the Boise staff at an evening party at Dave and Loreen Toothman's home. After adequate libation, Chuck Sumner entertained the group with banjo and song parodies on everything and everyone.

Dick Fisher and his family spent the Thanksgiving holiday in Idaho. After horseback riding in the Boise Valley, they journeyed to the Payette Lakes area to observe skiing at Brundage Mountain and Sno-Mobiling at Cougar Mountain Lodge. All ski resorts in the area report excellent conditions with 4 inches to 18 inches of "powder" - no waiting line at lift facilities. Night skiing under the lights is available at Bogus Basin 5 nights a week.

The Idaho City Sewer project has been completed. Quent Keener reports the Horseshoe Bend Water and Sewer projects are well ahead of schedule. Cleanup and testing is nearly complete and completion of these projects will provide community collection and treatment of sewage and domestic water and fire protection to a city which did not previously have any of these services.

Plans and specifications for the Cascade Sewer Project are being prepared. It is hoped a call for bids can be made in March.

Although the outpost from Boise didn't make the December Newsletter deadline, we did wish each of you a Happy Holiday.

Don Maxfield was back on furlough previous to a probable hitch in Viet Nam. He indicated a serious intention of tying the marital knot prior to reporting back to his base. Latest report - no change of status!

Bill McInerney has joined the Boise Office staff for a short assignment to work on the Lost Lake Irrigation Project study.

Hawaii (Southwest not Northwest)

The Christmas season was delightful with a fine Company dinner at the Kahala Hilton Hotel. Stan Froid, Jim McCarthy and Doug Mansfield made it a real occasion for the new Honolulu members of the Tudor family.

Durella DeGrasse and her delightful family were entertained on New Year's Day by the Ajirogis,

and a few days later, by the Craigs. According to them, this was their first experience with "dim sum", a very delicious Hong Kong type of food.

Flu took its toll in sunny Hawaii. . . . Bob Craig was laid low for a week and Neal Motoshige was sick abed a couple of days. Millie Ajirogi breezed through the epidemic with no trouble. Very tough wahine!

President Louis Riggs and Veep Stan Froid have been regular visitors. Stan is expected again February 10 for a week. He will be here to attend the Third Pacific Institute of Transportation.

NEWS FROM LATIN AMERICA

Caracas

Although this is the winter season, and in spite of predictions to the contrary, Caracas has thus far been spared the Hong Kong Flu. Actually, winter weather in Caracas is not bad at all. Occasionally in December, and January a light sweater feels good in the evenings, but it's a far cry from White Christmas country.

The office seems to be running a little more smoothly now that the year-end holidays are past. It's always a rough time of the year in Caracas, with the last three weeks of December filled by Venezuelan style parties which last until the wee hours.

Incidentally, Venezuelans have adopted the Christmas Tree tradition and each year big shipments arrive from Canada in early December.

We haven't seen many San Francisco "types" lately, however Matt Harrison bounced into Caracas for most of a week during January. He was accompanied this time by PBTB Comptroller Jack Chambers. It's always good to see them both.

Mechanical Engineer Manuel Olvera, formerly with Tudor and now with PBQ&D, is in Caracas for a temporary assignment. Manuel's wife Faye locked up the "old home" out in Antioch and joined him here after a few weeks when the two decided that being separated was for the birds. It was the first time in their long and happy marriage that they had been apart for more than just a few days.

The two now have a nice little place within walking distance of the office here in Sabana Grande.

As a matter of general interest, a look at the PBTB-SA roster shows that the regular staff here in Caracas was assembled as follows:

Tudor (4), Bechtel (2), Parsons (2), PBTB (1), Maher & Martens (1), and Hertzka & Knowles (1) - total 11 from the United States. From the Local Sources (20) - total regular staff - 31.

Buenos Aires

Sorry, but no input from way down there.

Lima

Pictures - yes - news - no.

Lima office staff:



Left to right: Enrique Sarmiento, Andy Lamore, Pilar Murillo, Ivan Alfaro and Luis Salkeld. Not shown Jorge Becerra

NEWS FROM 525

Since the last news letter Tudor employees have had two Valentine baby girls:

Helen and Gary Chan - Cleve W.

Margaret and George Szabo - Kathleen M.

Congratulations to both proud sets of parents!

Louis Riggs is General Chairman of the 1969 Engineers' Week beginning February 17th. The outstanding events are the luncheon and the symposium on the 18th and the banquet on the 20th.

Jim McCarthy and Nita Weddington collaborated on the following description of accident oddities among the Tudor family:

The year 1968 and early 1969 was living proof of the old adage that the most serious accidents happen at home. Several members of the Tudor staff were hobbling about for various and sundry reasons, none of which had to do with gainful employment.

Probably the first of the accidents was incurred by Carl Otto who was trying to outrun his children in a game of "Four Square". As a result of excess zeal Carl spent six weeks on crutches.

Gloria Pinell was enroute to work bright and early when she found herself sitting, not standing, on the steps of the reliable old Muni bus. The result of the accident, Gloria refuses to name but shall we say that she spent many a day sitting on a very soft pillow. Alyce Keast was the victim of the same type of accident when she slipped and fell on her front steps. Alyce admitted receiving a broken coccyx. If you can spell, it is worth talking about.

Nita Weddington fractured her right foot while trying to pick up the early newspaper in her robe. The resultant fracture resulted in a walking cast for 4 weeks and a small fortune in cab fares.

Alyce again got into the act when Bob was forced to stop short in order to avoid an accident in the intersection. Had she worn her seat belt in accordance with the law she would not have hit her eye on the rear view mirror, she would not have a new scar, and best of all she would have been spared the necessity of explaining "how she got it".

