



Sooner Engineers on the Dam Project

O.U. Alumni Have a Hand in Nearly Every Phase of This Mammoth Project

THE professional skill of nearly a score of graduates and former students of the University College of Engineering is being built into the concrete and steel of the \$20,000,000 hydroelectric project in northeastern Oklahoma at Pensacola, commonly known as the Grand River Dam.

As the work progresses, certain phases of the construction are finished, and the engineers and laborers move on to another job. For this reason, not all of the O.U. group have been on the job together. Building is going forward rapidly and completion of the entire structure in the spring of this year is anticipated.

Among those who have worked on the project or are still on it are Ferdinand Arnold, '39ex, Ralph Delaney, '30ex, Joe Elam, '38eng, William J. Fell, '31eng, Maynard G. Fuller, '30eng, John Green, '39ex, J. James Harrison, '37eng, Lee Hendrix, '25eng, Cline L. Mansur, '35eng, Ben McConnell, '39eng, Wayne Miller, '23eng, Robert T. Mitchell, '39eng, Robert S. Moore, '38eng, Warren W. Moore, '32eng, Asa N. Porter, '28eng, Denzil M. Roberts, '35ex, Darrell Debring, '39ex, Donald Suggs, '34eng, and Will W. Wheeler, '34eng.

There are three students now back in the University who have worked on the dam: Lester F. Brown, Eldon Rogers, and William B. Thompson, all engineers.

Actual construction got under way in 1937 under the direction of the Grand River Dam Authority, created by the Oklahoma Legislature in 1935. Funds were

supplied through a loan and grant agreement with the Public Works Administration of the federal government. The Authority includes fourteen counties in the northeastern part of the state. Power development, flood control, and general conservation are objects of the broad program, of which the Pensacola project is the first and major unit. Dams at Markham Ferry and Fort Gibson, farther downstream, will complete the development.

Although the University men on the project are distributed through different phases of the construction, most of them are civil engineers, and are in the employ of Holway and Neuffer, a Tulsa consulting firm. W. R. Holway is chief engineer. Others are working for Massman Construction Company, Kansas City, contractors.

CHIEF construction engineer is Lee Hendrix, '25eng, who ranks next to Mr. Holway. He has the responsibility for general supervision of the main dam, the spillways, the twenty-foot roadway and four-foot walkway that will be built across the top of the structure, the powerhouse, and the other auxiliary structures. In addition, he is assisting in the re-location and designing of five bridges in the area of 46,295 acres that will be flooded.

These five bridges are of as many different types: a deck-truss highway bridge, a concrete deck-girder railroad bridge on A-frame bents, a through-plate girder railroad bridge, a railroad-highway bridge of

I-beam spans, and the highway bridge crossing the dam.

A large picture of the deck-truss structure near Grove is pictured on the cover of the December, 1939, issue of *Civil Engineering*, the monthly journal of the American Society of Civil Engineers. Its pillars are extraordinarily high and slender, as it had to stand above the huge lake it will span.

When Mr. Hendrix submitted his part of the first plans for the bridge, he was told that such construction would be impracticable. He was firmly convinced, however, that it was not only practicable but actually preferable to any other type for this particular job. He sent the designs to New York for examination. All the consultants agreed with him, and finally work was begun. Today all but two of the twenty-foot steel spans have been hoisted into place atop the 120-foot high concrete pillars.

Mr. Hendrix became a member of the Holway and Neuffer consulting staff several years ago after experience in various civil engineering lines. He had been employed by the Oklahoma Highway Department, had been engaged in steel designing with a Kansas City bridge construction company, and had worked with another consulting firm.

Before receiving his degree in 1925, he was a member of the American society of Civil Engineers, Engineers Club, Toga, Clip, Checkmate, Ruf Neks, and had been elected to Tau Beta Pi, national honorary engineering fraternity.



PENSACOLA DAM - BUILT BY MASSMAN CONSTRUCTION CO.
 GRAND RIVER PROJECT OCT. 17 1939

Principal assistant construction engineer, Will W. Wheeler, '34eng, maintains the contact between the field forces and the offices of Holway and Neuffer. Until a few months ago Mr. Wheeler was manager of the firm's Tulsa office. His new post has taken him to the field office at Vinita.

Coordinating the different estimates of materials needed, making reports to the Grand River Dam Authority, and securing rights-of-way are all parts of his job. He is also in charge of the re-location of the water systems of Vinita, Grove and Bernice, and of the power house water supply.

Varied experience has equipped Mr. Wheeler for this multi-duty position. During the late 1920s and early '30s he interspersed attendance at the University with a number of different jobs. In 1934 he received a degree in civil engineering. Prior to that time he had worked with the United States Army Engineering Corps on river improvement in Arkansas, with the Oklahoma Highway Department, and with consulting firms on municipal water supply projects and sanitation systems.

