



# Wichita CHEMICAL AND TESTING Laboratories

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
 1428 N. MOSLEY AVE. PHONE HOBART 4-3948  
 WICHITA 4, KANSAS

J. E. MYERS  
 MANAGER

W. H. CAMPEN  
 J. R. SMITH  
 J. J. REMAR  
 ASSOCIATES

LICENSED PROFESSIONAL  
 ENGINEERS

## REPORT OF TEST

MEMBERS OF:

AMERICAN CHEMICAL  
 SOCIETY

AMERICAN SOCIETY FOR  
 TESTING MATERIALS

AMERICAN SOCIETY OF  
 CIVIL ENGINEERS

ASSOCIATION OF ASPHALT  
 PAVING TECHNOLOGISTS

Test Made for:

Date: March 27, 1956

Lock Joint Pipe Co.,  
 P.O. Box 127  
 Colwich, Kansas

Lab. Number: 903330-D

(REFER TO THIS NUMBER)

Submitted By: Lab. Inspector Date Received At Lab.: 3/21/56 Time: 3:00 PM

Material Tested: HARDENED CONCRETE  
 66" Water Transmission Lines  
 Project 2155  
 Black & Veatch, Cons. Engrs.

No. of Samples: As Shown  
 Sample Designations:

Samples taken from Outside Coating of Pipe  
 Serial No. 6213. Age of Pipe Coating 12 Days

### RESULTS OF TEST

<u>Specimen No.</u>	<u>Specific Grav.</u>	<u>Density lb./cu.ft.</u>	<u>Absorption</u>	<u>% Moisture Content (As Req'd.)</u>
D-1	2.12	132.2	10.02%	9.08
D-2	2.17	135.5	8.73%	7.77
D-3	2.182	136.3	7.77%	6.85
D-4	2.182	136.3	8.02%	7.06
D-5	<u>2.162</u>	<u>135.0</u>	<u>8.54%</u>	<u>7.23</u>
Averages:	2.165	135.0	8.62%	7.60%

MOISTURE  
 ABSORPTION  
 RATIO 88.2%

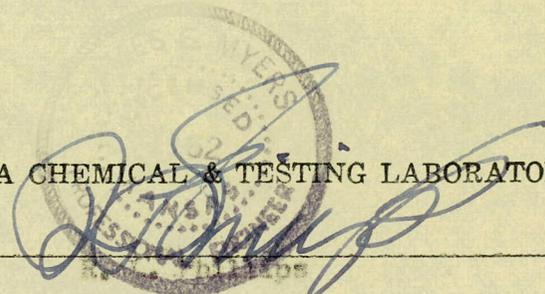
2 Lock Joint @ Colwich  
 2 Weller  
 CC: 1 Knoll  
 1 Hess

Reference: \_\_\_\_\_

WICHITA CHEMICAL & TESTING LABORATORIES

File: 1

By: \_\_\_\_\_



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 AMERICAN SOCIETY OF CIVIL ENGINEERS  
 ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS

Test Made for:

Lock Joint Pipe Co.  
 P.O. Box 137  
 Colwich, Kansas

Date: March 21, 1956

Lab. Number: 903267

(REFER TO THIS NUMBER)

Submitted By: Lab. Inspector Date Received At Lab.: 3/20/56 Time: 9:00 AM

Material Tested: HARDENED CONCRETE  
66" Water Transmission Lines  
Project 2155  
Black & Veatch, Cons. Engrs.

No. of Samples: As Shown  
 Sample Designations:  
Core Specimens from Inside Core of pipe  
Serial No. 6151. This core was discarded  
because of numerous cracks and the steel  
cylinder was stripped and repoured.

### RESULTS OF TEST

Specimen No.	AGE OF HARDENED CONCRETE SPECIMENS, 21 DAY, APPROX.				Averages
	Specific Gravity	Density lb./cu. ft.	Absorption %		
I-1	2.190	136.7	8.20		Average Specific Gravity 2.224
I-2	2.220	138.5	7.06		
I-3	2.298	143.4	5.48		
I-4	2.180	136.0	6.02		Average Density lb./cu. ft. 138.8
I-5	2.200	137.2	7.10		
I-6	2.250	140.5	5.24		Average Absorption 6.608%
I-7	2.252	140.6	5.65		
I-8	2.218	138.4	7.16		
I-9	2.208	137.8	7.55		

CC: 2 Lock Joint @ Colwich  
 2 Keller  
 1 Knoll  
 1 Hess

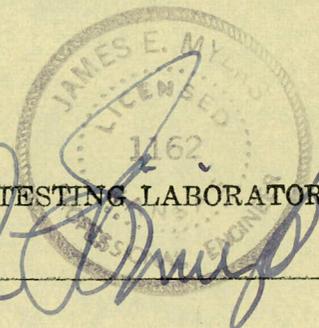
Reference: \_\_\_\_\_

WICHITA CHEMICAL & TESTING LABORATORIES

File: \_\_\_\_\_

By: \_\_\_\_\_

R. L. Phillips



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AMERICAN SOCIETY OF CIVIL ENGINEERS  
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS

Test Made for:

Lock Joint Pipe Co.  
P.O. Box 137  
Colwich, Kansas

Date: March 21, 1956

Lab. Number: 903267-B

(REFER TO THIS NUMBER)

Submitted By: Lab. Inspector

Date Received At Lab.: 3/20/56

Time: 9:00 AM

Material Tested: HARDENED CONCRETE  
66" Water Transmission Lines  
Project 2155  
Black & Veatch, Cons. Engrs.

No. of Samples: As Shown

Sample Designations:

Sample Specimens taken from outside coating of pipe No. 5057, which was dropped and damaged beyond repair. A new pipe was poured with this serial number.

## RESULTS OF TEST

AGE OF HARDENED CONCRETE SPECIMENS: 63 DAYS APPROX.

<u>Specimen No.</u>	<u>Specific Gravity</u>	<u>Density lb./cu.ft.</u>	<u>Absorption %</u>	<u>Averages</u>
C-1	2.202	137.6	7.97	Average Specific Gravity 2.170
C-2	2.170	135.5	8.27	
C-3	2.170	135.5	8.38	Average Density lb./cu.ft. 135.4
C-4	2.190	136.5	8.22	
C-5	2.162	135.0	8.58	Average Absorption 8.39%
C-6	2.162	135.0	8.08	
C-7	2.132	133.0	9.24	
C-8	2.168	135.2	8.53	
C-9	2.180	136.0	8.36	
C-10	2.161	134.7	8.29	

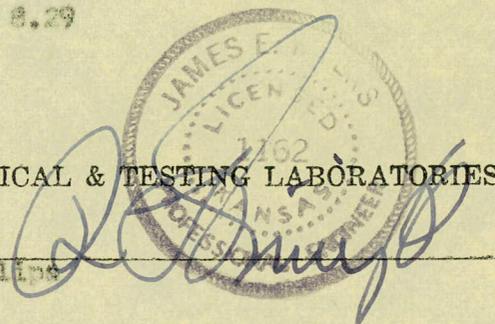
CC: 2 Lock Joint - Colwich  
2 Keller  
1 Knoll

Reference: \_\_\_\_\_

WICHITA CHEMICAL & TESTING LABORATORIES

File: 1

By: R.L. Phillips



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REPORT OF TEST

MEMBERS OF:  
 AMERICAN CHEMICAL SOCIETY  
 AMERICAN SOCIETY FOR TESTING MATERIALS  
 AMERICAN SOCIETY OF CIVIL ENGINEERS  
 ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS

Test Made for:

Date: March 21, 1956

Lock Joint Pipe Co.  
 P.O. Box 137  
 Colwich, Kansas

Lab. Number: 90367-0  
 (REFER TO THIS NUMBER)

Submitted By: Lab. Inspector Date Received At Lab.: 3/20/56 Time: 9:00 AM

Material Tested: HAZARDED CONCRETE  
66" Water Transmission Lines  
Project 2155  
Black & Veatch, Cons. Engrs.

No. of Samples: As Shown  
 Sample Designations:  
Core specimens from outside core of pipe  
serial No. 6151. This core was discarded  
because of numerous cracks and the steel  
cylinder stripped and repoured.