Bill Davis was injured in the process of playing Santa Claus. While carrying Christmas presents down the stairs of his daughter's apartment building his foot caught on the bottom step and pitched him against the wall. Result - a badly twisted knee and a few days away from the golf course. The latter, of course, was the bigger tragedy of the two.

Helping one's neighbor is also not all it is cracked up to be. Manuel Torres in a spirit of friendliness offered to help replace a broken window - end result, a bad gash entailing many stitches and loss of the use of his right hand for two weeks.

Another one of the ladies who was forced to sit with her foot elevated for a week or so was Leone Morris who bumped her foot in the dark in the security and safety of her own apartment.

Louis Riggs while puttering around his garden and relaxing for a change was unfortunate enough to poke a flax leaf into his eye. As all of us know nothing can be more painful than any form of injury to your eye. Very uncomfortable for Louis but luckily no permanent injury.

Alyce again is in the picture, and hopefully it will be our last accident to report for the year. While vacationing in Palm Springs during the Holiday season some gentleman (gentleman?) trod upon her foot on the dance floor. What appeared to have been a simple accident has become quite a serious one involving several days in the hospital and at the moment a walking cast for several weeks to come.

We could go on about the "Hong Kong" flu and its toll, but many of our members are not yet quite over its effects so it remains a touchy subject.

MORAL OF THE STORY. YOU CANNOT BE TOO CAREFUL.

Last thought before going to press, please turn off the rain!!!

NEWSLETTER

PUBLISHED FOR PERSONNEL OF TUDOR ENGINEERING COMPANY

APRIL, 1969

A MESSAGE FROM LOUIS RIGGS

The Stockholders of Tudor Engineering Company assembled for their annual meeting on March 24, 1969 at the Engineers Club. The customary business of this meeting is to review the Company's financial statements and reevaluate the Company's activities during the previous year. The Company's organization and operations are also discussed. In addition, this year's meeting was highlighted by the election of Robert N. Janopaul as a Director. Immediately following the Stockholders' Meeting, he was also elected by the Board of Directors to the office of Vice President. The other officers of the Company remain as before.

All of the Directors, the Stockholders, and I am sure, many friends whom Bob has within the Company welcome him to this new responsibility. Those of you who have had the opportunity of working with Bob will realize that the Company, in placing him in charge of the new Seattle office, is taking a strong and positive step to represent Tudor Engineering Company in the Northwest. I am sure that my own congratulations and wishes for his success are parallel to those of everyone in the firm.

NEWS FROM THE NORTHWEST

Seattle

Randy, Maggie and Bob are busily holding down the "fort" in Seattle. The office was recently awarded a contract for the scope preparation phase of a full scale design team study for a major transportation facility in Seattle. Bob and Randy have been spending a great deal of time in Olympia making presentations in support of the Parallel Evergreen Point Bridge bill which is now proceeding through the Legislature. The backlog of prospective jobs in the Seattle area looks very good with major activities probably getting underway this summer. Hope to have more specific news to report by the time of the next Newsletter.

Yakima

No news - they must really be working hard.

Boise

The Boise office has been caught with the usual rash of spring fever with the advent of warm, sunny weather. Spring skiing is still excellent at Bogus Basin, just outside of Boise, with the "world's longest lighted slopes." You'd be surprised at what the night-lighted slope does to (for) a person! We had a good turnout of Californians tying their boats (or tying one on) here in Idaho during the recent catastrophic earthquake you were supposed to have. Idaho taverns never had it so good!

Since we visited last time, Robert Baker, a registered Civil Engineer in Ohio, has joined us. Bob and his wife, Georgette, came from the Seattle area and are most welcome! Perhaps now someone can take a vacation without feeling guilty about deserting the ship.

The Cascade Sewer Project is now being advertised with bids due the first part of May. The Valley County Water and Sewer Study is near completion, and we are at present working on a number of subdivisions and miscellaneous projects.

We had two visitors from the San Francisco office recently--Louis Riggs and Bill Davis were here for a few days. Glad to have them!

Dave Toothman says that age doesn't mean a thing to some people. He recently accompanied Dr. W.L. Powers, our consulting agronomist from Los Angeles, to the Lost Lake Irrigation Project in Oregon. It seems that the very spry 82-year-young Dr. Powers had Dave up at the crack of dawn and in a two day period, they hand-dug approximately fifty 5-foot deep test holes. We think someone else will get the job of accompanying the Doctor next time!

Hawaii

March was a month for visitors--Stan Froid, Paul Potter, Viscount Botelho and his charming daughter, Guidinha--to name a few. Paul spent several days on a private marina project in which we may be engaged later this year. Stan Froid rushed from conference to conference on a variety of subjects.

Millie Ajirogi's husband, Tom, is making a successful recovery from a serious exploratory operation. Thank heaven all appears to be well.

Neal Motoshige is thinking about buying sideburns and a long curly mustache so that he can play his role as landlord in Waikiki in the traditional style of the American drama.

Waikiki Improvement Association came up with an additional contract for economic research which is very pleasing.

The first of April, Bob Craig attended the American Marketing Association Computer Seminar in Los Angeles, and spent one day in San Francisco.

NEWS FROM LATIN AMERICA

Caracas

After a stint of extra hours in early February, the staff here was able to enjoy a four-day weekend at "Carnival Time" in mid-February. Our people used this opportunity to travel as follows:

Frank and Martha Lerchen flew to Puerto Ordaz for a visit with Martha's sister and brother-in-law, Mary and Jim. Jim, formerly with the Panama Canal Company, is now with Orinico Mining Company, a Venezuelan subsidiary of U. S. Steel.

