AN EXPERIMENTAL APPROACH TO THE STUDY OF THE CREEP BEHAVIOR OF PLAIN CONCRETE SUBJECTED TO TRIAXIAL STRESSES AND ELEVATED TEMPERATURES

By Thomas W. Kennedy
and Ervin S. Perry

RESEARCH REPORT 2864-1

to
OAK RIDGE NATIONAL LABORATORY
operated by
UNION CARBIDE CORPORATION
for
U. S. ATOMIC ENERGY COMMISSION

DEPARTMENT OF CIVIL ENGINEERING
THE UNIVERSITY OF TEXAS AT AUSTIN
JUNE 1970

AN EXPERIMENTAL APPROACH TO THE STUDY OF THE CREEP BEHAVIOR OF PLAIN CONCRETE SUBJECTED TO TRIAXIAL STRESSES AND ELEVATED TEMPERATURES

by

Thomas W. Kennedy
Ervin S. Perry

Research Report Number 2864-1

An Investigation of the Time-Dependent Deformation of Concrete Under Triaxial Stress Conditions in Prestressed Reactor Vessels

Union Carbide Subcontract No. 2864

conducted for

Oak Ridge National Laboratory

operated by
Union Carbide Corporation
for
United States Atomic Energy Commission

by the

DEPARTMENT OF CIVIL ENGINEERING
THE UNIVERSITY OF TEXAS AT AUSTIN

June 1970

PREFACE

This is the first in a series of reports dealing with a research project concerned with evaluation of the creep behavior of concrete subjected to triaxial compressive stresses and elevated temperatures. The experiment which was conducted consisted of measuring shrinkage, creep, and recovery strains in cylindrical specimens subjected to 58 test conditions involving a variety of multiaxial loading conditions with compressive stresses ranging from zero to 3600 psi, two curing histories involving air-dried and sealed curing conditions, two temperatures during the loading period (75° F and 150° F), and three curing periods prior to loading (90, 183, and 365 days). This report describes the experiment, the techniques and procedures utilized, and the equipment and instrumentation developed and used for the study.

The investigation was conducted and financed under Union Carbide Subcontract 2864 for the Oak Ridge National Laboratory, which is operated by the Union Carbide Corporation for the United States Atomic Energy Commission. The planning and conducting of this experimental study required the assistance and cooperation of many individuals and organizations; the authors would like to acknowledge the support provided by Mr. G. D. Whitman, coordinator, Pressure Vessel Technology Program, Oak Ridge National Laboratory, whose active participation and guidance allowed this investigation to be successfully developed and conducted. Appreciation is also extended to Dr. J. P. Callahan, Mr. J. G. Stradley, and Dr. J. M. Corum of the Oak Ridge National Laboratory, and to Professor Clyde E. Kesler, Department of Civil Engineering, University of Illinois, who served as a consultant to the project. Special appreciation is due Dr. Nabil Jundi, Dr. Guy P. York, Dr. John W. Chuang, and Mr. Victor N. Toth for their aid in the planning and design of the experiment, the preparation of the specimens, and the collecting of data obtained during the testing. The authors would also like to acknowledge the cooperation and assistance obtained from the Concrete Division of the Waterways Experiment Station, Jackson,

Mississippi, and the Department of Civil Engineering of the University of California at Berkeley.

Thomas W. Kennedy
Ervin S. Perry

June 1970

ABSTRACT

This report describes an experimental investigation of the creep behavior of concrete which had a nominal 28-day compressive strength of 6000 psi and which was typical of the type of concrete which is used in prestressed concrete reactor vessels.

The experiment consisted of measuring the axial and radial strains in 6 X 16-inch cylindrical specimens subjected to 58 test conditions involving triaxial compressive stresses ranging from zero to 3600 psi, two curing histories in which the concrete was either air-dried or sealed, two temperatures during the loading period (75° F and 150° F), and three curing periods prior to loading (90, 183, and 365 days).

After curing, the specimens which were cured for 90 days were subjected to load for a period of 12 months followed by a 5-month unloading period during which creep recovery was observed; the specimens cured for 183 and 365 days were not unloaded, however, and will remain under load for an indefinite period of time. All specimens were sealed while under load to prevent moisture exchange.

Creep strains were estimated by taking the difference between the time-dependent strains in the loaded specimens and in the unloaded companion specimens. In addition, 6 X 12-inch cylindrical specimens were prepared in order to obtain an estimate of the compressive and tensile strengths of the concrete for the various test conditions throughout the test period.

The design of the experiment and all procedures associated with the casting, curing, sealing, and loading of the specimens are described in detail. In addition, a description of the equipment which was designed and built specifically for this investigation is included.

TABLE OF CONTENTS

APPENDICES

INTRODUCTION

In 1966 the U. S. Atomic Energy Commission authorized the Oak Ridge National Laboratory to formulate and direct a basic research and development program in support of the technology of prestressed concrete pressure vessels for nuclear reactors. The time-dependent deformation behavior of concrete subjected to various temperatures, curing histories, and loading conditions is one of the most important aspects of the design and safety evaluation of prestressed concrete reactor vessels. Thus, a materials program was initiated to obtain information on the creep behavior of concrete (Ref 2).

This materials program involved The University of Texas at Austin, the University of California at Berkeley, and the Waterways Experiment Station, Jackson, Mississippi, and close coordination of the research efforts at the various laboratories was required in order to combine effectively all of the information developed. Thus, a manual describing the procedures to be followed at The University of Texas at Austin (Ref 1) was prepared. This report documents the actual techniques and procedures used and describes the equipment developed as a part of the program at The University of Texas at Austin.

EXPERIMENTAL DESIGN AND PROCEDURES

The purpose of this study was to obtain information on the creep behavior of concrete subjected to triaxial compressive stresses and elevated temperatures. Since concrete exhibits two forms of time-dependent deformation, creep and shrinkage, it was necessary to measure strain in both loaded and unloaded companion specimens in order to obtain estimates of the total time-dependent strain, the portion of the strain resulting from shrinkage, and the portion resulting from creep. A typical strain-time relationship for concrete is depicted in Fig 1. The general relationship between total strain at any time and the portions resulting from creep, shrinkage, and elastic strains are shown in Fig 2.

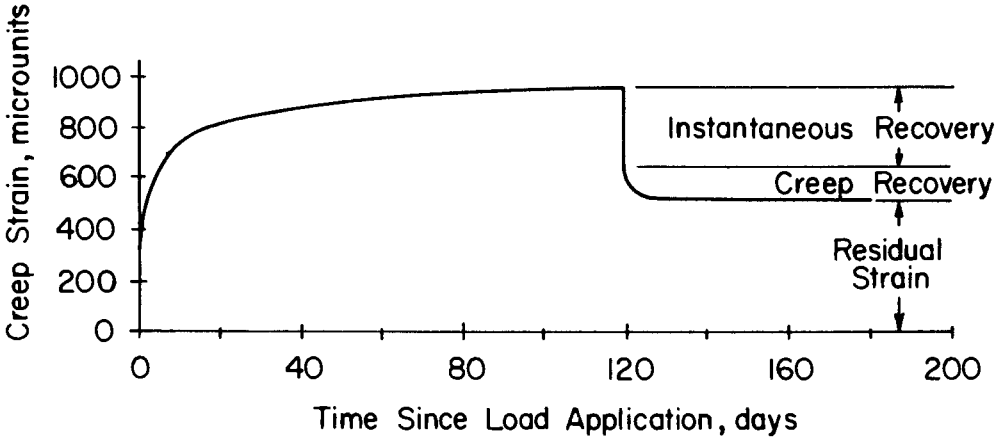


Fig 1. Typical relationship for creep and recovery strain.

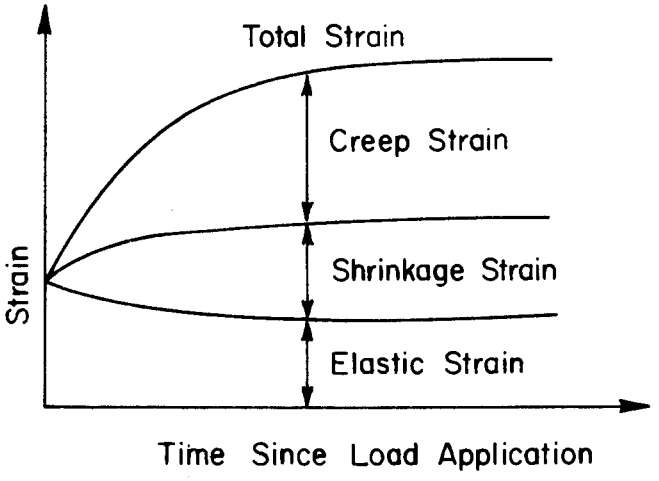


Fig 2. Time-dependent strain in concrete subjected to a sustained load.

In addition to strain measurements, estimates of the compressive and tensile strengths of the concrete were made since creep and strength are related and since strength depends on curing conditions, i.e., time, moisture, and temperature. In this study, the concrete was subjected to two curing histories and two temperatures during the loading period and the resulting strengths were used in the evaluation of observed time-dependent strains.

The concrete used in this study was designed for a standard-cured, 28-day compressive strength of 6000 psi. The majority of the study involved specimens cured for 90 days and then subjected to load for 12 months, with additional strain measurements being made for five additional months after the load was removed. In addition, a limited number of specimens were cured for 183 or 365 days prior to loading in order to evaluate the effect of time of loading. These specimens were loaded after the designated curing times and will be subjected to the prescribed loads for an indefinite period of time. In addition to curing time, the effects of the following factors were measured: two temperature conditions (75° F and 150° F), two curing histories (as-cast and air-dried), and 16 stress level combinations. These test conditions are summarized in Table 1. Details concerning the test procedures associated with the experiment and above factors are described below.

SPECIMENS

Three basic types of specimens were utilized in this investigation: creep, shrinkage, and strength. All creep and shrinkage specimens were 6 inches in diameter by 16 inches in length and were attached to 3-inch-thick steel end slugs, through which the axial load was applied (Fig 3). The specimens were cast horizontally in specially designed molds. The tensile and compressive strength specimens were 6 inches in diameter by 12 inches in length and were cast vertically in standard 6 x 12-inch molds.

TEST CONDITIONS

One hundred and two 6 x 16-inch specimens and 328 6 x 12-inch specimens were cast and investigated under 58 test conditions involving loaded specimens, as summarized in Table 1. These 58 test conditions involved two temperatures, two curing histories, three curing periods, and triaxial stress conditions ranging from 0 to 3600 psi for both the axial stress and the radial confining

TABLE 1. SUMMARY OF EXPERIMENTAL PROGRAM

Axial Stress σ_z, ksi			0					0.6					1.2					2.4					3.6				
Radial Stress σ_r, ksi			0	0.6	1.2	2.4	3.6	0	0.6	1.2	2.4	3.6	0	0.6	1.2	2.4	3.6	0	0.6	1.2	2.4	3.6	0	0.6	1.2	2.4	3.6
90	150	As-Cast	7*	1	1	1	1	1	-	-	-	-	1	-	1	1	-	1	1	-	1	-	1	-	-	-	1
		Air-Dried	7*	1	1	1	1	1	-	-	-	-	1	-	1	1	-	1	1	-	1	-	1	-	-	-	1
90	75	As-Cast	7*	1	-	-	1	1	1	-	-	1	-	-	1	1	-	1	1	-	1	-	-	-	1	-	1
		Air-Dried	7*	1	-	-	1	1	1	-	-	1	-	-	1	1	-	1	1	-	1	-	-	-	1	-	1
183	75	As-Cast	1**	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
		Air-Dried						1										1									
365	75	As-Cast	2**	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
		Air-Dried						1										1									

Age at Loading, Days

Testing Temperature, °F

Curing History

Numerals indicate the number of specimens tested.

* Shrinkage specimens - one specimen per batch.

** The as-cast specimen served as the shrinkage specimen for both the 183-day and 365-day creep specimens.

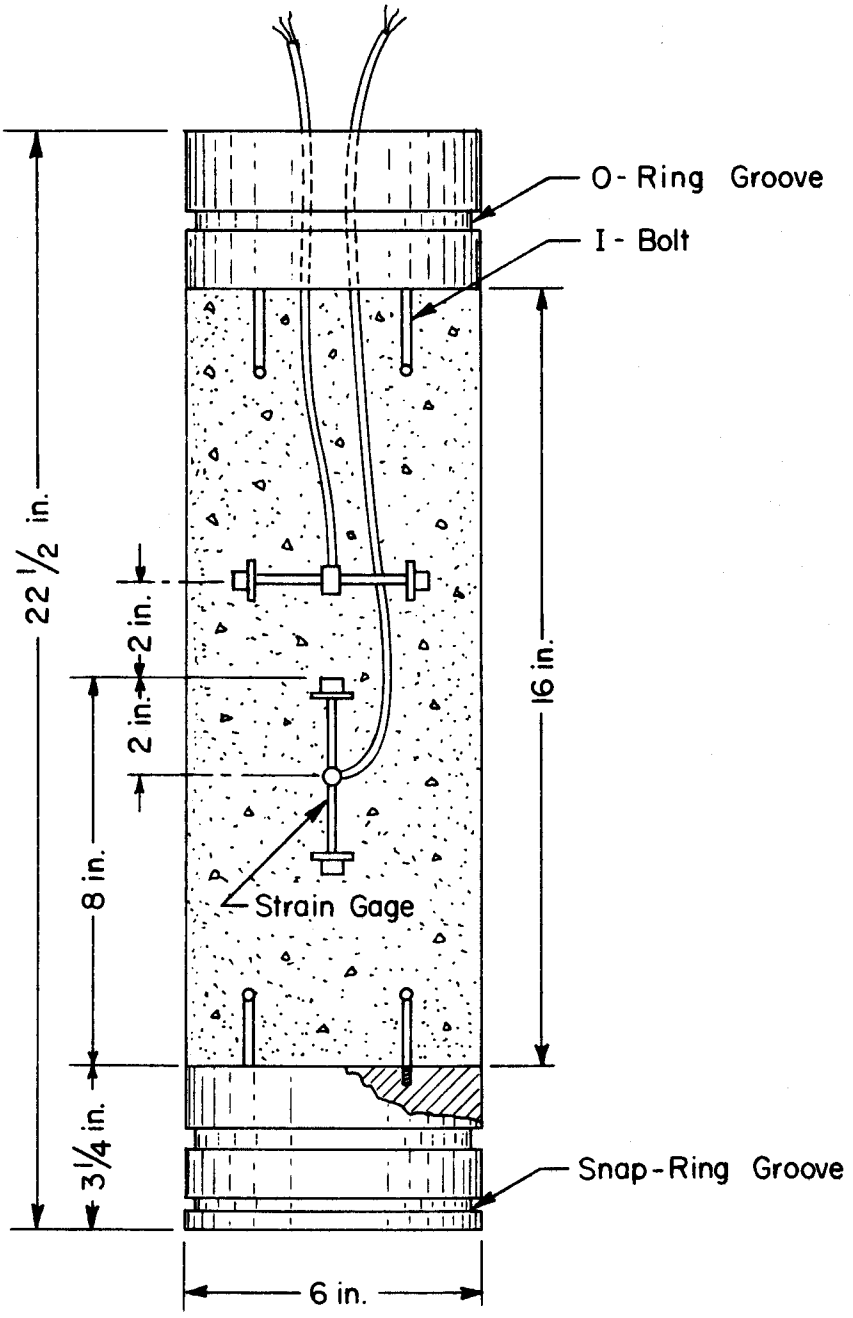


Fig 3. Test specimen and gage locations.

stress. Since half of these 58 test conditions involved one curing history and half involved the second curing history, the various curing conditions have been summarized in terms of 29 major test conditions, which are given in Table 2.

Temperature During Loading

During the loading period, the concrete was subjected to two temperature levels which represented the limits of the range of temperature which would be expected to occur in a nuclear reactor containment vessel. The low level was 75° F, which approximates the temperature at the outer surface of a reactor. The high level was 150° F, which approximates the temperature at the inner surface of a vessel.

Curing History

Two curing histories were selected for study and were designated as "as-cast" and "air-dried." These two histories simulated the range of curing conditions to which concrete in a prestressed concrete reactor would be subjected during curing. The as-cast condition is representative of the curing history of concrete at the inner face of a reactor or of concrete in any massive structure, except for that near a free-air surface. This condition involved sealing the specimens shortly after casting to maintain their initial water content by preventing evaporation losses. The air-dried condition is representative of the curing history of the concrete at the outer surface of a reactor, or other mass-concrete structure, or of concrete in relatively thin members. In this case, the concrete was cured under ideal conditions for approximately seven days and then allowed to air-dry for the remainder of the curing period prior to loading. Thus, curing history was closely related to the moisture conditions in the concrete during curing and loading periods. However, since it was difficult to determine the actual moisture conditions which resulted from the two types of curing, and because it was impossible to assign the cause of an observed effect to anything but the curing procedure, this variable was designated as curing history.

The procedures associated with the various curing histories are described in detail under Preparation of Specimens.

TABLE 2. SUMMARY OF MAJOR TEST CONDITIONS*

Major Condition No.	Temp., ° F	σ_z, psi	σ_r, psi	Test Unit No.	Age at Loading, Days	Type of Loading
1	75	2400	0	5**	90	Uniaxial
2	75	600	0	6	90	
3	75	0	3600	2	90	Biaxial
4	75	0	600	1**	90	
5	75	3600	3600	3**	90	Triaxial
6	75	3600	1200	7**	90	
7	75	2400	2400	12	90	
8	75	2400	600	9	90	
9	75	1200	2400	10**	90	
10	75	1200	1200	11	90	
11	75	600	3600	4**	90	
12	75	600	600	8	90	
13	150	3600	0	13	90	Uniaxial
14	150	2400	0	21**	90	
15	150	1200	0	14**	90	
16	150	600	0	20**	90	
17	150	0	3600	25**	90	Biaxial
18	150	0	2400	24	90	
19	150	0	1200	23**	90	
20	150	0	600	22**	90	
21	150	3600	3600	15	90	Triaxial
22	150	2400	2400	19**	90	
23	150	2400	600	18	90	
24	150	1200	2400	17**	90	
25	150	1200	1200	16**	90	
26	75	600	0	29**	183	Uniaxial
27	75	600	0	26	365	
28	75	2400	0	28**	183	
29	75	2400	0	27**	365	

* For each major test condition, there were both an air-dried and an as-cast specimen.

** In units with asterisks, the as-cast specimens were placed in the upper radial sleeve; in units without asterisks, the as-cast specimens were placed in the lower radial sleeve.

Load

Specimens were loaded triaxially at five stress levels, ranging from 0 to 3600 psi for both axial stress σ_a and radial confining stress σ_r (Fig 4). Since the combination of stresses involved some zero stress levels, the loading conditions were classified as uniaxial, $\sigma_r = 0$; biaxial, $\sigma_a = 0$; and triaxial. The five stress levels involved were 0, 600, 1200, 2400, and 3600 psi nominal pressures. A schematic of the basic test unit and photographs of the units used to achieve these loading conditions are shown in Figs 5 and 6.

MIXTURE DESIGN

The mixture design and all materials utilized in this investigation except water were furnished by the Concrete Division, Waterways Experiment Station, Jackson, Mississippi. Prior to shipping, the materials were proportioned into thirteen 12-cubic-foot batch quantities and placed in sealed containers.

The materials consisted of Type II cement and crushed fine and coarse limestone aggregates with a 3/4-inch maximum size. The concrete was designed for a 28-day compressive strength of 6000 ± 600 psi, for specimens cured while submerged in lime-saturated water, standard cured (ASTM C-192). Mix proportions and a summary of the results of engineering tests on the materials are presented in Appendix A. A brief summary of the concrete design proportions is shown in Table 3.

PREPARATION OF SPECIMENS

Nine 12-cubic-foot batches of concrete were prepared. All specimens required for the 29 major test conditions were cast from these batches, which were designated A through I. The first seven batches (A through G) provided concrete for the portion of the study concerned with 90-day loadings. These batches were cast on a weekly schedule, beginning October 28, 1968. Batches H and I provided concrete for the 183 and 365-day loading conditions and for replacements for specimens which failed in previous batches. These latter two batches were cast in June 1969.

The twenty-five 90-day loading test conditions were randomly assigned to the first seven batches of concrete. The only restrictions on this

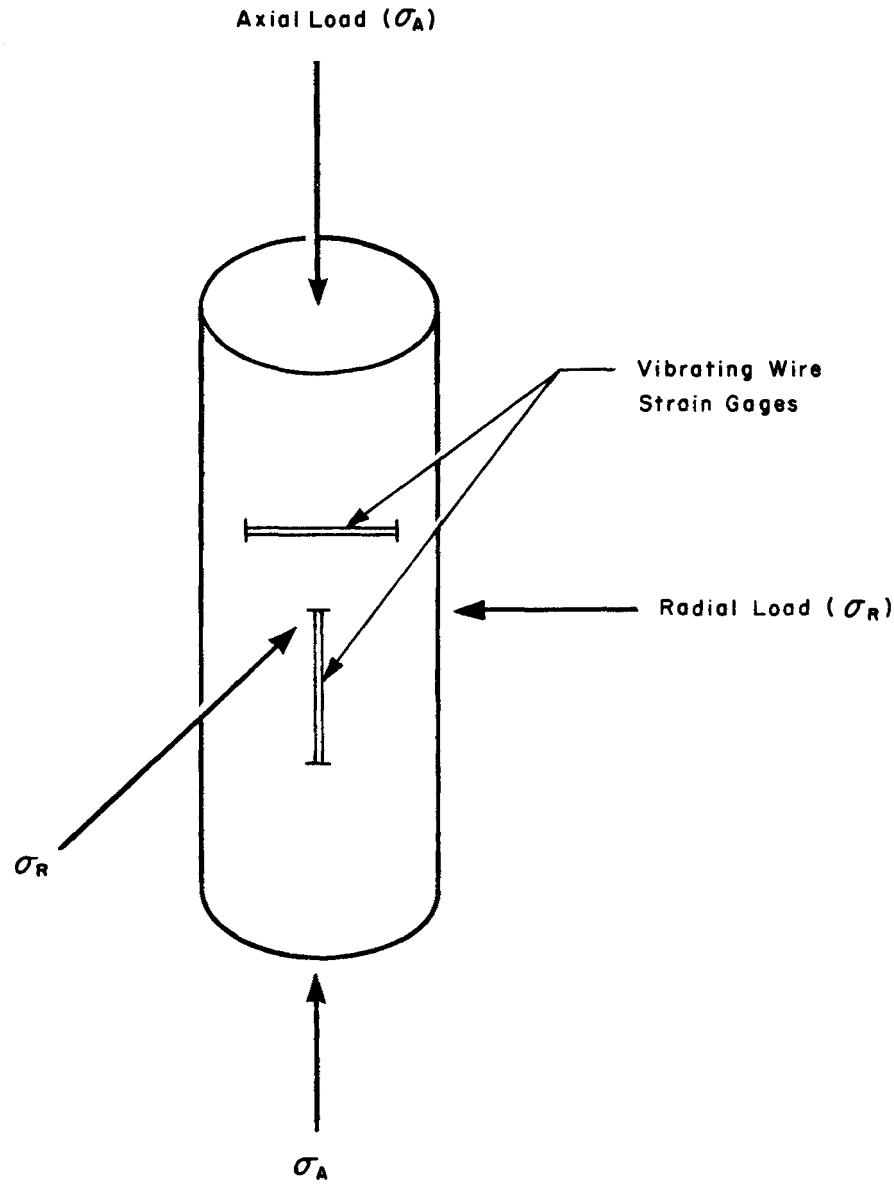


Fig 4. Stress condition on experimental specimen.

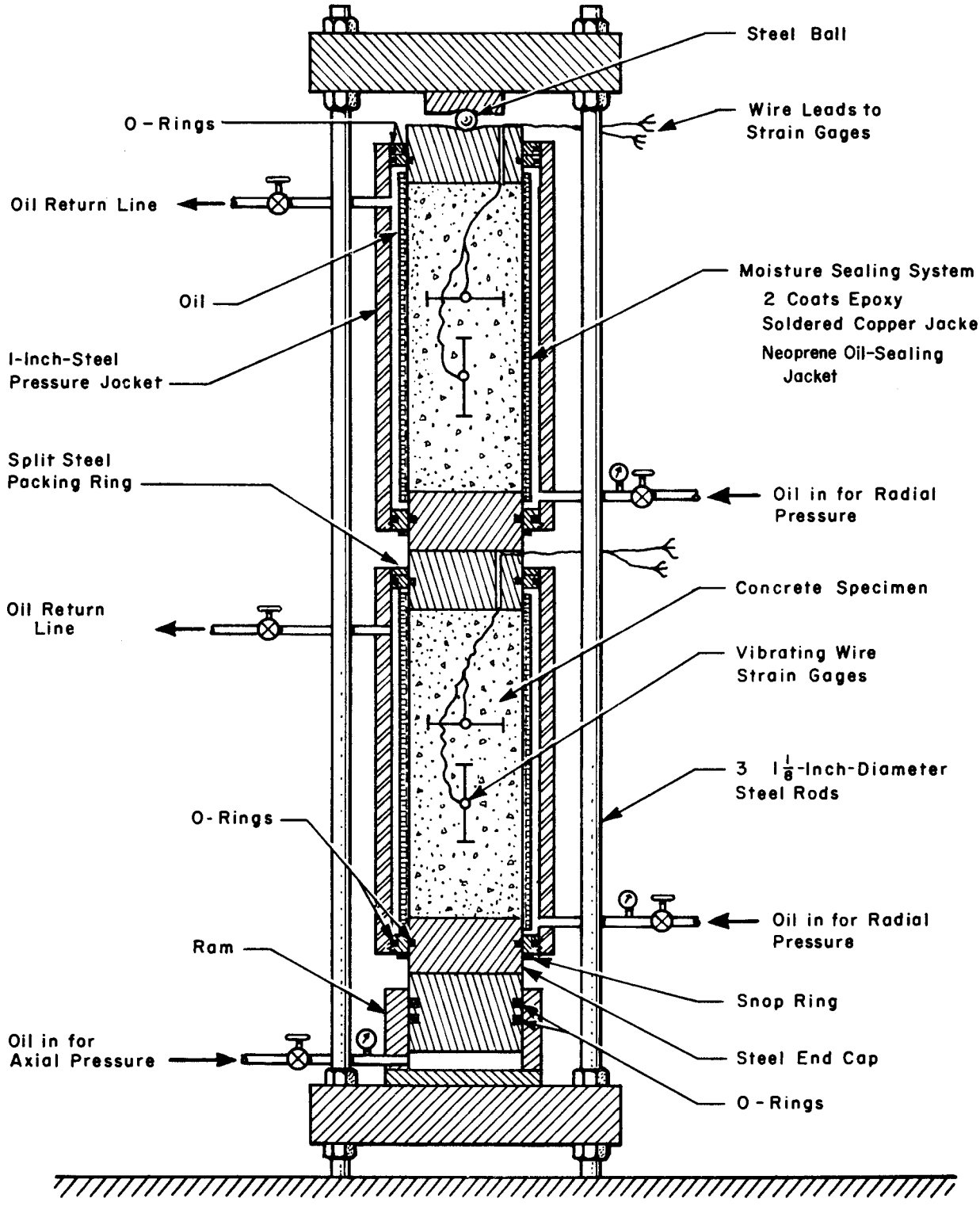
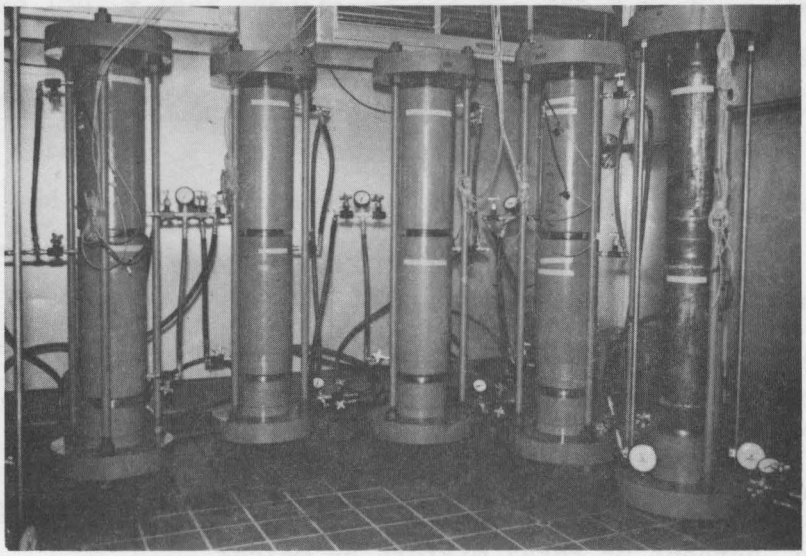
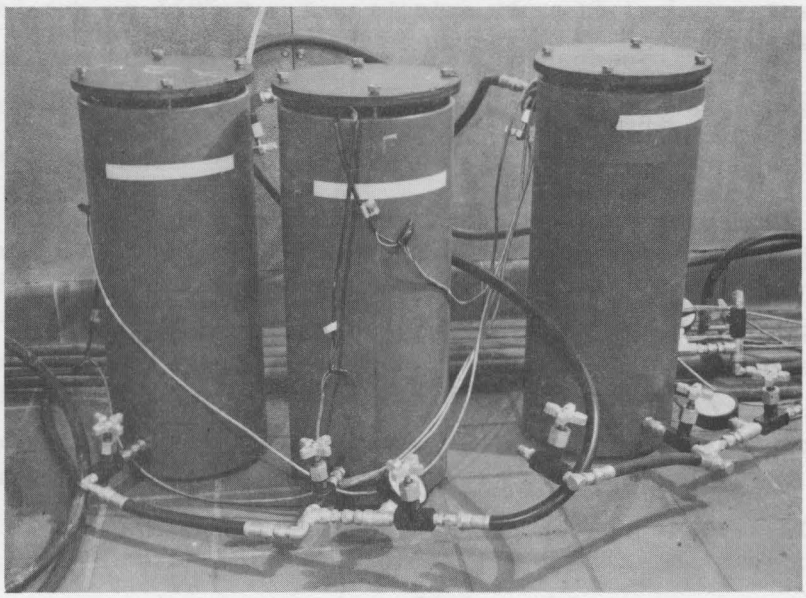


Fig 5. Schematic of triaxial test unit.