RESULTS OF TEST

AGE OF HAZARDED CONCRETE: APPROX. 21 DAYS

<u>Specimens No.</u>	<u>Specific Gravity</u>	<u>Density lb./cu. ft.</u>	<u>Absorption %</u>	<u>Averages</u>
0-1	2.219	138.3	7.81	Average Specific Gravity 2.222
0-2	2.228	139.0	7.47	
0-3	2.218	138.4	7.68	
0-4	2.213	138.2	7.79	Average Density 138.6 lb./cu. ft.
0-5	2.222	138.7	7.67	Average Absorption 7.49%
0-6	2.222	138.7	7.67	
0-7	2.212	138.1	7.89	
0-8	2.222	138.7	7.43	
0-9*	2.235	139.5	7.04	
0-10*	2.249	140.3	6.39	
0-11*	2.210	137.9	7.94	
0-12*	2.218	138.4	7.60	

CC: 2 Lock Joint @ Colwich  
 2 Keller  
 1 Knoll

\* Specimens marked thus were largest crack .050 wide.

Reference: \_\_\_\_\_

WICHITA CHEMICAL & TESTING LABORATORIES

File: 1  
 FORM 501

By: [Signature]  
 R. [Signature]





# LOCK JOINT PIPE COMPANY

ESTABLISHED 1905

GENERAL OFFICES: P.O. BOX 269, EAST ORANGE, N. J., TEL. ORANGE 5-8900

## REINFORCED CONCRETE PIPE

PRESSURE, WATER, SEWER, CULVERT AND SUBAQUEOUS

P. O. Box 137  
Colwich, Kansas  
March 3, 1956

Black and Veatch Co., Engineers  
Attention: Mr. John Knoll, Resident Engineer  
1617 Briggs  
Wichita, Kansas

Dear John:

Several weeks ago, a request was made of the Wichita Chemical and Testing Laboratories to substantiate a change in the concrete formula used at the Colwich Plant in the manufacture of 66" Prestressed Pipe for the City of Wichita. You may recall several discussions of the subject at our plant office.

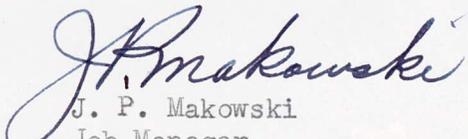
Since the start of concreting operations in June, 1955, we have used, and are currently using, a 7.6 sack/yd., 5 gal./sack concrete mix. This cement factor exceeds Specification requirements by 0.6 sack/yd. (Re: Section B-4.01, Part a.)

Recently, we made several concrete test cylinders using the 7.3 sack/yd., 5 gal./sack mix prepared by the Wichita Laboratories, with the Job Inspector in attendance. A report describing the results of 48 hr. 3 day, and 7 day tests have been attached for your review. You will notice that the results for 7 day concrete strengths are considerably above specification requirements; ie, 3,000 psi. We feel the results substantiate a change to the subject design.

We hope to introduce the modified mix in our pouring operations on Wednesday, March 7, 1956. If there are any objection to our plan, we would appreciate being notified prior to this date.

Sincerely,

LOCK JOINT PIPE COMPANY

  
J. P. Makowski  
Job Manager

JPM:mb

cc: Mr. J. Meyers, Wichita, Kansas  
cc: Mr. E. R. Miller, Turner, Kansas

## AVOID VERBAL MEMORANDA

NO. \_\_\_\_\_

TO John Knoll, Black & Veatch  
cc: J. Meyers, Wichita Lab.FROM J. P. MakowskiDATE March 3, 1956SUBJECT: Concrete Test Cylinders

At the time of this writing, formal reports, describing the results of 3 and 7 day concrete strengths (2nd trial), were in route, via mail. So as to not delay a notice of our intentions, this note, containing subject information, has been attached. The formal reports will be forwarded when received, if same is requested.

<u>Date Made</u>	<u>Compressive Strength, psi</u>	<u>Age at Test</u>
2/24/56	4500	3 Day
"	4400	3 Day
"	4500	3 Day
"	4550	7 Day
"	4800	7 Day
"	4500	7 Day



**Wichita CHEMICAL AND TESTING Laboratories**

Principals Are MEMBERS OF:  
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 AMERICAN SOCIETY FOR TESTING MATERIALS  
 AMERICAN SOCIETY OF CIVIL ENGINEERS  
 ASS'N OF ASPHALT PAVING TECHNOLOGISTS  
 LICENSED PROFESSIONAL ENGINEERS

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
 RESEARCH ON MANUFACTURING PROBLEMS  
 1428 N. MOSLEY AVE. PHONE HO BART 4-3948  
 WICHITA 4, KANSAS

CC: 2 Lock Joint @ Colwich  
 2 Weller  
 1 Knoll  
 1 Hess

File: 1 FEB 23 1956  
 Lock Joint Pipe Co.  
 RECEIVED

FLEXURE AND COMPRESSION TEST REPORT

Project: 66" Water Transmission Lines Lab. No. 902214-B  
 (Refer to This Number)  
 Location: Colwich, Kansas  
 Contractor: Lock Joint Pipe Co.  
 Architect: Black & Veatch  
 Owner: City of Wichita  
 Date Submitted at Lab: 2/17/56

Date February 22, 1956  
 Report No. LJC 143  
 Specimens  
 Made by: Laboratory  
 Structure Water Line

THIS IS A TRIAL BATCH OF 7.3 SACK;  
 55% ROCK 45% SAND MIX TO DETERMINE  
 STRENGTH OF CALCULATED MIX MADE  
 BY WICHITA CHEMICAL & TESTING LAB.

SPECIMEN NUMBER	DATE MADE	SLUMP INCHES	MIXTURE / 3 yard				Compressive Strength P.S.I.	Type Fracture	Age In Days	Days Lab. Cured, Standard Conditions	Remarks and Location of Pour
			Fine Aggregate	Coarse Aggregate	Cement	Total Water					
No. 1104	2/15	5"	4140 3.3%FM	5000 1.5%FM	2060	87Gal	4450	RC-AF	48Hr.	0	66" Line Pipe Core @ 11:00 AM
No. 1105	2/15	5"	4140 3.3%FM	5000 1.5%FM	2060	87Gal	4400	RC-AF	48Hr.	0	66" Line Pipe Core @ 11:00 AM
No. 1106	2/15	5"	4140 3.3%FM	5000 1.5%FM	2060	87Gal	4700	RC-AF	48Hr.	0	66" Line Pipe Core @ 11:00 AM
TESTS CONDUCTED AT FIELD LABORATORY											
No. 1107	2/15	5"	4140 3.3%FM	5000 1.5%FM	2060	87Gal	4412	RC-AF	3	0	66" Line Pipe Core @ 11:00 AM
No. 1108	2/15	5"	4140 3.3%FM	5000 1.5%FM	2060	87Gal	4394	RC-AF	3	0	66" Line Pipe Core @ 11:00 AM
No. 1109	2/15	5"	4140 3.3%FM	5000 1.5%FM	2060	87Gal	4359	RC-AF	3	0	66" Line Pipe Core @ 11:00 AM
TESTS CONDUCTED AT WICHITA											
No. 1110	2/15	5"	4140 3.3%FM	5000 1.5%FM	2060	87Gal	5000	RC-AF	7	0	66" Line Pipe Core @ 11:00 AM
No. 1111	2/15	5"	4140 3.3%FM	5000 1.5%FM	2060	87Gal	4950	DS-AF	7	0	66" Line Pipe Core @ 11:00 AM
No. 1112	2/15	5"	4140 3.3%FM	5000 1.5%FM	2060	87Gal	5400	DS-AF	7	0	66" Line Pipe Core @ 11:00 AM
Green Concrete 66° @ 33° Outside. No evidence of bleeding. Required 28 day strength: 4500 P. S. I.											
TESTS CONDUCTED AT FIELD LABORATORY											

TYPE FRACTURE: RC—regular cone; VS—vertical shear; DS—diagonal shear; HS—horizontal rupture; MB—mortar bond failure;

Brand of Cement Consolidated Victor

AF—aggregate failure.

Admixture None

WICHITA CHEMICAL & TESTING LABORATORIES

Fine Aggregate Dolese Concrete Sand

By J. E. Myers  
 J. E. Myers  
 PROFESSIONAL ENGINEER

Coarse Aggregate Moline 3/4" Stone

Mixed Aggregate None



WICHITA CHEMICAL AND TESTING LABORATORIES

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
RESEARCH ON MANUFACTURING PROBLEMS  
JAS. N. MORLEY AVE., PHONE HUBBARD 4-3943  
WICHITA 4, KANSAS

MEMBER OF  
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ASSOCIATION OF AERIAL TRAINING TECHNOLOGISTS  
LICENSED PROFESSIONAL ENGINEERS

FLEXURE AND COMPRESSION TEST REPORT

Specimens  
Made by Laboratory  
Specimen No. 1110  
Date February 22, 1937

THIS IS A FINAL REPORT ON P. 3 BACK  
SEE PAGE 124 FOR DETAILS TO ENTER THE  
STRENGTH OF CALCULATED TEST DATA  
BY WICHITA CHEMICAL & TESTING LAB.