Larry and Helga Barr farmed out son, Eric, and made the jump-up scene in the Port of Spain, Trinidad, along with Architect Nick Weber from Maher and Martens, and Bob Willow of PBQ&D, Inc.

Marius and Julia Bejan with daughter, Janine, flew to Aruba for some sun and sand.

Steve Stevlingson drove to Carupano in the easternmost part of Venezuela to look over the country and to check out the spear fishing possibilities.

Former Tudorite, Manuel Olvera, has returned to the PBQ&D, Inc. office in San Francisco after giving us a hand on the mechanical work.

Recent visiting firemen included Matt Harrison, Gene Altshuler, Don Moore and Carl Goepfert.

Buenos Aires

We're sorry to have missed the deadline last issue and will try not to let it happen again. We were very happy that Carl Otto could come so regularly every other week for the last two months and deliver to us the San Francisco Chronicle-Examiner. However, it seemed each time the paper was soggy (have you had rain in San Francisco??). We have not seen Carl since the 14th of March and do miss the newspapers. Another distinguished visitor to our fair city was Keith Bull who was completing some sort of "round-the-world" tour.

Seriously speaking, we have had an opportunity to submit a proposal on the first of several bridges in the future linking Argentina with Uruguay across the Uruguay River. The competitors for the bridge are worldwide. However, we all have our fingers and toes crossed here and hope that we, and our Argentine and Uruguay joint venture, will emerge victorious over the English, Germans, Italians, Spaniards, other Americans, etc.

Our contract with the Inter-American Development Bank will be two years old in April, 1969, and we expect that it will be extended for another two years. The family of Dave Willer has returned to the Bay Area; however, Dave will remain until his replacement has arrived. Recent comments received from Dave's family include: "I didn't remember Root Beer tasted like this"; "My new Spanish teacher has an accent"; "Is it all right to drink from this water fountain?"; "Why can't we order steak here like we did in Buenos Aires?"

Two ex-Tudorites are now living here in Buenos Aires--John Whipple is now Deputy Manager for TAMS, and Fred Madigan is a transportation specialist for the Inter-American Development Bank. They both send their best regards to their friends at Tudor.

Lima

Pilar Murillo notes that her infected fingernail which prevented her typing for a couple of days was not included in last year's accident list.

While in Peru, Mr. and Mrs. Kennedy visited Arequipa, Piura, Chiclayo and Machu Pichu. They were accompanied by Mr. and Mrs. Alfaro and it was the first time that Mrs. Alfaro had visited

these cities. Enrique Sarmiento made his first visit to Cuzco when participating in a review of the project there with Mr. Kennedy. While here in Lima, the Kennedys entertained the staff and their wives at Trece Monedas, a well known criollo restaurant.

Among life's embarrassing moments is to drive in front of the Bolivar Hotel in downtown Lima to pick up the Kennedys and have the station wagon stall in low gear. This occurred just as Andy and Garretta Lamore were picking up the Kennedys to take them to the airport to catch a plane to Arequipa. Garretta was left by the others (who dashed off in a taxi to the airport) to get the car started and limp home in locked-in low gear. She thereafter had some fun with the International Harvester salesman, Jorge Gutierrez, telling him how disappointing it was to have a practically brand new car fail in front of the Bolivar with one of the alto jefes of the participating companies ready to go to the airport.

Krysia Lamore, age 15, left February 16 for a two-week trip to a jungle area on one of the tributaries of the Amazon near Pucallpa, Peru. She took plenty of insect repellent which seemed to be the highest priority item on the equipment list.

News from 525

We have a lot of commuters, but think that John Wensinger must have the longest commute to and from the office each day. John lives 7 miles northwest of Santa Rosa--he leaves at 5:30 a.m. and arrives in the City at 7:30. We wonder if John does his sleeping on the bus since he can't have too much time at home.

Sunil Yadav had a wonderful vacation including a trip home to see his parents and relatives. He surprised them by not letting them know when he would arrive and just went to their home--they didn't know their "long-lost son" since he had gained weight and with a mustache. After he finally convinced them that he was Sunil, he had a wonderful time. And naturally, one never has enough time to see everyone and everything. Besides visiting his home, he visited London, Paris, Frankfurt, Geneva, Rome, Beirut, Delhi, Kashmir, Bangkok, Manila, Hong Kong, Tokyo and Honolulu. Doesn't that just make you drool?

Romance has once again blossomed at 525. Marilyn Padian and Gene Buckley recently announced their engagement. They expect to be married in December of this year. Congratulations to the young lovers.

BART CONSTRUCTION REVITALIZED

On April 8, 1969 Governor Ronald Reagan put his signature on the much debated sales tax bill which will finance the current \$150 million deficit and speed the system toward its completion and full operation. This makes possible the carrying of passengers in East Bay segments of the system by late 1971. The opening of bids for the cars on June 3, 1969 will be a significant milestone in the schedule for completion of the system.

The significance to Tudor Engineering Company of the legislative action is that certain construction contracts vital to the opening of the system can now be advertised rather than be put on the shelf for later action. One of the more important contracts to be advertised in the near future is the Richmond Yard and Shops. This contract is vital to the completion of trackwork and operation of the Berkeley - Richmond portion of the line. The Concord Yard and Shops will also be advertised in order that the Contra Costa line may be completed and put in operation.

Another significant milestone in the progress of BART occurred on April 3, 1969 when the last underwater tube was lowered into place forming the longest underwater transit tube in the world, some 3.6 miles in length.

