



*The third in a series of articles on the history of the Department of Civil and Environmental Engineering
Part Three, The Newmark Years: 1956 - 1973*

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Part I of this story, *The Early Years* (1867-1926), and Part II, *The Huntington Years* (1926-1956), were published in the Fall/Winter 2003 and the Spring/Summer 2004 issues, respectively, of this newsletter. Part III of this series, which I have called “The Newmark Years” will continue the story during the period from 1956 until 1973, the period during which Dr. Nathan M. Newmark served as Department Head.

Once again, it must be emphasized that this series of articles was not intended to be a detailed history of the department. As observed in Part II, they are intended to serve only as “a highly condensed overview of where we came from, who some of the primary contributors to our growth over the years have been, and what some of their major contributions were.” It is hoped that, through these articles, our alumni, especially our younger alumni for whom the years represented by these articles are ancient history, may come to appreciate more fully the truly magnificent heritage that is ours.

At the outset, it is probably worth noting that Newmark was not the unanimous, uncontested, candidate to succeed Whitney C. Huntington as head

of the department in 1956. Probably because of his intense focus on and his extraordinary success in the development of the structural research program of the department during the Huntington era, there was substantial concern that Newmark was too one-dimensional to serve effectively as the leader of the entire, multi-dimensional department. Despite these concerns, he was selected as the sixth “head” of our department (the first two leaders were identified as “administrators.”) Newmark very quickly demonstrated that he would expand his focus to include all technical areas of the department and apply to the entire department the same level of effort that he had applied so successfully in prior years to the development of the structural research program.

To assist him in this work, he asked Professor J. W. (Jack) Briscoe to continue in the capacity of Associate Head that he had held during the later years of the Huntington era. In 1958, Professor William J. Hall joined the department administration with general responsibility for its graduate student and research programs. Following Briscoe’s elevation to the position of Associate Provost of the University in 1965 and later of Vice Chancellor for Administration, Professor John D. Haltiwanger also joined the department’s administrative

team with primary responsibility for the undergraduate student and instructional programs of the department.

Because of its extraordinary growth during this era, it is impractical to try to describe the department’s activities chronologically in the space available. Instead of trying to do this (i.e., write a “history” of the department), we will address first a few major, department-wide events of this era, and then identify a few of the major personalities and accomplishments of the era in each of the department’s technical areas.

The single most significant event of that era was clearly the acquisition of our new building which, following his death, was named “Newmark Civil Engineering Laboratory.” The need for such a facility had long been recognized, and concerted efforts to acquire it were begun shortly after Newmark assumed office. At that time, the programs of the department were conducted in thirteen different buildings around campus, including what was then Civil Engineering Hall (now Engineering Hall), Talbot Laboratory, the Civil Engineering Surveying Building (immediately south of the University Library), a Sanitary Engineering Laboratory (south of Springfield Avenue and immediately west of Gregory Street in Urbana), a Hydraulic Engineering Laboratory (located in an unused Physical

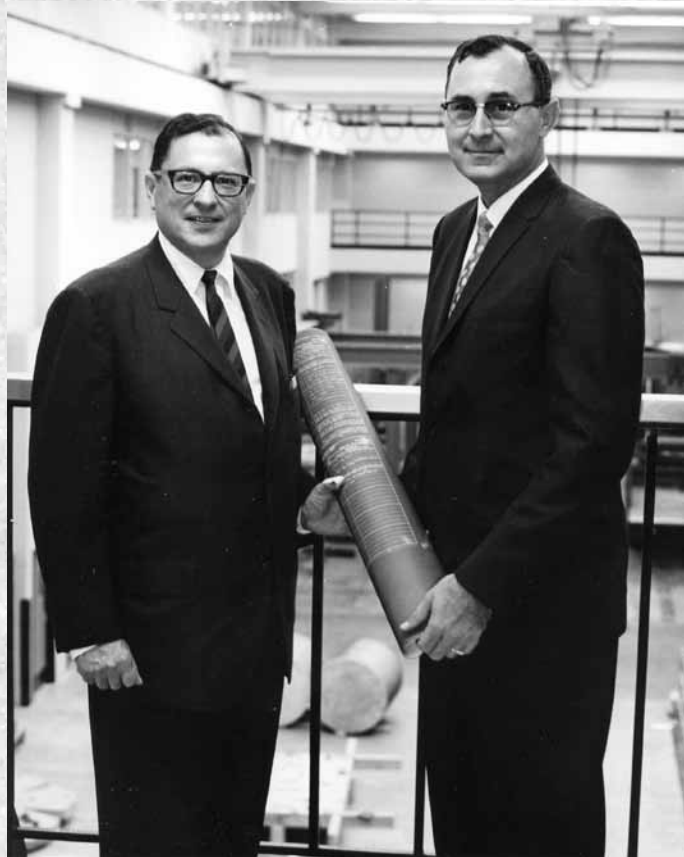
Plant warehouse near the Sanitary Laboratory), and several smaller structures such as a highway test track in a Quonset hut in the vicinity of the Sanitary Engineering Lab, two old residences across Wright St. from Talbot Lab that were used for research assistant offices, and several others.