Project No. 1110  
Location, Wichita, Kansas  
Owner, City of Wichita  
Date Submitted, Jan. 21, 37

Specimen No.	Date Made	Type	Age in Days	Type of Failure	Compressive Strength (psi)	MINUTES / 3 days		Type of Aggregate	Specimen Length (inches)	DATE	PERFORMING NUMBER
						Total Water	Concrete Content				
No. 110A	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110A
No. 110B	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110B
No. 110C	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110C
No. 110D	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110D
No. 110E	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110E
No. 110F	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110F
No. 110G	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110G
No. 110H	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110H
No. 110I	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110I
No. 110J	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110J
No. 110K	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110K
No. 110L	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110L
No. 110M	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110M
No. 110N	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110N
No. 110O	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110O
No. 110P	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110P
No. 110Q	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110Q
No. 110R	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110R
No. 110S	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110S
No. 110T	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110T
No. 110U	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110U
No. 110V	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110V
No. 110W	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110W
No. 110X	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110X
No. 110Y	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110Y
No. 110Z	2/15	SP	3	BR-AE	3700	2080	5000	ALLO	3.9	2/15	No. 110Z

TESTS CONDUCTED AT FIELD LABORATORY

TESTS CONDUCTED AT WICHITA

TESTS CONDUCTED AT FIELD LABORATORY

TYPE OF FAILURE: NO - normal; V2 - vertical shear; BR - diagonal shear; BS - horizontal rupture; M - mixed; and failure

Brand or Cement: (Specify brand used)

Aggregate: (Specify aggregate used)

WICHITA CHEMICAL & TESTING LABORATORIES

AP - aggregate

By: J. B. Myers

Checked: J. B. Myers

Wichita, Kansas

February 22, 1937

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Test Made for: Leak Joint Pipe Co.  
P.O. Box 137  
Colwich, Kansas

Date: September 13, 1955

Lab. Number: 809117  
 (REFER TO THIS NUMBER)

Submitted By: J. J. Knoll Date Received At Lab.: 8-22-55 Time: 2:30 P.M.

Material Tested: REINFORCED CONCRETE PIPE

No. of Samples: One

Sample Designations:

A.S.T.M. 3-Edge Bearing Test  
for Proof of Design

66" Prestressed Concrete Embedded  
Cylinder Pipe with Rubber & Steel Joint

RESULTS OF TEST

CERTIFICATION OF PIPE  
FOR PROOF OF DESIGN

Internal Pipe Diameter	Specimen No.	Strength lb./lin. Foot	
		Load Producing 0.01 in Crack	Ultimate Load
65"	1	16,000 lbs.	20,000 lbs.

Design Conditions:

6,600 lbs.

NOTE: The above tests indicate that the Designed strength has been met.

CERTIFIED

We certify the above test was conducted by us in accordance with accepted procedures and that this material meets specification requirements.

CC: 2-Leak Joint  
 2-Weller  
 1-Knoll  
 1-Hess

Reference: A.S.T.M. C-75

File: 1  
 FORM 301

WICHITA CHEMICAL & TESTING LABORATORIES

By: [Signature]  
 J. E. Myers  
 LICENSED PROFESSIONAL ENGINEER



Wichita, Kansas  
August 31, 1955

Subject: Wichita, Kansas  
Waterworks Improvements  
Project No. 2155, G-1.1

Black & Veatch  
4706 Broadway  
Kansas City 12, Missouri

Attention: Mr. Ray Lawrence & Mr. Lloyd Weller

Gentlemen:

A 3-edge bearing test was performed on a 3 ft. length of Lock Joint Pressure pipe which is being used on the 66" Transmission Line.

The results of this test were as follows:

	<u>Total lbs.</u>	<u>lbs. per Ft.</u>
1st Crack	30,000	10,000
1st .01" Crack	48,000	16,000
Failure	60,000	20,000

Failure was due to breaking of the tension steel at the 3 O'clock position. Breaking of the steel was uniform and across the entire length of the test section.

This test was performed on Aug. 30, 1955 and the following were witnesses: Mr. Ray Lawrence, Paul Haney, & J. Knoll of Black & Veatch; Mr. R. H. Hess & O. K. Brandon, City of Wichita; Mr. Jim Meyers, Wichita Testing Laboratory and Mr. Joe Makowsky and Jack Miller of Lock Joint Pipe Co.

Very truly yours,

Black & Veatch  
By:

cc: R. H. Hess  
Lock Joint Pipe Co.

John J. Knoll  
Resident Engineer

# Wichita CHEMICAL AND TESTING Laboratories

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
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 AMERICAN SOCIETY FOR TESTING MATERIALS  
 AMERICAN SOCIETY OF CIVIL ENGINEERS  
 ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS

Test Made for: Lock Joint Pipe Co.  
 P.O. Box 137  
 Colwich,  
 Kansas

Date: September 7, 1955

Lab. Number: 809026  
 (REFER TO THIS NUMBER)

Submitted By: Lab Inspector Date Received At Lab.: 8/31/55 Time: 8:00 A.M.

Material Tested: CONCRETE SAMPLES No. of Samples: 2- One Core Mix One Coating Mix  
66" Water Transmission Lines Sample Designations:  
Project 2155 Two Fragment Samples Of Concrete From Pipe  
Black & Veatch, Sons. Engrs. S.O. No. 6

### RESULTS OF TEST

<u>Sample No.</u>	<u>Specific Gravity</u>	<u>Density lb/cu.Ft.</u>	<u>Absorption</u>	<u>Average Absorption</u>
Core Mix No. 1	2.239	142.3	4.52%	4.52%
Coating Mix No.1	2.082	130.2	8.92%	8.93%
No.2	2.082	130.2	8.53%	
No.3	2.076	129.5	9.24%	

The above samples were taken from the pipe that was given the 3 edge load bearing test-- 8-30-55. The pouring date was (6-11-55) Pre-stress date 7-7-55. The coating mix using 3/8" Moline Stone has been discontinued effective. 8-22-55.

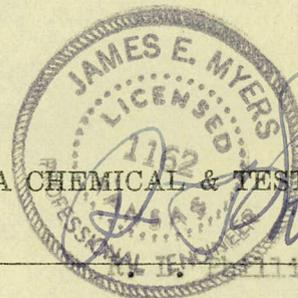
CC: 2- Lock Joint @ Colwich  
~~X~~ Knoll

Reference: \_\_\_\_\_

File: 1 1

WICHITA CHEMICAL & TESTING LABORATORIES

By: \_\_\_\_\_





CC: 2-Lock Joint  
2-Weller  
1-Knoll  
1-Hess

*Wichita* CHEMICAL AND TESTING *Laboratories*

Principals Are  
MEMBERS OF:  
AMERICAN CHEMICAL SOCIETY  
AMERICAN SOCIETY FOR TESTING MATERIALS  
AMERICAN SOCIETY OF CIVIL ENGINEERS  
ASS'N OF ASPHALT PAVING TECHNOLOGISTS  
LICENSED PROFESSIONAL ENGINEERS

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
RESEARCH ON MANUFACTURING PROBLEMS

File: 1

1428 N. MOSLEY AVE. PHONE HOBERT 4-3948  
WICHITA 4, KANSAS

FLEXURE AND COMPRESSION TEST REPORT

Project: 66" Water Transmission Line Lab. No. 807287  
Location: Golwich, Kansas  
Contractor: Lock Joint Pipe Co.  
Architect: Black & Veatch  
Owner: ...  
Date Submitted at Lab: Made @ Lab...