Another major milestone in BART progress took place on April 1, 1969 when the first section of rail was laid on the Southern Alameda line near Hayward.

In spite of many obstacles and frustrations the BART system is being constructed in total.

INVEST IN AMERICA WEEK is April 27-May 3, 1969 and serves to remind us that our communities and nation grow as savings, wisely invested, provide more goods and jobs for everyone. Jobs and opportunities for advancement are created only by the investment of savings, and they are maintained only by the continuing flow of savings into investments. While it is not the purpose of this message to ask any individual to invest capital in any particular way it is hoped that each of you will stop and reflect on the significance of personal savings and investment in American business. Several different pamphlets are published by the Invest-in-America Council. Copies will be available at the receptionist's desk during Invest-in-America Week.



TUDOR

Engineering Company

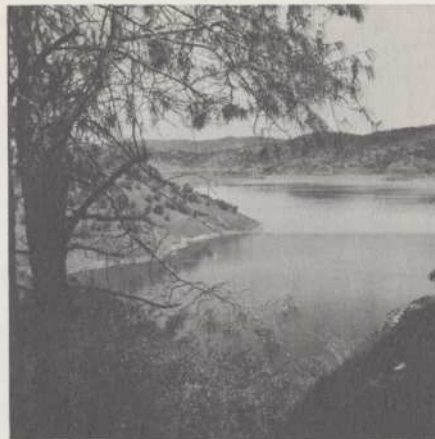
Newsletter

July 1969

MERCED RIVER
DEVELOPMENT PROJECT



Irrigation



Recreation

THE PROJECT

In May, the final summary report on construction of the Merced River Development Project was submitted to the Board of Directors of the Merced Irrigation District in Merced, California. The article which follows highlights the principal features of the New Exchequer Dam as described in the summary report.

The Merced River Development Project is an \$85,000,000 multiple purpose hydro development on the Merced River. The ultimate development includes four dams and appurtenant works, together with power installations totalling 175,100 KW.

The initial development includes New Exchequer Dam and Spillway, McSwain Dam and Spillway, and power facilities at both dams, together with appurtenant works. The New Exchequer Reservoir will provide 1,024,600 acre feet of storage. McSwain Reservoir will provide an additional 9,730 acre feet. Installed power generating capacity will be 80,100 KW and 9,000 KW at New Exchequer and McSwain powerhouses respectively.

The primary purpose of the project is to augment the supply of water to the irrigable land within the boundaries of the Merced Irrigation District. Power generation facilities at the two dams assure revenue

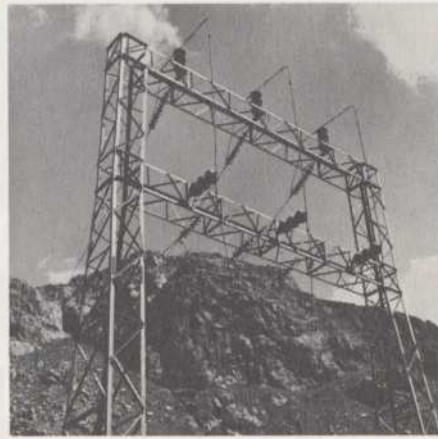
adequate to finance the capital cost of the construction, as well as operating and maintenance expenditure. An important benefit afforded by the project is the provision of flood-control storage to reduce the risk of flooding which has, in the past, caused considerable damage in the lower reaches of the Merced River valley. Associated with the project is the development of recreational facilities available for enjoyment by the public.

The general revenue bonds financed the irrigation and power generation portions of the project. The bonds will be retired from the sale of electrical energy generated by the project. The Federal Government provided funds for the flood control portion and the State of California made available funds for the recreational development.

Tudor Engineering Company was employed by the District to provide engineering services for the detailed planning, design, construction management, and assistance in financing and other associated activities. Studies were started by the Company in 1958, the design and contract plans for the first phase were completed in early 1964 and the contract for its construction was awarded July 24, 1964 to the Dravo Corporation. The first phase of the project was completed in December, 1967. Portions of the recreation facilities are still under construction.