A civil engineering graduate of 1930, Maynard G. Fuller, was another assistant engineer. His job entailed supervision of the concrete control laboratory where, after numerous tests, experts determine the strength of the concrete "mix" for the various parts of the construction. A total of 575,000 cubic yards of concrete will go into the dam spillways, which extend approximately a mile and a quarter in length and rise from bedrock to a height of a hundred and fifty feet for two-thirds of that distance.

Besides his laboratory supervision, he also headed a surveying field party.

Several years in all kinds of highway construction stand to Mr. Fuller's credit. As resident engineer with the Oklahoma Highway Department, he acquired skill in direction of men, in layout, and in preparation of mixtures for road surfaces.

Last month he returned to the State Highway Department as resident engineer.

Another graduate who headed a field party, specializing in the checking of forms set up for concrete pouring, was Warren W. "Bus" Moore, '32eng. He is a civil engineer. Before he was employed by Holway and Neuffer, he had been connected with a private engineering firm in Oklahoma City and with the State Highway Department. His highway work consisted of road surfacing and bridge construction.

UPON leaving Pensacola last year Mr. Moore joined a large Kansas City engineering company constructing a two-million-dollar bridge at Portsmouth, Massachusetts, as one of the principal engineers.

At the University the name of "Bus" Moore was prominent in news of the varsity track teams of 1931 and '32. He was awarded membership in both national honorary engineering fraternities, Sigma Tau and Tau Beta Pi, and in the leadership fraternity, Pe-et.

A younger brother, Robert S. Moore, '38, also went to work on the Pensacola dam, after a few months with the Hill Engineering Company in Oklahoma City. Although he is in the employ of the contractors, Massman Company, his work as chief of party is similar to that of Warren. As the company begins the actual construction designed and staked out by the Holway and Neuffer forces, it may be deemed advisable to make slight changes in the plans in order to take advantage of a rise in the ground, to avoid one, or for other reasons. Such changes require an engineer.

Mr. Robert Moore left the dam project and is now junior engineer in Denver with the Bureau of Reclamation, Division of Technical Studies. He was a member of the A.S.C.E. chapter on the campus, and belonged to Jazz Hounds and Phi Delta Theta fraternity.

Wayne E. Miller, '23eng, another C.E.,

succeeded Mr. Moore as chief of Massman's field party. He holds the position now.

During the sixteen years since he left the University he has been both chief of party and resident engineer with the Oklahoma Highway Department. At different times he had charge of the areas about Enid, Seminole, Wewoka, Wetumka, Idabel, and Hugo, where he was in 1938 before going to the Grand River project.

Parties that go into the field to plot the layout or examine the erected forms are made up of "instrument men" and "rodmen," in addition to the chief of the group. The work of the rodmen consists of assisting in surveying the ground or the "lines" of the forms, that is, the angles and elevation, and often in placing the stakes that mark foundation layouts.

Robert T. Mitchell, a '39 civil engineer, worked in that capacity on the dam for several months after his graduation. Now, however, his home is in Muskogee and he is a designing engineer with the Capital Steel and Iron Company.

Mr. Mitchell, a member of Kappa Alpha fraternity, was active in the A.S.C.E. as well as Engineers Club and the Knights of St. Pat.

Lester Brown, a C.E. senior this year and vice president of the University chapter of A.S.C.E., was also employed as rodman on the project last summer.

Assistant chief of a field party, Donald Suggs, '34eng, was occupied principally with inspection of forms, checking their lines and elevation. His work covered the forms of all parts of the dam and spillways.

After graduating in civil engineering in 1934, he spent three years in highway work and bridge construction, and taught for a year. He was civil engineering professor at Kansas State College, Manhattan, 1937-38. He intends to return to teaching now that his field work on the dam is nearing completion.

When in school Mr. Suggs belonged to

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Sooners on the Dam Project

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Engineers Club, Sigma Tau, and Acacia fraternity. He was president of A.S.C.E. in 1933-34.

Ralph Delaney, who studied engineering at the University in 1929 and '30, worked as instrument man on the water line survey crew. This group determined and staked the line to which the water will be backed up by the dam. Thus it was known what land had to be bought and what buildings or other structures had to be moved.

After layout has been completed and constituency of the concrete mixture decided upon, there comes next a step which brings Ferdinand Arnold into the picture. A junior last year and member of A.S.C.E., he has not returned to the University. When his job was concluded, he joined the Oklahoma Highway Department. He is a chief of party working out of Oklahoma City.

On the dam he bore the title of inspector of the mixing plant. Seeing that the specified quantities of the ingredients of the concrete mix were used was his chief duty. This was no inconsiderable task with almost a thousand cubic yards of concrete being prepared during each eight-hour day.

His attendance at the University was previously interrupted when he was employed by the highway department of the state and was made instrument man and inspector-on-foundation of the \$650,000 highway bridge at Purcell in 1937.

Other inspectors have been assigned to the various sections of the construction. J. James Harrison is in charge of both the main and the east spillways. He first inspects the forms themselves and then supervises the pouring of the concrete into them.