Date July 23, 1955  
Report No. LJS #2  
Specimens  
Made by: Laboratory  
Structure Design Specimens

PRELIMINARY DESIGN SPECIMENS  
305 Rock - 8 SACKS

SPECIMEN NUMBER	DATE MADE	SLUMP INCHES	MIXTURE				Compressive Strength P. S. I.	Type Fracture	Age In Days	Days Lab. Cured, Standard Conditions	Remarks and Location of Pour
			Fine Aggregate	Coarse Aggregate	Cement	Total Water					
No. 4911	6-23	6"	1458	1459	752	38.3	5083	RC-AF	28	27	Design Specimens
No. 4912	6-23	6"	1458	1459	752	38.3	4888	RC-AF	28	27	Design Specimens
No. 4913	6-23	6"	1458	1459	752	38.3	4659	RC-AF	28	27	Design Specimens
No Required Strength! Coating Mix											

TYPE FRACTURE: RC—regular cone; VS—vertical shear; DS—diagonal shear; HS—horizontal rupture; MB—mortar bond failure;

Brand of Cement Lehigh Portland  
Admixture None  
Fine Aggregate Dolase  
Coarse Aggregate Moline 3/8" Stone  
Mixed Aggregate None

WICHITA CHEMICAL & TESTING LABORATORIES

By [Signature]  
[Stamp]



CC: [illegible]  
[illegible]  
[illegible]

Wichita  
CHEMICAL  
AND  
TESTING  
Laboratories

ANALYTICAL CHEMIST - BACTERIOLOGIST - TESTING ENGINEER  
RESEARCH ON MANUFACTURING PROBLEMS  
1432 N. MOBLEY AVE.  
PHONG HOANG 4-9938  
WICHITA, KANSAS

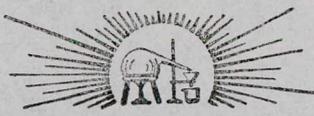
MEMBER OF  
AMERICAN CHEMICAL SOCIETY  
AMERICAN SOCIETY FOR TESTING MATERIALS  
AMERICAN SOCIETY OF CIVIL ENGINEERS  
AMERICAN SOCIETY OF RAILROAD ENGINEERS  
LICENSED PROFESSIONAL ENGINEER

FLUXURE AND COMPRESSION TEST REPORT

Project: [illegible]  
Location: [illegible]  
Contractor: [illegible]  
Inspector: [illegible]  
Owner: [illegible]  
Date Submitted at Lab: [illegible]  
Date: [illegible]  
Specimen No.: [illegible]  
Position: [illegible]  
Made by: [illegible]  
Structure: [illegible]

Specimen Number	Date Made	Specimen	Type	Compressive Strength Tons	MIXTURE			Cement	Water	Remarks
					Total	Coarse Aggregate	Fine Aggregate			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TESTER: [illegible]  
DATE: [illegible]  
WICHITA CHEMICAL AND TESTING LABORATORIES  
[illegible]



*Prelim Design File*

# Wichita CHEMICAL AND TESTING Laboratories

CC: 2-Loek Joint  
2-Weller  
1-Knoll  
1-Hess

Principals Are MEMBERS OF:  
AMERICAN CHEMICAL SOCIETY  
AMERICAN SOCIETY FOR TESTING MATERIALS  
AMERICAN SOCIETY OF CIVIL ENGINEERS  
ASS'N OF ASPHALT PAVING TECHNOLOGISTS  
LICENSED PROFESSIONAL ENGINEERS

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
RESEARCH ON MANUFACTURING PROBLEMS

File: 1

1428 N. MOSLEY AVE. PHONE HO BART 4-3948  
WICHITA 4, KANSAS

## FLEXURE AND COMPRESSION TEST REPORT

Project: 66" Water Transmission Line Lab. No. 807161  
(Refer to This Number)

Date July 14, 1955

Location: Colwich, Kansas

Report No. LJDS #2

Contractor: Loek Joint Pipe Co.

PRELIMINARY DESIGN SPECIMENS  
55% Rock - 7.61 SACK-CORD MIX

Specimens

Architect: Black & Veatch

Made by: Laboratory

Owner: .....

Structure Water Lines

Date Submitted at Lab: Made at Lab.

SPECIMEN NUMBER	DATE MADE	SLUMP INCHES	MIXTURE				Compressive Strength P. S. I.	Type Fracture	Age In Days	Days Lab. Cured, Standard Conditions	Remarks and Location of Pour
			Fine Aggregate	Coarse Aggregate	Cement	Total Water					
No. 4716 (4)	6-15	4"	1330	1626	715	303	5505	RC-AF	28	27	Design Specimens
No. 4717 (5)	6-15	4"	1330	1626	715	303	5170	RC-AF	28	27	Design Specimens
No. 4718 (6)	6-15	4"	1330	1626	715	303	4870	DS-AF	28	27	Design Specimens
R required 28 day strength: 4500 P.S.I.											

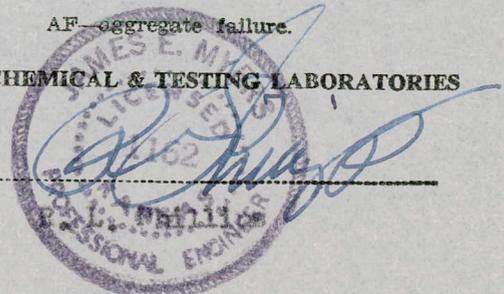
TYPE FRACTURE: RC—regular cone; VS—vertical shear; DS—diagonal shear; HS—horizontal rupture; MB—mortar bond failure;

Brand of Cement Lafarge Portland  
Admixture None  
Fine Aggregate Doloss  
Coarse Aggregate Woline 3/4"  
Mixed Aggregate None

AF—aggregate failure.

WICHITA CHEMICAL & TESTING LABORATORIES

By [Signature]





*File in  
Preliminary Design*

**Wichita CHEMICAL AND TESTING Laboratories**  
ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
1428 N. MOSLEY AVE. PHONE HOBART 4-3948  
WICHITA 4, KANSAS

J. E. MYERS  
MANAGER  
W. H. CAMPEN  
J. R. SMITH  
J. J. REMAR  
ASSOCIATES  
LICENSED PROFESSIONAL  
ENGINEERS

**REPORT OF TEST**

MEMBERS OF:  
AMERICAN CHEMICAL SOCIETY  
AMERICAN SOCIETY FOR TESTING MATERIALS  
AMERICAN SOCIETY OF CIVIL ENGINEERS  
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS

Test Made for: Lock Joint Pipe Co.  
Box 137  
Colwich, Kansas

Date: July 11, 1955

Lab. Number: 805296-a  
(REFER TO THIS NUMBER)

Submitted By: Lab. Inspector Date Received At Lab.: 5-31-55 Time: 3:00 P.M.

Material Tested: CONCRETE SAND  
66" Water Transmission Lines  
Project #2155  
Black & Veatch, Cons. Engrs.

No. of Samples: One -100 lbs.  
Sample Designations:  
PRELIMINARY CERTIFICATION  
Dolese Bros. Co. - Concrete Sand

**RESULTS OF TEST** (Date Mailed: 6-7-55)  
A.S.T.M. MORTAR STRENGTH TESTS

	<u>LOP-4</u>	<u>LOP-5</u>	<u>LOP-6</u>	
<u>A. Dolese Concrete Sand</u>				
Specimen No.				
28-Day Strength P.S.I.	<u>5940</u>	<u>4835</u>	<u>5452</u>	<u>5409</u>
Average P.S.I.				<u>96.8 %</u>
% of Standard				
<u>B. Standard Ottawa Sand</u>				
Specimen No.				
28-Day Strength P.S.I.	<u>5500</u>	<u>5700</u>	<u>5575</u>	<u>5592</u>
Average P.S.I.				<u>100.0 %</u>
% of Standard				

To meet A.S.T.M. C-39-52T "Not less than 95% of Standard"

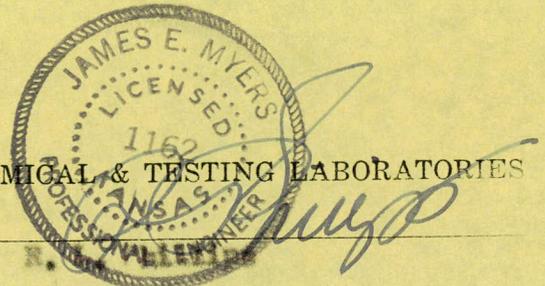
CC: 2-Lock Joint @ Colwich  
2-Weller  
1-Knoll  
1-Hess

Reference: ASTM C-87

File: 1  
FORM 501

WICHITA CHEMICAL & TESTING LABORATORIES

By: \_\_\_\_\_





*Design File*  
*Wichita*

CHEMICAL AND TESTING Laboratories

CC: 2-Loek Joint  
2-Teller  
1-Knoll  
1-Hess

Principals Are MEMBERS OF:  
AMERICAN CHEMICAL SOCIETY  
AMERICAN SOCIETY FOR TESTING MATERIALS  
AMERICAN SOCIETY OF CIVIL ENGINEERS  
ASS'N OF ASPHALT PAVING TECHNOLOGISTS  
LICENSED PROFESSIONAL ENGINEERS