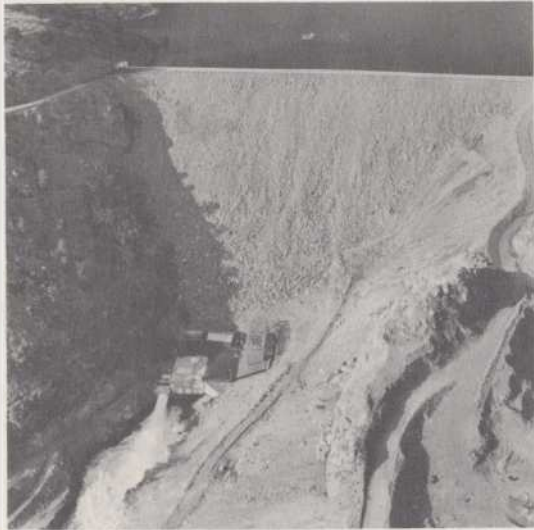
Flood Control



Power

NEW EXCHEQUER DAM

HIGHEST CONCRETE-FACED ROCKFILL DAM IN THE WORLD
UTILIZES EXISTING CONCRETE GRAVITY DAM IN STRUCTURE

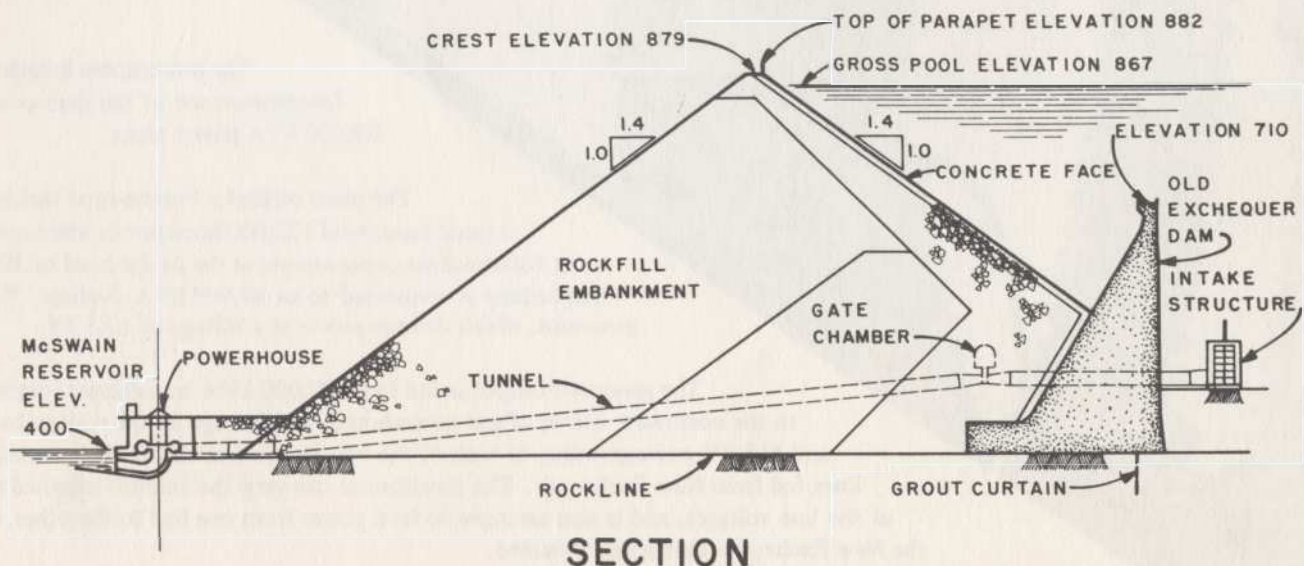
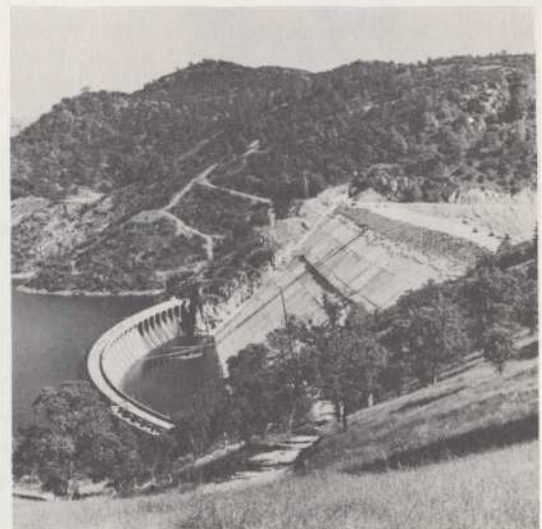


New Exchequer Dam and Powerhouse is the largest single feature of the Merced River Development Project. The dam rises 490 feet above its foundation and extends 1,220 feet along its crest. The reinforced concrete slab on the upstream slope of the rockfill provides a watertight face for the dam. The New Exchequer Dam is constructed immediately downstream of old Exchequer Dam. The old dam completed in 1926, is a concrete gravity dam of arch form, 310 feet high, impounding a reservoir having a capacity of 281,200 acre feet. During construction, the old dam permitted the reservoir to remain in operation for regulation and storage of water for irrigation. In the new construction, the old dam acts as a support for the upstream toe of the rockfill embankment. This unique feature of the design reduced the area of the impervious upstream concrete facing, and the maximum water pressure which this face must withstand.

The crest of the new dam is at Elevation 879 feet, providing a reservoir capacity of 1,024,600 acre feet. The rockfill is placed on a slope of 1 vertical on 1.4 horizontal, and a total of 5.4 million cubic yards of rockfill were used to complete the embankment.

Excavation for the dam foundation commenced in October 1964. By December 1964, the foundation was sufficiently prepared to receive the first rockfill for the dam embankment. The rockfill embankment was completed in April 1966.

The upstream face of the 490-foot high rockfill is paved with a series of concrete slabs, each 60 feet wide but varying in length up slope from 21 feet at the base to 50 feet at the top and in thickness, from 34 to 18 inches. Placing of the concrete slab facing commenced in July 1965 and was completed in late June 1966.





THE POWERHOUSE

The powerhouse located at the downstream toe of the dam contains a 89,000 kVA power plant.

The plant utilizes a Francis-type turbine with a rated capacity of 123,000 horsepower when operating at 180 revolutions per minute at the design head of 397 feet. The turbine is connected to an 89,000 kVA, 3-phase, 60-cycle generator, which delivers power at a voltage of 13.8 kV.

The generator output is fed to a 100,000 kVA transformer located near to the northwest corner of the powerhouse, which steps up the voltage to 69 kV and 115 kV, corresponding to each of the two Pacific Gas and Electric transmission lines fed from New Exchequer. The transformer can vary the amount supplied at each of the line voltages, and is also arranged to feed power from one line to the other, even if the New Exchequer unit is disconnected.



New Tudor Engineering Company Building

On July 1, the San Francisco office of the Caracas Metro Consultants took over new quarters on the 4th floor of the newly acquired Tudor Engineering Company Building at 149 New Montgomery Street. The new office is now being readied to provide space for the Design Task Group, which will accomplish the final design and will prepare construction contract documents for the first increment of the Caracas rapid transit system. The first increment includes approximately 4.5 miles of line (the major portion of which is tunneled subway), eight passenger stations, and the Pro Patria Yard.

