

## THE EARTHQUAKE OF MARCH, 1964

The excerpts which follow are from a publication entitled "Alaska Regional Profiles — Southcentral Region," prepared by the State of Alaska Division of Planning and Research.

"In the late afternoon of March 27, 1964, one of the greatest earthquakes in recorded history struck Southcentral Alaska. 115 lives were lost, and damage was estimated at \$330 million. The epicenter was near the head of College Fiord in Prince William Sound, at 61° 06' north latitude and 147° 44' west longitude, about 75 miles from Anchorage, with a focus depth between 12 and 31 miles. The magnitude is believed to have been between 8.4 and 8.6 on the Richter scale. Plafker\* suggests that rupture occurred along a fault of considerable length rather than at one specific point because of (1) the abnormally long duration of strong ground motion, (2) the character of the waves generated, and (3) the extensive belt over which 589 recorded aftershocks were distributed. The great geologic event and resultant vibrations manifested themselves through widespread vertical and horizontal displacements, surface faults, ground cracks and fissures, sediment compaction, landslides and subaqueous slides, locally generated sea waves and tsunamis. Of these, the tsunami took the most lives, and the landslides caused the most damage."

"The 1964 earthquake severely hampered all transportation, communication, and utilities systems in Southcentral Alaska. The shipping industry, which provides 90 percent of the state's import requirements, was greatly disrupted. Except for Anchorage, all ports in the earthquake-affected area were either destroyed or inoperable. Not only were many smaller vessels destroyed, but well-known waterways were altered by land-level changes. These events generated far-reaching changes in the shipping economy of Alaska."

The Port of Anchorage, the only useable port left in Southcentral Alaska, was back in service about 36 hours after the earthquake, following emergency repairs to the electrical system and repositioning of the cargo cranes which had been jolted off the rails.

\*George Plafker, of the U.S. Geological Survey, author of an article in *Science*, 1965, entitled "Tectonic Deformation Associated with the 1964 Alaska Earthquake."

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### BILL BUNSELMAYER REPORTS . . .

It's April — and the Arctic terns have returned to the northland from their long annual Antarctic flight. Daylight hours lengthen by leaps and bounds, and soon the sun will shine approximately 20 hours daily. Snow and ice still linger, but "break-up" is here, as huge ice floes lazily drift down Cook Inlet to the Gulf.

Just as work moves into high gear on the Alaska Pipeline, so likewise it does at the expanding Port of Anchorage. This is the second of the Port's two-year, \$7-million construction program for Terminal No. 3, and Yard No. 3.

The Port of Anchorage and its cargo facilities serve the needs of a major portion of a state larger than the combined areas of Texas, California, Tennessee, New York and all the New England states.

During 1975, general cargo tonnage at the Port of Anchorage increased 41% over the previous year. The trend continues and current general cargo tonnage is running 40% over 1975 figures. The oil pipeline is not the sole cause for the high tonnage increase, although it is a major factor. Oil-related and oil-support industries possibly contribute as much to the increase as the pipeline itself. The natural growth pattern and the mystical lure of the Great Land compound all these factors and the result is a boom.

The Port of Anchorage is served by two major dry cargo carriers on a year-round basis. Sea-Land Service, providing containerized cargo service, and Totem Ocean Trailer Express, providing roll-on/roll-off service, ply the Gulf of Alaska between Seattle and Anchorage in all seasons. Barge carriers also serve the Port of Anchorage, but they discontinue services during winter months.

There's an old saying here — "selling refrigerators in the Arctic" — don't laugh. In this oil-rich land, petroleum products are imported. Tankers from Union, Shell, Standard, and Texaco oil companies discharge refined products year round at the Port's petroleum berthing facility. Tesoro-Alaskan serves a portion of the state's needs with petroleum products produced and refined in the Cook Inlet area.

The Municipality and Port of Anchorage, keeping pace with earlier cargo traffic projection forecasts, authorized the expansion of its marine facilities in 1974. TAMS completed design work in the spring of 1975, and construction awards were made that summer.

General S.K.W.-Swalling, a joint venture organization from Anchorage and Seattle, is presently constructing a 353-foot-long by 69-foot-wide extension to Terminal No. 3, and a 208-foot-long by 30-foot-wide Trestle No. 3 to shore. Both structures are cast-in-place reinforced concrete, supported by steel pipe piling, ranging from 16 inches to 42 inches in diameter. Poor foundation conditions require the friction piles to vary in length from 116 feet at Trestle No. 3 to 184 feet at the wharf extension. An extreme tidal range of 42 feet accounts for the free-standing piles of 75 feet at the face of the wharf. Crane and railroad trackage, water, electricity, telephone, as well as ship's services will be extended into the new wharf. When work is completed in the late fall of 1976, the Marine Terminal will be 2,335 feet long.

Alaska Excavating and Alaska Beautification, an Anchorage joint venture firm, is re-claiming 8.2 acres of tidal mud flats for back-up staging area for Port users. This new security area will be provided with a railroad spurline for cargo in transit to the Interior. The spurline will be utilized during the construction period to transport fill materials, via the Alaska Railroad, to the project site.

TAMS PC (Alaska) is providing technical services to the Municipality and Port of Anchorage for their current construction program.



Bill Bunselmeyer is TAMS' Resident Manager in Anchorage, Alaska

### PROFILES

#### Austin E. Brant Jr.

Austin Brant joined TAMS' staff in 1951 as a civil engineer in the firm's Transportation Department. Among his first assignments at TAMS were studies on port development and navigation. These projects included the early studies for the Port of Anchorage, and industrial and economic studies for the development of the ports of Seattle, Tacoma, Olympia, Everett and Bellingham.

Mr. Brant also participated in the planning and design of highway projects. Through the years, he has directed much of TAMS' transportation planning work. In 1968, he was elected a partner.

Mr. Brant holds a Bachelor of Civil Engineering degree from Manhattan College and a Master of Science degree from Columbia University. He is a Fellow of the American Society of Civil Engineers, and a member of the Institute of Traffic Engineers, the Operations Research Society of America, and Chi Epsilon.

Mr. Brant has served as a member of the Panel on Future Port Requirements of the United States of the National Research Council (National Academy of Sciences-National Academy of Engineering) and is currently Vice-Chairman of the Executive Committee, Waterways, Harbors and Coastal Engineering Division, American Society of Civil Engineers.

Mr. Brant wrote the Civil Engineering section of *The Engineering Manual*, published by McGraw-Hill. He has also contributed to the publications of the American Society of Civil Engineers, the Transportation Research Board of the National Academy of Sciences-National Academy of Engineering, and the International Road Federation. Mr. Brant presented the feature speech on port financing at the American Association of Port Authorities Annual Meeting held in Montreal in September 1976.

#### Philip Perdichizzi

Philip Perdichizzi joined TAMS in 1955 following his graduation with a B.S.C.E. from the Rensselaer Polytechnic Institute. Assigned to the firm's Highway Department, Phil contributed much to the engineering of a number of major highway projects.

In 1963, Phil went to TAMS' Seattle office on a temporary assignment to assist in the planning of the Seattle-Tacoma Freeway. He is still there today — but as TAMS' Northwest Regional Manager, directing TAMS' work in that part of the U.S.A.