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
RESEARCH ON MANUFACTURING PROBLEMS  
1428 N. MOSLEY AVE. PHONE HO BART 4-3948  
WICHITA 4, KANSAS

File: 1

FLEXURE AND COMPRESSION TEST REPORT

Project: *66" Water Transmission Line* Lab. No. *806 985*  
(Refer to This Number)  
Location: *Colwich, Kansas*  
Contractor: *Loek Joint Pipe Co.*  
Architect: *Blawie & Young*  
Owner: *Blawie & Young*  
Date Submitted at Lab: *Wichita Chem. & Test. Lab.*

Date: *July 2, 1948*  
Report No. *LJDS #1*  
Specimens: *3*  
Made by: *Laboratory*  
Structure: *Design Specimens*

PRELIMINARY DESIGN SPECIMENS  
50% Rock-8 SACKS

SPECIMEN NUMBER	DATE MADE	SLUMP INCHES	MIXTURE				Compressive Strength P. S. I.	Type Fracture	Age In Days	Days Lab. Cured, Standard Conditions	Remarks and Location of Pour
			Fine Aggregate	Coarse Aggregate	Cement	Total Water					
No. 4911	6-23	6"	1458	1459	752	38.3	3953	RC-AF	7	6	Design Specimens
No. 4912	6-23	6"	1458	1459	752	38.3	3900	DS-AF	7	6	Design Specimens
No. 4913	6-23	6"	1458	1459	752	38.3	3775	RC-AF	7	6	Design Specimens
						Required 28 day strength:		None			

TYPE FRACTURE: RC—regular cone; VS—vertical shear; DS—diagonal shear; HS—horizontal rupture; MB—mortar bond failure; AF—aggregate failure.

Brand of Cement: Lehigh Portland  
Admixture: None  
Fine Aggregate: Poloss  
Coarse Aggregate: Woline 3/8" Stone  
Mixed Aggregate: \_\_\_\_\_

WICHITA CHEMICAL & TESTING LABORATORIES

By: *[Signature]*



Phillips



WE TEST EVERYTHING

REQUEST FOR APPROVAL



UNDER THE SUN

We hereby submit this report for an approval of these materials and/or mixtures intended for use on this project.

LAB NUMBER 806223-b (Refer to this Number)

Wichita

CHEMICAL AND TESTING

Laboratories

CC: 2-Lock Joint, 2-Weller, 1-Annoll, 1-Hess

PRELIMINARY DESIGN DATA

WICHITA 4, KANSAS

File: 1

Actual Lab. Batch Mix

DAILY LOG OF CONCRETING OPERATION

Type Mix: 50% Rock - 8 sks. Date: June 23, 1955. Weather: ---. Class of Concrete: None P.S.I. @ 28 da. Slump Ordered: 3 - 6 inches. Nominal Mix: 1: 1.84 : 1.94. Maximum Water: 5.0 gal./sk. cmt. Batch Wts., Lbs. Dry Basis: Cmt. 752 FA 1458 CA 1459

COATING DESIGN

Project: 66" water Transmission Lines Colwich, Kansas. Contractor: Lock Joint Pipe Co. Structure: Pre-Stressed Pipe Coating Block & Veatch, Project 2155. Fine Aggregate (FA): Dolose Sand. Coarse Aggregate (CA): Molina 3/8" Stone.

COMPUTATION FOR ACTUAL BATCH PROPORTIONS—WEIGHTS MOIST AS USED

TIME MOISTURE TEST MADE

Table with columns for No. 1 per ONE YARD and No. 2 per 3 YARD PATCH. Rows include FA, CA, Total Free water, Added at Mixer, Total Water, Gal./sk. cement, Slump, and Entrained air: (Trapped).

YIELD CALCULATIONS

Table with columns: Test Cylinder Nos., Wt./cu. ft., Wt./cu. yd., Vol., Yield, Actual Cement Content. Includes data for 7-day and 28-day tests.

Sieve Analysis of Aggregates

Table with columns: Sieve, Coarse, Fine. Rows include Sieve Opening (2 inch to No. 100) and F M values.

Concreting Started... Finished... No. Batches Delivered... Ticket Nos... Concrete laid... Cement Used... Remarks: Compression Tests will follow when due. Aggregate Ratio, % by Wt. 50% Rock, 8 sks.

WICHITA CHEMICAL & TESTING LABORATORIES 1428 N. MOSLEY AVE. PHONE HOBART 4-3948

% P200 WASH

Coarse: 2.0 Fine: 1.6



By: R. L. Phillips

FORM 505



REQUEST FOR APPROVAL  
We hereby submit this report for an approval  
of these materials and/or mixtures intended  
for use on this project.

Wichita  
Laboratories

CHEMICAL  
AND  
TESTING

Wichita

WICHITA, KANSAS

DAILY LOG OF CONCRETING OPERATION

Type Mix	_____
Date	_____
Weather	_____
Class of Concrete	_____
Slump Ordered	_____
Volume	_____
Moisture Water	_____
Batch Water	_____
Dry Packing	_____