Staffing the Design Task Group is to be equally divided among the three venturer firms, Parsons, Brinckerhoff, Quade & Douglas, Inc., Bechtel Corporation and Tudor Engineering Company. The project is presently staffed with approximately 35 personnel and it is anticipated that the staff will grow to 80 in mid-September. Tudor personnel currently assigned to the Design Task Group include: **Gene Altshuler, Don Moore, Dick Fischer, Dan Yavorsky, Mike Kazmirci, Ken Heilig, Glen Horton, Gary Chan, Bob Jacobs, and Luisa Bravo.**

While the San Francisco office is adjusting to its recent move and expansion, the Study Group in the Caracas office continues on with preliminary design activities under the direction of Resident Manager, **Frank Lerchen.** With the return of **Steve Stevlingson** to San Francisco, remaining Tudorites **Larry Barr** and **Marius Bejan** continue to keep their end of the project going. Although the work load has hampered vacation plans, Frank was able to slip in a short "business vacation" in San Francisco where he was "entertained" by the Board of Control. Marius and Julia managed to catch a few days of vacation time in late May, but the issue was in doubt until the last minute. For Larry, he "vacationed" at the office while Helga and Eric visited Europe.

† † † † †

A couple of ole gray-haired Tudorites, **Dave Willer** and **Steve Stevlingson**, just recently returned to the San Francisco office from South America.

Dave and his family, after almost two years in Buenos Aires, finally returned for good to relocate in the Bay Area. While in Buenos Aires, Dave served as Deputy Project Manager on the Argentina Potable Water Supply project for the

Tudor Staff News

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joint venture firm of Kennedy Engineers-Tudor Engineering Company. Financed in part by the Inter-American Development Bank, the project will provide new or additional water supply facilities to five cities in Argentina. These facilities will benefit over 3.5 million people. The joint venture firm is supervising the \$23 million loan and is responsible for reviewing design criteria, approving plans and specifications, assisting in bidding procedures, awarding contracts and inspecting construction. To supplement funds loaned by the bank, the owners, La Administracion General de Obras Sanitarias de la Nacion, has provided \$44 million for the project. The system is to be completed in late 1974.

After almost two years in Caracas, **Steve Stevlingson** returned to the San Francisco office before leaving for a well earned vacation in Canada. Steve was with Parsons Brinckerhoff-Tudor-Bechtel in Caracas, responsible for all surveying, aerial and topographic mapping and utility relocation for the Caracas Metro project. Unlike his previous experience in Lima, Peru, Steve had no problems in departing from Venezuela, other than a few broken hearts which he had to leave behind. Before departing Caracas, Steve was injured in an automobile accident and was hospitalized for a short period. We are happy to see Steve has recovered from the unfortunate incident.

Randy Wilkinson, after spending over 12 of his 13 years with Tudor Engineering Company in "foreign" Tudor offices, finally managed to secure a position in the San Francisco office upon returning from the Seattle office. Randy is now spending most of his time submerged in "Total Immersion" at Berlitz. [Could it be that he's going "foreign" again?]

While a few old Tudorites returned from other offices, several new employees have joined Tudor Engineering Company during the past few months. We wish to extend a warm welcome to the following new members of the "Tudor Team":

Walter F. Anton
Juan H. Aquino
William M. Buckland
Alberto J. Carasig

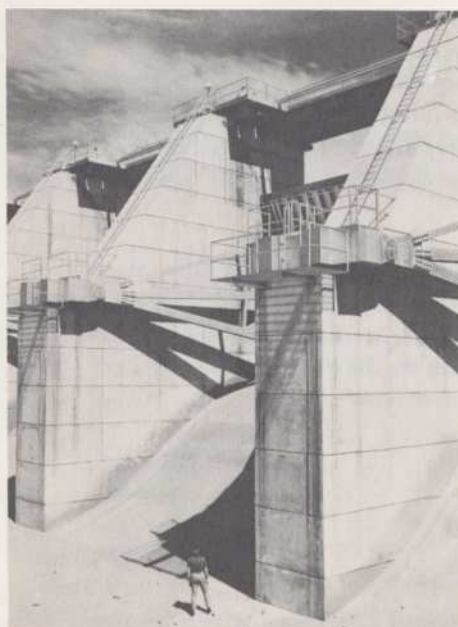
Glenys L. Dahl
James W. MacIsaac
Yolanda Tellez
Placido ("Mike") Viarnes

Walter Anton joined Tudor Engineering Company

The spillway consists of a 240-foot gated section, with an adjacent 1,080-foot long ungated spillway on the north. This element of the project is located in a saddle approximately one mile north of the main dam and provides for the passage of maximum flood flows through the New Exchequer reservoir when the reservoir is filled to capacity. The total combined discharge capacity of the gated and ungated spillway is 375,000 cubic feet per second.

The gated spillway structure has an overall length of 280 feet and contains six Taintor gates, each 40 feet wide by 30 feet high. The gates are operated by electric hoists. Power is furnished from a distribution line from the New Exchequer powerhouse and an emergency diesel generator is also provided. The crest of the gated spillway consists of a concrete ogee section, 30 feet high and 58 feet long in the direction of the flow. Downstream of the ogee section, the bed of the discharge channel is lined with concrete for a distance of 105 feet. Downstream, training walls extend 105 feet beyond the main structure on the right bank and 320 feet on the left bank. The spillway is crossed by a bridge affording access to the hoists needed to operate the spillway gates.

