



# APPLIED TECHNICAL SERVICES, INCORPORATED

1049 Triad Court, Marietta, Georgia 30062 • (770) 423-1400 Fax (770) 424-6415

## MATERIALS TEST REPORT

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Ed Rau  
Shumard Corporation  
2411 Weaver Street  
Haltom City, TX 76117

Purchase Order #: 19-0502

### Test Procedure

- Shear
- Load
- Impact
- Density
- Bend
- Pressure

Part Number: 36" ID, 4-foot length, round reinforced concrete pipe

Test Procedure: Load pipe until failure per ASTM C497-19 external load crushing strength test by the three-edge bearing test method. See Figure 1 for test setup.

### Test Results

Sample I.D.	Load (lbs.)	Load per Linear Foot (lbs.)	Remarks
4	28,297	7,074	Cracks measured on inside of pipe. See Figure 2 for example of crack.
5	32,720	8,180	
6	32,411	8,103	

31,142 AVG.



Prepared by: Hailey Brower Hailey Brower  
Materials Testing

Approved by: Jeremy Senn Jeremy Senn  
Group Supervisor

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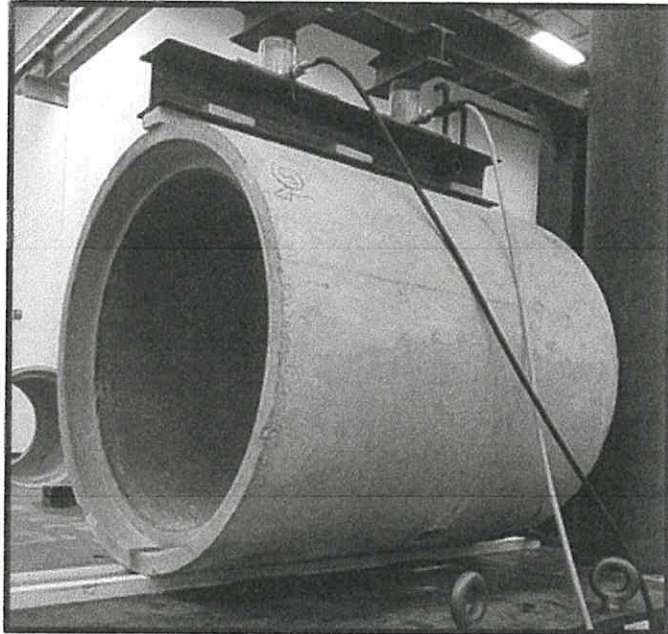
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**Figure 1 – Test Setup**



**Figure 2 – Inside Crack Example**



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Ed Rau
Shumard Corporation
2411 Weaver Street
Haltom City, TX 76117

Purchase Order #: 19-0502

Test Procedure

- Shear [ ]
Load [X]
Impact [ ]
Density [ ]
Bend [ ]
Pressure [ ]

Part Number: 36" ID, 4-foot length, round reinforced concrete pipe with fiberglass liner

Test Procedure: Load pipe per ASTM C497-19 external load crushing strength test by the three-edge bearing test method as a guide. See Figure 1 for test setup.

Test Results

Table with 4 columns: Sample I.D., Load (lbs.), Load per Linear Foot (lbs.), Remarks. Contains 3 rows of test data.