(a) Uniaxial and triaxial loading conditions.



(b) Biaxial loading condition.

Fig 6. Test units.

TABLE 3. MIX DESIGN SUMMARY

Water-cement ratio by weight			0.425
Cement factor, bags per cubic yard			7.25
Slump, inches			2
Aggregate, percent of total mixture by weight			
Fine	Sand		33.4
Coarse (A)	No. 4 sieve	13.0	
Coarse (B)	3/8-inch sieve	15.1	43.2
Coarse (C)	1/2-inch sieve	15.1	

randomization were the requirements that Batches B, C, E, and F each provide concrete for two 150° F test conditions and two 75° F test conditions; that Batches A and G each provide concrete for one 150° F test condition and one 75° F test condition; and that Batch D provide concrete for two 75° F test conditions and three 150° F test conditions.

Batches H and I provided concrete for the 183 and 365-day loading conditions. Because these two batches also provided concrete for the preparation of replacement specimens damaged or lost in previous batches, the composition of Batches H and I varied considerably from all previous batches. The batch, test condition, and test unit assignments for all batches are summarized in Table 4.

Batches and Specimens

The number and type of specimens for each batch are summarized below. The conditions and order of casting for each specimen are summarized by batch in Appendix C.

Batches A and G. Each batch provided concrete for two test conditions, one at 75° F and one at 150° F. In addition, 6 x 12-inch specimens were prepared for evaluation of compressive strength throughout the test period. These specimens were tested at 28, 90, 183, 365, and 538 days after casting. Each batch consisted of

(1) four 6 x 16-inch specimens for creep measurements (one as-cast and one air-dried which were tested at 75° F, one as-cast and one air-dried which were tested at 150° F);

(2) four 6 x 16-inch specimens for shrinkage measurements (one as-cast and one aid-dried which were tested at 75° F, one as-cast and one air-dried which were tested at 150° F); and

(3) forty-two 6 x 12-inch specimens for compressive strength determinations which were tested as follows:

   (a) nine specimens tested at 28 days (three as-cast, three air-dried, three cured by submerging in lime-saturated water),

   (b) nine specimens tested at 90 days (three as-cast, three air-dried, three cured by submerging in lime-saturated water),

   (c) eight specimens tested at 183 days (two as-cast and two air-dried cured at 75° F, two as-cast and two air-dried cured at 150° F),

   (d) eight specimens tested at 365 days (two as-cast and two air-dried cured at 75° F, two as-cast and two air-dried cured at 150° F), and

TABLE 4. BATCH, TEST CONDITION, AND TEST UNIT ASSIGNMENTS

Batch	Test Condition	Test Unit
A	20	22*
	3	2
B	16	20*
	1	5*
	13	13*
	9	10*
C	25	16*
	10	11*
	17	25*
	8	9
D	6	7*
	24	17
	19	23*
	5	3*
	15	14*
E	18	24
	2	6
	12	8
	23	18
F	21	15
	7	12*
	4	1*
	14	21
G	22	19*
	11	4*
H	26	29*
	27	26
I	28	28*
	29	27*

Test Condition	Batch
1	B
2	E
3	A
4	F
5	D
6	D
7	F
8	C
9	B
10	C
11	G
12	E
13	B
14	F
15	D
16	B
17	C
18	E
19	D
20	A
21	F
22	G
23	E
24	D
25	C
26	H
27	H
28	I
29	I

* In units with asterisk, the as-cast specimens were placed in the upper radial sleeve; in units without an asterisk, the as-cast specimens were placed in the lower radial sleeve.

(e) eight specimens tested at 538 days (two as-cast and two air-dried cured at 75° F, two as-cast and two air-dried cured at 150° F).

Batch D. Batch D provided concrete for five test conditions. Two of these test conditions were at 75° F and three were at 150° F. In addition, 6 x 12-inch specimens were prepared for evaluating the compressive strength and indirect tensile strength at 28 and 90 days. The batch consisted of

(1) ten 6 x 16-inch specimens for creep measurements (two as-cast and two air-dried which were tested at 75° F, three as-cast and three air-dried which were tested at 150° F);

(2) four 6 x 16-inch specimens for shrinkage measurements (one as-cast and one air-dried which were tested at 75° F, one as-cast and one air-dried which were tested at 150° F);

(3) twenty-four 6 x 12-inch specimens for compressive strength determinations which were tested as follows:

(a) twelve specimens tested at 28 days (three as-cast, three air-dried, and six cured by submerging in lime-saturated water), and

(b) twelve specimens tested at 90 days (three as-cast, three air-dried, and six cured by submerging in lime-saturated water); and

(4) twelve 6 x 12-inch specimens for indirect tensile strength determinations which were tested as follows:

(a) six specimens tested at 28 days (two as-cast, two air-dried, and two cured by submerging in lime-saturated water), and

(b) six specimens tested at 90 days (two as-cast, two air-dried, and two cured by submerging in lime-saturated water).

Batches B, C, E, and F. Each batch provided concrete for four test conditions. Two of these test conditions were at 75° F and two at 150° F. In addition, 6 x 12-inch strength specimens were prepared for evaluating the compressive strength at 28 and 90 days and the indirect tensile strength at 28, 90, and 538 days after casting. Each batch consisted of

(1) eight 6 x 16-inch specimens for creep measurements (two as-cast and two air-dried which were tested at 75° F, two as-cast and two air-dried which were tested at 150° F);

(2) four 6 x 16-inch specimens for shrinkage measurements (one as-cast and one air-dried which were tested at 75° F, one as-cast and one air-dried which were tested at 150° F);

(3) twenty-four 6 x 12-inch specimens for compressive strength determinations which were tested as follows:

(a) twelve specimens tested at 28 days (three as-cast, three air-dried, and six cured by submerging in lime-saturated water), and

(b) twelve specimens tested at 90 days (three as-cast, three air-dried, and six cured by submerging in lime-saturated water); and

(4) sixteen 6 X 12-inch specimens for indirect tensile strength determinations which were tested as follows:

(a) two specimens tested at 28 days (cured by submerging in lime-saturated water),

(b) six specimens which were tested at 90 days (two as-cast, two air-dried, and two cured by submerging in lime-saturated water), and

(c) eight specimens which were tested at 538 days (two as-cast and two air-dried cured at 75° F, two as-cast and two air-dried cured at 150° F).

Batch H. This batch provided concrete for test conditions involving 183 and 365-day loading times and for replacement specimens for those specimens which failed from previous batches. All five test conditions were at 75° F. In addition, 6 X 12-inch specimens were prepared for evaluating compressive strengths at 28, 90, 183, 365, and 538 days after casting. The batch consisted of

(1) ten 6 X 16-inch specimens for creep measurements (five as-cast and five air-dried tested at 75° F);

(2) four 6 X 16-inch specimens for shrinkage measurements (one as-cast and three air-dried tested at 75° F); and

(3) thirty-six 6 X 12-inch specimens for compressive strength determinations which were tested as follows:

(a) nine specimens tested at 28 days (three as-cast, three air-dried, and three cured by submerging in lime-saturated water),

(b) nine specimens tested at 90 days (three as-cast, three air-dried, and three cured by submerging in lime-saturated water),

(c) six specimens tested at 183 days (three as-cast and three air-dried at 75° F),

(d) six specimens tested at 365 days (three as-cast and three air-dried at 75° F), and

(e) six specimens tested at 538 days (three as-cast and three air-dried at 75° F).

Batch I. This batch provided concrete for test conditions involving 183 and 365-day loading time and for replacement specimens for those specimens which failed from previous batches. In addition, 6 X 12-inch specimens were

prepared for evaluating compressive strengths at 28, 90, 183, 365, and 538 days after casting. The batch consisted of

(1) six 6 X 16-inch specimens for creep measurements (two air-dried tested at 75° F and two as-cast and two air-dried tested at 150° F);

(2) four 6 X 16-inch specimens for shrinkage measurements (one as-cast and one air-dried tested at 75° F and one as-cast and one air-dried tested at 150° F); and

(3) forty-two 6 X 12-inch specimens for compressive strength determinations were tested as follows:

   (a) nine specimens were tested at 28 days (three as-cast, three air-dried, and three cured by submerging in lime-saturated water),

   (b) nine specimens were tested at 90 days (three as-cast, three air-dried, and three cured by submerging in lime-saturated water),

   (c) eight specimens were tested at 183 days (two as-cast and two air-dried at 75° F, two as-cast and two air-dried at 150° F),

   (d) eight specimens were tested at 365 days (two as-cast and two air-dried at 75° F, two as-cast and two air-dried at 150° F), and

   (e) eight specimens were tested at 538 days (two as-cast and two air-dried at 75° F, two as-cast and two air-dried at 150° F).

Placement of Gages

Two vibrating wire gages were placed in each 6 X 16-inch specimen. One hundred and two 6 X 16-inch specimens were tested, requiring a total of 204 gages. The gages were positioned so that the center of each gage was 2 inches from the centerline of the specimen, as shown in Fig 3. Both gages were installed on the same plane and held in position, as shown in Fig 7.

Mixing

The following mixing procedure, which was essentially that utilized by the Waterways Experiment Station in the development of the mixture proportions, was used during the casting of the specimens:

(1) Mixer was pre-dampened, leaving no free water;

   (a) mixer was rotated with free water for at least 15 minutes,

   (b) mixer was allowed to drain for 10 to 15 minutes, and

   (c) excess water was removed by blotting with rags.

(2) All coarse aggregate was placed in mixer.

(3) All fine aggregate was placed in mixer.

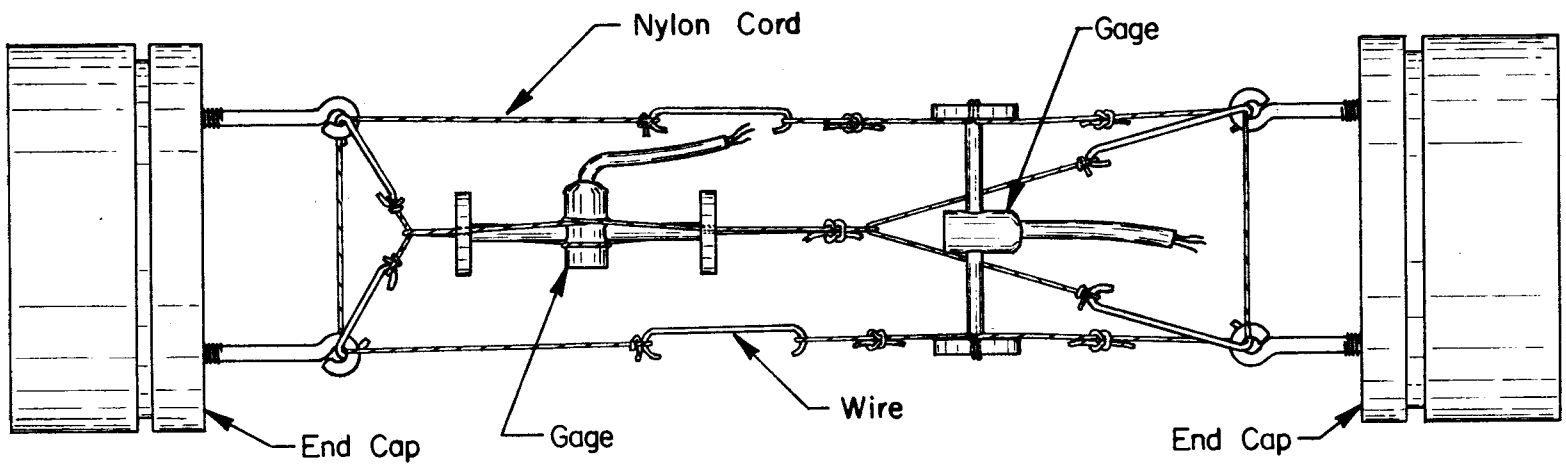


Fig 7. Method of positioning vibrating wire gages.

(4) Mixer was rotated approximately four revolutions.

(5) All water was placed in mixer.

(6) Mixer was started and all cement was added in a period of approximately 20 to 40 seconds.

(7) Concrete was mixed for two minutes.

(8) Mixer was stopped for three minutes.

(9) Concrete was mixed for one additional minute.

(10) Concrete was discharged into a damp pan.

Casting and Compaction

The 6 × 12-inch specimens were cast vertically, compacted according to ASTM specification C-192, and vibrated three seconds at a frequency of 3600 cycles per minute. The 6 × 16-inch specimens, which were cast horizontally (Fig 8), were compacted by approximately 200 strokes of a 1/4-inch-diameter rod. A specially constructed curved trowel was used to finish the exposed longitudinal surface of these specimens. The specimens were then vibrated five seconds at a frequency of 3600 cycles per minute. The entire casting and compaction operation for each batch took approximately 45 minutes.

Capping

All 6 × 12-inch specimens for compressive strength determinations were capped with neat cement four to six hours after casting. This cap thickness was approximately 1/8-inch and was formed against a glass plate. In order to obtain a clean break between the neat cement and the plate, the plate was coated with a bond breaker. The neat-cement paste, having a water-cement ratio of 0.30 by weight, was machine mixed one hour prior to capping, allowed to stand for an hour, and remixed just prior to the capping operation. The laitance was removed from the top of the specimen and the surface roughened to insure good bond between the cap and the concrete. The cap was formed by placing a conical mound of paste on the specimen and then gently pressing the glass plate onto the paste until the plate touched the rim of the mold. A very slight twisting motion was used to extrude excess paste and remove entrapped air. A 30-pound weight was placed on top of the capping plate, and the specimens were covered by damp burlap to prevent moisture loss. The weights and glass plates were removed 24 hours after casting. Removal of the plates was facilitated by tapping the edge with a rawhide hammer in a direction parallel to the plane of the cap.

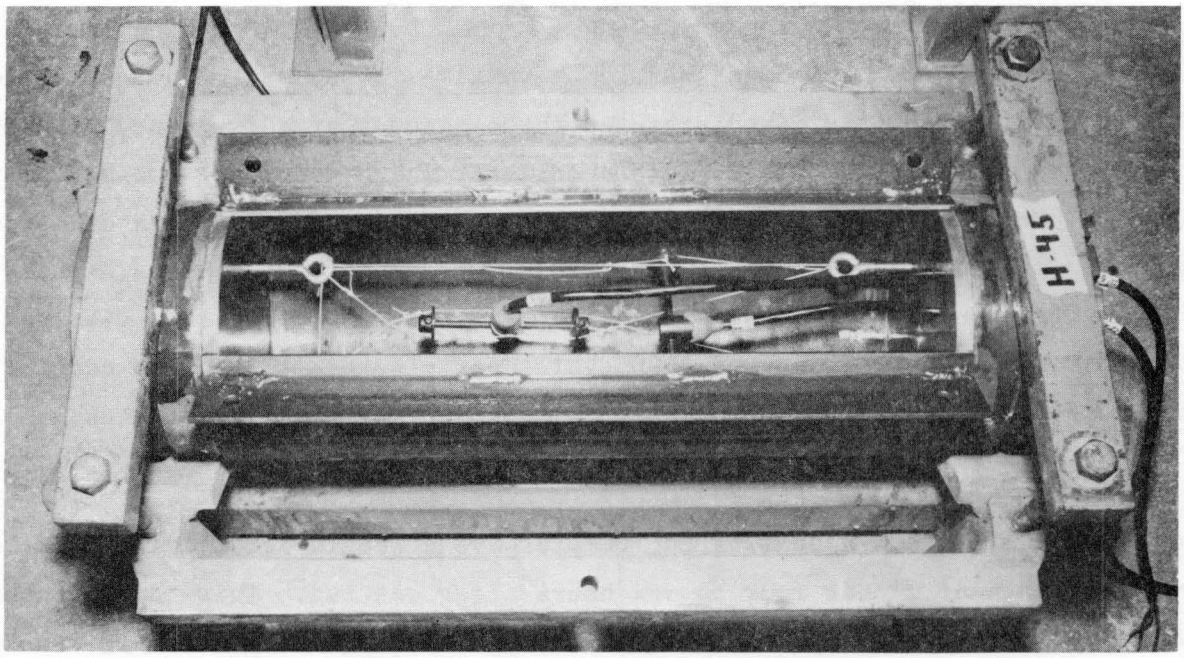


Fig 8. Mold assembly for 6 X 16-inch specimen.

Curing and Sealing

All specimens were cured 24 hours in the laboratory followed by 24 hours in a 100-percent relative humidity curing room. During the laboratory curing period (24 hours), the specimens were covered with sheet plastic and wet burlap and protected from excessive temperature change. Forms were removed after 24 hours. Subsequent sealing and curing procedures, developed by project personnel (Ref 6), were as follows:

(1) As-Cast Specimens

(a) 6 x 16-inch specimens

Immediately after the specimens were removed from the forms, all surface irregularities were removed by wire brushing and by rubbing the surface with a pumice stone. All surface voids were coated with epoxy (Colma Bonding Compound, Epoxy-Polysulfide System, Sika Chemical Corporation) and placed in the fog room. At the end of 48 hours, the specimens were removed from the fog room, recoated with epoxy, and sealed in a copper jacket. The specimens were cured an additional 81 days (83 days total curing) at 73.4 ± 3° F. At this time, the specimens were sealed in neoprene and placed in the testing unit. The testing unit and specimens were then brought to testing temperature by placing both in the testing temperature environment for an additional seven days (90 days of curing).

(b) 6 x 12-inch specimens

The 6 x 12-inch specimens were cast in molds containing a 6-inch OD copper insert. Forty-eight hours after casting, the specimens were completely sealed in copper and cured for the appropriate number of days at 73.4 ± 3° F. Those specimens which were tested 183 days or more after casting were placed in the proper temperature environment at the end of 83 days and remained at this temperature until 24 hours prior to testing.

(2) Air-Dried Specimens

(a) 6 x 16-inch specimens

Immediately after the specimens were removed from the forms, all surface irregularities were removed by wire brushing and by rubbing the surface with a pumice stone, and all surface voids were filled with a neat-cement paste. At the end of 48 hours, the specimens were submerged and further cured in lime-saturated water at 73.4 ± 3° F for five days (total of seven days of moist curing). Subsequent to this, the specimens were stored at 60 percent relative humidity at 73.4 ± 3° F for an additional 76 days (83 days total of curing). After 81 days of curing, the specimens were coated with epoxy. At the end of 82 days, the specimens were recoated with epoxy and sealed in copper. At 83 days, the copper-sealed specimens were sealed in neoprene and placed in the testing units. The testing units and

specimens were then brought to testing temperature by placing them in the testing temperature environment for an additional seven days (90 days total of curing).

(b) 6 x 12-inch specimens

After 48 hours, the 6 x 12-inch specimens were submerged and cured in lime-saturated water at 73.4 ± 3° F for five days (total of seven days of moist curing). Subsequent to this, the specimens were stored at 60 percent relative humidity at 73.4 ± 3° F for the appropriate number of days. Specimens scheduled for testing at 183, 365, or 538 days after casting were sealed in copper 83 days after casting and were placed in the proper temperature environment until 24 hours prior to testing.

(3) Standard Cured Specimens

Only the 6 x 12-inch specimens were standard cured. After 48 hours, these specimens were submerged and cured in lime-saturated water at 73.4 ± 3° F for 26 days (ASTM C-192) (28 days of curing) or 88 days (90 days of curing) prior to testing.

LOADING AND TESTING

The 6 x 16-inch creep specimens were loaded 90 days after casting. Prior to loading, the specimens were brought to temperature by placing them in their testing environment for a minimum of seven days. Each as-cast specimen was loaded simultaneously with its companion air-dried specimen. The larger stress levels were applied at a rate of 35 psi per second. The lower stress was applied at a slower rate, because the ratio of the axial and radial loads during loading was maintained constant and was equal to the ratio of the final axial and radial loads on the specimens.

In addition, the unconfined compressive and tensile strengths of specimens which had been subjected to the various environmental conditions were determined. The compressive strengths were determined at 28, 90, 183, and 365 days after casting; generally, three specimens for each curing history and age were tested for each batch. The tensile strengths were determined by the indirect tensile test at 28 and 90 days; however, only two specimens for each curing history and age were tested, and these specimens were all from Batches B through F. The compressive and tensile strength specimens were tested in accordance with ASTM specifications C39-66 and C496-69, respectively.

STRAIN MEASUREMENTS

Gages embedded in the creep and shrinkage specimens were read periodically during the 90-day curing period and the 17-month test period, as indicated in Appendix E. These measurements involved both strain and temperature.

Initial Readings After Loading

These measurements were critical and, therefore, were made according to the following instructions. Initial strain readings on the gages in the two specimens in each test unit were made in the following sequence at the times noted:

(1) Creep Specimens
   (a) axial gage in as-cast specimen, 15 seconds after application of maximum load;
   (b) radial gage in as-cast specimen, 30 seconds after application of maximum load;
   (c) axial gage in air-dried specimen, 45 seconds after application of maximum load; and
   (d) radial gage in air-dried specimen, 60 seconds after application of maximum load.

(2) Shrinkage Specimens
   (a) axial gage in as-cast specimen, 75 seconds after application of maximum load to creep specimens;
   (b) radial gage in as-cast specimen, 90 seconds after application of maximum load to creep specimens;
   (c) axial gage in air-dried specimen, 105 seconds after application of maximum load to creep specimens; and
   (d) radial gage in air-dried specimen, 120 seconds after application of maximum load to creep specimens.

After the strain readings had been made, the gages were read for temperature.

Subsequent Readings

All gages were read periodically throughout the test period at the times indicated in Appendix E.

SUMMARY AND OPERATIONS

Because of the many gage readings and operations which had to be performed to prepare, cure, and test the large number of specimens, a time flow diagram was prepared which indicated the time at which an operation or a gage

reading had to be performed (Appendix F). In addition, a summary of operations and gage readings was prepared which listed all operation and gage readings, by specimen, which had to be performed each day (Appendix G).

EQUIPMENT AND INSTRUMENTATION

LOADING UNIT

The loading frame used, designed specifically for this project, was manufactured by Wight Engineering Company, Austin, Texas. A schematic of the loading unit (Fig 3) shows all components of the loading systems. The radial load was applied directly to the sealed specimen by hydraulic oil pressure contained within a 1-inch-thick steel pressure jacket; the axial load was applied by a hydraulic ram. Thus, the triaxial loading system consisted of both an axial and a radial loading system which permitted each to be varied independently. The axial loading frame without the pressure jackets was used for the uniaxial case. The radial pressure jacket without the axial loading frame was used for the biaxial case.

Each loading unit contained two specimens from the same batch, one as-cast and one air-dried, which were simultaneously subjected to the same temperature and stress conditions. The relative positions of the as-cast and air-dried specimens within the frame were determined randomly in order to minimize bias in the results due to specimen location. The biaxial specimens were also simultaneously loaded in pairs under identical conditions.

The loading system developed for this investigation was generally satisfactory; however, preliminary tests (Refs 3 and 4) revealed that the axial stresses were less than those indicated by the pressure gage, due to friction losses in the hydraulic-mechanical pressure system (Ref 3). A number of modifications to the system were tried (Ref 5) but none increased the efficiency of the ram. Therefore, each of the loading rigs was pre-calibrated with a load cell. The axial stress for the various units ranged from 90 to 97 percent of the desired stress. The average axial stresses for the units with the desired levels of 0, 600, 1200, 2400, and 3600 psi, were 0, 545, 1080, 2185, and 3460 psi, respectively.

HYDRAULIC SYSTEM

Hydraulic pressure was supplied to the loading units by using the 100-psi air pressure, available in the laboratory, to drive oil pressure intensifiers. This was adequate for creep testing since only a very small quantity of oil was necessary once the system was pressurized. A flow diagram of the hydraulic system is shown in Fig 9.

The hydraulic system consisted of a pressure control console (Fig 10) and eight pressure manifolds to the loading units, plus return lines. The pressure control console housed the pressure control valves, pressure intensifiers, air reservoir, auxiliary air compressor, and pressure gages for the four different pressures.

The pressure system was designed for 5000-psi pressure and consisted of hydraulic pressure pipes with flexible pressure hoses to the test units. A dual system was employed for each of the four pressures (600, 1200, 2400, and 3600 psi). One manifold system supplied pressure to the 75° F laboratory and the other to the 150° F temperature control room. Each manifold system contained a return line which was connected to each test unit and allowed oil to circulate to remove air from the hydraulic system and keep the valves from sticking.

The hydraulic system was designed with two back-up subsystems. An auxiliary pressure intensifier was installed to replace any of the four intensifiers which might fail or require maintenance. Also included was an auxiliary air compressor which would turn on automatically if the laboratory air pressure dropped significantly.

The control system automatically regulated the pressure to within ±5 percent of the assigned gage pressure. Any combination of the eight pressure lines could be independently controlled and each test unit and specimen had separate controls.

ENVIRONMENTAL CONTROL

To make effective creep comparisons, a constant temperature and relative humidity had to be maintained over a long period of time. The tests performed under the nominal 75° F test condition were conducted in an air-conditioned laboratory, while the tests performed under the nominal 150° F test condition were conducted in a controlled temperature chamber approximately 14 x 20 x 7

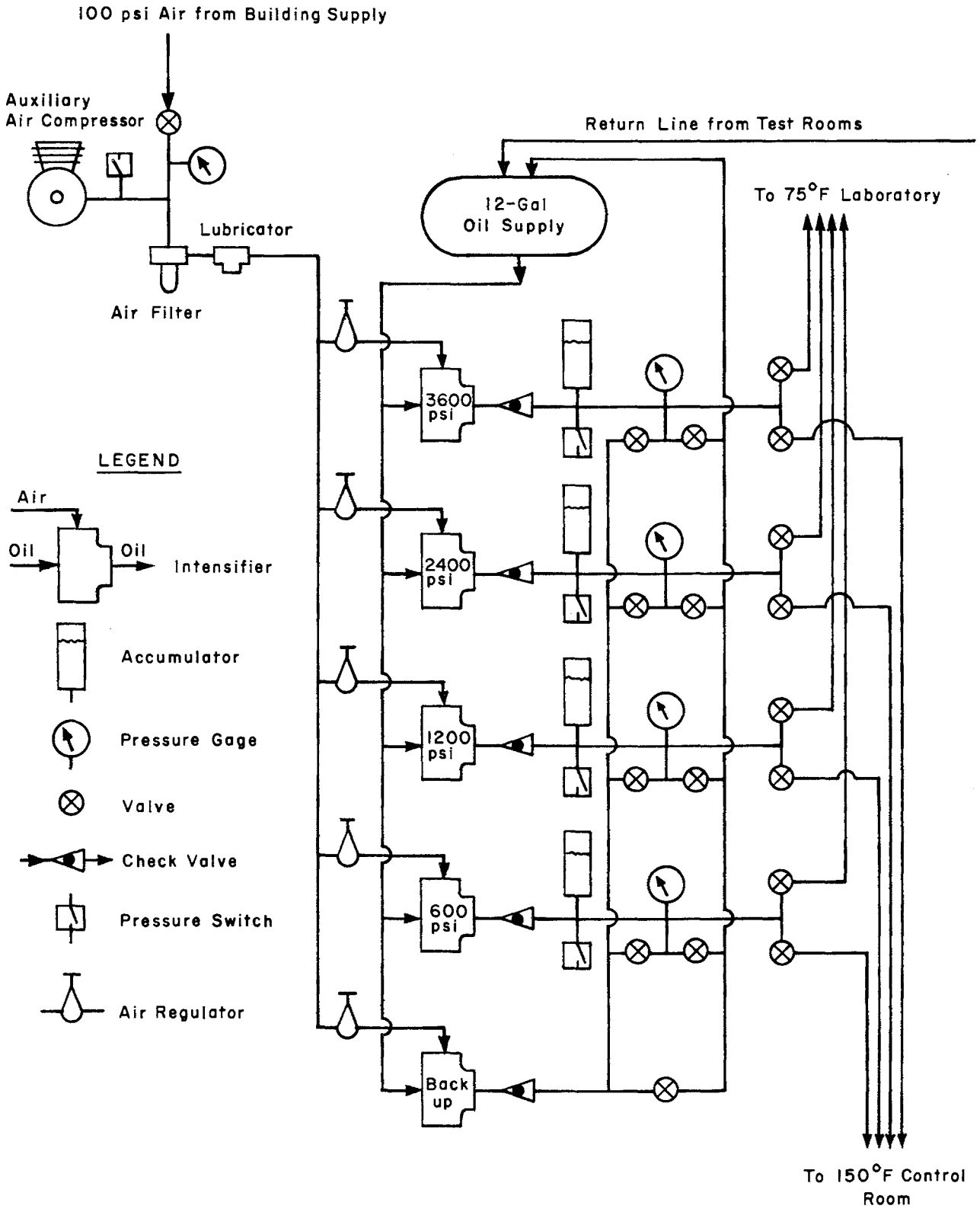


Fig 9. Flow diagram of hydraulic system.