COMPUTATION FOR ACTUAL BATCH PROPORTIONS--WEIGHTS MOIST AS USED

TIME MOISTURE FIRST MADE	% Moisture	Free Water	Actual Batch Water	% Moisture	Free Water	Actual
FA	_____	lb.	lb.	_____	lb.	lb.
CA	_____	lb.	lb.	_____	lb.	lb.
1/2 inch	_____	lb.	lb.	_____	lb.	lb.
1 inch	_____	lb.	lb.	_____	lb.	lb.
1 1/2 inch	_____	lb.	lb.	_____	lb.	lb.
2 inch	_____	lb.	lb.	_____	lb.	lb.
3 inch	_____	lb.	lb.	_____	lb.	lb.
4 inch	_____	lb.	lb.	_____	lb.	lb.
5 inch	_____	lb.	lb.	_____	lb.	lb.
6 inch	_____	lb.	lb.	_____	lb.	lb.
7 inch	_____	lb.	lb.	_____	lb.	lb.
8 inch	_____	lb.	lb.	_____	lb.	lb.
9 inch	_____	lb.	lb.	_____	lb.	lb.
10 inch	_____	lb.	lb.	_____	lb.	lb.
11 inch	_____	lb.	lb.	_____	lb.	lb.
12 inch	_____	lb.	lb.	_____	lb.	lb.
13 inch	_____	lb.	lb.	_____	lb.	lb.
14 inch	_____	lb.	lb.	_____	lb.	lb.
15 inch	_____	lb.	lb.	_____	lb.	lb.
16 inch	_____	lb.	lb.	_____	lb.	lb.
17 inch	_____	lb.	lb.	_____	lb.	lb.
18 inch	_____	lb.	lb.	_____	lb.	lb.
19 inch	_____	lb.	lb.	_____	lb.	lb.
20 inch	_____	lb.	lb.	_____	lb.	lb.
21 inch	_____	lb.	lb.	_____	lb.	lb.
22 inch	_____	lb.	lb.	_____	lb.	lb.
23 inch	_____	lb.	lb.	_____	lb.	lb.
24 inch	_____	lb.	lb.	_____	lb.	lb.
25 inch	_____	lb.	lb.	_____	lb.	lb.
26 inch	_____	lb.	lb.	_____	lb.	lb.
27 inch	_____	lb.	lb.	_____	lb.	lb.
28 inch	_____	lb.	lb.	_____	lb.	lb.
29 inch	_____	lb.	lb.	_____	lb.	lb.
30 inch	_____	lb.	lb.	_____	lb.	lb.
31 inch	_____	lb.	lb.	_____	lb.	lb.
32 inch	_____	lb.	lb.	_____	lb.	lb.
33 inch	_____	lb.	lb.	_____	lb.	lb.
34 inch	_____	lb.	lb.	_____	lb.	lb.
35 inch	_____	lb.	lb.	_____	lb.	lb.
36 inch	_____	lb.	lb.	_____	lb.	lb.
37 inch	_____	lb.	lb.	_____	lb.	lb.
38 inch	_____	lb.	lb.	_____	lb.	lb.
39 inch	_____	lb.	lb.	_____	lb.	lb.
40 inch	_____	lb.	lb.	_____	lb.	lb.
41 inch	_____	lb.	lb.	_____	lb.	lb.
42 inch	_____	lb.	lb.	_____	lb.	lb.
43 inch	_____	lb.	lb.	_____	lb.	lb.
44 inch	_____	lb.	lb.	_____	lb.	lb.
45 inch	_____	lb.	lb.	_____	lb.	lb.
46 inch	_____	lb.	lb.	_____	lb.	lb.
47 inch	_____	lb.	lb.	_____	lb.	lb.
48 inch	_____	lb.	lb.	_____	lb.	lb.
49 inch	_____	lb.	lb.	_____	lb.	lb.
50 inch	_____	lb.	lb.	_____	lb.	lb.
51 inch	_____	lb.	lb.	_____	lb.	lb.
52 inch	_____	lb.	lb.	_____	lb.	lb.
53 inch	_____	lb.	lb.	_____	lb.	lb.
54 inch	_____	lb.	lb.	_____	lb.	lb.
55 inch	_____	lb.	lb.	_____	lb.	lb.
56 inch	_____	lb.	lb.	_____	lb.	lb.
57 inch	_____	lb.	lb.	_____	lb.	lb.
58 inch	_____	lb.	lb.	_____	lb.	lb.
59 inch	_____	lb.	lb.	_____	lb.	lb.
60 inch	_____	lb.	lb.	_____	lb.	lb.
61 inch	_____	lb.	lb.	_____	lb.	lb.
62 inch	_____	lb.	lb.	_____	lb.	lb.
63 inch	_____	lb.	lb.	_____	lb.	lb.
64 inch	_____	lb.	lb.	_____	lb.	lb.
65 inch	_____	lb.	lb.	_____	lb.	lb.
66 inch	_____	lb.	lb.	_____	lb.	lb.
67 inch	_____	lb.	lb.	_____	lb.	lb.
68 inch	_____	lb.	lb.	_____	lb.	lb.
69 inch	_____	lb.	lb.	_____	lb.	lb.
70 inch	_____	lb.	lb.	_____	lb.	lb.
71 inch	_____	lb.	lb.	_____	lb.	lb.
72 inch	_____	lb.	lb.	_____	lb.	lb.
73 inch	_____	lb.	lb.	_____	lb.	lb.
74 inch	_____	lb.	lb.	_____	lb.	lb.
75 inch	_____	lb.	lb.	_____	lb.	lb.
76 inch	_____	lb.	lb.	_____	lb.	lb.
77 inch	_____	lb.	lb.	_____	lb.	lb.
78 inch	_____	lb.	lb.	_____	lb.	lb.
79 inch	_____	lb.	lb.	_____	lb.	lb.
80 inch	_____	lb.	lb.	_____	lb.	lb.
81 inch	_____	lb.	lb.	_____	lb.	lb.
82 inch	_____	lb.	lb.	_____	lb.	lb.
83 inch	_____	lb.	lb.	_____	lb.	lb.
84 inch	_____	lb.	lb.	_____	lb.	lb.
85 inch	_____	lb.	lb.	_____	lb.	lb.
86 inch	_____	lb.	lb.	_____	lb.	lb.
87 inch	_____	lb.	lb.	_____	lb.	lb.
88 inch	_____	lb.	lb.	_____	lb.	lb.
89 inch	_____	lb.	lb.	_____	lb.	lb.
90 inch	_____	lb.	lb.	_____	lb.	lb.
91 inch	_____	lb.	lb.	_____	lb.	lb.
92 inch	_____	lb.	lb.	_____	lb.	lb.
93 inch	_____	lb.	lb.	_____	lb.	lb.
94 inch	_____	lb.	lb.	_____	lb.	lb.
95 inch	_____	lb.	lb.	_____	lb.	lb.
96 inch	_____	lb.	lb.	_____	lb.	lb.
97 inch	_____	lb.	lb.	_____	lb.	lb.
98 inch	_____	lb.	lb.	_____	lb.	lb.
99 inch	_____	lb.	lb.	_____	lb.	lb.
100 inch	_____	lb.	lb.	_____	lb.	lb.

YIELD CALCULATIONS

Test Cylinder Height	Weight	Weight	Vol	Yield	Actual Cement Content
For 7-day tests	_____	_____	_____	_____	_____
For 28-day tests	_____	_____	_____	_____	_____
Sieve Analysis of Aggregates	_____	_____	_____	_____	_____
Concrete Batched	_____	_____	_____	_____	_____
Batched	_____	_____	_____	_____	_____

**CERTIFIED**  
We certify the above test was conducted by  
us in accordance with accepted procedures  
and that the material is suitable for  
specification requirements.



WICHITA CHEMICAL & TESTING LABORATORIES  
1925 WASH ST WICHITA, KANSAS

1925 WASH

File in

Original Design Data.



CC: 2-Loak Joint  
2-Teller  
2-Knoll  
1-Hess

LAB NUMBER 806223-a  
(Refer to this Number)

Wichita

CHEMICAL AND TESTING

Laboratories

WICHITA 4, KANSAS

File:

PRELIMINARY DESIGN DATA

Actual Lab. Batch Mix

DAILY LOG OF CONCRETING OPERATION

CORE DESIGN

Type Mix: 55% Rock - 7.61 SACK  
Date: June 15, 1955  
Weather: \_\_\_\_\_  
Class of Concrete: 4500 P.S.I. @ 28 da  
Slump Ordered: 3 - 6 inches  
Nominal Mix: 1: 1.86 : 2.27  
Maximum Water: 5.5 gal./sk. cmt.  
Batch Wts., Lbs.  
Dry Basis: Cmt. 715 FA 1330 CA 1626

Project: 66" Water Transmission Lines  
Colwich, Kansas  
Contractor: Loak Joint Pipe Co.  
Structure: Pre-Stressed Pine Core  
Black & Veatch Project 2155  
Fine Aggregate (FA): Dallas Sand  
Coarse Aggregate (CA): Holins 3/4" Stone

COMPUTATION FOR ACTUAL BATCH PROPORTIONS—WEIGHTS MOIST AS USED

TIME MOISTURE TEST MADE

	No. 1 per ONE YARD			No. 2 per 3 YD. BATCH		
	% Moisture	Free Water	Actual Batch Wts.	% Moisture	Free Water	Actual
FA	0	None lb.	1330 lb.	0	None lb.	3990 lb.
CA	0	None lb.	1626 lb.	0	None lb.	4880 lb.
Total Free water		None lb.	_____ gal.		None lb.	_____ gal.
Added at Mixer		909 lb.	36.3 gal.		909 lb.	108.9 gal.
Total Water		303 lb.	36.3 gal.		909 lb.	108.9 gal.
Gal./sk. cement			4.77			4.77
Slump		4 inch			4 inch	
Entrained air: (Trapped)		None			None	

YIELD CALCULATIONS

Test Cylinder Nos:	Wt./cu. ft.	Wt./cu. yd.	Vol.	Yield	Actual Cement Content
For 7-day tests: <u>4713-4716-4715</u>					
For 28-day tests: <u>4716-4717-4718</u>	<u>147.2 lb.</u>	<u>397 1/2 lb.</u>	<u>27.0 cu. ft.</u>	<u>100.0%</u>	<u>7.61 cts/yd.</u>

Sieve Analysis of Aggregates

Sieve	Coarse	Fine
Opening	5 1/2 in.	3 1/2 in.
2 inch		
1 1/2 inch		
1 inch	0	
3/4 inch	0	0
1/2 inch	22.9	0
3/8 inch	58.2	0.4
No. 4	88.9	3.6
No. 8	95.4	14.8
No. 10		
No. 16	96.1	35.0
No. 20		
No. 30	96.5	60.6
No. 40		
No. 50	96.7	87.0
No. 100	97.1	97.2
F M	6.29	2.99

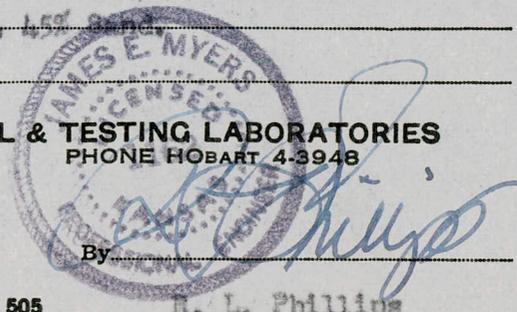
Concreting Started \_\_\_\_\_ Finished \_\_\_\_\_  
No. Batches Delivered \_\_\_\_\_ Batch Vol. \_\_\_\_\_  
Ticket Nos. \_\_\_\_\_  
Concrete laid \_\_\_\_\_ cu. yds.  
Cement Used 7.61 sks. Brand Lehigh Portland  
NO ADMIX sks. Brand \_\_\_\_\_  
Remarks: Compression Tests will follow when due. Aggregate Ratio, 1 by Wt., 55% Rock, 45% Sand.

