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6 December 1949

Chief of Naval Research
Attn: Code 438
Reference NR 035-229
Office of Naval Research
Washington 25, D. C.

Via: Mr. Paul H. Kratz
Resident Representative
Office of Naval Research
c/o University of Pennsylvania
3320 Walnut Street
Philadelphia 4, Penna.

Subject: Renewal and Extension of Contract N8 onr 64200 (Structural
Steel Investigations, Lehigh University)

Sir:

As requested in ONR letter of November 21, Serial No. 31520, we hereby propose two alternate plans for extension of the subject contract made between the Office of Naval Research, U. S. Navy, and Lehigh University. Plan A is for extension of six months from December 15, 1949 to June 15, 1950 and alternate Plan B is for extension of nine and one half months from December 15, 1949 to October 1, 1950.

Reference will be made herein to the following:

- (1) Proposal dated February 13, 1949, to Bureau of Yards and Docks, for investigation of "Strength of Simulated Frames and Continuous Beams", transmitted to your office under date of May 7, 1948.
- (2) "Strength of Welded Continuous Frames", a proposal to the Bureau of Ships, dated May 7, 1948.
- (3) Proposal for renewal and extension of contract N8onr64200 from June 15, 1949 to June 15, 1950, dated March 25, 1949.
- (4) "Revision of Proposal on Strength of Simulated Frames and Continuous Beams", transmitted August 3, 1949.
- (5) "Revised Program for Connection Tests", transmitted September 9, 1949.

In addition to the foregoing, general progress has been reported in quarterly reports transmitted July 11, (April-May-June), and October 12, 1949 (July-August-September).

Supplementing the foregoing references, progress to the present date may be summarized as follows:

Research on Welded Continuous Beams and Simulated Frames.

Tests A1, A, B, C, and D, of Ref. (4), have now been completed. Tests E, E1, and F have not been started. Most of the test data on completed work

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has been tabulated and graphed. The foregoing status will not change appreciably as of December 15, 1949.

Research on Welded Rigid-Joint Connections and Continuous Frames.

Progress has been restricted to connection tests, a necessary preliminary to complete frame tests. Tests A, D, E, K, M, and N of Ref. (5) have been completed and test data partially worked up. There remain tests B, C, F, G, H, I, J, and L, two of these being contingent on further study of tests completed at this time. Possibly one additional test will be completed before December 15.

Proposals for Extension.

Reference (3) requested \$12,630.00 for the foregoing two phases of research over the period June 15, 1949 to June 15, 1950. This was cut to \$10,000.00 by reduction in proposed overhead rate and reduction in number of tests contemplated. Initial allotment of \$5000.00 was made for the period June 15, 1949 to December 15, 1949. Of this, approximately 60% will be spent on continuous beam tests (Ref. 1 and 4) and 40% on connection tests (Ref. 2 and 5).

Plan A for Further Extension, December 15, 1949 to June 15, 1950.

This plan is in response to ONR letter of November 21, (NR 035-229, Serial No. 31520) suggesting that \$2500.00 might be available in lieu of the contemplated \$5000.00.

To meet the reduced budget it would not be possible fully to carry on both phases of the program. Accordingly, under this plan, it is proposed to drop further tests on continuous beams and simulated frames. Tests E, E1, and F, of Ref. (4), would thereby be eliminated. These tests might be carried out under financing from other sources, but not under Navy contract. However, the detailed progress report on this phase would be completed.

It is proposed to complete at least six of the eight planned tests now remaining and complete a detailed progress report on the connection tests.

Budget for Plan A

Salaries, half-time research assistant and part time engineer	\$990.00
Wages, computers welders, and mechanics	800.00
Overhead, 25% of foregoing	387.50
Miscellaneous and materials	<u>322.50</u>
Total	\$2500.00

Plan B for Further Extension, December 15, 1949 to October 1, 1950.

This plan is similar to the alternate requested in the letter referred to in the first paragraph of Plan A.

All tests listed above under Plan A would also be included under Plan B. In addition, two frame tests would be made. These would be chosen from the list]

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of seven proposed frame tests in Table I, Reference 2. The selection and details would be based on final results of connection tests and further discussion with the technical committee. Mr. Beedle's studies now in progress at Cambridge University might also have some bearing on the final selection of frame tests.

Budget for Plan B

Salaries, half time research assistant and part time engineer	\$1567.50
Wages, computers, welders, and mechanics	1732.50
Overhead, 25% of foregoing	825.00
Miscellaneous and materials	<u>875.00</u>
Total	\$5000.00

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12 x 12
155

9.3 MD

1560 135

Concluding Remarks.

Mr. Wehausen's letter of November 21 requested paring our budget to the minimum. This has been done in the foregoing plans. The overhead is already at a minimum and fails to represent the actual cost of overhead items to the University. During the period June 15, 1948 to December 15, 1949 the contribution of the Navy Department to the overall program will have amounted to \$10,500.00. The actual cost of the phases of work assigned to the Navy during the same period will be approximately \$14,500.00. The deficit of \$4000.00 is being made up out of the \$5000.00 contributed by the American Iron and Steel Institute over the two year period July 1, 1948 to July 1, 1950. It is fortunate that such funds were available without specific assignment but it should be obvious that no further paring is possible and in the future it will be necessary to keep the Navy part of the program within the established budget.

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3600

As requested, Mr. John Vasta has been invited to represent the Bureau of Ships on the Lehigh Subcommittee of the Structural Steel Committee of Welding Research Council.

The program will continue to be under the supervision of Dr. Bruce G. Johnston, Director of Fritz Engineering Laboratory, and Lynn S. Beedle, Research Engineer, who will have returned from his studies of related work in England by January 1, 1950.

The continued help of the Office of Naval Research in the program is greatly appreciated.

Very truly yours,

H. A. Neville
Director
Institute of Research

HAN:BGJ:fs

- CC: ONR via Paul H. Kratz (6)
- William Spraragen
- Lamotte Grover
- T. R. Higgins
- Bruce G. Johnston
- Lynn S. Beedle