48096 NG



Prepared by: Hailey Brower
Approved by: Jeremy Senn

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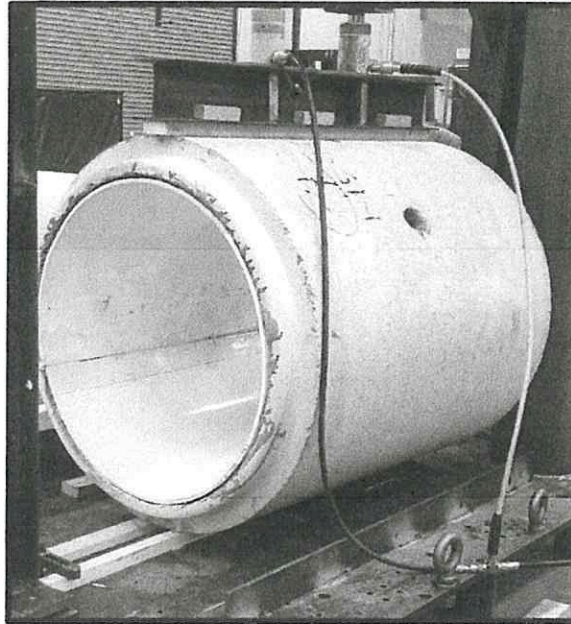
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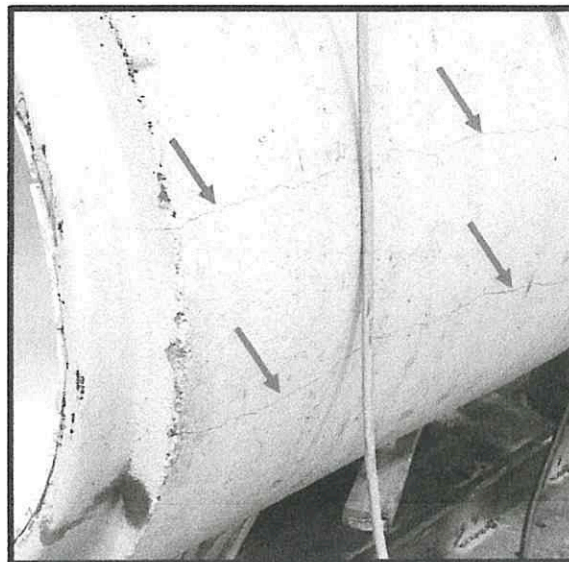
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**Figure 1 – Test Setup**



**Figure 2 – Outside Crack Examples**



MATERIALS TEST REPORT

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Ed Rau
Shumard Corporation
2411 Weaver Street
Haltom City, TX 76117

Purchase Order #: 19-0502

Test Procedure

- Shear [ ]
Load [X]
Impact [ ]
Density [ ]
Bend [ ]
Pressure [ ]

Part Number: Retest of 36" ID, 4-foot length, round reinforced concrete pipe with new fiberglass liner

Test Procedure: Load pipe per ASTM C497-19 external load crushing strength test by the three-edge bearing test method as a guide. See Figure 1 for test setup.

Test Results

Table with 4 columns: Sample I.D., Load (lbs.), Load per Linear Foot (lbs.), Remarks. Contains 3 rows of test data.



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Materials Testing
Approved by: [Signature] Jeremy Senn
Group Supervisor

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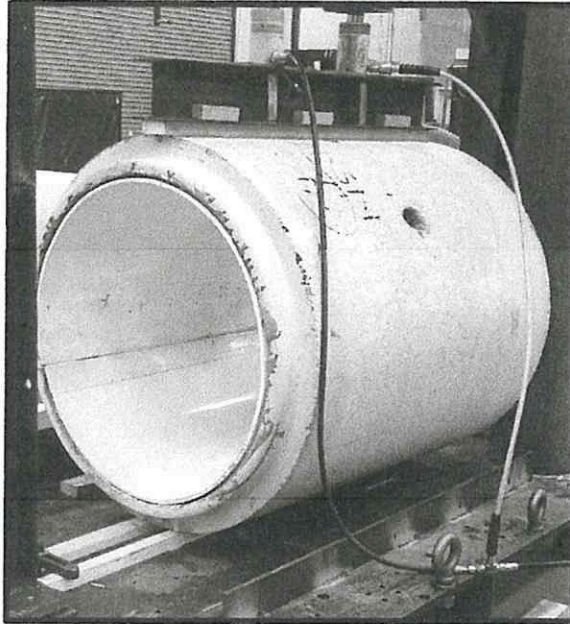
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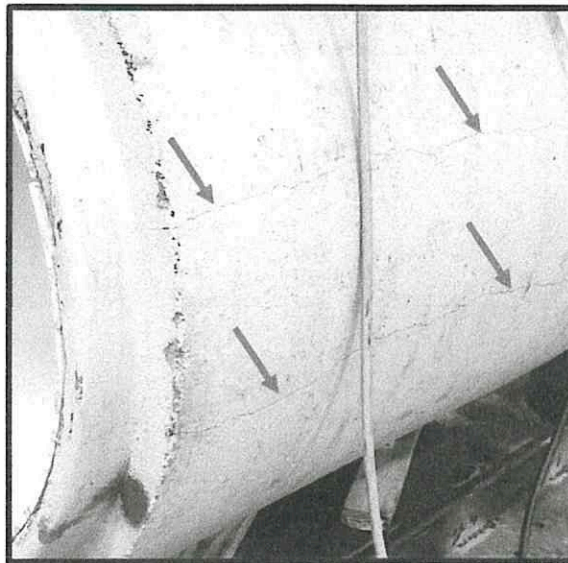
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**Figure 1 – Test Setup**