WICHITA CHEMICAL & TESTING LABORATORIES  
1428 N. MOSLEY AVE. PHONE HOBART 4-3948

% P200 WASH

Coarse: 2.6  
Fine: 1.6

FORM 505



R. L. Phillips



LAB NUMBER (Refer to this Number)

Wichita

CHEMICAL AND TESTING LABORATORIES

WICHITA & KANSAS

File:

001

DAILY LOG OF CONCRETING OPERATION

Project: \_\_\_\_\_

Contractor: \_\_\_\_\_

Structure: \_\_\_\_\_

Time Aggregate (T.A.): \_\_\_\_\_

Coarse Aggregate (C.A.): \_\_\_\_\_

Dry Batch: Cnt \_\_\_\_\_

Batch Wt. Lbs. \_\_\_\_\_

Maximum Water \_\_\_\_\_ gal/yk cont

Normal Mix \_\_\_\_\_

Slump Ordered \_\_\_\_\_

Class of Concrete \_\_\_\_\_

Weather \_\_\_\_\_

Date \_\_\_\_\_

Type Mix \_\_\_\_\_

COMPUTATION FOR ACTUAL BATCH PROPORTIONS—WEIGHTS MOIST AS USED

No. 1			No. 2		
TEST MADE	TIME MOISTURE	% Moisture	Free Water	Actual	Actual
GA	lb.	lb.	lb.	lb.	lb.
CA	lb.	lb.	lb.	lb.	lb.
Total Free Water	gal.	lb.	gal.	gal.	gal.
Added as Minor	gal.	lb.	gal.	gal.	gal.
Total Water	lb.	lb.	lb.	lb.	lb.
Gal/yk cement					
Slump					
Entered at:					

YIELD CALCULATIONS

Test Cylinder Nos:	Wt. per ft.	Wt. per yd.	Vol	Yield	Actual Cement Content
For 7-day tests					
For 28-day tests					

Slieve Analysis of Aggregates

Slieve	Course	Ratio	Concrete Batch	Batch Vol
Opening				
3 inch				
1 1/2 inch				
1 inch				
3/4 inch				
3/8 inch				
No. 4				
No. 8				
No. 10				
No. 16				
No. 20				
No. 30				
No. 40				
No. 60				
No. 100				

WICHITA CHEMICAL & TESTING LABORATORIES



% 500 WASH



REQUEST FOR APPROVAL

We hereby submit this report for an approval of these materials and/or mixtures intended for use on this project.

Wichita

CHEMICAL AND TESTING

Laboratories

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS

RESEARCH ON MANUFACTURING PROBLEMS

1428 N. MOSLEY AVE.

PHONE HOBART 4-3948

WICHITA 4, KANSAS

PRELIMINARY CERTIFICATION

REPORT ON 3/4" COARSE AGGREGATE

CC: 2-Lock Joint @ Colwich, 2-Weller, 1-Knoll, 1-Hess, File: 1

Date June 20, 1955

Aggr. Report No. LJC - 1

LAB NUMBER 806021-a (Refer to this Number)

PRINCIPALS ARE

- MEMBERS OF: AMERICAN CHEMICAL SOCIETY, AMERICAN SOCIETY FOR TESTING MATERIALS, AMERICAN SOCIETY OF CIVIL ENGINEERS, ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS, LICENSED PROFESSIONAL ENGINEERS

Contractor: Lock Joint Pipe Co., P.O. Box 137 - Colwich, Kansas; Project: 66" Water Transmission Lines, Project 2155, Colwich, Kansas; Engineer: Black & Veatch, Consulting Engrs., Location: Colwich, Kansas

Sample taken by: Lab. Inspector Co. Stockpile; Time: 2:00 P.M.; Date: 6-2-55

Table with columns for Car or sample number, GRADING (Percent Retained), sieve number, and IMPURITIES (Organic Matter, Silt, Clay Lumps, Unsound Particles, Coal Sticks). Includes data for Moline Stone 3/4" and Specifications.

Remarks: SOURCE: Crushed Limestone, Concrete Materials & Construction Co., Moline, Kansas, Producer.

\*-to be reported later

CERTIFIED

We certify the above test was conducted by us in accordance with accepted procedures and that this material meets specification requirements.

WICHITA CHEMICAL & TESTING LABORATORIES

By: R. L. Phillips



**Wichita Laboratories**  
**CHEMICAL AND TESTING**  
 ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
 RESEARCH ON MANUFACTURING PROBLEMS  
 1428 N. MOSLEY AVE. PHONE HOBERT 4-9948  
 WICHITA 4, KANSAS

MEMBERS OF:  
 AMERICAN CHEMICAL SOCIETY  
 AMERICAN SOCIETY FOR TESTING MATERIALS  
 AMERICAN SOCIETY OF CIVIL ENGINEERS  
 ASSOCIATION OF ASHALT PAVING TECHNOLOGISTS  
 LICENSED PROFESSIONAL ENGINEERS

CC: [illegible]  
 [illegible]  
 [illegible]  
 [illegible]

Date: \_\_\_\_\_  
 Agent Report No. \_\_\_\_\_  
 LAB NUMBER \_\_\_\_\_  
 (Refer to this Number)

REPORT ON

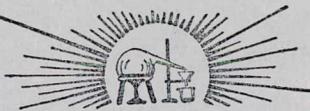
Project: \_\_\_\_\_  
 [illegible]  
 [illegible]

IMPURITIES

Car or sample number	GRADING, Percent					size number	Clay, %	Organic Matter	Sulfur, %	Clay Lumps, %	Unround Particles	Coal Sticks, %
	10	20	40	60	80							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

WICHITA CHEMICAL AND TESTING LABORATORIES  
 [Signature]  
 [Stamp]

Remarks: [illegible]  
 [illegible]  
 [illegible]



CC: 2-Lock Joint @ Colwich  
 2-Weller  
 1-Knoll  
 1-Hess

File: 1

**REQUEST FOR APPROVAL**  
 We hereby submit this report for an approval of these materials and/or mixtures for use on this project.

**Wichita**

**CHEMICAL AND TESTING**

**Laboratories**

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS

RESEARCH ON MANUFACTURING PROBLEMS

1428 N. MOSLEY AVE.

PHONE HOBART 4-3948

WICHITA 4, KANSAS

PRELIMINARY CERTIFICATION

Date June 20, 1955

Aggr. Report No. LJC -2

LAB NUMBER 806021-b  
 (Refer to this Number)

REPORT ON 3/8" COARSE AGGREGATE

Contractor: Lock Joint Pipe Co.  
 Box 137 - Colwich, Ks.

Project: 66" Water Transmission Lines  
 Project 2155

Engineer: Black & Veatch, Cons. Engrs. Location: Colwich, Kansas

Sample taken by: Lab. Inspector, Co. Stockpile Time: 2:00 P.M. Date: 6-8-55

Car or sample number	GRADING, Percent Retained								% Ret.	IMPURITIES				
	1"	3/4"	1/2"	3/8"	#4	#8	#16	#50		#100	Organic Matter ASTM C40	% Silt P200 ASTM C117	Clay Lumps, Shale ASTM C142 AASHTO T10	Unsound Particles ASTM C235 C83 C131
<b>COARSE AGGREGATE (For Coating Mix)</b>														
Moline Stone 3/8" (F.M. 5.63)	0	0	3.5	6.3	71.8	95.2	96.9	97.5	97.9	—	2.0	0	0	0
Specifications Par. B-2.03, Pg. B-7: (Also B-4.05, B-5001) (ASTM C39) - No Gradation limits this size. F.M. Variation $\pm$ 0.15 (as approved by the Engineer)														
<b>ADDITIONAL AGGREGATE DATA</b>														
	<u>Bulk Spec. Grav.</u>				<u>Sat'd. Spec. Grav.</u>				<u>Apparent Spec. Grav.</u>		<u>Absorption %</u>			
Moline 3/4" Stone	2.45				2.54				2.66		3.16 %			

Remarks: **SOURCE:** Crushed Limestone, Concrete Materials & Construction Co., Moline, Ks. Producer

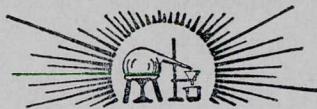
\* - To be reported later.

**CERTIFIED**

We certify the above test was conducted by us in accordance with accepted procedures and that this material meets specification requirements.

WICHITA CHEMICAL & TESTING LABORATORIES  
 By: *[Signature]*  
 R. L. Phillips





**REQUEST FOR APPROVAL**

We hereby submit this report for an approval of these materials and/or mixtures intended for use on this project.