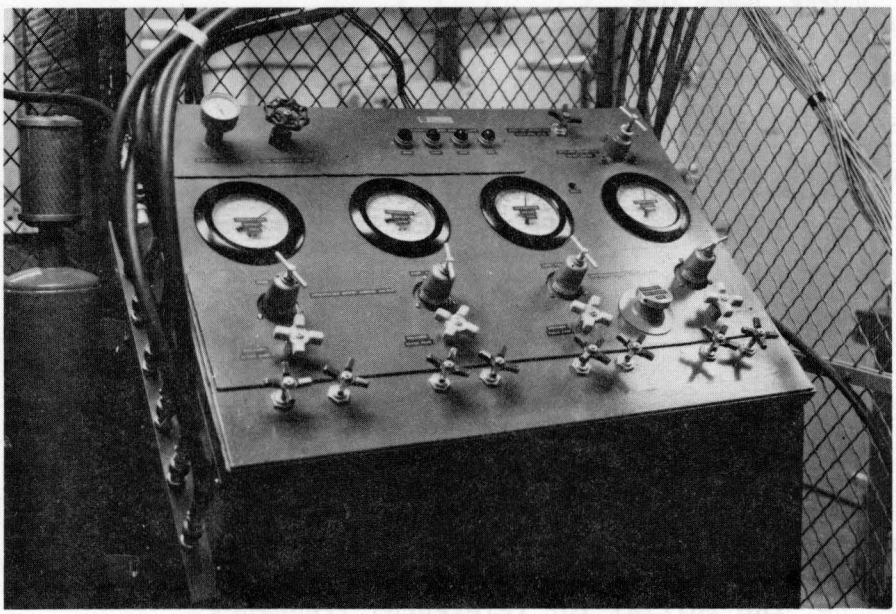


Fig 10. Hydraulic pressure control console.

feet, which was designed to maintain a constant temperature in the range from -20° F to 150° F. The relative humidity was maintained by the air-conditioning system and was assumed to be 60 percent, although it fluctuated from about 50 to 65 percent.

VIBRATING WIRE STRAIN GAGE

After evaluating various commercially available gages, the PC 641, manufactured in England by Perivale Control Company, was selected. This gage, approximately 4 inches long, was stable over a relatively long period of time and relatively inexpensive.

The gage was a vibrating wire device which indicated strain, or a change in strain, by a detectable change in its frequency of vibration. Actual strain was determined through calculations using Mersonnes' and Hooke's Laws, which in combination yielded the following equation:

$$\Delta\epsilon = \epsilon_1 - \epsilon_f = K\left(F_1^2 - F_f^2\right) \qquad (1)$$

where

K = gage factor,

F_i = the initial (or reference) frequency,

F_f = the frequency at the strain point desired,

ϵ_i = the initial (or reference) strain,

ϵ_f = the strain point desired.

The Perivale gage when cast in concrete had a gage factor of 1.24×10^{-3}, which was determined experimentally by the manufacturer. The range of the gage was approximately 1000 micro-units of strain and could be read to one micro-unit of strain.

A cross section of the Perivale gage is shown in Fig 11. The gage is 4 inches long with a 3.44-inch gage length and basically consisted of a hollow brass tube with a steel cap at each end and a steel wire tensioned between

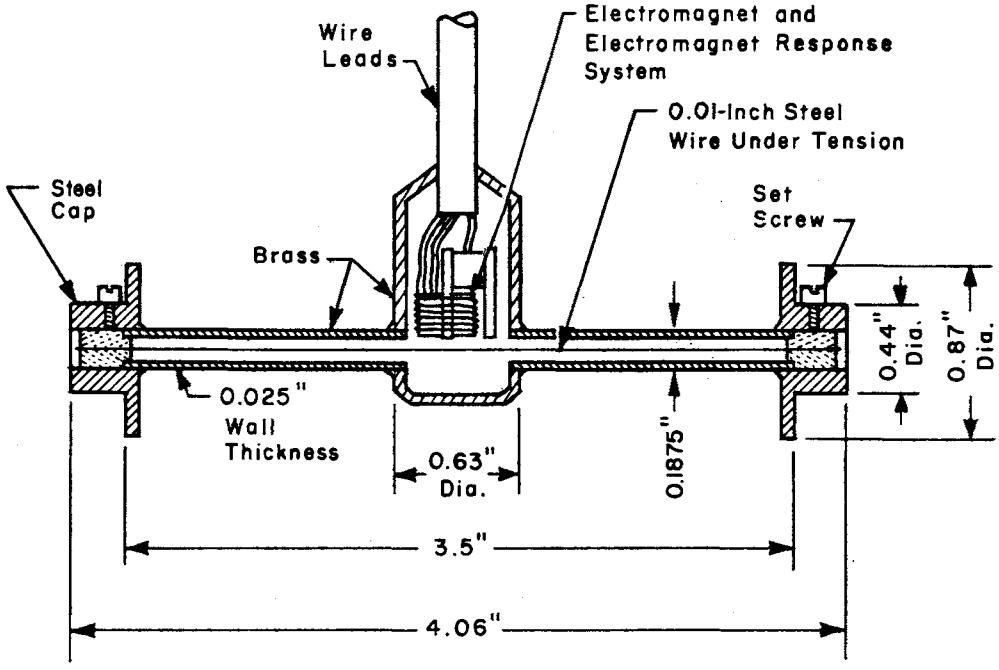


Fig 11. Cross section of Perivale vibrating wire strain gage (PC 641).

them. The frequency of the wire was measured by an electronic comparator which, when activated, plucked the wire by use of an electromagnet in the gage. The magnetic coil was used to measure the vibration of the wire and the frequency was compared with a standard frequency generated in the comparator. From this comparison, the frequency of the gage wire could be measured and used to calculate the change in strain (Eq 1), providing that the initial and final frequency readings were made at the same temperature and that there was temperature equilibrium.

The gage was supplied with an initial frequency or wire tension which allowed strain ranging from 285 micro-units in tension to 1050 micro-units in compression to be measured.

Fifty gages were tested (Ref 2) by submerging the gages in water for a period of approximately 12 days. Half of the gages were in water at 75° F and half in water at 150° F. Eight of the gages failed to operate after this test. These gages were allowed to air-dry in the laboratory for approximately 55 days, at which time five of the gages began to operate again. This indicated possible moisture leakage. Therefore, 20 additional gages were waterproofed with two coats of liquid neoprene (GW-5, Budd Instrument Company) at the junction of the electrical leads and the gage house and submerged in water at 75° F or 150° F. None of these gages failed; thus, all gages were waterproofed prior to use

Temperatures in the creep and shrinkage specimens were measured throughout the test period by a Wheatstone bridge system which measured the change in resistance of the electomagnetic coil in each gage. Thus, two internal temperature readings could be recorded for each specimen. A coil-resistance versus temperature curve was provided by the strain gage manufacturer.

For recording strain and temperature data, the comparator was connected to a switchboard. Each gage was connected by separate cables to a switchboard, and the strain or temperature in any one of the 204 gages (102 specimens) was measured from a central location.

REFERENCES

1. Kennedy, Thomas W., "Description and Procedures for Phase 1 of the Study of Time-Dependent Deformation of Concrete," Research Report published for internal distribution and use, Union Carbide Subcontract 2864, Department of Civil Engineering, The University of Texas at Texas at Austin, October 1968.

2. Kennedy, Thomas W., "Vibrating Wire Gages and Accessories," unpublished research memorandum, Union Carbide Subcontract 2864, Department of Civil Engineering, The University of Texas at Austin, February 1, 1968.

3. Kennedy, Thomas W., "Pilot Test 1," unpublished research memorandum, Union Carbide Subcontract 2864, Department of Civil Engineering, The University of Texas at Austin, July 21, 1968.

4. Kennedy, Thomas W., "Pilot Test 2," unpublished research memorandum, Union Carbide Subcontract 2864, Department of Civil Engineering, The University of Texas at Austin, August 2, 1968.

5. Kennedy, Thomas W., "Loss of Axial Load Due to Friction in the Loading Ram," unpublished research memorandum, Union Carbide Subcontract 2864, Department of Civil Engineering, The University of Texas at Austin, August 15, 1970.

6. Kennedy, Thomas W., "Sealing of Specimens to Prevent Moisture Loss," unpublished research memorandum, Union Carbide Subcontract 2864, Department of Civil Engineering, The University of Texas at Austin, June 18, 1968.

7. Corum, J. M., "Proposed Scope of a Basic Program to Investigage the Time-Dependent Deformation of Concrete Under Multiaxial Stress Conditions in Prestressed Reactor Vessels," Oak Ridge National Laboratory, June 1966.

APPENDIX A

SUMMARY OF MIX PROPORTIONS AND ENGINEERING CHARACTERISTICS OF AGGREGATE AND CEMENT

TABLE A1. SUMMARY FOR CONCRETE MIXTURE PROPORTIONS*

Materials

	Type	Source
Portland cement, SS-C-192	II	Alpha Portland Cement Co.
Admixtures	None	
Fine aggregate	Limestone	Vulcan Materials Company
Coarse aggregate	3/4-inch limestone	Vulcan Materials Company

Material Properties

	Size Range	Coarse Aggregate, % by weight	Bulk Specific Gravity, SSD	Absorption, % by weight
Portland cement			3.15	
Fine aggregate	-		2.67	1.3
Coarse aggregate (A)	No. 4	30	2.71	0.5
Coarse aggregate (B)	3/8-in.	35	2.71	0.5
Coarse aggregate (C)	1/2-in.	35	2.71	0.5

Mixture Data

	Mixture Proportions, by weight	SSD Weights per cubic yard, lb	Solid Volume per cubic yard, cubic feet
Portland cement	1.00	681.5	3.473
Fine aggregate	2.03	1381.5	8.305
Coarse aggregate (A)	0.79	535.4	3.171
Coarse aggregate (B)	0.92	624.5	3.699
Coarse aggregate (C)	0.92	624.5	3.697
Water	0.425	289.86	4.653

Water/cement ratio = 0.425, by weight
Slump = 2 inches
Cement factor = 7.25 bags/cu. yd.
Sand/aggregate ratio = 44%, by volume

Strength Data

Age, days	Psi
28	5750
28	6190
28	6050
28	6200
28	5860
28	5890

Average for 6 × 12-inch cylinders = 5990 psi

* From test reports submitted and prepared by Waterways Experiment Station, Jackson, Mississippi, December 5, 1967.

TABLE A2. REPORT OF TEST ON PORTLAND CEMENT

General

Specification	SS-C-192, Type II, LA, HH
Source	Alpha Portland Cement Co., Birmingham, Ala.
Dates Sampled	June 17-18, 1967
Barrels Represented	5000
Date of Report	December 5, 1967

Cement Components

Sample No.	Ign. Loss, %	Insol. Res., %	SO_3, %	M_gO, %	SiO_2, %	Al_2O_3, %	Fe_2O_8, %
1	1.1	0.22	2.0	3.4	21.9	4.4	4.4
2	1.1	0.22	1.9	3.5	21.8	4.4	4.8
3	1.1	0.22	2.0	3.4	21.9	4.4	4.4
5	1.1	0.24	1.9	3.4	21.7	4.5	4.4

Sample No.	C_3O, %	CaO, %	Total Alkali, %	Compressive Strength, psi 3-day	7-day	Entrained Air, %	Blaine Specific Surface, cm^2/gm
1	4.0	62.8	0.46	2000	2570	7.9	3150
2	4.1	62.7	0.45	1975	2480	8.1	3135
3	4.1	62.6	0.44	2095	2750	7.5	3135
5	4.3	62.7	0.44	2125	2760	8.1	3150

Time of Set

Sample Series	Autoclave Expansion, %	Time of Set Initial hr:min	Final hr:min
1-2	0.10	3:25	6:55
3-4	0.09	3:10	7:00
5-6	0.10	3:10	7:00

Heat of Hydration

7 days = 62 calories/gram
28 days = 72.5 calories/gram

TABLE A3. REPORT ON AGGREGATE

General

Type of Material	Limestone
Location	Lat. 36°10', Long. 86°35': off highway 70 north at Stone River on Central Pike near junction of Chandler Road, Tennessee
Source	Lambert Division, Vulcan Materials Company, Hermitage, Tennessee plant
Geological Formation and Age	Carter Limestone - Ordovican
Date of Report	November 16, 1967

Gradation

Sieve Size	Cumulative % Passing Coarse Agg.	Fine Agg.
1-in.	100	
3/4-in.	99	
1/2-in.	70	
3/8-in.	41	100
No. 4	0	98
No. 8		84
No. 16		64
No. 30		47
No. 50		24
No. 100		8
-200		4.2
Fineness Modulus		2.75

Test Results

	Coarse Agg.	Fine Agg.
Bulk Specific Gravity, SSD	2.71	2.67
Absorption, %	0.5	1.3

TABLE A4. CONCRETE MIXTURE PROPORTIONS

General

Cement Factor	7.25 bags/cu. yd.
Water/Cement Ratio	4.8 gals/bag or 0.425, by weight
Sand/Aggregate Ratio	44% by volume
Slump	2 inches
Date of Report	November 16, 1967

Material

	Size Range	Bulk Sp. Gravity	Unit Wt. (solid), lb/cu.ft	Absorp., %	Net Moisture, %
Portland cement		3.15	196.24		
Fine aggregate	Sand	2.67	166.34	1.3	-1.3
Coarse aggregate (A)	No. 4	2.71	168.83	0.5	-0.4
Coarse aggregate (B)	3/8-in.	2.71	168.83	0.5	-0.4
Coarse aggregate (C)	1/2-in.	2.71	168.83	0.5	-0.4

Mixture Proportions

For 1 Cubic Yard

	Solid Volume, cu.ft/batch	SSD Batch Weight, lb
Cement	3.473	681.5
Fine aggregate	8.305	1381.5
Coarse aggregate (A)	3.171	535.4
Coarse aggregate (B)	3.699	624.5
Coarse aggregate (C)	3.699	624.5
Water	4.653	289.86

For 1.6 Cubic Feet

	SSD Batch Weight, lb	Water Correction, lb	Actual Batch Weight, lb
Cement	40.9		40.9
Fine aggregate	82.9	-1.1	81.8
Coarse aggregate (A)	32.1	-0.1	32.0
Coarse aggregate (B)	37.5	-0.1	37.4
Coarse aggregate (C)	37.5	-0.2	37.3
Water	17.4	+1.5	18.9

APPENDIX B

PROCEDURES AND RESULTS OF PRELIMINARY 28-DAY COMPRESSIVE STRENGTH EVALUATION

APPENDIX B. PROCEDURES AND RESULTS OF PRELIMINARY 28-DAY COMPRESSIVE STRENGTH EVALUATION

Test Conditions

Date of Casting	February 23, 1968
Date of Test	March 22, 1968 (28 days after casting)
Materials	Preproportioned limestone aggregates and cement supplied by Waterways Experiment Station, Vicksburg, Mississippi
Design	As furnished by Waterways Experiment Station
Rate of Loading	35 psi/sec
Temperature	70° F
Loading Device	Young Loading Machine - 200,000 lbs maximum capacity
Specimen	6 X 12-inch concrete cylinders, cured 27 days in lime-saturated water, capped with a neat cement (w/c = .374 by weight) after four hours
Moisture	Specimen saturated at time of loading

Test Results

Sample No.	Ultimate Compressive Strength, psi	Remarks
1	5350	Poor cap Poor break
2	5610	
3	5570	
4	4940	Very poor cap Poor break
5	6400	Poor cap Good break

(Continued)

Sample No.	Ultimate Compressive Strength, psi	Remarks
6	5960	
7	5830	
Mean	5670	
Standard Deviation	464	
Coefficient of Variation	8.2%	

APPENDIX C

SUMMARY OF SPECIMENS FOR EACH BATCH OF CONCRETE

APPENDIX C. SUMMARY OF SPECIMENS FOR EACH BATCH OF CONCRETE

BATCH A

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
A1	Compressive	Air-dried	75°	183	
A2	Compressive	As-cast	150°	538	
A3	Compressive	As-cast	75°	538	
A4	Compressive	Air-dried	75°	538	
A5	Compressive	As-cast	--	90	
A6	Compressive	As-cast	150°	365	
A7	Compressive	Standard	--	28	
A8	Shrinkage	As-cast	75°	(3)	
A9	Creep	As-cast	75°	(3)	Failed during loading, replaced by H-22
A10	Compressive	Air-dried	150°	183	
A11	Compressive	Air-dried	150°	538	
A12	Creep	Air-dried	75°	(3)	Failed 8 hours after loading, replaced by H-14
A13	Compressive	As-cast	--	28	
A14	Compressive	As-cast	--	28	
A15	Compressive	Air-dried	--	90	
A16	Compressive	As-cast	75°	183	
A17	Compressive	As-cast	150°	183	
A18	Compressive	Air-dried	--	28	
A19	Creep	Air-dried	150°	(20)	Failed during loading, replaced by I-13
A20	Compressive	As-cast	--	90	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH A (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
A21	Compressive	As-cast	75°	538	
A22	Shrinkage	As-cast	150°	(20)	
A23	Compressive	Air-dried	--	28	
A24	Compressive	Air-dried	75°	365	
A25	Compressive	Standard	--	28	
A26	Compressive	As-cast	75°	365	
A27	Compressive	Air-dried	150°	538	
A28	Compressive	As-cast	--	28	
A29	Compressive	Standard	--	90	
A30	Compressive	Air-dried	75°	183	
A31	Compressive	Air-dried	75°	538	
A32	Shrinkage	Air-dried	150°	(20)	Axial gage failed 252 days after loading
A33	Compressive	Air-dried	150°	365	
A34	Compressive	Air-dried	75°	365	
A35	Creep	As-cast	150°	(20)	Axial gage failed 252 days after loading
A36	Compressive	As-cast	150°	183	
A37	Compressive	Standard	--	90	
A38	Shrinkage	Air-dried	75°	(3)	
A39	Compressive	As-cast	75°	183	
A40	Compressive	As-cast	150°	365	
A41	Compressive	Air-dried	150°	183	
A42	Compressive	Standard	--	28	
A43	Compressive	Air-dried	--	28	
A44	Compressive	Air-dried	150°	365	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH A (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
A45	Compressive	As-cast	75°	365	
A46	Compressive	As-cast	150°	538	
A47	Compressive	Air-dried	--	90	
A48	Compressive	Standard	--	90	
A49**	Compressive	Air-dried	--	90	
A50**	Compressive	As-cast	--	90	

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

** Not cast due to insufficient concrete.

BATCH B

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
B1	Creep	Air-dried	150°	(16)	
B2	Tensile	Air-dried	--	90	
B3	Tensile	Standard	--	28	
B4	Creep	As-cast	150°	(16)	Axial gage failed 308 days after loading
B5	Creep	Air-dried	150°	(13)	Axial gage failed at 12 hours after loading; radial gage failed at 168 days after loading
B6	Tensile	Standard	--	90	
B7	Creep	As-cast	75°	(1)	
B8	Tensile	Air-dried	75°	538	
B9	Compressive	Standard	--	90	
B10	Compressive	Standard	--	90	
B11	Compressive	Air-dried	--	90	
B12	Compressive	Standard	--	28	
B13	Shrinkage	As-cast	150°	(13,16)	Radial gage failed 84 days after loading
B14	Tensile	Standard	--	90	
B15	Tensile	As-cast	--	90	
B16	Creep	As-cast	150°	(13)	Axial gage range exceeded 112 days after loading
B17	Tensile	Air-dried	150°	538	
B18	Compressive	As-cast	--	90	
B19	Creep	Air-dried	75°	(1)	
B20	Compressive	Standard	--	28	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH B (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
B21	Compressive	As-cast	--	28	
B22	Compressive	Standard	--	28	
B23	Shrinkage	Air-dried	75°	(1,9)	
B24	Compressive	Air-dried	--	28	
B25	Tensile	As-cast	75°	538	
B26	Shrinkage	Air-dried	150°	(13,16)	
B27	Tensile	As-cast	150°	538	
B28	Tensile	As-cast	75°	538	
B29	Shrinkage	As-cast	75°	(1,9)	
B30	Compressive	As-cast	--	28	
B31	Compressive	Air-dried	--	90	
B32	Tensile	Air-dried	--	90	
B33	Compressive	As-cast	--	28	
B34	Compressive	Standard	--	90	
B35	Compressive	Air-dried	--	90	
B36	Tensile	Standard	--	28	
B37	Compressive	Air-dried	--	28	
B38	Tensile	As-cast	--	90	
B39	Tensile	As-cast	150°	538	
B40	Tensile	Air-dried	150°	538	
B41	Creep	As-cast	75°	(9)	
B42	Creep	Air-dried	75°	(9)	
B43	Tensile	Air-dried	75°	538	
B44	Compressive	As-cast	--	90	
B45	Compressive	As-cast	--	90	
B46	Compressive	Air-dried	--	28	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH B (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
B47**	Compressive	Standard	--	28	
B48**	Compressive	Standard	--	90	
B49**	Compressive	Standard	--	28	
B50**	Compressive	Standard	--	90	
B51**	Compressive	Standard	--	28	
B52**	Compressive	Standard	--	90	

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

** Not cast due to insufficient concrete.

BATCH C

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
C1	Compressive	As-cast	--	90	
C2	Compressive	Standard	--	28	
C3	Tensile	As-cast	150°	538	
C4	Tensile	Air-dried	150°	538	
C5	Compressive	Air-dried	--	90	
C6	Shrinkage	Air-dried	75°	(8,10)	
C7	Compressive	Air-dried	--	28	
C8	Compressive	As-cast	--	28	
C9	Tensile	Air-dried	150°	538	
C10	Tensile	As-cast	--	90	
C11	Creep	Air-dried	75°	(8)	
C12	Creep	As-cast	150°	(25)	Radial gage failed 252 days after loading
C13	Creep	Air-dried	150°	(17)	Failed during loading
C14	Tensile	Air-dried	75°	538	
C15	Compressive	Standard	--	28	
C16	Creep	As-cast	75°	(10)	Radial pressure reduced to zero due to oil leak in specimen
C17	Creep	Air-dried	75°	(10)	
C18	Tensile	Air-dried	--	90	
C19	Compressive	As-cast	--	28	
C20	Tensile	Standard	--	28	
C21	Tensile	Air-dried	--	90	
C22	Compressive	Standard	--	90	
C23	Creep	As-cast	75°	(8)	
C24	Tensile	Air-dried	75°	538	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH C (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
C25	Compressive	Standard	--	90	
C26	Tensile	Standard	--	28	
C27	Compressive	Air-dried	--	28	
C28	Compressive	Standard	--	90	
C29	Compressive	As-cast	--	90	
C30	Tensile	As-cast	--	90	
C31	Compressive	Air-dried	--	28	
C32	Compressive	Standard	--	90	
C33	Tensile	As-cast	75°	538	
C34	Creep	As-cast	150°	(17)	Failed during loading, replaced by I-16
C35	Compressive	As-cast	--	90	
C36	Shrinkage	Air-dried	150°	(17,25)	Radial gage failed at 140 days after loading
C37	Tensile	As-cast	150°	538	
C38	Tensile	As-cast	75°	538	
C39	Shrinkage	As-cast	75°	(8, 10)	
C40	Compressive	As-cast	--	28	
C41	Shrinkage	As-cast	150°	(17,25)	
C42	Tensile	Standard	--	90	
C43	Compressive	Air-dried	--	90	
C44	Compressive	Air-dried	--	90	
C45	Compressive	Standard	--	28	
C46	Creep	Air-dried	150°	(25)	Radial pressure reduced to zero due to oil leak in specimen
C47	Compressive	Standard	--	28	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH C (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
C48	Tensile	Standard	--	90	
C49	Compressive	Standard	--	28	
C50**	Compressive	Standard	--	90	
C51**	Compressive	Standard	--	28	
C52**	Compressive	Standard	--	90	

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

** Not cast due to insufficient concrete.

BATCH D

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
D1	Compressive	As-cast	--	28	
D2	Creep	As-cast	150°	(24)	Radial pressure reduced to zero due to oil leak in specimen
D3	Creep	Air-dried	150°	(19)	Radial gage failed at 224 days after loading; axial gage failed 385 days after loading
D4	Compressive	Air-dried	--	90	
D5	Compressive	Standard	--	90	
D6	Compressive	As-cast	--	28	
D7	Compressive	Standard	--	28	
D8	Compressive	Standard	--	28	
D9	Tensile	Air-dried	--	28	
D10	Tensile	As-cast	--	90	
D11	Compressive	Standard	--	90	
D12	Shrinkage	As-cast	150°	(15,19,24)	Radial gage failed at 168 days after loading
D13	Compressive	Air-dried	--	90	
D14	Compressive	Standard	--	90	
D15	Creep	As-cast	150°	(15)	Radial gage failed at 224 days after loading
D16	Compressive	Air-dried	--	28	
D17	Tensile	As-cast	--	90	
D18	Tensile	Standard	--	28	
D19	Tensile	Air-dried	--	28	
D20	Shrinkage	As-cast	75°	(5,6)	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH D (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
D21	Compressive	Air-dried	--	28	
D22	Creep	Air-dried	150°	(15)	
D23	Shrinkage	Air-dried	150°	(15,19,24)	
D24	Compressive	As-cast	--	28	
D25	Compressive	Standard	--	28	
D26	Creep	As-cast	75°	(6)	
D27	Tensile	As-cast	--	28	
D28	Compressive	As-cast	--	90	
D29	Tensile	As-cast	--	28	
D30	Compressive	Air-dried	--	28	
D31	Creep	As-cast	75°	(5)	
D32	Compressive	Standard	--	28	
D33	Shrinkage	Air-dried	75°	(5,6)	Radial gage failed at 196 days after loading
D34	Compressive	Standard	--	90	
D35	Compressive	Air-dried	--	90	
D36	Compressive	As-cast	--	90	
D37	Tensile	Air-dried	--	90	
D38	Tensile	Standard	--	90	
D39	Compressive	As-cast	--	90	
D40	Creep	Air-dried	75°	(5)	
D41	Creep	Air-dried	150°	(24)	Radial pressure reduced to zero due to oil leak in speciman
D42	Compressive	Standard	--	90	
D43	Tensile	Air-dried	--	90	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH D (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
D44	Creep	Air-dried	75°	(6)	Axial gage range exceeded 140 days after loading
D45	Compressive	Standard	--	28	
D46	Creep	As-cast	150°	(19)	Failed during loading, replaced by I-27
D47	Compressive	Standard	--	90	
D48	Tensile	Standard	--	28	
D49	Compressive	Standard	--	28	
D50	Tensile	Standard	--	90	

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH E

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
E1	Creep	Air-dried	150°	(18)	Axial gage failed at 21 days after loading; radial gage failed at 112 days after loading
E2	Compressive	Standard	--	28	
E3	Tensile	As-cast	--	90	
E4	Creep	Air-dried	150°	(23)	Radial gage failed at 252 days after loading
E5	Creep	As-cast	75°	(12)	Radial gage failed at 308 days after loading
E6	Tensile	Air-dried	150°	538	
E7	Tensile	Air-dried	--	90	
E8	Tensile	Standard	--	90	
E9	Compressive	As-cast	--	90	
E10	Shrinkage	As-cast	150°	(18,23)	Radial gage failed at 308 days after loading
E11	Compressive	As-cast	--	90	
E12	Tensile	As-cast	75°	538	
E13	Creep	Air-dried	75°	(12)	
E14	Compressive	Standard	--	28	
E15	Tensile	Air-dried	--	90	
E16	Compressive	Standard	--	90	
E17	Compressive	As-cast	--	28	
E18	Creep	As-cast	150°	(23)	Axial gage failed at 196 days after loading; radial gage failed at 280 days after loading

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH E (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
E19	Compressive	Standard	--	28	
E20	Tensile	Air-dried	150°	538	
E21	Compressive	Air-dried	--	28	
E22	Compressive	Standard	--	90	
E23	Shrinkage	Air-dried	75°	(2,12)	
E24	Compressive	Air-dried	--	90	
E25	Tensile	As-cast	--	90	
E26	Tensile	As-cast	150°	538	
E27	Tensile	As-cast	75°	538	
E28	Shrinkage	As-cast	75°	(2,12)	
E29	Compressive	Air-dried	--	28	
E30	Tensile	Air-dried	75°	538	
E31	Tensile	Standard	--	28	
E32	Compressive	Standard	--	90	
E33	Compressive	As-cast	--	90	
E34	Tensile	Air-dried	75°	538	
E35	Compressive	Air-dried	--	90	
E36	Compressive	As-cast	--	28	
E37	Compressive	As-cast	--	28	
E38	Tensile	Standard	--	28	
E39	Creep	As-cast	75°	(2)	
E40	Creep	Air-dried	75°	(2)	
E41	Tensile	Standard	--	90	
E42	Shrinkage	Air-dried	150°	(18,23)	
E43	Creep	As-cast	150°	(18)	Axial gage failed at 84 days after loading
E44	Compressive	Air-dried	--	28	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH E (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
E45	Compressive	Air-dried	--	90	
E46	Tensile	As-cast	150°	538	
E47	Compressive	Standard	--	28	
E48	Compressive	Standard	--	90	
E49**	Compressive	Standard	--	28	
E50**	Compressive	Standard	--	90	
E51**	Compressive	Standard	--	28	
E52**	Compressive	Standard	--	90	

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

** Not cast due to insufficient concrete.

BATCH F

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
F1	Compressive	Standard	--	28	
F2	Tensile	As-cast	75°	538	
F3	Compressive	Standard	--	90	
F4	Compressive	As-cast	--	28	
F5	Tensile	Standard	--	28	
F6	Creep	Air-dried	150°	(21)	Radial gage range exceeded 168 days after loading
F7	Tensile	Air-dried	150°	538	
F8	Compressive	Air-dried	--	28	
F9	Creep	As-cast	75°	(7)	
F10	Tensile	Standard	--	90	
F11	Tensile	As-cast	150°	538	
F12	Compressive	Air-dried	--	90	
F13	Creep	As-cast	75°	(4)	
F14	Tensile	As-cast	75°	538	
F15	Shrinkage	As-cast	150°	(14,21)	Axial gage failed at 84 days after casting; radial gage failed at 168 days after casting
F16	Compressive	Air-dried	--	28	
F17	Shrinkage	Air-dried	75°	(4,7)	
F18	Compressive	As-cast	--	28	
F19	Compressive	Standard	--	28	
F20	Creep	As-cast	150°	(21)	Axial gage failed at 21 days after casting; radial gage range exceeded 252 days after loading