Excavation for the gated spillway was started in September, 1964 and concrete placement commenced at the end of November, 1964. By the end of August, 1965, assembly of the first of the Taintor gates had commenced and this phase of the work was completed in November, 1965. Hoists and auxiliary equipment were installed and subjected to preliminary tests in March, 1966. Releases were made over the gated spillway in the summer of 1967, and final acceptance tests were performed in December, 1967.

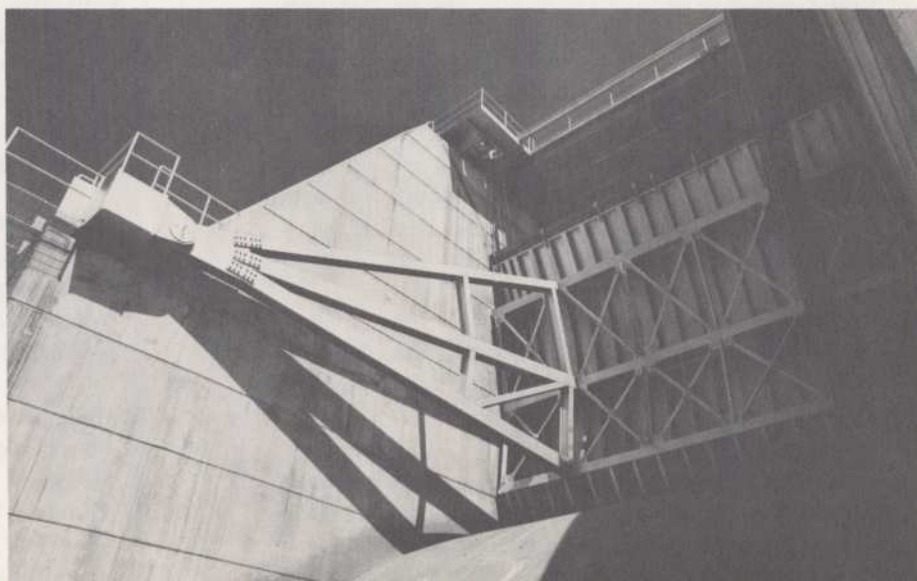


THE SPILLWAY and DIKE



The emergency spillway consists of a nine-foot wide concrete crest section 1,080 feet long, capable of passing the standard project design flood of 167,000 cubic feet per second. The right abutment consists of an inclined concrete slab. A training wall 210 feet long, is connected along the left bank of the emergency spillway channel. Earthfill embankments, including a central impervious core and filter layers, are located between the emergency spillway and the gated spillway and to the left of the gated spillway.

A saddle dike, 2,200 feet long, with a maximum height of 60 feet is located south of the spillway structure. Construction of the dike was started in April, 1966 and the fill operation was completed in October, 1966.



There must be some attraction down La Paz (Baja, California) way – Nita Weddington and Alyce Keast each spent a week there. What with a tropical climate, beautiful beaches and clear blue bay waters – how come they both returned without suntans – must be the night life, eh??

Bill Davis and his wife Meredith, attended the 30th reunion of Bill's Harvard Business School class held on the Island of Martha's Vineyard, Massachusetts. Bill reports that the "Vineyard" is a delightful spot for a vacation and that they thoroughly enjoyed themselves. He mentioned that his classmates had somewhat less hair and more avoirdupois but were still recognizable. On their way home they visited friends in New York whom they had known in Peru and who are also mutual friends of the Otto's.

Stanley Innes and family made a trip back to England last May to attend Stanley's parents' golden wedding anniversary celebration. Being that Stanley and Betsey have the only daughters ever born in the Innes family, Cindy and Heather had no difficulty in charming their grandparents. For Betsey, this was her first trip to England and she soon learned why the English are so hardy. What with no heat, doors and windows continuously open in 50 degree weather, and the senior Innes constantly complaining "that it certainly is stuffy in here," Betsey never warmed up the whole time she was there. Regardless, she is still eager to repeat the experience.

While Mary Roberts and her husband spend five weeks motoring across the U. S. to the east coast, Ray O'Neil is baby-sitting (or is it the other way around, Ray?) their 60 pound German Shepherd-Labrador Retriever named Ljuba. For Ray, it's something altogether different – he's not used to having such gourmet dishes such as doggie-pot pie and having a back seat driver telling him how to drive his Alfa-Romeo on dog outings. Can you imagine the reception Ray gets when he returns home from a long day at the office? We'll report on the conclusion to this story in the next issue.

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During the July ASCE sponsored National Meeting of Transportation Engineering in Washington, D. C., Louis Riggs presented a paper entitled: *The Field of Private Enterprise: Planning and Engineering*. The subject of the paper deals with the approach of bringing private consultants and public agencies together to utilize the top talent and experience of both to provide maximum effectiveness and efficiency in administering, planning and engineering public works projects.



David G. Hammond, Director of Development and Operations for the San Francisco Bay Area Rapid Transit District was chosen 1969 "Man of the Year" by the American Public Works Association and Kiwanis International. Mr. Hammond received the award at the annual meeting of the Northern California Chapter of the APWA. According to Chapter President H. H. LaVigne, Mr. Hammond was cited for "outstanding success in coordinating design and construction of the entire \$1.3 billion BART project, while maintaining an awareness of human values" Above, Dave Hammond receives the award from Bert LaVigne. Bob Bugher (center), who is Executive Secretary of the National APWA, officiated at the presentation.