Graduated a civil engineer in 1937, he joined Holway and Neuffer soon afterwards. He was president of A.S.C.E. on the campus in 1936-37, was a member of Engineers Club, Knights of St. Pat, Scabard and Blade, and Sigma Nu fraternity.

The inspector of the power house construction and supervisor of power machinery installation is John Green. He has studied both electrical and civil engineering at the University. He worked up from an operating engineer position with the Oklahoma Gas and Electric Company in its Tishomingo plant in 1925 to chief of power plant construction at Oklahoma City and Muskogee in 1931. He attended the University on leave of absence during two of those years.

Since 1931 he has studied civil engineering and has worked a number of years on the highways as chief of party and inspector. He was assigned to the large Purcell bridge. It was completed in 1937 and he joined the Holway and Neuffer firm.

Denzil M. Roberts, a student at O.U.

from 1933 to '35 in mechanical engineering, is another inspector on the project. He examines the concrete as it is poured into the forms on the buttresses of the main dam, sees that it is spaded and spread into place, and checks it frequently as it "cures."

An engineering senior this year, William B. Thompson, was made inspector last summer on one of the parties detailed to go over the forms before concrete was poured. He assisted in measuring the lines of the forms, their elevations, and inspecting their general construction.

A general supervisor of all inspectors is included in the project's engineering forces. This was the position of Asa Porter, whose title was assistant engineer. He was promoted to that post from instrument man. He left the dam several months ago and returned to the Illinois State Highway Department, where he was employed as resident engineer for the ten years following his graduation in 1928.

On the University campus he belonged to A.S.C.E. and Engineers Club. He was elected to both Sigma Tau and Tau Beta Pi.

Two University graduates in electrical engineering are also in the Holway-Neuffer forces. William J. Fell is the principal engineer in charge of transmission line construction and re-location of highlines and branches throughout the dam area.

During the eight years since he left the University, he has been in Shawnee most of the time, working on large municipal or federal relief projects there. His first year out of school was spent as cadet engineer with the Commonwealth-Edison Company of New York City.

A prominent student on the campus, Mr. Fell was secretary-treasurer of the University chapter of the American Institute of Electrical Engineers. He was also a member of Engineers Club, Tau Beta Pi, and Sigma Tau.

A graduate of a year ago, Joe Elam, holds the position of inspector on the transmission line contracts. He was employed by the Holway and Neuffer firm soon after he left the University. His work is in the field where the actual line construction is going on.

He belonged to Engineers Club, A.I.E.E., and was a director of the Independent Men's Association.

Carpentering is still another line into which a Sooner student has gone. Darrell Sebring was engaged for this work by the Massman Company shortly after the beginning of the second semester last year. He was a senior engineer.

Other engineering positions require office and book work. Cline L. Mansur and Eldon Rogers both bear the title, computer, and are two of the "inside" engineers.

Mr. Mansur's office conducts examination of estimates on materials, orders those materials and other equipment, and determines the amounts of money necessary to cover each item.

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issue is available at
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From the time of his graduation in 1935 until he joined Holway and Neuffer last year, he was construction engineer of University utilities. He was put in charge of improvements at the University Hospital and Crippled Children's Hospital in Oklahoma City during almost a year of that time.

As a student on the campus he took part in numerous activities, among them, Engineers Club, Sigma Tau, Tau Beta Pi, the University Band, and St. Pat's Council. He was president of A.S.C.E. and was on the Men's Council.

Eldon Rogers, who was computer in charge of checking land acquisition and land titles during the summer months, is again enrolled in the University. He is a C.E. senior and president of the school's chapter of the American Society of Civil Engineers.

Another Sooner alumnus has been employed by the Grand River Dam Authority as guide for sightseers at the project. Ben McConnell, in this capacity, is required to be familiar with all phases of the work and have an answer for each of the many questions asked him. He accepted this job last September, three months after receiving his degree in electrical engineering.

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Heads state association

Worth W. Heffner, '33bus, manager of the Chickasha Chamber of Commerce, was elected president of the Oklahoma Association of Commercial Organization Secretaries at their meeting in Oklahoma City in November.

J. Paul Gleason, '20ex, of Enid, was made editor of the *O.C.A.O.S. News*.

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Elected to school board

University alumni were elected last month to two positions on the Oklahoma City school district's new five-man board. They are Warren Edwards, '22law, an attorney, and Dave R. McKown, '21geol, branch manager of an insurance company.

The newly elected officials took office as members of the first five-man board in Oklahoma City at the board's January meeting. They were members of the old nine-member board until it expired by law December 31, 1939.

Mr. McKown was president of the University of Oklahoma Association in 1922-23. Mrs. McKown (Florence Monnet, '22) has been active in alumni affairs and is a former member of the association's executive board.

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Heads bar group

John H. Cantrell, '21, '24law, Oklahoma City attorney, has been named president of the Oklahoma County Bar Association. He is a member of the law firm of Cantrell, Savage and McCloud, legal counsel for the Southwestern Bell Telephone Company.

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