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH F (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
F21	Shrinkage	Air-dried	150°	(14,21)	Radial gage failed at 3 days after loading
F22	Compressive	As-cast	--	90	
F23	Shrinkage	As-cast	75°	(4,7)	
F24	Tensile	As-cast	--	90	
F25	Compressive	Air-dried	--	90	
F26	Tensile	As-cast	--	90	
F27	Tensile	Standard	--	90	
F28	Compressive	As-cast	--	90	
F29	Tensile	Air-dried	--	90	
F30	Creep	Air-dried	75°	(7)	
F31	Compressive	As-cast	--	90	
F32	Tensile	Air-dried	150°	538	
F33	Creep	As-cast	150°	(14)	Radial gage failed at 140 days after loading
F34	Creep	Air-dried	150°	(14)	Radial gage failed at 168 days after loading
F35	Compressive	Air-dried	--	28	
F36	Compressive	Standard	--	28	
F37	Tensile	Air-dried	75°	538	
F38	Compressive	As-cast	--	28	
F39	Tensile	Standard	--	28	
F40	Compressive	Standard	--	90	
F41	Tensile	Air-dried	75°	538	
F42	Creep	Air-dried	75°	(4)	
F43	Compressive	Standard	--	90	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH F (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
F44	Tensile	Air-dried	--	90	
F45	Compressive	Air-dried	--	90	
F46	Tensile	As-cast	150°	538	
F47	Compressive	Standard	--	28	
F48	Compressive	Standard	--	90	
F49	Compressive	Standard	--	28	
F50**	Compressive	Standard	--	90	
F51**	Compressive	Standard	--	28	
F52**	Compressive	Standard	--	90	

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

** Not cast due to insufficient concrete.

BATCH G

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
G1	Shrinkage	As-cast	150°	(22)	Axial gage failed at 308 days after casting; radial gage failed at 420 days after casting
G2	Compressive	As-cast	150°	538	
G3	Compressive	As-cast	75°	365	
G4	Compressive	As-cast	75°	538	
G5	Compressive	Air-dried	--	28	
G6	Compressive	Air-dried	75°	365	
G7	Compressive	As-cast	--	28	
G8	Compressive	As-cast	150°	365	
G9	Creep	As-cast	150°	(22)	
G10	Shrinkage	Air-dried	75°	(11)	
G11	Compressive	Standard	--	28	
G12	Compressive	Standard	--	90	
G13	Compressive	As-cast	75°	538	
G14	Compressive	Air-dried	--	90	
G15	Compressive	As-cast	75°	183	
G16	Compressive	As-cast	150°	183	
G17	Compressive	Standard	--	28	
G18	Shrinkage	As-cast	75°	(11)	
G19	Creep	Air-dried	150°	(22)	
G20	Compressive	Air-dried	--	90	
G21	Shrinkage	Air-dried	150°	(22)	
G22	Compressive	Air-dried	150°	365	
G23	Compressive	As-cast	150°	183	
G24	Compressive	As-cast	75°	365	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH G (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
G25	Compressive	Standard	--	90	
G26	Compressive	Air-dried	75°	183	
G27	Compressive	Air-dried	75°	538	
G28	Compressive	Air-dried	--	28	
G29	Compressive	As-cast	--	28	
G30	Creep	Air-dried	75°	(11)	Radial gage range exceeded 56 days after loading
G31	Compressive	Air-dried	150°	365	
G32	Compressive	Air-dried	150°	538	
G33	Compressive	As-cast	--	90	
G34	Compressive	As-cast	150°	365	
G35	Creep	As-cast	75°	(11)	
G36	Compressive	Standard	--	90	
G37	Compressive	Air-dried	75°	183	
G38	Compressive	As-cast	75°	183	
G39	Compressive	Air-dried	150°	183	
G40	Compressive	As-cast	--	28	
G41	Compressive	Air-dried	150°	538	
G42	Compressive	Air-dried	75°	538	
G43	Compressive	Air-dried	150°	183	
G44	Compressive	As-cast	150°	538	
G45	Compressive	As-cast	--	90	
G46	Compressive	Air-dried	75°	365	
G47	Compressive	Air-dried	--	28	
G48	Compressive	Standard	--	28	
G49	Compressive	As-cast	--	90	
G50	Compressive	Air-dried	--	90	

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH H

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
H1	Shrinkage	Air-dried	75°	(3R)	
H2	Compressive	Air-dried	75°	538	
H3	Compressive	As-cast	75°	365	
H4	Creep	Air-dried	75°	(28)	Damaged, replaced by I-20
H5	Creep	As-cast	75°	(27)	
H6	Compressive	Air-dried	--	90	
H7	Compressive	Air-dried	75°	28	
H8	Compressive	Standard	--	28	
H9	Compressive	As-cast	75°	183	
H10	Compressive	Air-dried	75°	365	
H11	Compressive	As-cast	--	28	
H12	Compressive	Air-dried	75°	538	
H13	Compressive	Standard	--	28	
H14	Creep	Air-dried	75°	(3R)	Replaces A-12; radial gage range exceeded 56 days after loading
H15	Compressive	Standard	--	90	
H16	Creep	Air-dried	75°	(26)	Damaged, replaced by I-39
H17	Creep	Air-dried	75°	(29)	
H18	Compressive	As-cast	75°	538	
H19	Compressive	As-cast	--	28	
H20	Compressive	As-cast	75°	183	
H21	Compressive	Air-dried	75°	183	
H22	Creep	As-cast	75°	(3R)	Replaces A-9
H23	Compressive	As-cast	75°	183	
H24	Creep	As-cast	75°	(29)	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH H (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
H25	Compressive	As-cast	--	90	
H26	Compressive	As-cast	75°	365	
H27	Compressive	Air-dried	75°	365	
H28	Shrinkage	As-cast	75°	(26,27,28, 29,3R)	Duplicate of I-23
H29	Compressive	Air-dried	75°	183	
H30	Compressive	Air-dried	--	90	
H31	Creep	Air-dried	75°	(27)	
H32	Compressive	Standard	--	28	
H33	Compressive	As-cast	--	28	
H34	Creep	As-cast	75°	(28)	
H35	Shrinkage	Air-dried	75°	(27,29)	
H36	Compressive	Air-dried	--	90	
H37	Compressive	As-cast	--	90	
H38	Shrinkage	Air-dried	75°	(26,28)	Damaged, replaced by I-17
H39	Compressive	Standard	--	90	
H40	Compressive	Air-dried	--	28	
H41	Compressive	As-cast	75°	538	
H42	Compressive	As-cast	75°	365	
H43	Compressive	As-cast	75°	538	
H44	Compressive	Air-dried	75°	365	
H45	Creep	As-cast	75°	(26)	
H46	Compressive	As-cast	--	90	
H47	Compressive	Air-dried	75°	183	
H48	Compressive	Air-dried	--	28	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH H (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
H49**	Compressive	Air-dried	75°	538	
H50**	Compressive	Standard	--	90	

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

** Not cast due to insufficient concrete.

BATCH I

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Curing	Condition or Time of Test*	Remarks
I1	Shrinkage	Air-dried	150°	(20R,21R)	
I2	Compressive	As-cast	150°	538	
I3	Compressive	As-cast	150°	538	
I4	Compressive	Air-dried	--	90	
I5	Compressive	Air-dried	150°	365	
I6	Compressive	Air-dried	--	90	
I7	Compressive	As-cast	75°	538	
I8	Compressive	As-cast	150°	365	
I9	Compressive	Air-dried	--	28	
I10	Compressive	As-cast	150°	365	
I11	Compressive	As-cast	150°	183	
I12	Compressive	As-cast	--	28	
I13	Creep	Air-dried	150°	(20R)	Replaces A-19; failed 9 hours after loading
I14	Compressive	As-cast	150°	183	
I15	Compressive	Air-dried	--	28	
I16	Creep	As-cast	150°	(17R)	Replaces C-34; axial and radial gage ranges exceeded 56 and 21 days, respectively, after loading
I17	Shrinkage	Air-dried	75°	(26,28)	
I18	Compressive	Air-dried	--	28	
I19	Compressive	As-cast	75°	365	
I20	Creep	Air-dried	75°	(28R)	Replaces H-4
I21	Shrinkage	As-cast	150°	(17R,19R)	
I22	Compressive	Air-dried	150°	183	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH I (Continued)

Speciman, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
I23	Shrinkage	As-cast	75°	(26,28)	Duplicate of H-28; axial gage failed 14 days after casting
I24	Compressive	As-cast	75°	365	
I25	Compressive	As-cast	75°	183	
I26	Compressive	Standard	--	28	
I27	Creep	As-cast	150°	(19R)	Replaces D-46; axial and radial gages failed at 168 days after loading
I28	Compressive	Air-dried	--	90	
I29	Compressive	Standard	--	28	
I30	Creep	Air-dried	150°	(21R)	Replaces F-6; specimen failed 33 days after loading
I31	Compressive	Air-dried	150°	365	
I32	Compressive	Standard	--	28	
I33	Compressive	Air-dried	75°	365	
I34	Compressive	Air-dried	75°	183	
I35	Compressive	Air-dried	150°	183	
I36	Compressive	Standard	--	90	
I37	Compressive	Air-dried	150°	538	
I38	Compressive	Air-dried	75°	365	
I39	Creep	Air-dried	75°	(26)	
I40	Compressive	As-cast	--	90	
I41	Compressive	As-cast	75°	538	
I42	Compressive	Air-dried	75°	183	

(Continued)

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

BATCH I (Continued)

Specimen, Order of Casting	Type of Test	Type of Curing	Temp. of Test	Condition or Time of Test*	Remarks
I43**	Compressive	Standard	--	90	
I44**	Compressive	As-cast	--	90	
I45**	Compressive	Air-dried	75°	538	
I46**	Compressive	As-cast	--	90	
I47**	Compressive	Air-dried	150°	538	
I48**	Compressive	As-cast	--	28	
I49**	Compressive	Standard	--	90	
I50**	Compressive	As-cast	75°	183	
I51**	Compressive	As-cast	--	28	
I52**	Compressive	Air-dried	75°	538	

* Days after casting. Numbers in parentheses refer to test conditions in Table 2.

** Not cast due to insufficient concrete.

APPENDIX D

TIME SEQUENCE OF CASTING, CURING, SEALING, AND TESTING

APPENDIX D. TIME SEQUENCE OF CASTING, CURING, SEALING, AND TESTING

6 x 16-INCH, AS-CAST SPECIMENS

Time With Respect to Casting	Operation*
-24 hours	Place gages and epoxy lead holes
0	Cast specimens
24 hours	Remove forms
	Read gages
	Wire brush and rub surfaces
	Fill surface voids with neat cement
	Coat specimens with epoxy
	Allow epoxy to harden for one hour
	Place specimens in curing room
48 hours	Remove specimens from curing room
	Coat specimens with second coat of epoxy (leave 1/4-inch uncoated at each end)
	Wrap specimens with copper; solder overlap joints, and solder copper to pre-tinned end plates
	Coat solder joints with epoxy
	Store at 73.4 ± 3° F
	Weigh specimens and read gages
3 days	Weigh specimens and read gages; if specimens exhibit weight loss or shrinkage strains, coat specimens with epoxy
4 days	Weigh specimens and read gages; if specimens exhibit weight loss or shrinkage strains, coat specimens with epoxy

(Continued)

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

6 X 16-INCH, AS-CAST SPECIMENS (Continued)

Time With Respect to Casting	Operation*
5 days	Weigh specimens and read gages; if specimens exhibit weight loss or shrinkage strains, coat specimens with epoxy
6 days	Weigh specimens and read gages; if specimens exhibit weight loss or shrinkage strains, coat specimens with epoxy
7 days	Weigh specimens and read gages; if specimens exhibit weight loss or shrinkage strains, coat specimens with epoxy
83 days	Seal 90-day specimens in neoprene
	Place sealed 90-day specimens in test unit at designated testing temperature
90 days	Load 90-day specimens
176 days	Seal 183-day specimens in neoprene
	Place sealed 183-day specimens in test unit at 75° F
183 days	Load 183-day specimens
358 days	Seal 365-day specimens in neoprene
	Place sealed 365 day specimens in test unit at 75° F
365 days	Load 365-day specimens
454 days	Unload 90-day specimens
593 days	Terminate 90-day tests
	Remove 90-day specimens from test units
	Weigh 90-day specimens
	Inspect copper seals on 90-day specimens
	Begin to inspect 90-day specimens

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

6 x 16-INCH, AIR-DRIED SPECIMENS

Time With Respect to Casting	Operation*
-24 hours	Place gages and epoxy lead holes
0	Cast specimens
24 hours	Remove forms
	Read gages
	Wire brush and rub surfaces
	Fill surface voids with neat cement
	Place specimens in curing room
48 hours	Weigh specimens and read gages
	Submerge specimens in lime-saturated water at 73.4 ± 3° F
7 days	Remove specimens from lime-saturated water
	Weigh specimens and read gages
	Store specimens at 73.4 ± 3° F
81 days	Weigh 90-day specimens and read gages
	Coat 90-day specimens with epoxy
82 days	Coat 90-day specimens with second coat of epoxy leaving approximately 1/4-inch uncoated at each end
	Wrap 90-day specimens with copper; solder overlap joints and solder copper to pre-tinned end plates
	Coat solder joints with epoxy
	Weigh 90-day specimens and read gages

(Continued)

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

6 x 16-INCH, AIR-DRIED SPECIMENS (Continued)

Time With Respect to Casting	Operation*
83 days	Seal 90-day specimens in neoprene
	Place sealed 90-day specimens in test unit at designated testing temperature
90 days	Load 90-day specimens
174 days	Weigh 183-day specimens and read gages
	Coat 183-day specimens with epoxy
175 days	Coat 183-day specimens with second coat of epoxy leaving approximately 1/4-inch uncoated at each end
	Wrap 183-day specimens with copper; solder overlap joints and solder copper to pre-tinned end plates
	Coat solder joints with epoxy
	Weigh 183-day specimens and read gages
176	Seal 183-day specimens in neoprene
	Place sealed 183-day specimens in test unit at 75° F
183 days	Load 183-day specimens
356 days	Weigh 365-day specimens and read gages
	Coat 365-day specimens with epoxy
357 days	Coat 365-day specimens with second coat of epoxy leaving approximately 1/4-inch uncoated at each end
	Wrap 365-day specimens with copper; solder overlap joints and solder copper to pre-tinned end plates
358 days	Seal 365-day specimens in neoprene
	Place sealed 365-day specimens in test unit at 75° F

(Continued)

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

6 x 16-INCH AIR-DRIED SPECIMENS (Continued)

Time With Respect to Casting	Operation*
365 days	Load 365-day specimens
454 days	Unload 90-day specimens
593 days	Terminate 90-day tests
	Remove 90-day specimens from test units
	Weigh 90-day specimens
	Inspect copper seals on 90-day specimens
	Begin to inspect 90-day specimens

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

6 x 12-INCH, AS-CAST SPECIMENS

Time With Respect to Casting	Operation*
-24 hours	Install copper jackets in molds
0	Cast specimens
4-6 hours	Cap specimens with neat cement
24 hours	Remove molds
	Place specimens in curing room
48 hours	Remove specimens from curing room
	Seal specimens by placing copper lids on both ends of the specimens and soldering lids to copper
	Coat solder joints with epoxy
	Store at 73.4 ± 3° F
27 days	Remove copper from 28-day strength specimens
28 days	Test 28-day strength specimens
83 days	Place 183, 365, and 538-day strength specimens in assigned temperature environment
89 days	Remove copper from 90-day strength specimens
90 days	Test 90-day strength specimens
182 days	Remove copper from 183-day strength specimens
	Please specimens in a 75° F environment
183 days	Test 183-day strength specimens
364 days	Remove copper from 365-day strength specimens
	Place specimens in a 75° F environment

(Continued)

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

6 x 12-INCH AS-CAST SPECIMENS (Continued)

Time With Respect to Casting	Operation*
365 days	Test 365-day strength specimens
537 days	Remove copper from 538-day strength specimens
	Place specimens in a 75° F environment
538 days	Test 538-day strength specimens

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

6 × 12-INCH, AIR-DRIED SPECIMENS

Time With Respect to Casting	Operation*
0	Cast specimens
4 hours	Cap specimens with neat cement
24 hours	Remove forms
	Place specimens in curing room
48 hours	Remove specimens from curing room
	Submerge specimens in lime-saturated water at 73.4 ± 3° F
7 days	Remove specimens from lime-saturated water
	Store at 73.4 ± 3° F and 60-percent relative humidity
28 days	Test 28-day strength specimens
82 days	Seal 183, 365, and 538-day strength specimens by wrapping specimens in copper and soldering overlap joints, placing copper lids on both ends of specimens, and soldering lids to copper jacket
	Coat solder joints with epoxy
83 days	Place 183, 365, and 538-day strength specimens in designated temperature environment
90 days	Test 90-day strength specimens
182 days	Remove copper from 183-day strength specimens
	Place specimens in 75° F environment
183 days	Test 183-day strength specimens

(Continued)

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

6 x 12-INCH, AIR-DRIED SPECIMENS (Continued)

Time With Respect to Casting	Operation*
364 days	Remove copper from 365-day strength specimens
	Place specimens in 75° F environment
365 days	Test 365-day strength specimens
537 days	Remove copper from 538-day strength specimens
	Place specimens in 75° F environment
538 days	Test 538-day strength specimens

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

6 x 12-INCH, STANDARD-CURED SPECIMENS

Time with Respect to Casting	Operation*
0	Cast specimens
4-6 hours	Cap specimens with neat cement
24 hours	Remove molds
	Place specimens in curing room
48 hours	Remove specimens from curing room
	Submerge specimens in lime-saturated water at 73.4 ± 3° F
28 days	Test 28-day strength specimens
90 days	Test 90-day strength specimens

* The sequence and times for gage readings for each specimen are summarized in Appendix E.

APPENDIX E

TIME SEQUENCE FOR READING VIBRATING WIRE GAGES

APPENDIX E. TIME SEQUENCE FOR READING VIBRATING WIRE GAGES

90-DAY SPECIMENS

As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
--	0 days (just prior to casting)	--	0 days (just prior to casting)
--	0 days (just after casting)	--	0 days (just after casting)
--	+24 hours	--	+24 hours
--	+48 hours	--	+48 hours
--	3 days	--	7 days
--	4 days	--	8 days
--	5 days	--	9 days
--	6 days	--	10 days
--	7 days	--	11 days
--	14 days	--	12 days
--	28 days	--	13 days
--	56 days	--	14 days
--	83 days	--	21 days
0 days (just prior to loading)	90 days (just prior to loading)	--	28 days

(Continued)

90-DAY SPECIMENS (Continued)

As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
0 days (just after loading)	90 days (just after loading)	--	56 days
+3 hours	+3 hours	--	81 days
+6 hours	+6 hours	--	82 days
+12 hours	+12 hours	--	83 days
+24 hours	+24 hours	0 days (just prior to loading)	90 days (just prior to loading)
+48 hours	+48 hours	0 days (just after loading)	90 days (just after loading)
3 days	93 days	+3 hours	+3 hours
4 days	94 days	+6 hours	+6 hours
5 days	95 days	+12 hours	+12 hours
6 days	96 days	+24 hours	+24 hours
7 days	97 days	+48 hours	+48 hours
14 days	104 days	3 days	93 days
21 days	111 days	4 days	94 days
28 days	118 days	5 days	95 days
56 days	146 days	6 days	96 days
84 days	174 days	7 days	97 days
112 days	202 days	14 days	104 days

(Continued)

90-DAY SPECIMENS (Continued)

As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
140 days	230 days	21 days	111 days
168 days	258 days	28 days	118 days
196 days	286 days	56 days	146 days
224 days	314 days	84 days	174 days
252 days	342 days	112 days	202 days
280 days	370 days	140 days	230 days
308 days	398 days	168 days	258 days
336 days	426 days	196 days	286 days
364 days (just prior to unloading)	454 days (just prior to unloading)	224 days	314 days
364 days (just after unloading)	454 days (just after unloading)	252 days	342 days
+3 hours	+3 hours	280 days	370 days
+6 hours	+6 hours	308 days	398 days
+12 hours	+12 hours	336 days	426 days
+24 hours	+24 hours	364 days (just prior to unloading)	454 days (just prior to unloading)
+48 hours	+48 hours	364 days (just after unloading)	454 days (just after unloading)
367 days	457 days	+3 hours	+3 hours

(Continued)

90-DAY SPECIMENS (Continued)

As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
368 days	458 days	+6 hours	+6 hours
369 days	459 days	+12 hours	+12 hours
370 days	460 days	365 days	455 days
371 days	461 days	366 days	456 days
378 days	468 days	367 days	457 days
385 days	475 days	368 days	458 days
392 days	482 days	369 days	459 days
420 days	510 days	370 days	460 days
448 days	538 days	371 days	461 days
476 days	566 days	378 days	468 days
504 days	594 days	385 days	475 days
		392 days	482 days
		420 days	510 days
		488 days	538 days
		476 days	566 days
		504 days	594 days

183-DAY SPECIMENS

As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
--	0 days (just prior to casting)	--	0 days (just prior to casting)
--	0 days (just after casting)	--	0 days (just after casting)
--	+24 hours	--	+24 hours
--	+48 hours	--	+48 hours
--	3 days	--	7 days
--	4 days	--	8 days
--	5 days	--	9 days
--	6 days	--	10 days
--	7 days	--	11 days
--	14 days	--	12 days
--	28 days	--	13 days
--	56 days	--	14 days
--	84 days	--	21 days
--	112 days	--	28 days
--	140 days	--	56 days
--	168 days	--	84 days
--	174 days	--	112 days
--	176 days	--	140 days

(Continued)

183-DAY SPECIMENS (Continued)

As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
0 days (just prior to loading)	183 days (just prior to loading)	--	168 days
0 days (just after loading)	183 days (just after loading)	--	174 days
+3 hours	+3 hours	--	175 days
+6 hours	+6 hours	--	176 days
+12 hours	+12 hours	0 days (just prior to loading)	183 days (just prior to loading)
+24 hours	+24 hours	0 days (just after loading)	183 days (just after loading)
+48 hours	+48 hours	+3 hours	+3 hours
3 days	186 days	+6 hours	+6 hours
4 days	187 days	+12 hours	+12 hours
5 days	188 days	+24 hours	+24 hours
6 days	189 days	+48 hours	+48 hours
7 days	190 days	3 days	186 days
14 days	197 days	4 days	187 days
21 days	204 days	5 days	188 days
28 days	211 days	6 days	189 days
56 days	239 days	7 days	190 days
84 days	267 days	14 days	197 days

(Continued)

183-DAY SPECIMENS (Continued)

As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
112 days	295 days	21 days	204 days
140 days	323 days	28 days	211 days
168 days	351 days	56 days	239 days
196 days	379 days	84 days	267 days
224 days	407 days	112 days	295 days
252 days	435 days	140 days	323 days
280 days	463 days	168 days	351 days
308 days	491 days	196 days	379 days
336 days	519 days	224 days	407 days
364 days	547 days	252 days	435 days
392 days	575 days	280 days	463 days
420 days	603 days	308 days	491 days
448 days	631 days	336 days	519 days
476 days	659 days	364 days	547 days
504 days	687 days	392 days	575 days
532 days	715 days	420 days	603 days
560 days	743 days	448 days	631 days
588 days	771 days	476 days	659 days
616 days	799 days	504 days	687 days
644 days*	827 days*	532 days*	715 days*

* Read gages every 28 days until test is terminated.

365-DAY SPECIMENS

As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
--	0 days (just prior to casting)	--	0 days (just prior to casting)
--	0 days (just after casting)	--	0 days (just after casting)
--	+24 hours	--	+24 hours
--	+48 hours	--	+48 hours
--	3 days	--	7 days
--	4 days	--	8 days
--	5 days	--	9 days
--	6 days	--	10 days
--	7 days	--	11 days
--	14 days	--	12 days
--	28 days	--	13 days
--	56 days	--	14 days
--	84 days	--	21 days
--	112 days	--	28 days
--	140 days	--	56 days
--	168 days	--	84 days
--	196 days	--	112 days
--	224 days	--	140 days

(Continued)

365-DAY SPECIMENS (Continued)

As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
--	252 days	--	168 days
--	280 days	--	196 days
--	308 days	--	224 days
--	336 days	--	252 days
--	358 days	--	280 days
0 days (just prior to loading)	365 days (just prior to loading)	--	308 days
0 days (just after loading)	365 days (just after loading)	--	336 days
+3 hours	+3 hours	--	356 days
+6 hours	+6 hours	--	357 days
+12 hours	+12 hours	--	358 days
+24 hours	+24 hours	0 days (just prior to loading)	365 days (just prior to loading)
+48 hours	+48 hours	0 days (just after loading)	365 days (just after loading)
3 days	368 days	+3 hours	+3 hours
4 days	369 days	+6 hours	+6 hours
5 days	370 days	+12 hours	+12 hours
6 days	371 days	+24 hours	+24 hours
7 days	372 days	+48 hours	+48 hours

(Continued)

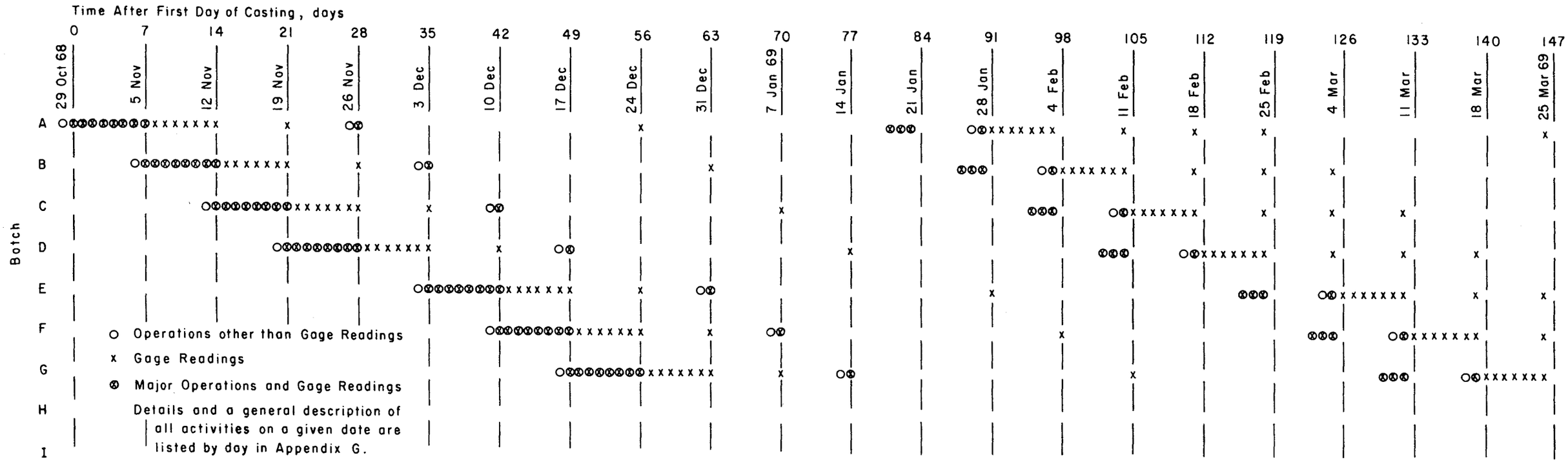
365-DAY SPECIMENS (Continued)

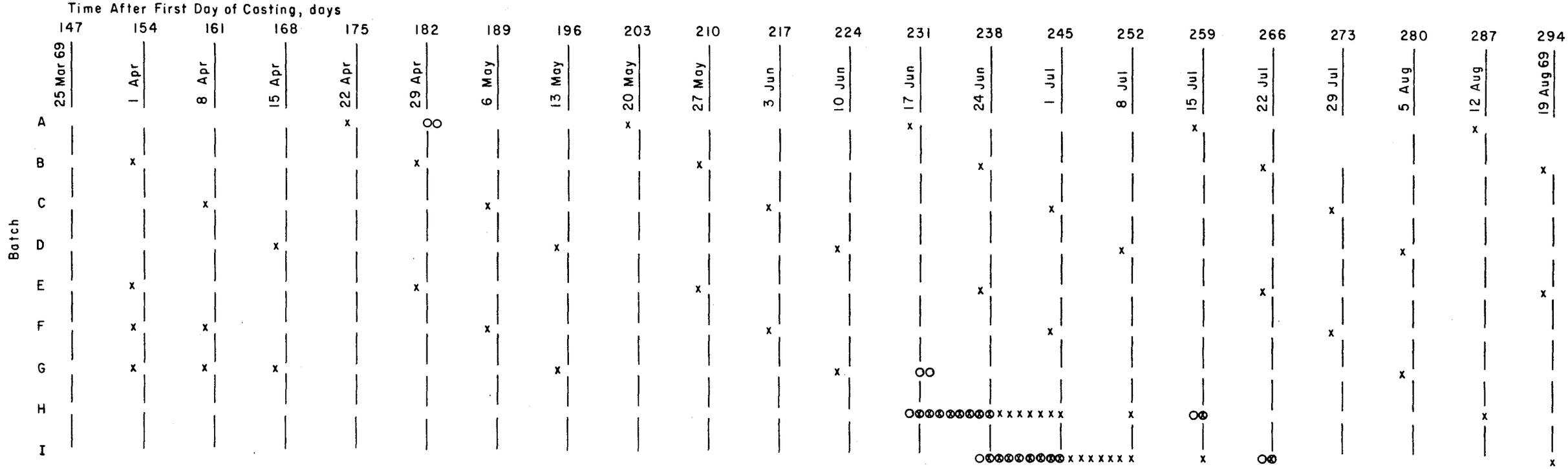
As-Cast Specimens		Air-Dried Specimens	
Time With Respect to Loading	Time With Respect to Casting	Time With Respect to Loading	Time With Respect to Casting
14 days	379 days	3 days	368 days
21 days	386 days	4 days	369 days
28 days	393 days	5 days	370 days
56 days	421 days	6 days	371 days
84 days	449 days	7 days	372 days
112 days	477 days	14 days	379 days
140 days	505 days	21 days	386 days
168 days	533 days	28 days	393 days
196 days	561 days	56 days	421 days
224 days	589 days	84 days	449 days
252 days	617 days	112 days	477 days
280 days	645 days	140 days	505 days
308 days	673 days	168 days	533 days
336 days	701 days	196 days	561 days
364 days	729 days	224 days	589 days
392 days	757 days	252 days	617 days
420 days	785 days	280 days	645 days
448 days	813 days	308 days	673 days
476 days	841 days	336 days	701 days
504 days	869 days	364 days	729 days

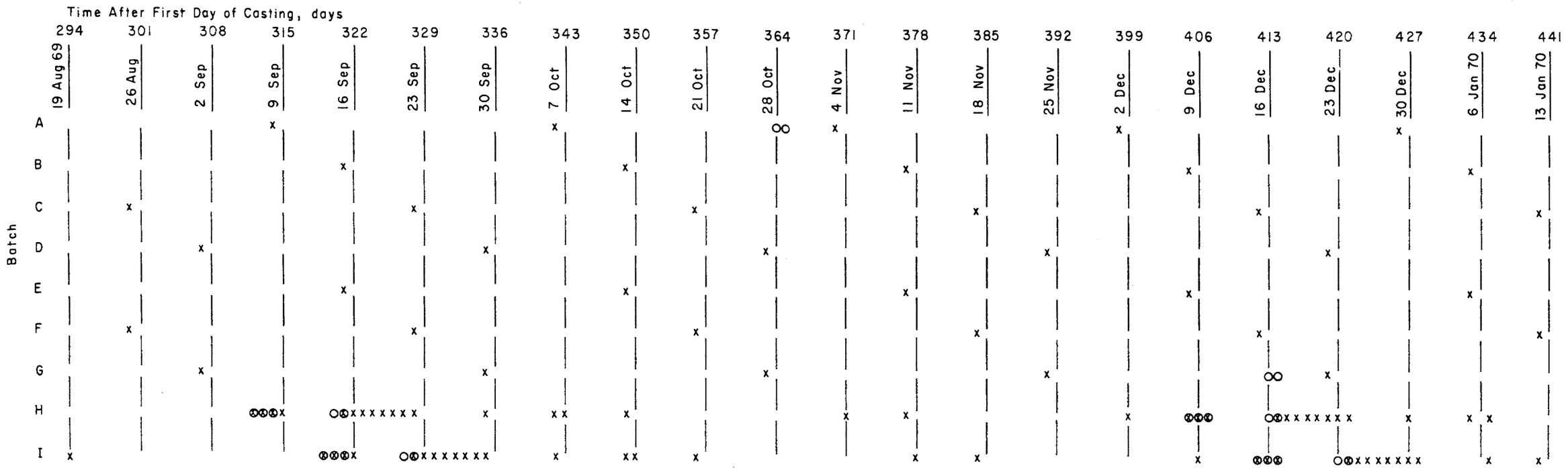
* Read gages every 28 days until test is terminated.