The first phase of the new building was funded primarily by a state grant of \$4,216,000, and construction of it had progressed in 1967 to the point that most of the offices in it could be occupied at that time, while work on the several laboratories continued. The second phase of the building, funded substantially by an NSF grant in the amount of \$1,500,000 permitted the expansion of Newmark Civil Engineering Lab within the next few years to become the facility as we know it today. Our current building complex was completed with the construction of the Hydrosystems Laboratory in 1970. Unfortunately, despite continuing efforts, funds were not provided for the construction of a multistory connecting link between Newmark Lab and the Hydrosystems Lab that would have provided much needed classroom, meeting, and office space. Perhaps that dream can yet be realized.

A second major accomplishment that affected the general health of the department was the establishment of the Civil Engineering Alumni Association in 1963. The officers selected to oversee the initial program of this new group included Paul F. Kent (President of General Paving Co. of Champaign) as President; Frank Veasman (Vice President of Chicago Malleable Castings Co.) as First Vice President; Thomas D. Wofford Jr. (Ass't. Chief Engineer, ICRR) as Second Vice President; Prof. E. E. Bauer as Secretary; and Prof. M. O. Schmidt as Assistant Secretary. As is evident from the nature and extent of its current programs, this organization has grown and prospered, and has evolved as a major force for good in support of the

programs of the department. It provides a critical and much-needed link between the department's faculty and students and the world of civil engineering practice.

While not physically or contractually connected with the department, the location of the U. S. Army Construction Engineering Research Laboratory



Newmark with the author of this piece, circa 1967

in Champaign represents a third major accomplishment of that era. During the planning phase for the CERL, the Army had indicated that it wanted its new laboratory to be located in close proximity to a highly regarded university civil engineering research program. Such a location would be of obvious benefit to both the new Army laboratory and the nearby academic institution. In response to this interest as expressed by the Army, proposals were submitted by a number of schools, of which the U of I was one. Fortunately for us and, we think, for the Army, our proposal was selected, and CERL in Champaign became a reality in 1969. As a consequence of the many

cooperative relationships that have developed over the years between CERL and our department, the effectiveness of both institutions has been greatly enhanced.

During this era, the department evolved as one of the premier civil engineering programs in the nation, at both the undergraduate and graduate levels. Evidence of this status is given by the following statement taken from the ECPD accreditation report of 1961: "This department was judged to be one of the finest in the nation with respect to faculty qualifications and scholarly production, curriculum, instruction, and equipment." That report did note, however, that "physical facilities were inadequate", a statement with which the department agreed fully, and which gave support to the department's continuing efforts to acquire a new building.

Among the general observations that help define the growth of the department during this era in both size and stature are the following:

- Of the faculty members that were active during this era, 19 were elected to membership in the National Academy of Engineering.
- Of the faculty members that were active during this era, 14 were elected as Honorary Members of ASCE.
- Enrollments varied during this period from 1966 levels of 593 undergraduate and 154 graduate students to maximums of 627 undergraduate and 303 graduate students in 1970 and 1973, respectively. The all-time maximum enrollments to date were 816 undergraduates in 1978 and 410 graduates in 2004.
- The number of full-time-equivalent academic faculty increased to about 70 in 1973.
- The annual research budget for the department grew from about \$750,000 in 1956 to over \$2 million in 1973.