**Wichita**

**CHEMICAL AND TESTING**

**Laboratories**

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS

RESEARCH ON MANUFACTURING PROBLEMS

1428 N. MOSLEY AVE.

PHONE HOBART 4-3948

WICHITA 4, KANSAS

PRELIMINARY CERTIFICATION

CC: 2-Lock Joint Pipe  
 @ Colwich  
 2-Weller  
 1-Knoll  
 File: Hess  
 1-File

**PRINCIPALS ARE**

- MEMBERS OF:
- AMERICAN CHEMICAL SOCIETY
- AMERICAN SOCIETY FOR TESTING MATERIALS
- AMERICAN SOCIETY OF CIVIL ENGINEERS
- ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS
- LICENSED PROFESSIONAL ENGINEERS

REPORT ON FINE AGGREGATE

Date June 20, 1955

Aggr. Report No. LJC-3

LAB NUMBER 305296-3  
 (Refer to this Number)

Contractor: Lock Joint Pipe Co.  
Box 137 - Colwich, Ks.

Project: 66" Water Transmission Lines

Engineer: Black & Veatch.

Location: Colwich, Kansas

Sample taken by: Lab. Inspector Co. Stockpile

Time: 3:00 P.M.

Date: 5-31-55

Car or sample number	GRADING, Percent Retained sieve number									% Ret.	IMPURITIES				
	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100		Organic Matter ASTM C40	% Silt P200 ASTM C117	Clay Lumps, Shale ASTM C142 AASHTO T10	Unsound Particles ASTM C235 C88 C131	Coal Sticks, Etc. ASTM C123 C129 C227
<u>FINE AGGREGATE (For Core &amp; Coating Mixes)</u>															
<u>Dolese Concrete Sand (F.M. 2.99)</u>	0	0	0.4	3.6	14.8	35.0	60.6	87.0	97.2	O.K. Type I	1.6	None	None	None	
<u>Specifications:</u>	Par. B-2.02, Pg. B-6; B-4.05, Pg. B-12; B-5002, Pg. B-14.														
<u>(ASTM C33)</u>	---	---	0	0-5	0-20	15-50	40-75	70-90	90-98	Type I	3.0	1.0	---	0.5	
<u>Black &amp; Veatch Grad.:</u>	F.M. 2.50 to 3.00 Variation $\pm$ 0.15 (as approved by Engineer)														
			0-5	---	20-40	---	70-80	92-98							
<u>ADDITIONAL AGGREGATE DATA</u>															
	<u>Bulk Spec. Grav.</u>				<u>Sat'd. Spec. Grav.</u>				<u>Apparent Spec. Grav.</u>			<u>Absorption %</u>			
<u>Dolese Sand</u>	2.56				2.58				2.60			0.88 %			

Remarks:

SOURCE: Washed and Graded Sand, Arkansas River Deposit, N. Wichita, Dolese Bros. Co., Wichita, Kansas

\*Mortar Cubes on Separate Report.

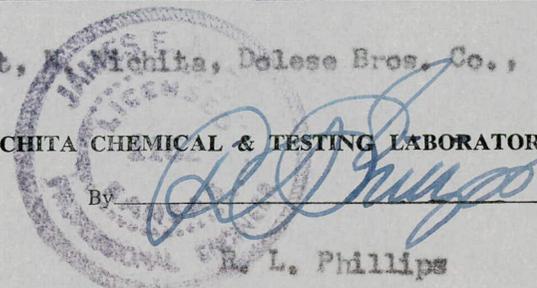
CERTIFIED

We certify the above test was conducted by us in accordance with accepted procedures and that this material meets specification requirements.

WICHITA CHEMICAL & TESTING LABORATORIES

By

R. L. Phillips





# Wichita CHEMICAL AND TESTING Laboratories

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
1428 N. MOSLEY AVE. PHONE HOBART 4-3948  
WICHITA 4, KANSAS

J. E. MYERS  
MANAGER  
W. H. CAMPEN  
J. R. SMITH  
J. J. REMAR  
ASSOCIATES  
LICENSED PROFESSIONAL  
ENGINEERS

## REPORT OF TEST

MEMBERS OF:  
AMERICAN CHEMICAL SOCIETY  
AMERICAN SOCIETY FOR TESTING MATERIALS  
AMERICAN SOCIETY OF CIVIL ENGINEERS  
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS

Test Made for: Lock Joint Pipe Co.  
P.O. Box 137  
Colwich, Kansas

Date: June 20, 1955

Lab. Number: 805296-b  
(REFER TO THIS NUMBER)

Submitted By: Lab. Inspector Date Received At Lab.: 5-31-55 Time: 3:00 P.M.

Material Tested: CONCRETE SAND  
66" Water Transmission Lines  
Project No. 2155  
Black & Veatch, Consulting Engrs.

No. of Samples: One - 100 lbs.  
Sample Designations:  
PRELIMINARY CERTIFICATION  
Dolese Bros. Co. - Concrete Sand

### REQUEST FOR APPROVAL

We hereby submit this report for an approval of these materials and/or mixtures intended for use on this project.

### RESULTS OF TEST

(Date Molded: 6-7-55)

#### A.S.T.M. MORTAR STRENGTH TESTS (7-Day Results)

<u>A. Dolese Concrete Sand</u>				
Specimen No.:	LCP-1	LCP-2	LCP-3	
7-Day Strength, PSI:	3650	3775	3625	
Average P.S.I.:				3683
% of Standard:				105.4 %
<u>B. Standard Ottawa Sand</u>				
Specimen No.:	LOSP-1	LOSP-2	LOSP-3	
7-Day Strength, P.S.I.:	3250	3775	3460	
Average PSI:				3495
% of Standard:				100.0 %

To meet A.S.T.M. C-33-52T "Not less than 95% of Standard."

### CERTIFIED

We certify the above test was conducted by us in accordance with accepted procedures and that this material **meets** specification requirements.

CC: 2-Lock Joint @ Colwich  
2-Meller  
1-Kroll  
1-Hess

Reference: A.S.T.M. 087

File: 1  
FORM 501

WICHITA CHEMICAL & TESTING LABORATORIES

By: \_\_\_\_\_



Myers



# Wichita CHEMICAL AND TESTING Laboratories

CC: 2-Lock Joint  
2-Weller  
1-Knoll  
1-Hess

Principals Are MEMBERS OF:  
AMERICAN CHEMICAL SOCIETY  
AMERICAN SOCIETY FOR TESTING MATERIALS  
AMERICAN SOCIETY OF CIVIL ENGINEERS  
ASS'N OF ASPHALT PAVING TECHNOLOGISTS  
LICENSED PROFESSIONAL ENGINEERS

ANALYTICAL CHEMISTS - BACTERIOLOGISTS - TESTING ENGINEERS  
RESEARCH ON MANUFACTURING PROBLEMS  
1428 N. MOSLEY AVE. PHONE HO BART 4-3948  
WICHITA 4, KANSAS

File: 1

## FLEXURE AND COMPRESSION TEST REPORT

Project: 66" Water Transmission Line  
Lab. No. 806263  
(Refer to This Number)  
Location: Colwich, Kansas  
Contractor: Lock Joint Pipe Co.  
Architect: Black & Veatch  
Owner: ...  
Date Submitted at Lab: Made @ Lab.

Date: June 22, 1955  
Report No. LJD9- #1  
Specimens  
Made by: Laboratory  
Structure: Water Lines

PRELIMINARY DESIGN SPECIMENS  
55% Rock - 7.61 Sack

SPECIMEN NUMBER	DATE MADE	SLUMP INCHES	MIXTURE				Compressive Strength P. S. I.	Type Fracture	Age In Days	Days Lab. Cured, Standard Conditions	Remarks and Location of Pour	
			Fine Aggregate	Coarse Aggregate	Cement	Total Water						
No. 4713	6-15	4"	1370	1626	715	303	4359	DS-AF	7	6	Design Specimens	
No. 4714	6-15	4"	1330	1626	715	303	4518	RC-AF	7	6	Design Specimens	
No. 4715	6-15	4"	1330	1626	715	303	4341	RC-AF	7	6	Design Specimens	
Required 28 day strength:							4500 P.S.I.					

TYPE FRACTURE: RC—regular cone; VS—vertical shear; DS—diagonal shear; HS—horizontal rupture; MB—mortar bond failure;

Brand of Cement: Laligh Portland  
Admixture: None  
Fine Aggregate: Deless  
Coarse Aggregate: Rollins 3/4"  
Mixed Aggregate: None

AF—aggregate failure.

WICHITA CHEMICAL & TESTING LABORATORIES

By: [Signature]