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Design and engineering services during construction continue at a rapid pace on Dave Hammond's project. Of the 47 construction contracts assigned to Tudor Engineering Company, 12 are still under design, while six are between the advertising and award stages. Of the 29 contracts awarded for construction, 13 have been completed.

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In keeping with Bob Janopaul's active pace, Bob was busy during the month of June speaking before two meetings in Seattle. The first was a general discussion meeting in which Bob was the featured speaker before the ASCE Technical Group on Transportation. The topic of the discussion was the aspect of natural and human environment as a consideration in transportation planning. For the second meeting Bob spoke before the Seattle Section of the ASCE on the Lake Washington Bridge Crossings Study which was prepared by Tudor Engineering Company for the Washington State Highway Commission. From all reports, both meetings were well attended.

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Newsletter

July 1969

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in March as the Project Manager for Tudor's varied water resources activities. Walt is returning to the Bay Area after seven years with Harza Engineering Company in Chicago, where he was the design engineer and project manager for a variety of worldwide water resources projects. Walt received his Bachelor of Science degree in structural engineering and his Master's degree in water resources engineering from the University of California, Berkeley. He served with the Navy's Civil Engineer Corps and was later employed with Kaiser Engineers, first as a dams engineer and subsequently as Assistant to the Vice President. Walt resides in Piedmont with his wife and three children.

In July, **Juan Aquino** joined Tudor Engineering Company as a civil engineering draftsman. Juan is from the Philippines, where he was formerly employed with the Department of Public Works and Communications as a field inspector and supervisor on irrigation projects.

Bill Buckland, a native of Sydney, Australia, received his Master's degree in structural engineering at Stanford University before joining Tudor Engineering Company as a structural engineer. Before coming to the United States, Bill was employed with Sir Alexander Gibb & Partners in London and with Stanley Dewellyn & Whiten, Consulting Engineers in Sydney.

In July, **Alberto Carasig** joined Tudor Engineering Company as a structural draftsman. Alberto received his Bachelor's degree in architecture from the Far Eastern University in Manila. Prior to coming to the United States, Alberto was with ITT Philippines, Inc., which is affiliated with International Telephone and Telegraph Company of New York.

In May, **Glenys Dahl** took over the secretarial duties in the Seattle office after **Maggie Cotton** "retired" to San Francisco. Several years ago, Glenys left Yakima for the cool, green environs of the Puget Sound area; from all indications, it appears to agree with her.

After four years with the Puget Sound Governmental Conference in Seattle, **Jim MacIsaac** has joined the Seattle office staff as Senior Transportation Planning Engineer. At the Conference, Jim was supervisor of the traffic and transportation section, charged with the responsibility of carrying out the work program of the four county regional transportation planning study. Jim received his Bachelor of Science and Master's degrees in civil engineering at the University of Washington.

In February, **Yolanda Tellez** joined the secretarial staff in the San Francisco office. Prior to leaving her native land of Nicaragua, she was a secretary with the American Embassy in Managua.

"Mike" **Viarnes** joined Tudor Engineering Company as a Senior Structural Engineer after spending over four years with the State of California's Department of Water Resources in Sacramento. During Mike's employment with the State, he participated in the design of the Box Canyon

Dam, Brush Creek Dam, and other water resources projects. The Viarnes will be settling in Walnut Creek as soon as their new home is completed.

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Bob Janopaul reports from Seattle that **Wil Pacheco** and family arrived safely in Seattle in early June to set up new housekeeping in their new "country club estate" in Bellevue. By the end of the first week the furniture finally showed up, after many collect phone calls from the truck driver in Portland. Apparently the truck driver couldn't find his way out of Portland. Once the furniture arrived, Wil decided it was time to get back to office work, but he wasn't sure **which** office. Since then, Wil has constantly been seen in the San Francisco office muttering and complaining that San Francisco hotels refuse to honor his M. S. International Credit Card and something about the fact that "**Marge planned this whole thing.**"

Reports from the Lima office indicate that social events were at an all time high during June. According to **Andy Lamore's** monthly progress reports, social activities went along like this:

June 12	Despedida luncheon for Carlos Villar of BID
14	Lima office staff welcomed the Richard Kennedys of Kennedy Engineers
15	Luncheon for the Kennedys at the Sarmiento's
16	Dinner for the Kennedys at the Lamore's
17	Despedida luncheon for Edmundo Aguilar of BID
18	Luncheon at Paracas with the Kennedys, Lamore and Juan Alfaro, followed by the Kennedys entertaining the entire Lima office staff at the Hotel Crillon Skyroom
21	Lima office staff welcomed Carl Otto, followed by luncheon for Carlos Leon de Peralta and Carl Otto
22	Picnic attended by Carl Otto, the Lamores and Sarmientos

[23 to 30 Begin diet and rest up for unexpected social events which could occur in July]

It seems that every time Mr. and Mrs. Kennedy visit Peru, there is always a "**happening**" with the company vehicles. On one visit, they ran out of gas while in the Sierra; on another occasion the clutch failed in downtown Lima when they were trying to catch an airplane. On this visit, "we" accommodated them with a flat tire.

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Now that summertime is here, Tudor Management is desperately attempting to "**computerize**" summer vacation schedules so that work can continue uninterrupted. Already many have evaded the computerization by taking their vacations early.

Prior to the "**heavy**" work load in June, **Enrique** and **Sylvia Sarmiento** were able to slip away from Lima in April for a vacation to Rio de Janeiro and Buenos Aires. While Enrique relaxed on the beach at Copacabana, Sylvia did her "**heavy shopping thing**" for which Enrique had the honor of carrying the results home. [Is it true that Sylvia insists on starting on vacations with empty suitcases just in case she should run into a bargain?]