● Both Professors Newmark and Peck were awarded the National Medal of Science.

As noted earlier, in the limited space that is available, a comprehensive listing of the activities of the department during this era is impractical, but a highly condensed overview of those activities, as given below, might help portray the character of the department at that time.

Under Newmark's leadership, the general focus of the department underwent an interesting change. Up until that time, with a few exceptions, the faculty consisted essentially of two faculties, a "teaching faculty" and a "research" faculty. But within a few years, those two faculties had become one, with all faculty members being involved in both teaching and research, to the benefit of the entire department, especially its students.

The structural engineering and mechanics programs continued to be the largest and most widely regarded of the programs of the department, with general guidance still being given them by Professor Newmark. Among the many other faculty leaders whose names will be recalled by many readers were, in alphabetical order, R. A. Eubanks, D. A. Foutch, W. L. Gamble, E. H. Gaylord, G. Gurfinkel, W. J. Hall (who, subsequently, became Department Head), J. D. Haltiwanger (author of this article), N. Khachatryan, C. E. Kesler, F. V. Lawrence, L. A. Lopez, V. J. McDonald, R. J. Mosborg, W. H. Munse, S. L. Paul, D. A. W. Pecknold, A. R. Robinson, W. C.

Schnobrich, C. P. Siess (who also became Department Head), G. K. Sinnamon, J. E. Stallmeyer, W. H. Walker, and J. F. Young, all of whom completed their professional careers on this faculty. Significant contributions to the program were made also by many other young men who spent only parts of their professional careers here. Included in this latter group are, again in alphabetical order, M. Amin, A. H-S. Ang, W. J. Austin, S. J. Fenves, L. Goodman, H. H. Hilsdorf, J. L. Merritt, B. Mohraz, W. W. Sanders, M. A. Sozen, W. Tang, Y. K. Wen, and A. S. Veletsos.

The well-established research programs in concrete and steel, as structural materials under assorted environmental and loading conditions, and the behavior of reinforced concrete beam and slab structures under varying load and support conditions were continued with expanded breadth, but new areas of structural engineering research were introduced. Among these "new" areas were numerous programs in the area of structural dynamics, with emphasis being placed on both the behavior and design of structures under the effects of both earthquakes and nuclear blast loads. It is fair to say that the research work done here during that era provided the bases upon which much of the design criteria for structures subjected to loadings produced either from earthquake motions or nuclear blasts now rests. Much the

same can be said for the areas of prestressed concrete and the probabilistic approach the determination of the safety

of structures.

In addition to its work in the area of the design and behavior of structures to resist nuclear blast forces, a closely related program concerned with the design of structures to protect occupants from the radiation as well as the blast effects of nuclear explosions. This program was conducted by Professor A. B. Chilton, with the cooperation of numerous other members of the structural engineering faculty, and consisted of courses of instruction as well as a significant number of short courses that were presented to practicing engineers.

But major strides in program growth, in both size and stature, also occurred in the other technical areas of the department. Of particular note in this regard are Geotechnical Engineering, Sanitary (now,

Environmental) Engineering, Hydrology and Hydrosystems, Construction Management and Systems Engineering, Transportation Engineering, and Surveying and Photogrammetry.

Under the guidance of Professor Ralph B. Peck, ably assisted by professors E. J. Cording, M. T. Davisson, Don U. Deere, A. J. Hendron, H. O. Ireland, T. K. Liu, G. Mesri, R. E. Olson, and T. H. Thornburn, several of whom completed their careers elsewhere, the geotechnical program gained international recognition. As was the case for the structural research program, the work domain in geotechnical engineering was expanded to include soil and rock dynamics in order to deal more confidently with the behavior and design of structures built either on, in, or through these materials when subjected to unusual dynamic loadings such as those induced by nuclear blast loadings or earthquake motions.