**Figure 2 – Outside Crack Examples**



MATERIALS TEST REPORT

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Ed Rau
Shumard Corporation
2411 Weaver Street
Haltom City, TX 76117

Purchase Order #: 19-0502

Test Procedure

- Shear [ ]
Load [X]
Impact [ ]
Density [ ]
Bend [ ]
Pressure [ ]

Part Number: 36" OD, 4-foot length, round fiberglass pipe

Test Procedure: Loaded 3 pipes per ASTM C497-19 external load crushing strength test by the three-edge bearing test method as a guide. Measured deflection at center of pipe until reaching equipment limits. See Figure 1 for test setup.

Test Results

See Table I-III for test results.



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Table I – Sample 1 Test Results

Displacement (in)	Load (lbs.)	Load per Linear Foot (lbs.)	Remarks
1	1,752	438	No noticeable damage.
2	3,469	867	
3	5,108	1,277	
4	6,628	1,657	
5	8,068	2,017	

Table II – Sample 2 Test Results

Displacement (in)	Load (lbs.)	Load per Linear Foot (lbs.)	Remarks
1	1,200	300	No noticeable damage.
2	2,346	587	
3	3,441	860	
4	4,475	1,119	
5	5,426	1,357	
6	6,333	1,583	

Table III – Sample 3 Test Results

Displacement (in)	Load (lbs.)	Load per Linear Foot (lbs.)	Remarks
1	1,128	282	No noticeable damage.
2	2,408	602	
3	3,528	882	
4	4,598	1,150	
5	5,602	1,401	
6	6,565	1,641	





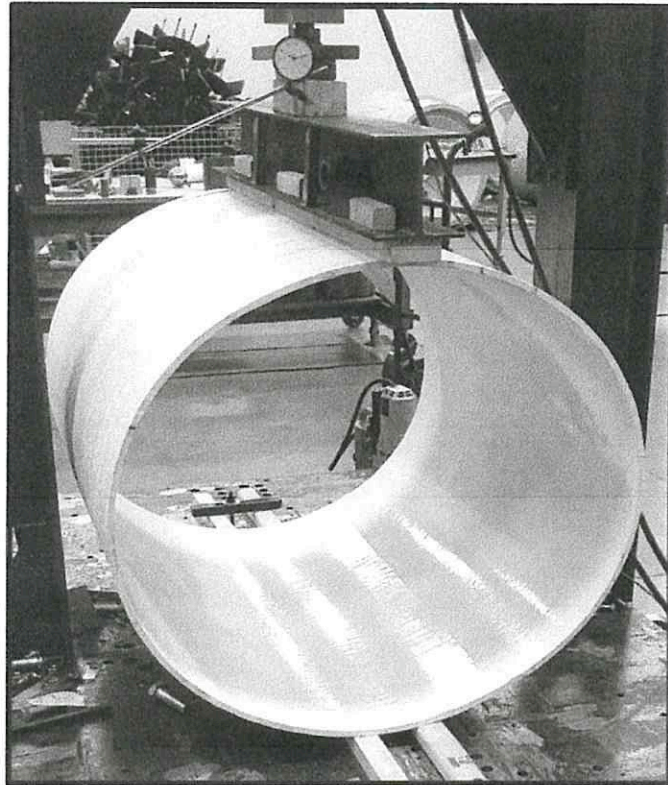
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**Figure 1 – Test Setup with Pipe Under Load**