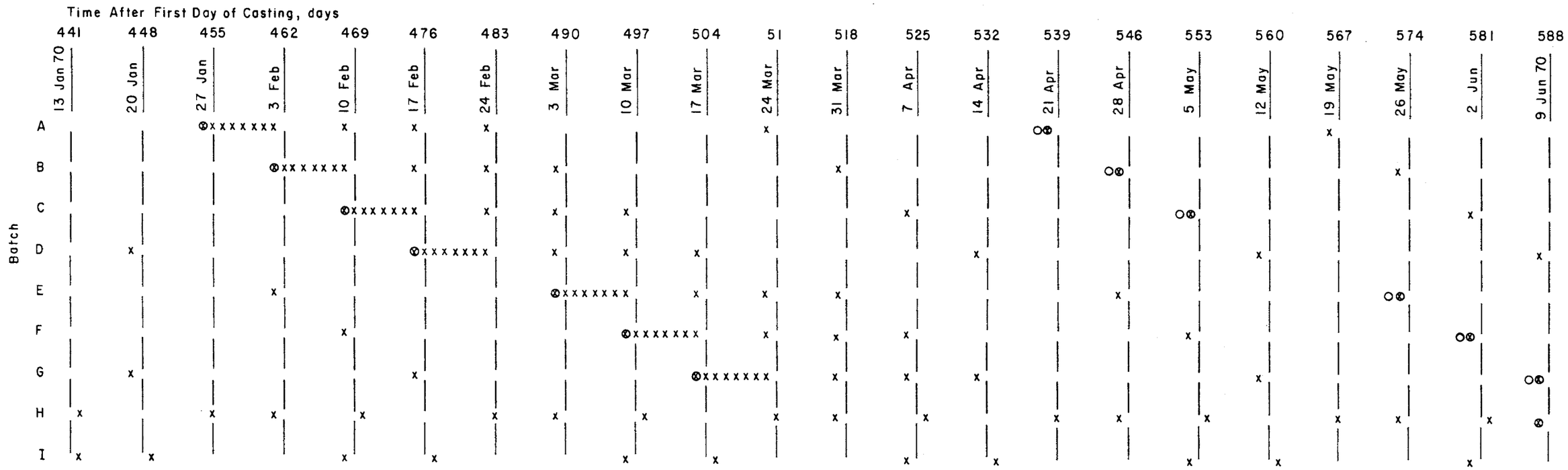
APPENDIX F

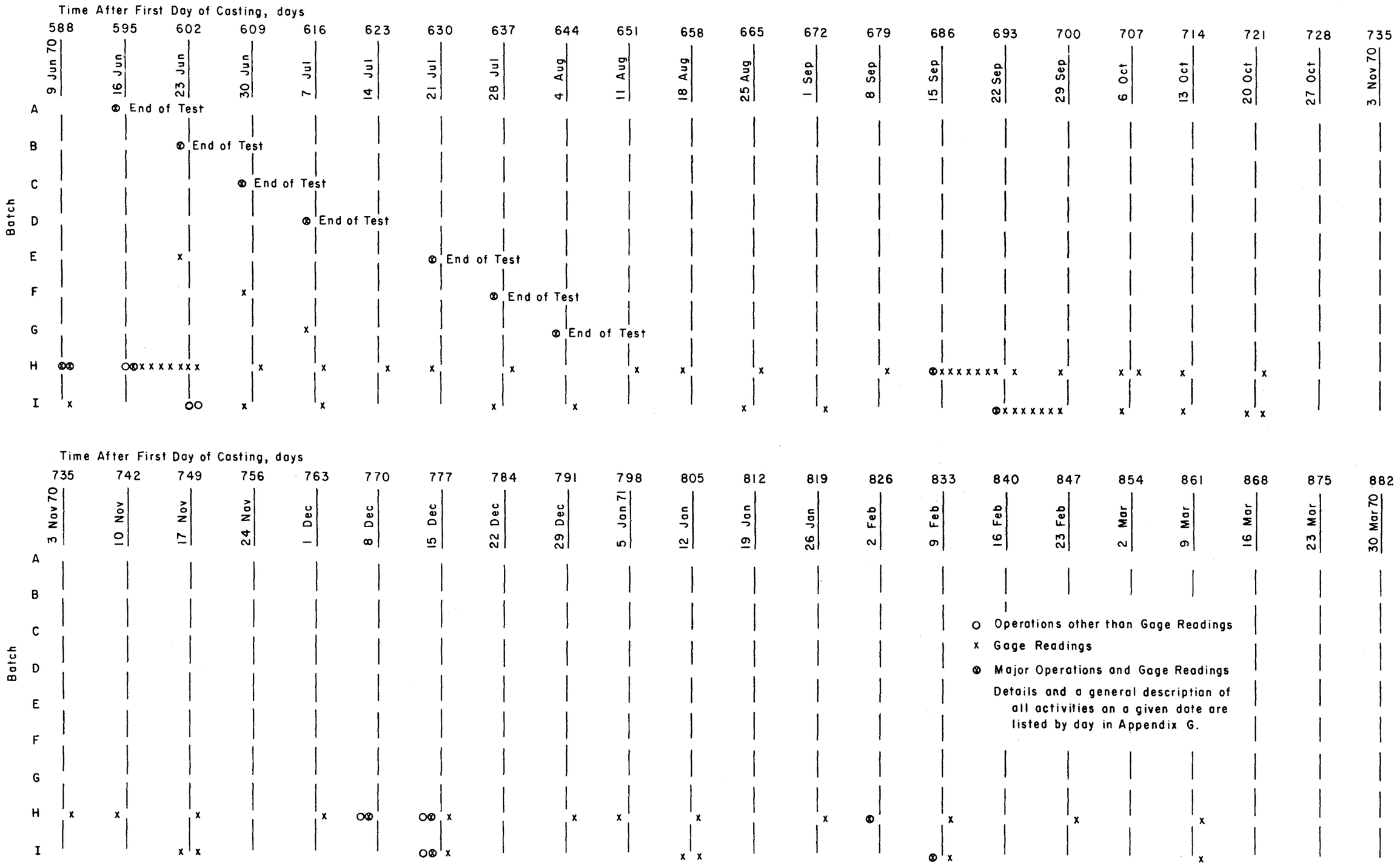
TIME FLOW DIAGRAM OF OPERATIONS AND GAGE READINGS


Time After First Day of Casting, days
0
7
14
21
28
35
42
49
56
63
70
77
84
91
98
105
112
119
126
133
140
147
29 Oct 68
5 Nov
12 Nov
19 Nov
26 Nov
3 Dec
10 Dec
17 Dec
24 Dec
31 Dec
7 Jan 69
14 Jan
21 Jan
28 Jan
4 Feb
11 Feb
18 Feb
25 Feb
4 Mar
11 Mar
18 Mar
25 Mar 69
Batch
A
B
C
D
E
F
G
H
I
O Operations other than Gage Readings
x Gage Readings
⊗ Major Operations and Gage Readings
Details and a general description of all activities on a given date are listed by day in Appendix G.


Time After First Day of Casting, days
147
154
161
168
175
182
189
196
203
210
217
224
231
238
245
252
259
266
273
280
287
294
25 Mar 69
1 Apr
8 Apr
15 Apr
22 Apr
29 Apr
6 May
13 May
20 May
27 May
3 Jun
10 Jun
17 Jun
24 Jun
1 Jul
8 Jul
15 Jul
22 Jul
29 Jul
5 Aug
12 Aug
19 Aug 69
Batch
A
B
C
D
E
F
G
H
I


Time After First Day of Casting, days
294
301
308
315
322
329
336
343
350
357
364
371
378
385
392
399
406
413
420
427
434
441
19 Aug 69
26 Aug
2 Sep
9 Sep
16 Sep
23 Sep
30 Sep
7 Oct
14 Oct
21 Oct
28 Oct
4 Nov
11 Nov
18 Nov
25 Nov
2 Dec
9 Dec
16 Dec
23 Dec
30 Dec
6 Jan 70
13 Jan 70
Batch
A
B
C
D
E
F
G
H
I


Time After First Day of Casting, days
441
448
455
462
469
476
483
490
497
504
51
518
525
532
539
546
553
560
567
574
581
588
13 Jan 70
20 Jan
27 Jan
3 Feb
10 Feb
17 Feb
24 Feb
3 Mar
10 Mar
17 Mar
24 Mar
31 Mar
7 Apr
14 Apr
21 Apr
28 Apr
5 May
12 May
19 May
26 May
2 Jun
9 Jun 70
Batch
A
B
C
D
E
F
G
H
I


Time After First Day of Casting, days
588 595 602 609 616 623 630 637 644 651 658 665 672 679 686 693 700 707 714 721 728 735
9 Jun 70 16 Jun 23 Jun 30 Jun 7 Jul 14 Jul 21 Jul 28 Jul 4 Aug 11 Aug 18 Aug 25 Aug 1 Sep 8 Sep 15 Sep 22 Sep 29 Sep 6 Oct 13 Oct 20 Oct 27 Oct 3 Nov 70
Batch
A
B
C
D
E
F
G
H
I
End of Test
735 742 749 756 763 770 777 784 791 798 805 812 819 826 833 840 847 854 861 868 875 882
3 Nov 70 10 Nov 17 Nov 24 Nov 1 Dec 8 Dec 15 Dec 22 Dec 29 Dec 5 Jan 71 12 Jan 19 Jan 26 Jan 2 Feb 9 Feb 16 Feb 23 Feb 2 Mar 9 Mar 16 Mar 23 Mar 30 Mar 70
O Operations other than Gage Readings
x Gage Readings
⊗ Major Operations and Gage Readings
Details and a general description of all activities on a given date are listed by day in Appendix G.

APPENDIX G

SUMMARY OF OPERATIONS AND GAGE READINGS

LISTING OF OPERATIONS

Operations/Specimens Involved		Additional Instructions
Day No.-1	28 Oct 68	
Batch A - PREPARE FOR CASTING		
a. 8, 6 x 16-inch specimens		(1) Assemble molds (2) Check and place gages (3) Epoxy leads (4) Oil molds
b. 18, 6 x 12-inch specimens	(As-Cast)	(1) Insert copper jackets (See Appendix C-Batch A)
c. 24, 6 x 12-inch specimens	(Air-Dried and standard)	(1) Assemble and oil molds
Day No. 0	29 Oct 68	
Batch A - CAST SPECIMENS		
a. 8, 6 x 16-inch specimens		(1) Read gages before and after casting (2) Record ambient temperature (3) Mark all specimens
b. 42, 6 x 12-inch specimens		(1) Cap 4-6 hrs after casting (2) Mark all specimens
Day No. 1	30 Oct 68	
Batch A - STRIP AND PREPARE SPECIMENS		
a. Specimens: A - 8, 9, 22, 35	(As-Cast)	(1) Remove molds (2) Wire brush and rub surfaces (3) Fill surface voids with neat cement (4) Coat with epoxy (5) Place in fog room
b. Specimens: A - 12, 19, 32, 38	(Air-Dried)	(1) Same as above, except no epoxy coat
c. 42, 6 x 12-inch specimens		(1) Remove molds (2) Place in fog room

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 1 (Continued)	
Batch A - READ GAGES	
a. Specimens: A - 8, 9, 22, 35, (As-Cast)	
b. Specimens: A - 12, 19, 32, 38 (Air-Dried)	
Day No. 2 — 31 Oct 68	
Batch A - SEAL SPECIMENS	
a. Specimens: A - 8, 9, 22, 35 (As-Cast, 6 x 16)	(1) Apply 2nd coat epoxy (2) Seal in copper (3) Store at 73.4° F
b. Specimens: A - 2, 3, 5, 6, 13, 14, 16, 17, 20, 21, 26, 28, 36, 39, 40, 45, 46, 50 (As-Cast, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy (3) Store at 73.4° F
Batch A - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: A - 8, 9, 22, 35 (As-Cast)	
b. Specimens: A - 12, 19, 32, 38 (Air-Dried)	
Batch A - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: A - 12, 19, 32, 38 (Air-Dried, 6 x 16)	(1) Store in lime-saturated water at 73.4° F
b. Specimens: A - 1, 4, 7, 10, 11, 15, 18, 23, 24, 25, 27, 29, 30, 31, 33, 34, 37, 41, 42, 43, 44, 47, 48, 49 (Air-Dried and standard 6 x 12)	(1) Store in lime-saturated water at 73.4° F
Day No. 3 — 1 Nov 68	
Batch A - WEIGH SPECIMENS AND READ GAGES	
Specimens: A - 8, 9, 22, 35 (As-Cast)	(1) If loss in weight, coat with epoxy

Operations/Specimens Involved	Additional Instructions
Day No. 4 — 2 Nov 68	
Batch A - WEIGH SPECIMENS AND READ GAGES	
Specimens: A - 8, 9, 22, 35 (As-Cast)	(1) If loss in weight, coat with epoxy
Day No. 5 — 3 Nov 68	
Batch A - WEIGH SPECIMENS AND READ GAGES	
Specimens: A - 8, 9, 22, 35 (As-Cast)	(1) If loss in weight, coat with epoxy
Day No. 6 — 4 Nov 68	
Batch B - PREPARE FOR CASTING	
a. 12, 6 x 16-inch specimens	(1) Assemble molds (2) Check and place gages (3) Epoxy leads (4) Oil molds
b. 12, 6 x 12-inch specimens (As-Cast)	(1) Insert copper jackets (see Appendix C, Batch B)
c. 28, 6 x 12-inch specimens (Air-Dried and standard)	(1) Assemble and oil molds
Batch A - WEIGH SPECIMENS AND READ GAGES	
Specimens: A - 8, 9, 22, 35 (As-Cast)	(1) If loss in weight, coat with epoxy
Day No. 7 — 5 Nov 68	
Batch B - CAST SPECIMENS	
a. 12, 6 x 16-inch specimens	(1) Read gages before and after casting (2) Record ambient temperature (3) Mark all specimens
b. 40, 6 x 12-inch specimens	(1) Cap, 4-6 hrs after casting (2) Mark all specimens

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 7 (Continued)	
Batch A - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: A - 12, 19, 32, 38 (Air-Dried, 6 x 16)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
b. Specimens: A - 1, 4, 10, 11, 15, 18, 23, 24, 27, 30, 31, 33, 34, 41, 43, 44, 47, 49 (Air-Dried, 6 x 12)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
Batch A - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: A - 8, 9, 22, 35, (As-Cast)	(1) If loss in weight, coat with epoxy
b. Specimens: A - 12, 19, 32, 38 (Air-Dried)	
Day No. 8 — 6 Nov 68	
Batch B - STRIP AND PREPARE SPECIMENS	
a. Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast)	(1) Remove molds (2) Wire brush and rub surfaces (3) Fill surface voids with neat cement (4) Coat with epoxy (5) Place in fog room
b. Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	(1) Same as above, except no epoxy coat
c. 40, 6 x 12-inch specimens	(1) Remove molds (2) Place in fog room
Batches A, B - READ GAGES	
a. Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast) Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
b. Specimens: A - 12, 19, 32, 38 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 9 — 7 Nov 68	
Batch B - SEAL SPECIMENS	
a. Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast, 6 x 16)	(1) Apply 2nd coat epoxy (2) Seal in copper (3) Store at 73.4° F
b. Specimens: B - 15, 18, 21, 25, 27, 28, 30, 33, 38, 39, 44, 45 (As-Cast, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy (3) Store at 73.4° F
Batch B - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast)	
b. Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
Batch B - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried, 6 x 16)	(1) Store in lime-saturated water at 73.4° F
b. Specimens: B - 2, 3, 6, 8, 9, 10, 11, 12, 14, 17, 20, 22, 24, 31, 32, 34, 35, 36, 37, 40, 43, 46, 47, 48, 49, 50, 51, 52 (Air-Dried and standard, 6 x 12)	(1) Store in lime-saturated water at 73.4° F
Specimens: A - 12, 19, 32, 38 (Air-Dried)	
Day No. 10 — 8 Nov 68	
Batch B - WEIGH SPECIMENS AND READ GAGES	
Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch A - READ GAGES	
Specimens: A - 12, 19, 32, 38	

Operations/Specimens Involved	Additional Instructions
Day No. 11 — 9 Nov 68	
Batch B - WEIGH SPECIMENS AND READ GAGES	
Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch A - READ GAGES	
Specimens: A - 12, 19, 32, 38 (Air-Dried)	
Day No. 12 — 10 Nov 68	
Batch B - WEIGH SPECIMENS AND READ GAGES	
Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch A - READ GAGES	
Specimens: A - 12, 19, 32, 38 (Air-Dried)	
Day No. 13 — 11 Nov 68	
Batch C - PREPARE FOR CASTING	
a. 12, 6 x 16-inch specimens	(1) Assemble molds (2) Check and place gages (3) Epoxy leads (4) Oil molds
b. 12, 6 x 12-inch specimens (As-Cast)	(1) Insert copper jackets (See Appendix C, Batch C)
c. 28, 6 x 12-inch specimens (Air-Dried and standard)	(1) Assemble and oil molds
Batch B - WEIGH SPECIMENS AND READ GAGES	
Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch A - READ GAGES	
Specimens: A - 12, 19, 32, 38 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 14 — **12 Nov 68**	
Batch C - CAST SPECIMENS	
a. 12, 6 x 16-inch specimens	(1) Read gages before and after casting (2) Record ambient temperature (3) Mark all specimens
b. 40, 6 x 12-inch specimens	(1) Cap 4-6 hrs after casting (2) Mark all specimens
Batch B - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried, 6 x 16)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
b. Specimens: B - 2, 8, 11, 17, 24, 31, 32, 35, 37, 40, 43, 46 (Air-Dried 6 x 12)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
Batch B - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast)	(1) If loss in weight, coat with epoxy
b. Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 15 — **13 Nov 68**	
Batch C - STRIP AND PREPARE SPECIMENS	
a. Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast)	(1) Remove molds (2) Wirebrush and rub surfaces (3) Fill voids with neat cement (4) Coat with epoxy (5) Place in fog room

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 15 (Continued)	
b. Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	(1) Same as above, except no epoxy coat
c. 40, 6 x 12-inch specimens	(1) Remove forms (2) Place in fog room
Batches B, C - READ GAGES	
a. Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast) C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
b. Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
Day No. 16 — 14 Nov 68	
Batch C - SEAL SPECIMENS	
a. Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast, 6 x 16)	(1) Apply 2nd coat epoxy (2) Seal in copper (3) Store at 73.4° F
b. Specimens: C - 1, 3, 8, 10, 19, 29, 30, 33, 35, 37, 38, 40 (As-Cast, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy (3) Store at 73.4° F
Batch C - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast)	
b. Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
Batch C - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried, 6 x 16)	(1) Store in lime-saturated water at 73.4° F
b. Specimens: C - 2, 4, 5, 7, 9, 14, 15, 18, 20, 21, 22, 24, 25, 26, 27, 28, 31, 32, 42, 43, 44, 45, 47, 48, 49, 50, 51, 52 (Air-Dried and standard, 6 x 12)	(1) Store in lime-saturated water at 73.4° F
Batch B - READ GAGES	
Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 17 — 15 Nov 68	
Batch C - WEIGH SPECIMENS AND READ GAGES	
Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch B - READ GAGES	
Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
Day No. 18 — 16 Nov 68	
Batch C - WEIGH SPECIMENS AND READ GAGES	
Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch B - READ GAGES	
Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
Day No. 19 — 17 Nov 68	
Batch C - WEIGH SPECIMENS AND READ GAGES	
Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch B - READ GAGES	
Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
Day No. 20 — 18 Nov 68	
Batch D - PREPARE FOR CASTING	
a. 14, 6 × 16-inch specimens	(1) Assemble molds (2) Check and place gages (3) Epoxy leads (4) Oil molds

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 20 (Continued)	
b. 10, 6 X 12-inch specimens (As-Cast)	(1) Insert copper jackets (See Appendix C, Batch D)
c. 26, 6 X 12-inch specimens (Air-Dried and standard)	(1) Assemble and oil molds
Batch C - WEIGH SPECIMENS AND READ GAGES	
Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch B - READ GAGES	
Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
Day No. 21 — 19 Nov 68	
Batch D - CAST SPECIMENS	
a. 14, 6 X 16-inch specimens	(1) Read gages before and after casting (2) Record ambient temperature (3) Mark all specimens
b. 36, 6 X 12-inch specimens	(1) Cap 4-6 hours after casting (2) Mark all specimens
Batch C - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried, 6 X 16)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
b. Specimens: C - 4, 5, 7, 9, 14, 18, 21, 24, 27, 31, 43, 44 (Air-Dried, 6 X 12)	(1) Remove from lime-saturated water (2) Store at 73.4° F
Batch C - WEIGH SPECIMENS AND READ GAGES	
Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast) C - 6, 11, 13, 17, 36, 46 (Air-Dried)	(1) If loss in weight, coat with epoxy

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 21 (Continued)	
Batches A, B - READ GAGES	
a. Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast) B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
b. Specimens: A - 12, 19, 32, 38 (Air-Dried)	
Day No. 22 — 20 Nov 68	
Batch D - STRIP AND PREPARE SPECIMENS	
a. Specimens: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast)	(1) Remove molds (2) Wire brush and rub surfaces (3) Fill voids with neat cement (4) Coat with epoxy (5) Place in fog room
b. Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	(1) Same as above, except no epoxy coat
c. 36, 6 x 12-inch specimens	(1) Remove forms (2) Place in fog room
Batches C, D - READ GAGES	
a. Specimens: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast) D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
b. Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
Day No. 23 — 21 Nov 68	
Batch D - SEAL SPECIMENS	
a. Specimens: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast, 6 x 16)	(1) Apply 2nd coat epoxy (2) Seal in copper (3) Store at 73.4° F
b. Specimens: D - 1, 6, 10, 17, 24, 27, 28, 29, 36, 39 (As-Cast, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy (3) Store at 73.4° F

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 23 (Continued)	
Batch D - WEIGH SPECIMENS AND READ GAGES	
Specimens: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast) D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
Batch D - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: D - 3, 22, 23, 33, 40, 41 44 (Air-Dried, 6 x 16)	(1) Store in lime-saturated water at 73.4° F
b. Specimens: D - 4, 5, 7, 8, 9, 11, 13, 14, 16, 18, 19, 21, 25, 30, 32, 34, 35, 37, 38, 42, 43, 45, 47, 48, 49, 50 (Air-Dried and standard, 6 x 12)	(1) Store in lime-saturated water at 73.4° F
Batch C - READ GAGES	
Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
Day No. 24 — 22 Nov 68	
Batch D - WEIGH SPECIMENS AND READ GAGES	
Specimens: D - 2, 12, 15, 20, 26, 31 46 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch C - READ GAGES	
Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
Day No. 25 — 23 Nov 68	
Batch D - WEIGH SPECIMENS AND READ GAGES	
Specimens: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch C - READ GAGES	
Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 26 — **24 Nov 68**	
Batch D - WEIGH SPECIMENS AND READ GAGES	
Specimen: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch C - READ GAGES	
Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
Day No. 27 — **25 Nov 68**	
Batch D - WEIGH SPECIMENS AND READ GAGES	
Specimens: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch C - READ GAGES	
Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
Batch A - REMOVE COPPER	
Specimens: A - 13, 14, 28 (As-Cast, 6 x 12, 28-day strength)	(1) Prepare for testing
Day No. 28 — **26 Nov 68**	
Batch D - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried, 6 X 16)	(1) Remove from lime-saturated water (2) Store at 73.4° F
b. Specimens: D - 4, 9, 13, 16, 19, 21, 30, 35, 37, 43 (Air-Dried, 6 X 12)	(1) Remove from lime-saturated water (2) Store at 73.4° F
Batch D - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast)	(1) If loss in weight, coat with epoxy
b. Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 28 (Continued) Batches A, B, C - READ GAGES a. Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast) C - 6, 11, 13, 17, 36, 46 (Air-Dried) b. Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried) c. Specimens: A - 8, 9, 22, 35 (As-Cast) A - 12, 19, 32, 38 (Air-Dried) Batch A - TEST STRENGTH Specimens: A - 13, 14, 28 (As-Cast) A - 18, 23, 43 (Air-Dried) A - 7, 25, 42 (standard)	(1) Test for 28-day compressive strength
Day No. 29 — 27 Nov 68 Batch D - READ GAGES Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
Day No. 30 — 28 Nov 68 Batch D - READ GAGES Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
Day No. 31 — 29 Nov 68 Batch D - READ GAGES Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 32 — 30 Nov 68	
Batch D - READ GAGES	
Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
Day No. 33 — 1 Dec 68	
Batch D - READ CAGES	
Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
Day No. 34 — 2 Dec 68	
Batch E - PREPARE FOR CASTING	
a. 12, 6 X 16-inch specimens	(1) Assemble molds (2) Check and place gages (3) Epoxy leads (4) Oil molds
b. 12, 6 X 12-inch specimens (As-Cast)	(1) Insert copper jackets (See Appendix C, Batch E)
c. 28, 6 X 12-inch specimens (Air-Dried and standard)	(1) Assemble and oil molds
Batch D - READ GAGES	
Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
Batch B - REMOVE COPPER	
Specimens: B - 21, 30, 33, (As-Cast 6 X 12, 28-day strength)	(1) Prepare for testing
Day No. 35 — 3 Dec 68	
Batch E - CAST SPECIMENS	
a. 12, 6 X 16-inch specimens	(1) Read gages before and after casting (2) Record ambient temperature (3) Mark all specimens
b. 40, 6 X 12-inch specimens	(1) Cap 4-6 hrs after casting (2) Mark all specimens

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 35 (Continued)	
Batches B, C, D - READ GAGES	
a. Specimens: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast) D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
b. Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
c. Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast) B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
Batch B - TEST STRENGTH	
a. Specimens: B - 21, 30, 33 (As-Cast) B - 24, 37, 46 (Air-Dried) B - 12, 20, 22, 47, 49, 51 (standard)	(1) Test for 28-day compressive strength
b. Specimens: B - 3, 36 (standard)	(1) Test for 28-day tensile strength
Day No. 36 — 4 Dec 68	
Batch E - STRIP AND PREPARE SPECIMENS	
a. Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast)	(1) Remove molds (2) Wire brush and rub surfaces (3) Fill voids with neat cement (4) Coat with epoxy (5) Place in fog room
b. Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	(1) Same as above, except no epoxy coat
c. 40, 6 × 12-inch specimens	(1) Remove forms (2) Place in fog room
Batch E - READ GAGES	
Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast) E - 1, 4, 13, 23, 40, 42 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 37 — 5 Dec 68	
Batch E - SEAL SPECIMENS	
a. Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast, 6 x 16)	(1) Apply 2nd coat epoxy (2) Seal in copper (3) Store at 73.4° F
b. Specimens: E - 3, 9, 11, 12, 17, 25, 26, 27, 33, 36, 37, 46 (As-Cast, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy (3) Store at 73.4° F
Batch E - WEIGH SPECIMENS AND READ GAGES	
Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast) E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
Batch E - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried, 6 x 16)	(1) Store in lime-saturated water at 73.4° F
b. Specimens: E - 2, 6, 7, 8, 14, 15, 16, 19, 20, 21, 22, 24, 29, 30, 31, 32, 34, 35, 38, 41, 44, 45, 47, 48, 49, 50, 51, 52 (Air-Dried and standard, 6 x 12)	(1) Store in lime-saturated water at 73.4° F
Day No. 38 — 6 Dec 68	
Batch E - WEIGH SPECIMENS AND READ GAGES	
Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast)	(1) If loss in weight, coat with epoxy
Day No. 39 — 7 Dec 68	
Batch E - WEIGH SPECIMENS AND READ GAGES	
Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast)	(1) If loss in weight, coat with epoxy