Directed by Professor Richard. S. Engelbrecht, the Sanitary Engineering program made major advances during this era, expanding its scope of interests to the point that its name was changed to "Environmental Engineering and Science" in order to reflect more properly its broader interests. During this era, its areas of research and teaching were expanded to



Richard Engelbrecht



Ven Te Chow



Ellis Danner

include water quality control, emphasizing both drinking water and wastewater, air pollution control, solid waste management, aquatic biology, and environmental systems analysis. With the development of programs in these areas, it became one of the premier environmental engineering programs in the nation. Participating closely with Professor Engelbrecht in this program growth and expansion were such



Ralph Peck

highly regarded engineers and scientists as E. Downey Brill, Richard I. Dick, J. W. Eheart, Benjamin B. Ewing, E. E. Herricks, Jon C. Liebman (who later became Head of the Department), John T. Pfeffer, Vernon L. Snoeyink, and James J. Stukel (who became President of the U of I).

Similarly, under the direction of Prof. L. R. Shaffer (who was appointed later as the first Technical Director of the new U. S. Army Construction Engineering Research Laboratory in Champaign), the program in Construction Engineering and Management blossomed. Among the notable additions to that faculty were L. T. Boyer and J. W. Melin.

During this period, having been stimulated by a newly enacted "State Technical Services Act," the closely related area of Civil Engineering Systems achieved self-identification, and a significant program of research and instruction in this area was developed. Instrumental in this development were S. J. Fenves and L. A. Lopez.

Contributing also to the developments of this era was Professor Judith S. Liebman (later to become Vice Chancellor for Research on this campus) who applied her background in operations research to further expand the scope of the department's interests.

The long and distinguished history of research, service and teaching in the area of Transportation Engineering, which was led in earlier years by C. C. Wiley, was continued and expanded under the guidance of Ellis Danner, with the able assistance of John E. Baerwald, Eugene Huang, John Hutchinson (all of whom completed their careers elsewhere), W. W. Hay, who had responsibility for the railway engineering

aspect of the program, and Moreland Herrin. Upon the retirement of Professor Danner, Moreland Herrin assumed the leadership role for this program, and E. J. Barenberg, S. H. Carpenter, M. I. Darter, B. J. Dempsey and M. R. Thompson joined its faculty. During this era, the Transportation Facilities program grew in both size and stature

to become one of the widely regarded centers of transportation engineering study in the nation, a position that it still enjoys.

With the advent of the new Hydraulics and Hydrosystems Laboratory Building in 1970, the department's program in that area of teaching and research also expanded. This era saw a marriage between the well-established hydrology program and the then-emerging laboratory-oriented hydraulic engineering program that had been housed in the old hydraulic engineering laboratory building. This merger fostered the development of a strong and highly regarded program in water resources systems. Until his untimely death in 1981, Professor Ven T. Chow, an internationally known authority in the area of Hydrosystems Engineering, directed the program. Participating with him in this work were fellow faculty members such as William C. Ackermann, John C. Guillou, E. R. Holley, W. H. C. Maxwell, Murray B. McPherson, J. P. Murtha, H. G. Wenzel, and B. C. Yen.

Under the guidance of Professor M. O. Schmidt, Surveying and Photogrammetry continued during this era to be a small but vital area of departmental instruction and research programs. Participating with Professor Schmidt in the conduct of this program were W. H. Eldridge, H. M. Karara and K. W. Wong.

The department completed this era larger, stronger, more broadly based and more highly regarded, both nationally and internationally, than at any time in its impressive and illustrious history to that time. But this little narrative that attempts to reflect, in a very general way, the nature and extent of that growth, falls short of that goal. Neglected in this piece were the names of countless men and women who participated on the faculty for relatively short periods of time, but who, during those periods, contributed greatly to the ultimate successes of the groups of which they were parts. To these people, many of whom were his personal friends, and all of whom were his highly regarded and respected associates, the author extends his apologies – there simply wasn't enough space to permit the inclusion of all of their names.

Also neglected in this piece are the extraordinary contribution of the non-academic staff of the department – people like Professor Newmark's secretary, Doyne Proudfit; V. J. McDonald who directed the instrumentation of the laboratory tests; and Wyck McKenzie of the staff of the concrete laboratory. It is much to be regretted that we can't give due credit to

these folk, for without their committed support, not much of what happened in the department would have happened.

Unmentioned also are the untold, but profound, contributions that were made to the profession and to society by the department's alumni. To include this, even reasonably adequately, would require books. Suffice it to say that the reputation

of the department is reflected, perhaps most brilliantly and effectively, by and in the works of its graduates. **SO**



L.R. Shaffer

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