Operations/Specimens Involved	Additional Instructions
Day No. 40 — 8 Dec 68	
Batch E - WEIGH SPECIMENS AND READ GAGES	
Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast)	(1) If loss in weight, coat with epoxy
Day No. 41 — 9 Dec 68	
Batch F - PREPARE FOR CASTING	
a. 12, 6 x 16-inch specimens	(1) Assemble molds (2) Check and place gages (3) Epoxy leads (4) Oil molds
b. 12, 6 x 12-inch specimens (As-Cast)	(1) Insert copper jackets (See Appendix C, Batch F)
c. 28, 6 x 12-inch specimens (Air-Dried and standard)	(1) Assemble and oil molds
Batch E - WEIGH SPECIMENS AND READ GAGES	
Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch C - REMOVE COPPER	
Specimens: C - 8, 19, 40 (As-Cast) 6 x 12, 28-day strength)	(1) Prepare for testing
Day No. 42 — 10 Dec 68	
Batch F - CAST SPECIMENS	
a. 12, 6 x 16-inch specimens	(1) Read gages before and after casting (2) Record ambient temperature (3) Mark all specimens
b. 40, 6 x 12-inch specimens	(1) Cap 4-6 hrs after casting (2) Mark all specimens

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 42 (Continued)	
Batch E - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried, 6 x 16)	(1) Remove from lime-saturated water (2) Store at 73.4° F
b. Specimens: E - 6, 7, 15, 20, 21, 24, 29, 30, 34, 35, 44, 45 (Air-Dried, 6 x 12)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
Batch E - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: E - 5, 10, 18, 28, 39 43 (As-Cast)	(1) If loss in weight, coat with epoxy
b. Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
Batch C - TEST STRENGTH	
a. Specimens: C - 8, 19, 40 (As-Cast) C - 7, 27, 31 (Air-Dried) C - 2, 15, 45, 47, 49, 51 (standard)	(1) Test for 28-day compressive strength
b. Specimens: C - 20, 26 (standard)	(1) Test for 28-day tensile strength
Batches C, D - READ GAGES	
a. Specimens: D - 3, 22, 23, 33, 40, 41 44 (Air-Dried)	
b. Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast) C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
Day No. 43 — 11 Dec 68	
Batch F - STRIP AND PREPARE SPECIMENS	
a. Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast, 6 x 16)	(1) Remove molds (2) Wire brush and rub surfaces (3) Fill voids with neat cement (4) Coat with epoxy (5) Place in fog room

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 43 (Continued)	
b. Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried, 6 x 16)	(1) Same as above, except no epoxy coat
c. 40, 6 x 12-inch specimens	(1) Remove forms (2) Place in fog room
Batches E, F - READ GAGES	
a. Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast) F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
b. Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
Day No. 44 — 12 Dec 68	
Batch F - SEAL SPECIMENS	
a. Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast, 6 x 16)	(1) Apply 2nd coat epoxy (2) Seal in copper (3) Store at 73.4° F
b. Specimens: F - 2, 4, 11, 14, 18, 22, 24, 26, 28, 31, 38, 46 (As-Cast, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy (3) Store at 73.4° F
Batch F - WEIGH SPECIMENS AND READ GAGES	
Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast) F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
Batch F - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried, 6 x 16)	(1) Store in lime-saturated water at 73.4° F
b. Specimens: F - 1, 3, 5, 7, 8, 10, 12, 16, 19, 25, 27, 29, 32, 35, 36, 37, 39, 40, 41, 43, 44, 45, 47, 48, 49, 50, 51, 52 (Air-Dried and standard, 6 x 12)	(1) Store in lime-saturated water at 73.4° F

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 44 (Continued)	
Batch E - READ GAGES	
Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
Day No. 45 13 Dec 68	
Batch F - WEIGH SPECIMENS AND READ GAGES	
Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch E - READ GAGES	
Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
Day No. 46 14 Dec 68	
Batch F - WEIGH SPECIMENS AND READ GAGES	
Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch E - READ GAGES	
Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
Day No. 47 15 Dec 68	
Batch F - WEIGH SPECIMENS AND READ GAGES	
Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch E - READ GAGES	
Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 48 — **16 Dec 68**	
Batch G - PREPARE FOR CASTING	
a. 8, 6 x 16-inch specimens	(1) Assemble molds (2) Check and place gages (3) Epoxy leads (4) Oil molds
b. 18, 6 x 12-inch specimens (As-Cast)	(1) Insert copper jackets (See Appendix C, Batch G)
c. 24, 6 x 12-inch specimens (Air-Dried and standard)	(1) Assemble and oil molds
Batch F - WEIGH SPECIMENS AND READ GAGES	
Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch E - READ GAGES	
Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
Batch D - REMOVE COPPER	
Specimens: D - 1, 6, 24, 27, 29 (As-Cast, 6 x 12, 28-day strength)	(1) Prepare for testing
Day No. 49 — **17 Dec 68**	
Batch G - CAST SPECIMENS	
a. 8, 6 x 16-inch specimens:	(1) Read gages before and after casting (2) Record ambient temperature (3) Mark all specimens
b. 42, 6 x 12-inch specimens	(1) Cap 4-6 hrs after casting (2) Mark all specimens

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 49 (Continued)	
Batch F - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried, 6 x 16)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
b. Specimens: F - 7, 8, 12, 16, 25, 29, 32, 35, 37, 41, 44, 45 (Air-Dried, 6 x 12)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
Batch F - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast)	(1) If loss in weight, coat with epoxy
b. Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
Batches D, E - READ GAGES	
a. Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast) E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
b. Specimens: D - 2, 12, 15, 20, 26, 31, 46 (As-Cast) D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
Batch D - TEST STRENGTH	
a. Specimens: D - 1, 6, 24 (As-Cast) D - 16, 21, 30 (Air-Dried) D - 7, 8, 25, 32, 45, 49 (standard)	(1) Test for 28-day compressive strength
b. Specimens: D - 27, 29 (As-Cast) D - 9, 19 (Air-Dried) D - 18, 48 (standard)	(1) Test for 28-day tensile strength

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 50 (Continued) — 18 Dec 68	
Batch G - STRIP AND PREPARE SPECIMENS	
a. Specimens: G - 1, 9, 18, 35 (As-Cast, 6 x 16)	(1) Remove molds (2) Wire brush and rub surfaces (3) Fill voids with neat cement (4) Coat with epoxy (5) Place in fog room
b. Specimens: G - 10, 19, 21, 30 (Air-Dried, 6 x 16)	(1) Same as above, except no epoxy coat
c. 42, 6 x 12-inch specimens	(1) Remove forms (2) Place in fog room
Batches F, G - READ GAGES	
a. Specimens: G - 1, 9, 18, 35 (As-Cast) G - 10, 19, 21, 30 (Air-Dried)	
b. Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
Day No. 51 — 19 Dec 68	
Batch G - SEAL SPECIMENS	
a. Specimens: G - 1, 9, 18, 35 (As-Cast, 6 x 16)	(1) Apply 2nd coat epoxy (2) Seal in copper (3) Store at 73.4° F
b. Specimens: G - 2, 3, 4, 7, 8, 13, 15, 16, 23, 24, 29, 33, 34, 38, 40, 44, 45, 49 (As-Cast, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy (3) Store at 73.4° F
Batch G - WEIGH SPECIMENS AND READ GAGES	
Specimens: G - 1, 9, 18, 35 (As-Cast) G - 10, 19, 21, 30 (Air-Dried)	
Batch G - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: G - 10, 19, 21, 30 (Air-Dried, 6 x 16)	(1) Store in lime-saturated water at 73.4° F

(Continued)

Operations/Specimens Involved		Additional Instructions
Day No. 51 (Continued)		
b. Specimens:	G - 5, 6, 11, 12, 14, 17, 20, 22, 25, 26, 27, 28, 31, 32, 36, 37, 39, 41, 42, 43, 46, 47, 48, 50 (Air-Dried and standard, 6 x 12)	(1) Store in lime-saturated water at 73.4° F
Batch F - READ GAGES		
Specimens:	F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
Day No. 52	20 Dec 68	
Batch G - WEIGH SPECIMENS AND READ GAGES		
Specimens:	G - 1, 9, 18, 35 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch F - READ GAGES		
Specimens:	F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
Day No. 53	21 Dec 68	
Batch G - WEIGH SPECIMENS AND READ GAGES		
Specimens:	G - 1, 9, 18, 35 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch F - READ GAGES		
Specimens:	F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
Day No. 54	22 Dec 68	
Batch G - WEIGH SPECIMENS AND READ GAGES		
Specimens:	G - 1, 9, 18, 35 (As-Cast)	(1) If loss in weight, coat with epoxy

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 54 (Continued)	
Batch F - READ GAGES	
Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
Day No. 55 — 23 Dec 68	
Batch G - WEIGH SPECIMENS AND READ GAGES	
Specimens: G - 1, 9, 18, 35 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch F - READ GAGES	
Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
Day No. 56 — 24 Dec 68	
Batch G - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: G - 10, 19, 21, 30 (Air-Dried, 6 x 16)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
b. Specimens: G - 5, 6, 14, 20, 22, 26, 27, 28, 31, 32, 37, 39, 41, 42, 43, 46 47, 50 (Air-Dried, 6 x 12)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
Batch G - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: G - 1, 9, 18, 35 (As-Cast)	(1) If loss in weight, coat with epoxy
b. Specimens: G - 10, 19, 21, 30 (Air-Dried)	

(Continued)

Operations/Specimens Involved	Additional Instructions

Day No. 56 (Continued)

Batches A, E, F - READ GAGES

a. Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast)
F - 6, 17, 21, 30, 34, 42 (Air-Dried)

b. Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)

c. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38

Day No. 57 — 25 Dec 68

Batch G - READ GAGES

Specimens: G - 10, 19, 21, 30 (Air-Dried)

Day No. 58 — 26 Dec 68

Batch G - READ GAGES

Specimens: G - 10, 19, 21, 30 (Air-Dried)

Day No. 59 — 27 Dec 68

Batch G - READ GAGES

Specimens: G - 10, 19, 21, 30 (Air-Dried)

Day No. 60 — 28 Dec 68

Batch G - READ GAGES

Specimens: G - 10, 19, 21, 30 (Air-Dried)

Operations/Specimens Involved	Additional Instructions
Day No. 61 — 29 Dec 68	
Batch G - READ GAGES	
Specimens: G - 10, 19, 21, 30 (Air-Dried)	
Day No. 62 — 30 Dec 68	
Batch G - READ GAGES	
Specimens: G - 10, 19, 21, 30 (Air-Dried)	
Batch E - REMOVE COPPER	
Specimens: E - 17, 36, 37 (As-Cast, 6 x 12, 28-day strength)	(1) Prepare for testing
Day No. 63 — 31 Dec 68	
Batches B, E, F, G - READ GAGES	
a. Specimens: G - 1, 9, 18, 35 (As-Cast) G - 10, 19, 21, 30 (Air-Dried)	
b. Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried)	
c. Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast) E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
d. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Batch E - TEST STRENGTH	
a. Specimens: E - 17, 36, 37 (As-Cast) E - 21, 29, 44 (Air-Dried) E - 2, 14, 19, 47, 49, 51 (standard)	(1) Test for 28-day compressive strength
b. Specimens: E - 31, 38 (standard)	(1) Test for 28-day tensile strength

Operations/Specimens Involved		Additional Instructions
Days No. 64-68	1-5 Jan 69.	(1) No scheduled work
Day No. 69	6 Jan 69	
Batch F - REMOVE COPPER Specimens: F - 4, 18, 38 (As-Cast, 6 x 12, 28-day strength)		(1) Prepare for testing
Day No. 70.	7 Jan 69	
Batches C, F, G - READ GAGES a. Specimens: G - 10, 19, 21, 30 (Air-Dried) b. Specimens: F - 9, 13, 15, 20, 23, 33, (As-Cast) F - 6, 17, 21, 30, 34, 42 (Air-Dried) c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
Batch F - TEST STRENGTH a. Specimens: F - 4, 18, 38 (As-Cast) F - 8, 16, 35 (Air-Dried) F - 1, 19, 36, 47, 49, 51 (standard)		(1) Test for 28-day compressive strength
b. Specimens: F - 5, 39 (standard)		(1) Test for 28-day tensile strength
Days No. 71-75	8-12 Jan 69	(1) No scheduled work
Day No. 76	13 Jan 69	
Batch G - REMOVE COPPER Specimens: G - 7, 29, 40 (As-Cast, 6 x 12, 28-day strength)		(1) Prepare for testing

Operations/Specimens Involved		Additional Instructions
Day No. 77	14 Jan 69	
Batches D, G - READ GAGES		
a. Specimens: G - 1, 9, 18, 35 (As-Cast) G - 10, 19, 21, 30 (Air-Dried)		
b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
Batch G - TEST STRENGTH		
Specimens: G - 7, 29, 40 (As-Cast) G - 5, 28, 47 (Air-Dried) G - 11, 17, 48 (standard)		(1) Test for 28-day compressive strength
Days No. 78-80	15-17 Jan 69	(1) No scheduled work
Day No. 81	18 Jan 69	
Batch A - WEIGH SPECIMENS AND READ GAGES		
Specimens: A - 12, 19, 32, 38 (Air-Dried)		
Batch A - PREPARE FOR SEALING		
Specimens: A - 12, 19, 32, 38 (Air-Dried, 6 x 16)		(1) Coat with epoxy
Day No. 82	19 Jan 69	
Batch A - SEAL SPECIMENS		
a. Specimens: A - 12, 19, 32, 38 (Air-Dried, 6 x 16)		(1) Apply 2nd coat of epoxy (2) Seal in copper
b. Specimens: A - 1, 4, 10, 11, 24, 27, 30, 31, 33, 34, 41, 44 (Air-Dried, 6 x 12)		(1) Seal in copper (2) Coat solder joints with epoxy
Batch A - WEIGH SPECIMENS AND READ GAGES		
Specimens: A - 12, 19, 32, 38 (Air-Dried)		

Operations/Specimens Involved		Additional Instructions
Day No. 83	20 Jan 69	
Batch A - PREPARE FOR LOADING		
Specimens: A - 12, 19, 32, 38 (Air-Dried, 6 x 16) A - 8, 9, 22, 35 (As-Cast, 6 x 16)		(1) Seal specimens in neoprene jackets (2) Place sealed specimens in test units at 75 or 150° F (See Appendix C, Batch A)
Batch A - READ GAGES		
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		
Batch A - ENVIRONMENTAL CHANGE/STORAGE		
Specimens: A - 2, 6, 10, 11, 17, 27, 33, 36, 40, 41, 44, 46 (6 x 12)		(1) Store at 150° F
Days No. 84-87	21-24 Jan 69	(1) No scheduled work
Day No. 88	25 Jan 69	
Batch B - WEIGH SPECIMENS AND READ GAGES		
Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)		
Batch B - PREPARE FOR SEALING		
Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried, 6 x 16)		(1) Coat with epoxy
Day No. 89	26 Jan 69	
Batch B - SEAL SPECIMENS		
a. Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried, 6 x 16)		(1) Apply 2nd coat of epoxy (2) Seal in copper
b. Specimens: B - 8, 17, 40, 43 (Air-Dried, 6 x 12)		(1) Seal in copper (2) Coat solder joints with epoxy

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 89 (Continued)	
Batch B - WEIGH SPECIMENS AND READ GAGES	
Specimens: B - 1, 5, 19, 23, 26, 42 (Air-Dried)	
Batch A - REMOVE COPPER	
Specimens: A - 5, 20, 50 (As-Cast, 6 x 12, 90-day strength)	(1) Prepare for testing
Day No. 90 — 27 Jan 69	
Batch A - LOAD SPECIMENS	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to schedule in Appendix E, Batch A
Batch B - PREPARE FOR LOADING	
Specimens: B - 4, 7, 13, 16, 29, 41 (As-Cast, 6 x 16) B - 1, 5, 19, 23, 26, 42 (Air-Dried, 6 x 16)	(1) Seal specimens in neoprene jackets (2) Place sealed specimens in test units at 75 or 150° F (See Appendix C, Batch B)
Batches A, B - READ GAGES	
a. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
b. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	(1) See instructions under Batch A - LOAD SPECIMENS, above
Batch B - ENVIRONMENTAL CHANGE/STORAGE	
Specimens: B - 17, 27, 39, 40 (6 x 12)	(1) Store at 150° F
Batch A - TEST STRENGTH	
Specimens: A - 5, 20, 50 (As-Cast) A - 15, 47, 49 (Air-Dried) A - 29, 37, 48 (standard)	(1) Test for 90-day compressive strength.

Operations/Specimens Involved	Additional Instructions
Day No. 91 — 28 Jan 69	
Batches A, E - READ GAGES	
a. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
b. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 92 — 29 Jan 69	
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 93 — 30 Jan 69	
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 94 — 31 Jan 69	
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 95 — 1 Feb 69	
Batch C - WEIGH SPECIMENS AND READ GAGES	
Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
Batch C - PREPARE FOR SEALING	
Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	(1) Coat with epoxy
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	

Operations/Specimens Involved	Additional Instructions
Day No. 96 — 2 Feb 69	
Batch C - SEAL SPECIMENS	
a. Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried, 6 x 16)	(1) Apply 2nd coat of epoxy (2) Seal in copper
b. Specimens: C - 4, 9, 14, 24 (Air-Dried, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy
Batch C - WEIGH SPECIMENS AND READ GAGES	
Specimens: C - 6, 11, 13, 17, 36, 46 (Air-Dried)	
Batch B - REMOVE COPPER	
Specimens: B - 15, 18, 38, 44, 45 (As-Cast, 6 x 12, 90-day strength)	(1) Prepare for testing
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 97 — 3 Feb 69	
Batch B - LOAD SPECIMENS	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to the schedule in Appendix E, Batch B
Batch C - PREPARE FOR LOADING	
Specimens: C - 12, 16, 23, 34, 39, 41 (As-Cast, 6 x 16) C - 6, 11, 13, 17, 36, 46 (Air-Dried, 6 x 16)	(1) Seal specimens in neoprene jackets (2) Place sealed specimens in test units at 75 or 150° F (See Appendix C, Batch C)

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 97 (Continued)	
Batches A, B, C - READ GAGES	
a. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
b. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	(1) See instructions under Batch B - LOAD SPECIMENS, above
c. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Batch C - ENVIRONMENTAL CHANGE/STORAGE	
Specimens: C - 3, 4, 9, 37 (6 x 12)	(1) Store at 150° F
Batch B - TEST STRENGTH	
a. Specimens: B - 18, 44, 45 (As-Cast) B - 11, 31, 35 (Air-Dried) B - 9, 10, 34, 48, 50, 52 (standard)	(1) Test for 90-day compressive strength
b. Specimens: B - 15, 38 (As-Cast) B - 2, 32 (Air-Dried) B - 6, 14 (standard)	(1) Test for 90-day tenile strength
Day No. 98 — 4 Feb 69	
Batches B, F - READ GAGES	
a. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
b. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 99 — 5 Feb 69	
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	

Operations/Specimens Involved	Additional Instructions
Day No. 100 — 6 Feb 69	
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 101 — 7 Feb 69	
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 102 — 8 Feb 69	
Batch D - WEIGH SPECIMENS AND READ GAGES	
Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
Batch D - PREPARE FOR SEALING	
Specimens D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	(1) Coat with epoxy
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 103 — 9 Feb 69	
Batch D - SEAL SPECIMENS	
Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried, 6 X 16)	(1) Apply 2nd coat of epoxy (2) Seal in copper
Batch D - WEIGH SPECIMENS AND READ GAGES	
Specimens: D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried)	
Batch C - REMOVE COPPER	
Specimens: C - 1, 10, 29, 30, 35 (As-Cast, 6 X 12, 90-day strength)	(1) Prepare for testing

(Continued)

Operations/Specimens Involved	Additional Instructions

Day No. 103 (Continued)

Batch B - READ GAGES

Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42

Day No. 104 — 10 Feb 69

Batch C - LOAD SPECIMENS

Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46

(1) Read gages just prior to loading
(2) Read gages immediately after loading and according to the schedule in Appendix E, Batch C

Batch D - PREPARE FOR LOADING

Specimens: D - 2, 12, 15, 20, 26, 31, 46, (As-Cast, 6 x 16)
D - 3, 22, 23, 33, 40, 41, 44 (Air-Dried, 6 x 16)

(1) Seal specimens in neoprene jackets
(2) Place sealed specimens in test units at 75 or 150° F (See Appendix C, Batch D)

Batches A, B, C, D - READ GAGES

a. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46
b. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46 — (1) See instructions under Batch C - LOAD SPECIMENS, above
c. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42
d. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38

Batch C - TEST STRENGTH

a. Specimens: C - 1, 29, 35 (As-Cast)
C - 5, 43, 44 (Air-Dried)
C - 22, 25, 28, 32, 50, 52 (standard) — (1) Test for 90-day compressive strength

b. Specimens: C - 10, 30 (As-Cast)
C - 18, 21 (Air-Dried)
C - 42, 48 (standard) — (1) Test for 90-day tensile strength

Operations/Specimens Involved	Additional Instructions
Day No. 105 — 11 Feb 69	
Batches C, G - READ GAGES	
Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 106 — 12 Feb 69	
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 107 — 13 Feb 69	
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 108 — 14 Feb 69	
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 109 — 15 Feb 69	
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	

Operations/Specimens Involved	Additional Instructions
Day No. 110 — 16 Feb 69	
Batch D - REMOVE COPPER	
Specimens: D - 10, 17, 28, 36, 39 (As-Cast, 6 x 12, 90-day strength)	(1) Prepare for testing
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 111 — 17 Feb 69	
Batch D - LOAD SPECIMENS	
Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to the schedule in Appendix E, Batch D
Batch D - TEST STRENGTH	
a. Specimens: D - 28, 36, 39 (As-Cast) D - 4, 13, 35 (Air-Dried) D - 5, 11, 14, 34, 42, 47 (standard)	(1) Test for 90-day compressive strength
b. Specimens: D - 10, 17 (As-Cast) D - 37, 43 (Air-Dried) D - 38, 50 (standard)	(1) Test for 90-day tensile strength
Batches A, B, C, D - READ GAGES	
a. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	(1) See instructions under Batch D - LOAD SPECIMENS, above
b. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
c. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
d. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	

Operations/Specimens Involved	Additional Instructions
Day No. 112 — 18 Feb 69	
Batch D - READ GAGES	
Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
Day No. 113 — 19 Feb 69	
Batch D - READ GAGES	
Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
Day No. 114 — 20 Feb 69	
Batch D - READ GAGES	
Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
Day No. 115 — 21 Feb 69	
Batch D - READ GAGES	
Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
Day No. 116 — 22 Feb 69	
Batch E - WEIGH SPECIMENS AND READ GAGES	
Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	
Batch E - PREPARE FOR SEALING	
Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)	(1) Apply 1st coat of epoxy
Batch D - READ GAGES	
Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	

Operations/Specimens Involved	Additional Instructions

Day No. 117 — 23 Feb 69

Batch E - SEAL SPECIMENS

a. Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried, 6 x 16)
   (1) Apply 2nd coat of epoxy
   (2) Seal in copper

b. Specimens: E - 6, 20, 30, 34 (Air-Dried, 6 x 12)
   (1) Seal in copper
   (2) Coat solder joints with epoxy

Batch E - WEIGH SPECIMENS AND READ GAGES

Specimens: E - 1, 4, 13, 23, 40, 42 (Air-Dried)

Batch D - READ GAGES

Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46

Day No. 118 — 24 Feb 69

Batch E - PREPARE FOR LOADING

Specimens: E - 5, 10, 18, 28, 39, 43 (As-Cast, 6 x 16)
E - 1, 4, 13, 23, 40, 42 (Air-Dried, 6 x 16)
   (1) Seal specimens in neoprene jackets
   (2) Place sealed specimens in test units at 75 or 150° F (See Appendix C, Batch E)

Batch E - ENVIRONMENTAL CHANGE/STORAGE

Specimens: E - 6, 20, 26, 46 (6 x 12)
   (1) Store at 150° F

Batches A, B, C, D, E - READ GAGES

a. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43

b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46

c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46

d. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42

e. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38

Operations/Specimens Involved		Additional Instructions
Days No. 119-122	25-28 Feb 69	(1) No scheduled work
Day No. 123	1 Mar 69	
Batch F - WEIGH SPECIMENS AND READ GAGES		
Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried)		
Batch F - PREPARE FOR SEALING		
Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried)		(1) Apply 1st coat of epoxy
Day No. 124	2 Mar 69	
Batch F - SEAL SPECIMENS		
a. Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried, 6 x 16)		(1) Apply 2nd coat of epoxy (2) Seal in copper
b. Specimens: F - 7, 32, 37, 41 (Air-Dried, 6 x 12)		(1) Seal in copper (2) Coat solder joints with epoxy
Batch F - WEIGH SPECIMENS AND READ GAGES		
Specimens: F - 6, 17, 21, 30, 34, 42 (Air-Dried)		
Batch E - REMOVE COPPER		
Specimens: E - 3, 9, 11, 25, 33 (As-Cast, 6 x 12, 90-day strength)		(1) Prepare for testing
Batches B, C, D - READ GAGES		
a. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
b. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
c. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		

Operations/Specimens Involved	Additional Instructions

Day No. 125 — 3 Mar 69

Batch E - LOAD SPECIMENS

Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43

(1) Read gages just prior to loading
(2) Read gages immediately after loading and according to the schedule in Appendix E, Batch E

Batch F - PREPARE FOR LOADING

Specimens: F - 9, 13, 15, 20, 23, 33 (As-Cast, 6 x 16)
F - 6, 17, 21, 30, 34, 42 (Air-Dried, 6 x 16)

(1) Seal specimens in neoprene jackets
(2) Place sealed specimens in test units at 75 or 150° F (See Appendix C, Batch F)

Batch F - ENVIRONMENTAL CHANGE/STORAGE

Specimens: F - 7, 11, 32, 46 (6 x 12)

(1) Store at 150° F

Batches B, C, D, E, F - READ GAGES

a. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42

b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43

(1) See instructions under Batch E - LOAD SPECIMENS, above

c. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46

d. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46

e. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42

Batch E - TEST STRENGTH

a. Specimens: E - 9, 11, 33 (As-Cast)
E - 24, 35, 45 (Air-Dried)
E - 16, 22, 32, 48, 50, 52 (standard)

(1) Test for 90-day compressive strength

b. Specimens: E - 3, 25 (As-Cast)
E - 7, 15 (Air-Dried)
E - 8, 41 (standard)

(1) Test for 90-day tensile strength

Operations/Specimens Involved	Additional Instructions
Day No. 126 — 4 Mar 69	
Batch E - READ GAGES	
Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
Day No. 127 — 5 Mar 69	
Batch E - READ GAGES	
Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
Day No. 128 — 6 Mar 69	
Batch E - READ GAGES	
Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
Day No. 129 — 7 Mar 69	
Batch E - READ GAGES	
Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
Day No. 130 — 8 Mar 69	
Batch G - WEIGH SPECIMENS AND READ GAGES	
Specimens: G - 10, 19, 21, 30 (Air-Dried)	
Batch G - PREPARE FOR SEALING	
Specimens: G - 10, 19, 21, 30 (Air-Dried)	(1) Apply 1st coat of epoxy
Batch E - READ GAGES	
Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	

Operations/Specimens Involved	Additional Instructions
Day No. 131 — **9 Mar 69**	
Batch G - SEAL SPECIMENS	
a. Specimens: G - 10, 19, 21, 30 (Air-Dried, 6 x 16)	(1) Apply 2nd coat of epoxy (2) Seal in copper
b. Specimens: G - 6, 22, 26, 27, 31, 32, 37, 39, 41, 42, 43, 46 (Air-Dried, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy
Batch G - WEIGH SPECIMENS AND READ GAGES	
Specimens: G - 10, 19, 21, 30 (Air-Dried)	
Batch F - REMOVE COPPER	
Specimens: F - 22, 24, 26, 28, 31 (As-Cast, 6 x 12, 90-day strength)	(1) Prepare for testing
Batch E - READ GAGES	
Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
Day No. 132 — **10 Mar 69**	
Batch F - LOAD SPECIMENS	
Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to the schedule in Appendix E, Batch F
Batch G - PREPARE FOR LOADING	
Specimens: G - 1, 9, 18, 35 (As-Cast, 6 x 16) G - 10, 19, 21, 30 (Air-Dried, 6 x 16)	(1) Seal specimens in neoprene jackets (2) Place sealed specimens in test units at 75 or 150° F (See Appendix C, Batch G)
Batch G - ENVIRONMENTAL CHANGE/STORAGE	
Specimens: G - 2, 8, 16, 22, 23, 31, 32, 34, 39, 41, 43, 44 (6 x 12)	(1) Store at 150° F

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 132 (Continued)	
Batches C, D, E, F, G - READ GAGES	
a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	(1) See instructions under Batch F - LOAD SPECIMENS, above
c. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
d. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
e. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Batch F - TEST STRENGTH	
a. Specimens: F - 22, 28, 31 (As-Cast) F - 12, 25, 45 (Air-Dried) F - 3, 40, 43, 48, 50, 52 (standard)	(1) Test for 90-day compressive strength
b. Specimens: F - 24, 26 (As-Cast) F - 29, 44 (Air-Dried) F - 10, 27 (standard)	(1) Test for 90-day tensile strength
Day No. 133 — **11 Mar 69**	
Batch F - READ GAGES	
Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
Day No. 134 — **12 Mar 69**	
Batch F - READ GAGES	
Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	

Operations/Specimens Involved	Additional Instructions
Day No. 135 — 13 Mar 69	
Batch F - READ GAGES Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
Day No. 136 — 14 Mar 69	
Batch F - READ GAGES Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
Day No. 137 — 15 Mar 69	
Batch F - READ GAGES Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
Day No. 138 — 16 Mar 69	
Batch G - REMOVE COPPER Specimens: G - 33, 45, 49 (As-Cast, 6 x 12, 90-day strength)	(1) Prepare for testing
Batch F - READ GAGES Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
Day No. 139 — 17 Mar 69	
Batch G - LOAD SPECIMENS Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to the schedule in Appendix E, Batch F

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 139 (Continued)	
Batches D, E, F, G - READ GAGES	
a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	(1) See instructions under Batch G - LOAD SPECIMENS, above
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
c. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
d. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
Batch G - TEST STRENGTH	
Specimens: G - 33, 45, 49 (As-Cast) G - 14, 20, 50 (Air-Dried) G - 12, 25, 36 (standard)	(1) Test for 90-day compressive strength
Day No. 140 — 18 Mar 69	
Batch G - READ GAGES	
Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	
Day No. 141 — 19 Mar 69	
Batch G - READ GAGES	
Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	
Day No. 142 — 20 Mar 69	
Batch G - READ GAGES	
Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	

Operations/Specimens Involved	Additional Instructions

Day No. 143 — 21 Mar 69

Batch G - READ GAGES

Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35

Day No. 144 — 22 Mar 69

Batch G - READ GAGES

Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35

Day No. 145 — 23 Mar 69

Batch G - READ GAGES

Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35

Day No. 146 — 24 Mar 69

Batches A, E, F, G - READ GAGES

a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35

b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42

c. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43

d. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38

Days No. 147-152 — 25-30 Mar 69 — (1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 153	31 Mar 69	
Batches B, E, F, G - READ GAGES		
a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35		
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42		
c. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43		
d. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		
Days No. 154-159	1-6 Apr 69	(1) No scheduled work
Day No. 160	7 Apr 69	
Batches C, F, G - READ GAGES		
a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35		
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42		
c. Specimens: C - 6, 11, 12, 13, 16, 17, 23 34, 36, 39, 41, 46		
Days No. 161-166	8-13 Apr 69	(1) No scheduled work
Day No. 167	14 Apr 69	
Batches D, G - READ GAGES		
a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35		
b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		

Operations/Specimens Involved		Additional Instructions
Days No. 168-173	15-20 Apr 69	(1) No scheduled work
Day No. 174	21 Apr 69	
Batch A - READ GAGES Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		
Days No. 175-180	22-27 Apr 69	(1) No scheduled work
Day No. 181	28 Apr 69	
Batches B, E - READ GAGES a. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43 b. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		
Day No. 182	29 Apr 69	
Batch A - REMOVE COPPER Specimens: A - 1, 10, 16, 17, 30, 36, 39, 41 (6 x 12, 183-day strength)		(1) Prepare for testing (2) Store at 75° F
Day No. 183	30 Apr 69	
Batch A - TEST STRENGTH Specimens: A - 16, 17, 36, 39 (As-Cast) A - 1, 10, 30, 41 (Air-Dried)		(1) Test for 183-day compressive strength

Operations/Specimens Involved		Additional Instructions
Days No. 184-187	1-4 May 69	(1) No scheduled work
Day No. 188	5 May 69	
Batches C, F - READ GAGES a. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42 b. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
Days No. 189-194	6-11 May 69	(1) No scheduled work
Day No. 195	12 May 69	
Batches D, G - READ GAGES a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
Days No. 196-201	13-18 May 69	(1) No scheduled work
Day No. 202	19 May 69	
Batch A - READ GAGES Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		
Days No. 203-208	20-25 May 69	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 209	26 May 69	
Batches B, E - READ GAGES		
a. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43		
b. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		
Days No. 210-215	27 May-1 June 69	(1) No scheduled work
Day No. 216	2 June 69	
Batches C, F - READ GAGES		
a. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42		
b. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
Days No. 217-222	3-8 June 69	(1) No scheduled work
Day No. 223	9 June 69	
Batches D, G - READ GAGES		
a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35		
b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
Days No. 224-229	10-15 June 69	(1) No scheduled work

Operations/Specimens Involved	Additional Instructions
Day No. 230 — 16 June 69	
Batch H - PREPARE FOR CASTING	
a. 14, 6 x 16-inch specimens	(1) Assemble molds (2) Check and place gages (3) Epoxy leads (4) Oil molds
b. 15, 6 x 12-inch specimens (As-Cast)	(1) Insert copper jackets (See Appendix C, Batch H)
c. 21, 6 x 12-inch specimens (Air-Dried and standard)	(1) Assemble and oil molds
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 231 — 17 June 69	
Batch H - CAST SPECIMENS	
a. 14, 6 x 16-inch specimens	(1) Read gages before and after casting (2) Record ambient temperature (3) Mark all specimens
b. 36, 6 x 12-inch specimens	(1) Cap 4-6 hrs after casting (2) Mark all specimens
Batch G - REMOVE COPPER	
Specimens: G - 15, 16, 23, 26, 37, 38, 39, 43	(1) Prepare for testing (2) Store at 75° F
Day No. 232 — 18 June 69	
Batch H - STRIP AND PREPARE SPECIMENS	
a. Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast)	(1) Remove molds (2) Wire brush and rub surfaces (3) Fill surface voids with neat cement (4) Coat with epoxy (5) Place in fog room

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 232 (Continued)	
b. Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)	(1) Same as above, except no epoxy coat
c. 36, 6 x 12-inch specimens	(1) Remove molds (2) Place in fog room
Batch G - TEST STRENGTH	
Specimens: G - 15, 16, 23, 38 (As-Cast) G - 26, 37, 39, 43 (Air-Dried)	(1) Test for 183-day compressive strength
Batch H - READ GAGES	
a. Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast)	
b. Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)	
Day No. 233 — 19 June 69	
Batch H - SEAL SPECIMENS	
a. Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast, 6 x 16)	(1) Apply 2nd coat epoxy (2) Seal in copper (3) Store at 73.4° F
b. Specimens: H - 3, 9, 11, 18, 19, 20, 23, 25, 26, 33, 37, 41, 42, 43, 46 (As-Cast, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy (3) Store at 73.4° F
Batch H - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast)	
b. Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)	
Batch H - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried, 6 x 16)	(1) Store in lime-saturated water at 73.4° F

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 233 (Continued)	
b. Specimens: H - 2, 6, 7, 8, 10, 12, 13, 15, 21, 27, 29, 30, 32, 36, 39, 40 44, 47, 48, 49, 50 (Air-Dried and standard, 6 x 12)	(1) Store in lime-saturated water at 73.4° F
Day No. 234 — 20 June 69	
Batch H - WEIGH SPECIMENS AND READ GAGES	
Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast)	(1) If loss in weight, coat with epoxy
Day No. 235 — 21 June 69	
Batch H - WEIGH SPECIMENS AND READ GAGES	
Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast)	(1) If loss in weight, coat with epoxy
Day No. 236 — 22 June 69	
Batch H - WEIGH SPECIMENS AND READ GAGES	
Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast)	(1) If loss in weight, coat with epoxy
Day No. 237 — 23 June 69	
Batch I - PREPARE FOR CASTING	
a. 10, 6 x 16-inch specimens	(1) Assemble molds (2) Check and place gages (3) Epoxy leads (4) Oil molds
b. 18, 6 x 12-inch specimens (As-Cast)	(1) Insert copper jackets (See Appendix C, Batch I)
c. 24, 6 x 12-inch specimens (Air-Dried and standard)	(1) Assemble and oil molds

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 237 (Continued)	
Batch H - WEIGH SPECIMENS AND READ GAGES	
Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast)	(1) If loss in weight, coat with epoxy
Batches B, E - READ GAGES	
a. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
b. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 238 — 24 June 69	
Batch I - CAST SPECIMENS	
a. 10, 6 x 16-inch specimens	(1) Read gages before and after casting (2) Record ambient temperature (3) Mark all specimens
b. 42, 6 x 12-inch specimens	(1) Cap 4-6 hrs after casting (2) Mark all specimens
Batch H - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried, 6 x 16)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
b. Specimens: H - 2, 6, 7, 10, 12, 21, 27, 29, 30, 36, 40, 44, 47, 48, 49 (Air-Dried, 6 x 12)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
Batch H - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast)	(1) If loss in weight, coat with epoxy
b. Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 239 — **25 June 69**	
Batch I - STRIP AND PREPARE SPECIMENS	
a. Specimens: I - 16, 21, 23, 27 (As-Cast)	(1) Remove molds (2) Wire brush and rub surfaces (3) Fill surface voids with neat cement (4) Coat with epoxy (5) Place in fog room
b. Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	(1) Same as above, except no epoxy coat
c. 42, 6 x 12-inch specimens	(1) Remove molds (2) Place in fog room
Batches H, I - READ GAGES	
a. Specimens: I - 16, 21, 23, 27 (As-Cast) I - 1, 13, 17, 20, 30, 39 (Air-Dried)	
b. Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)	
Day No. 240 — **26 June 69**	
Batch I - SEAL SPECIMENS	
a. Specimens: I - 16, 21, 23, 27 (As-Cast, 6 x 16)	(1) Apply 2nd coat epoxy (2) Seal in copper (3) Store at 73.4° F
b. Specimens: I - 2, 3, 7, 8, 10, 11, 12, 14, 19, 24, 25, 40, 41, 44, 46, 48, 50, 51 (As-Cast, 6 x 12)	(1) Seal in copper (2) Coat solder joints with epoxy (3) Store at 73.4° F
Batch I - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: I - 16, 21, 23, 27 (As-Cast)	
b. Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	

(Continued)

Operations/Specimens Involved	Additional Instructions

Day No. 240 (Continued)

Batch I - ENVIRONMENTAL CHANGE/STORAGE

a. Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried, 6 x 16) — (1) Store in lime-saturated water at 73.4° F

b. Specimens: I - 4, 5, 6, 9, 15, 18, 22, 26, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 42, 43, 45, 47, 49, 52 (Air-Dried and standard, 6 x 12) — (1) Store in lime-saturated water at 73.4° F

Batch H - READ GAGES

Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)

Day No. 241 — 27 June 69

Batch I - WEIGH SPECIMENS AND READ GAGES

Specimens: I - 16, 21, 23, 27 (As-Cast) — (1) If loss in weight, coat with epoxy

Batch H - READ GAGES

Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)

Day No. 242 — 28 June 69

Batch I - WEIGH SPECIMENS AND READ GAGES

Specimens: I - 16, 21, 23, 27 (As-Cast) — (1) If loss in weight, coat with epoxy

Batch H - READ GAGES

Specimens: H - 1, 4, 14, 16, 17, 31 35, 38 (Air-Dried)

Operations/Specimens Involved	Additional Instructions
Day No. 243 — 29 June 69	
Batch I - WEIGH SPECIMENS AND READ GAGES	
Specimens: I - 16, 21, 23, 27 (As-Cast)	(1) If loss in weight, coat with epoxy
Batch H - READ GAGES	
Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)	
Day No. 244 — 30 June 69	
Batch I - WEIGH SPECIMENS AND READ GAGES	
Specimens: I - 16, 21, 23, 27 (As-Cast)	(1) If loss in weight, coat with epoxy
Batches C, F, H - READ GAGES	
a. Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)	
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 245 — 1 July 69	
Batch I - ENVIRONMENTAL CHANGE/STORAGE	
a. Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried, 6 x 16)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
b. Specimens: I - 4, 5, 6, 9, 15, 18, 22, 28, 31, 33, 34, 35, 37, 38, 42, 45, 47, 52 (Air-Dried, 6 x 12)	(1) Remove from lime-saturated water (2) Store at 73.4° F, 60% relative humidity
Batch I - WEIGH SPECIMENS AND READ GAGES	
a. Specimens: I - 16, 21, 23, 27 (As-Cast)	(1) If loss in weight, coat with epoxy
b. Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 245 (Continued) Batch H - READ GAGES Specimens: H - 1, 4, 5, 14, 16, 17, 22, 24, 28, 31, 34, 35, 38, 45	
Day No. 246 2 July 69 Batch I - READ GAGES Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	
Day No. 247 3 July 69 Batch I - READ GAGES Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	
Day No. 248 4 July 69 Batch I - READ GAGES Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	
Day No. 249 5 July 69 Batch I - READ GAGES Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	
Day No. 250 6 July 69 Batch I - READ GAGES Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 251 — 7 July 69	
Batches D, I - READ GAGES	
a. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
b. Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	
Day No. 252 — 8 July 69	
Batches H, I - READ GAGES	
a. Specimens: I - 16, 21, 23, 27 (As-Cast) I - 1, 13, 17, 20, 30, 39 (Air-Dried)	
b. Specimens: H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)	
Days No. 253-257 — 9-13 July 69	(1) No scheduled work
Day No. 258 — 14 July 69	
Batch H - REMOVE COPPER	
Specimens: H - 11, 19, 33 (As-Cast, 6 × 12, 28-day strength)	(1) Prepare for testing
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 259 — 15 July 69	
Batches H, I - READ GAGES	
Specimens: I - 1, 13, 17, 20, 30, 39 (Air-Dried)	

(Continued)

Operations/Specimens Involved		Additional Instructions
Day No. 259 (Continued)		
Specimens: H - 5, 22, 24, 28, 34, 45 (As-Cast) H - 1, 4, 14, 16, 17, 31, 35, 38 (Air-Dried)		
Batch H - TEST STRENGTH		
Specimens: H - 11, 19, 33 (As-Cast) H - 7, 40, 48 (Air-Dried) H - 8, 13, 32 (standard)		(1) Test for 28-day compressive strength
Days No. 260-264	16-20 July 69	(1) No scheduled work
Day No. 265	21 July 69	
Batch I - REMOVE COPPER		
Specimens: I - 12, 48, 51 (As-Cast, 6 x 12, 28-day strength)		(1) Prepare for testing
Batches B, E - READ GAGES		
a. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		
b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43		
Day No. 266	22 July 69	
Batch I - READ GAGES		
Specimens: I - 16, 21, 23, 27 (As-Cast) I - 1, 13, 17, 20, 30, 39 (Air-Dried)		
Batch I - TEST STRENGTH		
Specimens: I - 12, 48, 51 (As-Cast) I - 9, 15, 18 (Air-Dried) I - 26, 29, 32 (standard)		(1) Test for 28-day compressive strength

Operations/Specimens Involved		Additional Instructions
Days No. 267-271	23-27 July 69	(1) No scheduled work
Day No. 272	28 July 69	
Batches C, F - READ GAGES a. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42 b. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
Days No. 273-278	29 July-3 Aug 69	(1) No scheduled work
Day No. 279	4 Aug 69	
Batches D, G - READ GAGES a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
Days No. 280-285	5-10 Aug 69	(1) No scheduled work
Day No. 286	11 Aug 69	
Batch A - READ GAGES Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		
Day No. 287	12 Aug 69	
Batch H - READ GAGES Specimens: H - 1, 4, 5, 14, 16, 17, 22, 24, 28, 31, 34, 35, 38, 45		

Operations/Specimens Involved		Additional Instructions
Days No. 288-292	13-17 Aug 69	(1) No scheduled work
Day No. 293	18 Aug 69	
Batches B, E - READ GAGES a. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42 b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43		
Day No. 294	19 Aug 69	
Batch I - READ GAGES Specimens: I - 1, 13, 16, 17, 20, 21, 23, 27, 30, 39		
Days No. 295-299	20-24 Aug 69	(1) No scheduled work
Day No. 300	25 Aug 69	
Batches C, F - READ GAGES a. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46 b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42		
Days No. 301-306	26-31 Aug 69	(1) No scheduled work
Day No. 307	1 Sept 69	
Batches D, G - READ GAGES a. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46 b. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35		

Operations/Specimens Involved		Additional Instructions
Days No. 308-311	2-5 Sept 69	(1) No scheduled work
Day No. 312	6 Sept 69	
Batch H - WEIGH SPECIMENS AND READ GAGES		
Specimens: H - 1, 14 (Air-Dried, 90 day replacements)		
Batch H - PREPARE FOR SEALING		
Specimens: H - 1, 14 (Air-Dried, 6 x 16)		(1) Coat with epoxy
Day No. 313	7 Sept 69	
Batch H - SEAL SPECIMENS		
a. Specimens: H - 1, 14 (Air-Dried, 6 x 16)		(1) Apply 2nd coat of epoxy (2) Seal in copper
b. Specimens: H - 2, 10, 12, 21, 27, 29, 44, 47, 49 (Air-Dried, 6 x 12)		(1) Seal in copper (2) Coat solder joints with epoxy
Batch H - WEIGH SPECIMENS AND READ GAGES		
Specimens: H - 1, 14 (Air-Dried)		
Day No. 314	8 Sept 69	
Batch H - PREPARE FOR LOADING		
Specimens: H - 22, 28 (As-Cast, 6 x 16) H - 1, 14 (Air-Dried, 6 x 16)		(1) Seal specimens in neoprene jackets (2) Place sealed specimens in test units at 75° F. (See Appendix C, Batch H)
Batch H - READ GAGES		
a. Specimens: H - 1, 14, 22, 28		
b. Specimens: H - 8, 9, 12, 19, 22, 32, 35, 38		

Operations/Specimens Involved		Additional Instructions
Day No. 315	9 Sept 69	
Batch H - READ GAGES		
Specimens H - 4, 5, 16, 17, 24, 28, 31, 34, 35, 38, 45		
Days No. 316-318	10-12 Sept 69	(1) No scheduled work
Day No. 319	13 Sept 69	
Batch I - WEIGH SPECIMENS AND READ GAGES		
Specimens: I - 1, 13, 30 (Air-Dried)		
Batch I - PREPARE FOR SEALING		
Specimens: I - 1, 13, 30 (Air-Dried, 6 x 16)		(1) Coat with epoxy
Day No. 320	14 Sept 69	
Batch I - SEAL SPECIMENS		
a. Specimens: I - 1, 13, 30 (Air-Dried, 6 x 16)		(1) Apply 2nd coat of epoxy (2) Seal in copper
b. Specimens: I - 5, 9, 22, 31, 33, 34, 35, 37, 38, 42, 45, 47, 52		(1) Seal in copper (2) Coat solder joints with epoxy
Batch I - WEIGH SPECIMENS AND READ GAGES		
Specimens: I - 1, 13, 30 (Air-Dried)		
Batch H - REMOVE COPPER		
Specimens: H - 25, 37, 46 (As-Cast, 6 x 12, 90-day strength)		(1) Prepare for testing

Operations/Specimens Involved	Additional Instructions
Day No. 321 — **15 Sept 69**	
Batch H - LOAD SPECIMENS	
Specimens: H - 1, 14, 22, 28 (90 day replacements)	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to the schedule in Appendix E, Batch H
Batch I - PREPARE FOR LOADING	
Specimens: I - 16, 21, 27 (As-Cast, 6 x 16) I - 1, 13, 30 (Air-Dried, 6 x 16)	(1) Seal specimens in neoprene jackets (2) Place sealed specimens in test units at 75 or 150° F (See Appendix C, Batch I)
Batches B, E, H, I - READ GAGES	
a. Specimens: I - 1, 13, 16, 21, 27, 30	
b. Specimens: H - 1, 14, 22, 28	(1) See instructions under Batch H - LOAD SPECIMENS, above
c. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
d. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Batch I - ENVIRONMENTAL CHANGE/STORAGE	
Specimens: I - 2, 3, 5, 8, 10, 11, 14, 22, 31, 35, 37, 47	(1) Store at 150° F
Batch H - TEST STRENGTH	
Specimens: H - 25, 37, 46 (As-Cast) H - 6, 30, 36 (Air-Dried) H - 15, 39, 50 (standard)	(1) Test for 90-day compressive strength
Day No. 322 — **16 Sept 69**	
Batches H, I - READ GAGES	
a. Specimens: I - 17, 20, 23, 39	
b. Specimens: H - 1, 14, 22, 28	

Operations/Specimens Involved	Additional Instructions
Day No. 323 — 17 Sept 69	
Batch H - READ GAGES	
Specimens: H - 1, 14, 22, 28	
Day No. 324 — 18 Sept 69	
Batch H - READ GAGES	
Specimens: H - 1, 14, 22, 28	
Day No. 325 — 19 Sept 69	
Batch H - READ GAGES	
Specimens: H - 1, 14, 22, 28	
Day No. 326 — 20 Sept 69	
Batch H - READ GAGES	
Specimens: H - 1, 14, 22, 28	
Day No. 327 — 21 Sept 69	
Batch I - REMOVE COPPER	
Specimens: I - 40, 44, 46 (As-Cast, 6 × 12, 90-day strength)	(1) Prepare for testing
Batch H - READ GAGES	
Specimens: H - 1, 14, 22, 28	

Operations/Specimens Involved	Additional Instructions
Day No. 328 — 22 Sept 69	
Batch I - LOAD SPECIMENS	
Specimens: I - 1, 13, 16, 21, 27, 30	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to the schedule in Appendix E, Batch I
Batches C, F, H, I - READ GAGES	
a. Specimens: I - 1, 13, 16, 21, 27, 30	(1) See instructions under Batch I - LOAD SPECIMENS, above
b. Specimens: H - 1, 14, 22, 28	
c. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
d. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Batch I - TEST STRENGTH	
Specimens: I - 40, 44, 46 (As-Cast) I - 4, 6, 28 (Air-Dried) I - 36, 43, 49 (standard)	(1) Test for 90-day compressive strength
Day No. 329 — 23 Sept 69	
Batch I - READ GAGES	
Specimens: I - 1, 13, 16, 21, 27, 30	
Day No. 330 — 24 Sept 69	
Batch I - READ GAGES	
Specimens: I - 1, 13, 16, 21, 27, 30	
Day No. 331 — 25 Sept 69	
Batch I - READ GAGES	
Specimens: I - 1, 13, 16, 21, 27, 30	

Operations/Specimens Involved		Additional Instructions
Day No. 332	26 Sept 69	
Batch I - READ GAGES Specimens: I - 1, 13, 16, 21, 27, 30		
Day No. 333	27 Sept 69	
Batch I - READ GAGES Specimens: I - 1, 13, 16, 21, 27, 30		
Day No. 334	28 Sept 69	
Batch I - READ GAGES Specimens: I - 1, 13, 16, 21, 27, 30		
Day No. 335	29 Sept 69	
Batches D, G, H, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 b. Specimens: H - 1, 14, 22, 28 c. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 d. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
Days No. 336-341	30 Sept-5 Oct 69	(1) No scheduled work
Day No. 342	6 Oct 69	
Batches A, H, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 b. Specimens: H - 1, 14, 22, 28 c. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		

Operations/Specimens Involved		Additional Instructions
Day No. 343	7 Oct 69	
Batch H - READ GAGES Specimens: H - 4, 5, 16, 17, 24, 28, 31, 34, 35, 38, 45		
Days No. 344-348	8-12 Oct 69	(1) No scheduled work
Day No. 349	13 Oct 69	
Batches B, E, H, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 b. Specimens: H - 1, 14, 22, 28 c. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43 d. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		
Day No. 350	14 Oct 69	
Batch I - READ GAGES Specimens: I - 17, 20, 23, 39		
Days No. 351-355	15-19 Oct 69	(1) No scheduled work
Day No. 356	20 Oct 69	
Batches C, F, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42 c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		

Operations/Specimens Involved		Additional Instructions
Days No. 357-362	21-26 Oct 69	(1) No scheduled work
Day No. 363	27 Oct 69	
Batches D, G - READ GAGES a. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46 b. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35		
Day No. 364	28 Oct 69	
Batch A - REMOVE COPPER Specimens: A - 6, 24, 26, 33, 34, 40, 44, 45 (6 x 12, 365-day strength)		(1) Prepare for testing (2) Store at 75° F
Day No. 365	29 Oct 69	
Batch A - TEST STRENGTH Specimens: A - 6, 26, 40, 45 (As-Cast) A - 24, 33, 34, 44 (Air-Dried)		(1) Test for 365-day compressive strength
Days No. 366-369	30 Oct-2 Nov 69	(1) No scheduled work
Day No. 370	3 Nov 69	
Batch A - READ GAGES Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		

Operations/Specimens Involved		Additional Instructions
Day No. 371	4 Nov 69	
Batch H - READ GAGES Specimens: H - 4, 5, 16, 17, 24, 28, 31, 34, 35, 38, 45		
Days No. 372-376	5-9 Nov 69	(1) No scheduled work
Day No. 377	10 Nov 69	
Batches B, E, H - READ GAGES a. Specimens: H - 1, 14, 22, 28 b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43 c. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		
Day No. 378	11 Nov 69	
Batch I - READ GAGES Specimens: I - 17, 20, 23, 39		
Days No. 379-383	12-16 Nov 69	(1) No scheduled work
Day No. 384	17 Nov 69	
Batches C, F, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42 c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		

Operations/Specimens Involved		Additional Instructions
Days No. 385-390	18-23 Nov 69	(1) No scheduled work
Day No. 391	24 Nov 69	
Batches D, G - READ GAGES a. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46 b. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35		
Days No. 392-397	25-30 Nov 69	(1) No scheduled work
Day No. 398	1 Dec 69	
Batch A - READ GAGES Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		
Day No. 399	2 Dec 69	
Batch H - READ GAGES Specimens: H - 4, 5, 16, 17, 24, 28, 31, 34, 35, 38, 45		
Days No. 400-404	3-7 Dec 69	(1) No scheduled work
Day No. 405	8 Dec 69	
Batch H - WEIGH SPECIMENS AND READ GAGES Specimens: H - 4, 16, 38 (Air-Dried, 183-day)		

(Continued)

Operations/Specimens Involved		Additional Instructions
Day No. 405 (Continued)		
Batch H - PREPARE FOR SEALING		
Specimens:	H - 4, 16, 38 (Air-Dried, 6 x 16)	(1) Coat with epoxy
Batches B, E, H - READ GAGES		
a. Specimens:	H - 1, 14, 22, 28 (90-day)	
b. Specimens:	E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
c. Specimens:	B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 406	9 Dec 69	
Batch H - SEAL SPECIMENS		
Specimens:	H - 4, 16, 38 (Air-Dried, 6 x 16)	(1) Apply 2nd coat of epoxy (2) Seal in copper
Batch H - WEIGH SPECIMENS AND READ GAGES		
Specimens:	H - 4, 16, 38 (Air-Dried)	
Batch I - READ GAGES		
Specimens:	I - 17, 20, 23, 39	
Day No. 407	10 Dec 69	
Batch H - PREPARE FOR LOADING		
Specimens:	H - 28, 34, 45 (As-Cast, 6 x 16)	(1) Seal specimens in neoprene jackets
	H - 4, 16, 38 (Air-Dried, 6 x 16)	(2) Place sealed specimens in test units at 75° F (See Appendix C, Batch H)
Days No 408-411	11-14 Dec 69	(1) No scheduled work

Operations/Specimens Involved	Additional Instructions
Day No. 412 — **15 Dec 69**	
Batch I - WEIGH SPECIMENS AND READ GAGES	
Specimens: I - 17, 20, 39 (Air-Dried)	
Batch I - PREPARE FOR SEALING	
Specimens: I - 17, 20, 39 (Air-Dried, 6 x 16)	(1) Coat with epoxy
Batches C, F, I - READ GAGES	
a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 413 — **16 Dec 69**	
Batch I - SEAL SPECIMENS	
Specimens: I - 17, 20, 39 (Air-Dried, 6 x 16)	(1) Apply 2nd coat of epoxy (2) Seal in copper
Batch I - WEIGH SPECIMENS AND READ GAGES	
Specimens: I - 17, 20, 39 (Air-Dried)	
Batches G, H - REMOVE COPPER	
a. Specimens: H - 9, 20, 21, 23, 29, 47 (6 x 12, 183-day strength)	(1) Prepare for testing
b. Specimens: G - 3, 6, 8, 22, 24, 31, 34, 46 (6 x 12, 365-day strength)	(1) Prepare for testing

Operations/Specimens Involved	Additional Instructions
Day No. 414 — **17 Dec 69**	
Batch H - LOAD SPECIMENS	
Specimens: H - 4, 16, 28, 34, 38, 45	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to the schedule in Appendix E, Batch H
Batch I - PREPARE FOR LOADING	
Specimens: I - 23 (As-Cast, 6 x 16) I - 17, 20, 39 (Air-Dried, 6 x 16)	(1) Seal specimens in neoprene jackets (2) Place sealed specimens in test units at 75° F (See Appendix C, Batch I)
Batches H, I - READ GAGES	
a. Specimens: I - 17, 20, 23, 39	
b. Specimens: H - 4, 16, 28, 34, 38, 45	(1) See instructions under Batch H - LOAD SPECIMENS, above
Batches G, H - TEST STRENGTH	
a. Specimens: H - 9, 20, 23 (As-Cast) H - 21, 29, 47 (Air-Dried)	(1) Test for 183-day compressive strength
b. Specimens: G - 3, 8, 24, 34 (As-Cast) G - 6, 22, 31, 46 (Air-Dried)	(1) Test for 365-day compressive strength.
Day No. 415 — **18 Dec 69**	
Batch H - READ GAGES	
Specimens: H - 4, 16, 28, 34, 38, 45	
Day No. 416 — **19 Dec 69**	
Batch H - READ GAGES	
Specimens: H - 4, 16, 28, 34, 38, 45	

Operations/Specimens Involved	Additional Instructions
Day No. 417 — 20 Dec 69	
Batch H - READ GAGES Specimens: H - 4, 16, 28, 34, 38, 45	
Day No. 418 — 21 Dec 69	
Batch H - READ GAGES Specimens: H - 4, 16, 28, 34, 38, 45	
Day No. 419 — 22 Dec 69	
Batches D, G, H - READ GAGES a. Specimens: H - 4, 16, 28, 34, 38, 45 b. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 c. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
Day No. 420 — 23 Dec 69	
Batch I - REMOVE COPPER Specimens: I - 11, 14, 22, 25, 34, 35, 42, 50 (6 x 12, 183-day strength)	(1) Prepare for testing
Batch H - READ GAGES Specimens: H - 4, 16, 28, 34, 38, 45	
Day No. 421 — 24 Dec 69	
Batch I - LOAD SPECIMENS Specimens: I - 17, 20, 23, 39	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to the schedule in Appendix E, Batch I

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 421 (Continued)	
Batches H, I - READ GAGES	
a. Specimens: I - 17, 20, 23, 39	(1) See instructions under Batch I - LOAD SPECIMENS, above
b. Specimens: H - 4, 16, 28, 34, 38, 45	
Batch I - TEST STRENGTH	
Specimens: I - 11, 14, 25, 50 (As-Cast) I - 22, 34, 35, 42 (Air-Dried)	(1) Test for 183-day compressive strength
Day No. 422 — 25 Dec 69	
Batch I - READ GAGES	
Specimens: I - 17, 20, 23, 39	
Day No. 423 — 26 Dec 69	
Batch I - READ GAGES	
Specimens: I - 17, 20, 23, 39	
Day No. 424 — 27 Dec 69	
Batch I - READ GAGES	
Specimens: I - 17, 20, 23, 39	
Day No. 425 — 28 Dec 69	
Batch I - READ GAGES	
Specimens: I - 17, 20, 23, 39	

Operations/Specimens Involved		Additional Instructions
Day No. 426	29 Dec 69	
Batches A, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 b. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		
Day No. 427	30 Dec 69	
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)		
Day No. 428	31 Dec 69	
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 429-432	1-4 Jan 70	(1) No scheduled work
Day No. 433	5 Jan 70	
Batches B, E, H - READ GAGES a. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42 b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43 c. Specimens: H - 1, 14, 22, 28 (90-day)		
Day No. 434	6 Jan 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 435	7 Jan 70	
Batches H, I -READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 436-439	8-11 Jan 70	(1) No scheduled work
Day No. 440	12 Jan 70	
Batches C, F, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day) b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42 c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
Day No. 441	13 Jan 70	(1) No scheduled work
Day No. 442	14 Jan 70	
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 443-446	15-18 Jan 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 447	19 Jan 70	
Batches D, G - READ GAGES a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
Day No. 448	20 Jan 70	(1) No scheduled work
Day No. 449	21 Jan 70	
Batch I - READ GAGES Specimens I - 17, 20, 23, 39 (183-day)		
Days No. 450-453	22-25 Jan 70	(1) No scheduled work
Day No. 454	26 Jan 70	
Batch A - UNLOAD SPECIMENS Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		(1) Read gages just prior to unloading (2) Read gages immediately after unloading and according to the schedule in Appendix E, Batch A
Day No. 455	27 Jan 70	
Batches A, H - READ GAGES a. Specimens: A - 8, 9, 12, 19, 22, 32 35, 38 b. Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)		

Operations/Specimens Involved	Additional Instructions
Day No. 456 — 28 Jan 70	
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 457 — 29 Jan 70	
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 458 — 30 Jan 70	
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 459 — 31 Jan 70	
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 460 — 1 Feb 70	
Batch A - READ GAGES	
Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	

Operations/Specimens Involved	Additional Instructions
Day No. 461 — 2 Feb 70	
Batch B - UNLOAD SPECIMENS	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	(1) Read gages just prior to unloading (2) Read gages immediately after unloading and according to the schedule in Appendix E, Batch B
Batches A, B, E, H - READ GAGES	
a. Specimens: H - 1, 14, 22, 28 (90-day)	
b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
c. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	(1) See instructions under Batch B - UNLOAD SPECIMENS, above
d. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 462 — 3 Feb 70	
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 463 — 4 Feb 70	
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 464 — 5 Feb 70	
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	

Operations/Specimens Involved	Additional Instructions
Day No. 465 — 6 Feb 70	
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 466 — 7 Feb 70	
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 467 — 8 Feb 70	
Batch B - READ GAGES	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Day No. 468 — 9 Feb 70	
Batch C - UNLOAD SPECIMENS	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	(1) Read gages just prior to unloading (2) Read gages immediately after unloading and according to the schedule in Appendix E, Batch C
Batches A, B, C, F, I - READ GAGES	
a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	(1) See instructions under Batch C - UNLOAD SPECIMENS, above

(Continued)

Operations/Specimens Involved	Additional Instructions
Day No. 468 (Continued)	
d. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
e. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 469 — 10 Feb 70	
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 470 — 11 Feb 70	
Batches C, H - READ GAGES	
a. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)	
b. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 471 — 12 Feb 70	
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 472 — 13 Feb 70	
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	

Operations/Specimens Involved	Additional Instructions
Day No. 473 — 14 Feb 70	
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 474 — 15 Feb 70	
Batch C - READ GAGES	
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
Day No. 475 — 16 Feb 70	
Batch D - UNLOAD SPECIMENS	
Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	(1) Read gages just prior to unloading (2) Read gages immediately after unloading and according to the schedule in Appendix E, Batch D
Batches A, B, C, D, G - READ GAGES	
a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	
b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	(1) See instructions under Batch D - UNLOAD SPECIMENS, above
c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	
d. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
e. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Day No. 476 — 17 Feb 70	
Batch D - READ GAGES	
Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	

Operations/Specimens Involved	Additional Instructions

Day No. 477 — 18 Feb 70

Batches D, I - READ GAGES

a. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46

b. Specimens: I - 17, 20, 23, 39 (183-day)

Day No. 478 — 19 Feb 70

Batch D - READ GAGES

Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46

Day No. 479 — 20 Feb 70

Batch D - READ GAGES

Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46

Day No. 480 — 21 Feb 70

Batch D - READ GAGES

Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46

Day No. 481 — 22 Feb 70

Batch D - READ GAGES

Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46

Operations/Specimens Involved		Additional Instructions
Day No. 482	23 Feb 70	
Batches A, B, C, D - READ GAGES		
a. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
b. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
c. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		
d. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		
Day No. 483	24 Feb 70	
Batch H - READ GAGES		
Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)		
Days No. 484-488	25 Feb-1 Mar 70	(1) No scheduled work
Day No. 489	2 Mar 70	
Batch E - UNLOAD SPECIMENS		
Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43		(1) Read gages just prior to unloading (2) Read gages immediately after unloading and according to the schedule in Appendix E, Batch E
Batches B, C, D, E, H - READ GAGES		
a. Specimens: H - 1, 14, 22, 28 (90-day)		
b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43		(1) See instructions under Batch E - UNLOAD SPECIMENS, above

(Continued)

Operations/Specimens Involved	Additional Instructions

Day No. 489 (Continued)

c. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46

d. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46

e. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42

Day No. 490 — 3 Mar 70

Batch E - READ GAGES

Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43

Day No. 491 — 4 Mar 70

Batch E - READ GAGES

Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43

Day No. 492 — 5 Mar 70

Batch E - READ GAGES

Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43

Day No. 493 — 6 Mar 70

Batch E - READ GAGES

Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43

Operations/Specimens Involved	Additional Instructions
Day No. 494 — 7 Mar 70	
Batch E - READ GAGES	
Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
Day No. 495 — 8 Mar 70	
Batch E - READ GAGES	
Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
Day No. 496 — 9 Mar 70	
Batch F - UNLOAD SPECIMENS	
Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	(1) Read gages just prior to unloading (2) Read gages immediately after unloading and according to the schedule in Appendix E, Batch F
Batches C, D, E, F, I - READ GAGES	
a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	(1) See instructions under Batch F - UNLOAD SPECIMENS, above
c. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
d. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
e. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46	

Operations/Specimens Involved	Additional Instructions

Day No. 497 — 10 Mar 70

Batch F - READ GAGES

Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42

Day No. 498 — 11 Mar 70

Batches F, H - READ GAGES

a. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)

b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42

Day No. 499 — 12 Mar 70

Batch F - READ GAGES

Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42

Day No. 500 — 13 Mar 70

Batch F - READ GAGES

Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42

Day No. 501 — 14 Mar 70

Batch F - READ GAGES

Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42

Operations/Specimens Involved	Additional Instructions
Day No. 502 — 15 Mar 70	
Batch F - READ GAGES	
Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
Day No. 503 — 16 Mar 70	
Batch G - UNLOAD SPECIMENS	
Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	(1) Read gages just prior to unloading (2) Read gages immediately after unloading and according to the schedule in Appendix E, Batch G
Batches D, E, F, G - READ GAGES	
a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	(1) See instructions under Batch G - UNLOAD SPECIMENS, above
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42	
c. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
d. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46	
Day No. 504 — 17 Mar 70	
Batches G, I - READ GAGES	
a. Specimens: I - 17, 20, 23, 39 (183-day)	
b. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	
Day No. 505 — 18 Mar 70	
Batches G, I - READ GAGES	
a. Specimens: I - 17, 20, 23, 39 (183-day)	
b. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	

Operations/Specimens Involved	Additional Instructions

Day No. 506 — 19 Mar 70

Batch G - READ GAGES

Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35

Day No. 507 — 20 Mar 70

Batch G - READ GAGES

Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35

Day No. 508 — 21 Mar 70

Batch G - READ GAGES

Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35

Day No. 509 — 22 Mar 70

Batch G - READ GAGES

Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35

Day No. 510 — 23 Mar 70

Batches A, E, F, G - READ GAGES

a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35

b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42

c. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43

d. Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38

Operations/Specimens Involved		Additional Instructions
Day No. 511	24 Mar 70	
Batch H - READ GAGES Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)		
Days No. 512-516	25-29 Mar 70	(1) No scheduled work
Day No. 517	30 Mar 70	
Batches B, E, F, G, H - READ GAGES a. Specimens: H - 1, 14, 22, 28 (90-day) b. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 c. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42 d. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43 e. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		
Days No. 518-523	31 Mar-5 Apr 70	(1) No scheduled work
Day No. 524	6 Apr 70	
Batches C, F, G, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day) b. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 c. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42 d. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		

Operations/Specimens Involved		Additional Instructions
Day No. 525	7 Apr 70	(1) No scheduled work
Day No. 526	8 Apr 70	
Batch H - READ GAGES Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 527-530	9-12 Apr 70	(1) No scheduled work
Day No. 531	13 Apr 70	
Batches D, G - READ GAGES a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
Day No. 532	14 Apr 70	(1) No scheduled work
Day No. 533	15 Apr 70	
Batch I - READ GAGES Specimens: I - 17, 20, 23, 39 (183-day)		
Days No. 534-536	16-18 Apr 70	(1) No scheduled work
Day No. 537	19 Apr 70	
Batch A - REMOVE COPPER Specimens: A - 2, 3, 4, 11, 21, 27, 31, 46 (6 x 12, 538-day strength)		(1) Prepare for testing (2) Store at 75° F

Operations/Specimens Involved		Additional Instructions
Day No. 538	20 Apr 70	
Batch A - TEST STRENGTH Specimens: A - 2, 3, 21, 46 (As-Cast) A - 4, 11, 27, 31 (Air-Dried)		(1) Test for 538-day compressive strength
Batch A - READ GAGES Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		
Day No. 539	21 Apr 70	
Batch H - READ GAGES Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)		
Days No. 540-543	22-25 Apr 70	(1) No scheduled work
Day No. 544	26 Apr 70	
Batch B - REMOVE COPPER Specimens: B - 8, 17, 25, 27, 28, 39, 40, 43		(1) Prepare for testing (2) Store at 75° F
Day No. 545	27 Apr 70	
Batch B - TEST STRENGTH Specimens: B - 25, 27, 28, 39 (As-Cast) B - 8, 17, 40, 43 (Air-Dried)		(1) Test for 538-day tensile strength
Batches B, E, H - READ GAGES a. Specimens: H - 1, 14, 22, 28 (90-day) b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43 c. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		

Operations/Specimens Involved		Additional Instructions
Days No. 546-550	28 Apr-2 May 70	(1) No scheduled work
Day No. 551	3 May 70	
Batch C - REMOVE COPPER Specimens: C - 3, 4, 9, 14, 24, 33, 37, 38		(1) Prepare for testing (2) Store at 75° F
Day No. 552	4 May 70	
Batch C - TEST STRENGTH Specimens: C - 3, 33, 37, 38 (As-Cast) C - 4, 9, 14, 24 (Air-Dried)		(1) Test for 538-day tensile strength
Batches C, F, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day) b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42 c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
Day No. 553	5 May 70	(1) No scheduled work
Day No. 554	6 May 70	
Batch H - READ GAGES Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 555-558	7-10 May 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 559	11 May 70	
Batches D, G - READ GAGES a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
Day No. 560	12 May 70	(1) No scheduled work
Day No. 561	13 May 70	
Batch I - READ GAGES Specimens: I - 17, 20, 23, 39 (183-day)		
Days No. 562-565	14-17 May 70	(1) No scheduled work
Day No. 566	18 May 70	
Batch A - READ GAGES Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38		
Day No. 567	19 May 70	
Batch H - READ GAGES Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)		

Operations/Specimens Involved		Additional Instructions
Days No. 568-571	20-23 May 70	(1) No scheduled work
Day No. 572	24 May 70	
Batch E - REMOVE COPPER Specimens: E - 6, 12, 20, 26, 27, 30, 34, 46		(1) Prepare for testing (2) Store at 75° F
Day No. 573	25 May 70	
Batch E - TEST STRENGTH Specimens: E - 12, 26, 27, 46 (As-Cast) E - 6, 20, 30, 34 (Air-Dried)		(1) Test for 538-day tensile strength
Batches B, E, H - READ GAGES a. Specimens: H - 1, 14, 22, 28 (90-day) b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43 c. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42		
Days No. 574-578	26-30 May 70	(1) No scheduled work
Day No. 579	31 May 70	
Batch F - REMOVE COPPER Specimens: F - 2, 7, 11, 14, 32, 37, 41, 46		(1) Prepare for testing (2) Store at 75° F

Operations/Specimens Involved		Additional Instructions
Day No. 580	1 June 70	
Batch F - TEST STRENGTH Specimens: F - 2, 11, 14, 46 (As-Cast) F - 7, 32, 37, 41 (Air-Dried)		(1) Test for 538-day tensile strength
Batches C, F, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day) b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42 c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
Day No. 581	2 June 70	(1) No scheduled work
Day No. 582	3 June 70	
Batch H - READ GAGES Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 583-585	4-6 June 70	(1) No scheduled work
Day No. 586	7 June 70	
Batch G - REMOVE COPPER Specimens: G - 2, 4, 13, 27, 32, 41, 42, 44		(1) Prepare for testing (2) Store at 75° F

Operations/Specimens Involved	Additional Instructions
Day No. 587 — **8 June 70**	
Batch H - WEIGH SPECIMENS AND READ GAGES	
Specimens: H - 17, 31, 35 (Air-Dried)	
Batch H - PREPARE FOR SEALING	
Specimens: H - 17, 31, 35 (Air-Dried, 6 X 16)	(1) Coat with epoxy
Batch G - TEST STRENGTH	
Specimens: G - 2, 4, 13, 44 (As-Cast) G - 27, 32, 41, 42 (Air-Dried)	(1) Test for 538-day compressive strength
Batches D, G - READ GAGES	
a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35	
b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 30, 33, 40, 41, 44, 46	
Day No. 588 — **9 June 70**	
Batch H - SEAL SPECIMENS	
Specimens: H - 17, 31, 35 (Air-Dried, 6 X 16)	(1) Apply 2nd coat of epoxy (2) Seal in copper
Batch H - WEIGH SPECIMENS AND READ GAGES	
Specimens: H - 17, 31, 35 (Air-Dried)	

Operations/Specimens Involved	Additional Instructions
Day No. 589 — 10 June 70	
Batch H - PREPARE FOR LOADING Specimens: H - 5, 24, 28 (As-Cast, 6 x 16) H - 17, 31, 35 (Air-Dried, 6 x 16)	(1) Seal specimens in neoprene jackets (2) Place sealed specimens in test units at 75° F (See Appendix C, Batch H) (3) H-28 was previously placed under test
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 5, 17, 28, 31, 35 (365-day)	
Days No. 590-593 — 11-14 June 70	(1) No scheduled work
Day No. 594 — 15 June 70	
Batch A - READ GAGES Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	
Batch A - TERMINATE TEST Specimens: A - 8, 9, 12, 19, 22, 32, 35, 38	(1) Remove specimens from test units (2) Weigh specimens (3) Inspect copper seals (4) Begin detailed inspection of specimens

Operations/Specimens Involved	Additional Instructions
Day No. 595 — 16 June 70	
Batch H - REMOVE COPPER	
Specimens: H - 3, 10, 26, 27, 42, 44 (6 x 12, 365-day strength)	(1) Prepare for testing
Day No. 596 — 17 June 70	
Batch H - LOAD SPECIMENS	
Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)	(1) Read gages just prior to loading (2) Read gages immediately after loading and according to the schedule in Appendix E, Batch H
Batch H - TEST STRENGTH	
Specimens: H - 3, 26, 42 (As-Cast) H - 10, 27, 44 (Air-Dried)	(1) Test for 365-day compressive strength
Day No. 597 — 18 June 70	
Batch H - READ GAGES	
Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)	
Day No. 598 — 19 June 70	
Batch H - READ GAGES	
Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)	

Operations/Specimens Involved	Additional Instructions
Day No. 599 — 20 June 70	
Batch H - READ GAGES	
Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)	
Day No. 600 — 21 June 70	
Batch H - READ GAGES	
Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)	
Day No. 601 — 22 June 70	
Batches B, E, H - READ GAGES	
a. Specimens: H - 1, 14, 22, 28 (90-day)	
b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43	
c. Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	
Batch B - TERMINATE TEST	
Specimens: B - 1, 4, 5, 7, 13, 16, 19, 23, 26, 29, 41, 42	(1) Remove test specimens from test units (2) Weigh specimens (3) Inspect copper seals (4) Begin detailed inspection of specimens
Day No. 602 — 23 June 70	
Batch I - REMOVE COPPER	
Specimens: I - 5, 8, 10, 19, 24, 31, 33, 38	(1) Prepare for testing
Batch H - READ GAGES	
Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)	

Operations/Specimens Involved		Additional Instructions
Day No. 603	24 June 70	
Batch H - READ GAGES		
Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)		
Batch I - TEST STRENGTH		
Specimens: I - 8, 10, 19, 24 (As-Cast) I - 5, 31, 33, 38 (Air-Dried)		(1) Test for 365-day compressive strength
Days No. 604-607	25-28 June 70	(1) No scheduled work
Day No. 608	29 June 70	
Batches C, F, I - READ GAGES		
a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)		
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42		
c. Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		
Batch C - TERMINATE TEST		
Specimens: C - 6, 11, 12, 13, 16, 17, 23, 34, 36, 39, 41, 46		(1) Remove test specimens from test units (2) Weigh specimens (3) Inspect copper seals (4) Begin detailed inspection of specimens
Day No. 609	30 June 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 610	1 July 70	
Batch H - READ GAGES a. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day) b. Specimens: H - 5, 17, 24, 28, 31, 35 (365-day)		
Days No. 611-614	2-5 July 70	(1) No scheduled work
Day No. 615	6 July 70	
Batches D, G - READ GAGES a. Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35 b. Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		
Batch D - TERMINATE TEST Specimens: D - 2, 3, 12, 15, 20, 22, 23, 26, 31, 33, 40, 41, 44, 46		(1) Remove test specimens from test units (2) Weigh specimens (3) Inspect copper seals (4) Begin detailed inspection of specimens
Day No. 616	7 July 70	(1) No scheduled work
Day No. 617	8 July 70	
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 5, 17, 28, 31, 35 (365-day)		

Operations/Specimens Involved		Additional Instructions
Days No. 618-623	9-14 July 70	(1) No scheduled work
Day No. 624	15 July 70	
Batch H - READ GAGES Specimens: H - 5, 17, 28, 31, 35 (365-day)		
Days No. 625-628	16-19 July 70	(1) No scheduled work
Day No. 629	20 July 70	
Batches E, H - READ GAGES a. Specimens: H - 1, 14, 22, 28 (90-day) b. Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43		
Batch E - TERMINATE TEST Specimens: E - 1, 4, 5, 10, 13, 18, 23, 28, 39, 40, 42, 43		(1) Remove test specimens from test units (2) Weigh specimens (3) Inspect copper seals (4) Begin detailed inspection of specimens
Days No. 630-635	21-26 July 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 636	27 July 70	
Batches F, I - READ GAGES		
a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)		
b. Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42		
Batch F - TERMINATE TEST		
Specimens: F - 6, 9, 13, 15, 17, 20, 21, 23, 30, 33, 34, 42		(1) Remove test specimens from test units (2) Weigh specimens (3) Inspect copper seals (4) Begin detailed inspection of specimens
Day No. 637	28 July 70	(1) No scheduled work
Day No. 638	29 July 70	
Batch H - READ GAGES		
Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 639-642	30 July-2 Aug 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 643	3 Aug 70	
Batch G - READ GAGES Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35		
Batch G - TERMINATE TEST Specimens: G - 1, 9, 10, 18, 19, 21, 30, 35		(1) Remove test specimens from test units (2) Weigh specimens (3) Inspect copper seals (4) Begin detailed inspection of specimens
Day No. 644	4 Aug 70	(1) No scheduled work
Day No. 645	5 Aug 70	
Batch I - READ GAGES Specimens: I - 17, 20, 23, 39 (183-day)		
Days No. 646-651	6-11 Aug 70	(1) No scheduled work
Day No. 652	12 Aug 70	
Batch H - READ GAGES Specimens: H - 5, 17, 28, 31, 35 (365-day)		
Days No. 653-656	13-16 Aug 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 657	17 Aug 70	
Batch H - READ GAGES Specimens: H - 1, 14, 22, 28 (90-day)		
Days No. 658-663	18-23 Aug 70	(1) No scheduled work
Day No. 664	24 Aug 70	
Batch I - READ GAGES Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)		
Day No. 665	25 Aug 70	(1) No scheduled work
Day No. 666	26 Aug 70	
Batch H - READ GAGES Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 667-672	27 Aug-1 Sept 70	(1) No scheduled work
Day No. 673	2 Sept 70	
Batch I - READ GAGES Specimens: I - 17, 20, 23, 39 (183-day)		
Days No. 674-679	3-8 Sept 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 680	9 Sept 70	
Batch H - READ GAGES Specimens: H - 5, 17, 28, 31, 35 (365-day)		
Days No. 681-684	10-13 Sept 70	(1) No scheduled work
Day No. 685	14 Sept 70	
Batch H - UNLOAD SPECIMENS Specimens: H - 1, 14, 22, 28		(1) Read gages just prior to unloading (2) Read gages immediately after unloading and according to the schedule in Appendix B, Batch H
Day No. 686	15 Sept 70	
Batch H - READ GAGES Specimens: H - 1, 14, 22, 28 (90-day)		
Day No. 687	16 Sept 70	
Batch H - READ GAGES Specimens: H - 1, 14, 22, 28 (90-day)		
Day No. 688	17 Sept 70	
Batch H - READ GAGES Specimens: H - 1, 14, 22, 28 (90-day)		

Operations/Specimens Involved	Additional Instructions
Day No. 689 — 18 Sept 70	
Batch H - READ GAGES	
Specimens: H - 1, 14, 22, 28 (90-day)	
Day No. 690 — 19 Sept 70	
Batch H - READ GAGES	
Specimens: H - 1, 14, 22, 28 (90-day)	
Day No. 691 — 20 Sept 70	
Batch H - READ GAGES	
Specimens: H - 1, 14, 22, 28 (90-day)	
Day No. 692 — 21 Sept 70	
Batch I - UNLOAD SPECIMENS	
Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	(1) Read gages just prior to unloading (2) Read gages immediately after unloading and according to the schedule in Appendix E, Batch I
Batches H, I - READ GAGES	
a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	(1) See instructions under Batch I - UNLOAD SPECIMENS, above
b. Specimens: H - 1, 14, 22, 28 (90-day)	
Day No. 693 — 22 Sept 70	
Batch I - READ GAGES	
Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	

Operations/Specimens Involved	Additional Instructions
Day No. 694 — 23 Sept 70	
Batches H, I - READ GAGES	
a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	
b. Specimens: I - 17, 20, 23, 39 (183-day)	(1) Specimens read 7 days early to coordinate reading for all 183-day specimens
c. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)	
Day No. 695 — 24 Sept 70	
Batch I - READ GAGES	
Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	
Day No. 696 — 25 Sept 70	
Batch I - READ GAGES	
Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	
Day No. 697 — 26 Sept 70	
Batch I - READ GAGES	
Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	
Day No. 698 — 27 Sept 70	
Batch I - READ GAGES	
Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	

Operations/Specimens Involved		Additional Instructions
Day No. 699	28 Sept 70	
Batches H, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day) b. Specimens: H - 1, 14, 22, 28 (90-day)		
Days No. 700-705	29 Sept-4 Oct 70	(1) No scheduled work
Day No. 706	5 Oct 70	
Batches H, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day) b. Specimens: H - 1, 14, 22, 28 (90-day)		
Day No. 707	6 Oct 70	(1) No scheduled work
Day No. 708	7 Oct 70	
Batch H - READ GAGES Specimens: H - 5, 17, 28, 31, 35 (365-day)		
Days No. 709-712	8-11 Oct 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 713	12 Oct 70	
Batches H, I - READ GAGES a. Specimens: I - 1, 13, 16, 21, 27, 30 (90-day) b. Specimens: H - 1, 14, 22, 28 (90-day)		
Days No. 714-719	13-18 Oct 70	(1) No scheduled work
Day No. 720	19 Oct 70	
Batch I - READ GAGES Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)		
Day No. 721	20 Oct 70	(1) No scheduled work
Day No. 722	21 Oct 70	
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 723-735	22 Oct-3 Nov 70	(1) No scheduled work
Day No. 736	4 Nov 70	
Batch H - READ GAGES Specimens: H - 5, 17, 28, 31, 35 (365-day)		

Operations/Specimens Involved		Additional Instructions
Days No. 737-740	5-8 Nov 70	(1) No scheduled work
Day No. 741 Batch H - READ GAGES Specimens: H - 1, 14, 22, 28 (90-day)	9 Nov 70	
Days No. 742-747	10-15 Nov 70	(1) No scheduled work
Day No. 748 Batch I - READ GAGES Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)	16 Nov 70	
Day No. 749	17 Nov 70	(1) No scheduled work
Day No. 750 Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)	18 Nov 70	
Days No. 751-763	19 Nov-1 Dec 70	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 764	2 Dec 70	
Batch H - READ GAGES Specimens: H - 5, 17, 28, 31, 35 (365-day)		
Days No. 765-767	3-5 Dec 70	(1) No scheduled work
Day No. 768	6 Dec 70	
Batch H - REMOVE COPPER Specimens: H - 2, 12, 18, 41, 43, 49 (6 X 12, 538-day strength)		(1) Prepare for testing
Day No. 769	7 Dec 70	
Batch H - TEST STRENGTH Specimens: H - 18, 41, 43 (As-Cast) H - 2, 12, 49 (Air-Dried)		(1) Test for 538-day compressive strength
Batch H - READ GAGES Specimens: H - 1, 14, 22, 28 (90-day)		
Days No. 770-774	8-12 Dec 70	(1) No scheduled work
Day No. 775	13 Dec 70	
Batch I - REMOVE COPPER Specimens: I - 2, 3, 7, 37, 41, 45, 47, 52 (6 X 12, 538-day strength)		(1) Prepare for testing

Operations/Specimens Involved		Additional Instructions
Day No. 776	14 Dec 70	
Batch I - TEST STRENGTH Specimens: I - 2, 3, 7, 41 (As-Cast) I - 37, 45, 47, 52 (Air-Dried)		(1) Test for 538-day compressive strength
Batch I - READ GAGES Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)		
Day No. 777	15 Dec 70	(1) No scheduled work
Day No. 778	16 Dec 70	
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 779-791	17-29 Dec 70	(1) No scheduled work
Day No. 792	30 Dec 70	
Batch H - READ GAGES Specimens: H - 5, 17, 28, 31, 35 (365-day)		
Days No. 793-796	31 Dec 70-3 Jan 71	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 797	4 Jan 71	
Batch H - READ GAGES Specimens: H - 1, 14, 22, 28 (90-day)		
Days No. 798-803	5-10 Jan 71	(1) No scheduled work
Day No. 804	11 Jan 71	
Batch I - READ GAGES Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)		
Day No. 805	12 Jan 71	(1) No scheduled work
Day No. 806	13 Jan 71	
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 807-819	14-26 Jan 71	(1) No scheduled work
Day No. 820	27 Jan 71	
Batch H - READ GAGES Specimens: H - 5, 17, 28, 31, 35 (365-day)		

Operations/Specimens Involved		Additional Instructions
Days No. 821-824	28-31 Jan 71	(1) No scheduled work
Day No. 825	1 Feb 71	
Batch H - READ GAGES Specimens: H - 1, 14, 22, 28 (90-day)		
Batch H - TERMINATE TEST Specimens: H - 1, 14, 22, 28 (90-day)		(1) Remove specimens from test units (2) Weigh specimens (3) Inspect copper seals (4) Begin detailed inspection of specimens (5) Specimen H-28 will continue under test
Days No. 826-831	2-7 Feb 71	(1) No scheduled work
Day No. 832	8 Feb 71	
Batch I - READ GAGES Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)		
Batch I - TERMINATE TEST Specimens: I - 1, 13, 16, 21, 27, 30 (90-day)		(1) Remove specimens from test units (2) Weigh specimens (3) Inspect copper seals (4) Begin detailed inspection of specimens
Day No. 833	9 Feb 71	(1) No scheduled work

Operations/Specimens Involved		Additional Instructions
Day No. 834	10 Feb 71	
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 835-847	11-23 Feb 71	(1) No scheduled work
Day No. 848	24 Feb 71	
Batch H - READ GAGES Specimens: H - 5, 17, 28, 31, 35 (365-day)		
Days No. 849-861	25 Feb-9 March 71	(1) No scheduled work
Day No. 862	10 March 71	
Batches H, I - READ GAGES a. Specimens: I - 17, 20, 23, 39 (183-day) b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day)		
Days No. 863-875	11-23 March 71	(1) No scheduled work

Operations/Specimens Involved	Additional Instructions
Day No. 876 — 24 March 71	
Batches H, I - READ GAGES	
a. Specimens: I - 17, 20, 23, 39 (183-day) H - 4, 16, 28, 34, 38, 45 (183-day)	(1) Specimens read 14 days early to coordinate readings for all 183-day and 365-day specimens
b. Specimens: H - 5, 17, 28, 31, 35 (365-day)	
Batches H, I - CONTINUE GAGE READINGS	
a. Specimens: I - 17, 20, 23, 39 (183-day)	(1) Read these gages every 28 days
b. Specimens: H - 4, 16, 28, 34, 38, 45 (183-day) H - 5, 17, 28, 31, 35 (365-day)	