

TECHNICAL MEMORANDUM

To: Trevor Walter, PE, City of Baxter
From: Alex Bitter, PE, Widseth
Cc: Kent Rohr, PE, Widseth
Subject: Whiskey Creek Bridge Abutment Concrete Results Evaluation
Date: September 28, 2026
Project: Whiskey Creek Bridge Abutment Rehabilitation: 2023-11678
Attachments: Transmittal 3_Whiskey Creek Bridge Abutment Rehab Concrete Testing
2026-08-07 Batch Ticket

Widseth has been assisting the City of Baxter with project in the subject line. Anderson Brothers was the low quoter selected by the City Council at the February 17th City Council meeting. A preconstruction meeting was held on May 27th and Anderson Brother was able to start working on the abutments in June of 2026.

The southern abutment was able to have the decayed concrete removed down to solid concrete. The northern abutment was taken down approximately 1.5' with no solid concrete observed. A drill was used to drill into the concrete another 8" and it did not seem there was solid concrete to be found. Anderson Brothers was put on hold and Widseth reviewed with City staff to came up with 4 possible options to resolve the issue.

At the July 21st City Council meeting the Council authorized a change order to remove and replace the north abutment and amending the project budget. Widseth has reviewed with Anderson Brothers and construction will start again over the next couple weeks.

Anderson Brothers completed the concrete pours as of 8-07-26. The concrete breaks on the first pour which included the footing of the north abutment, at a 28-day break strength average of 4,240 psi. The second pour included the vertical portions of the north and south abutments and had a 28-day break strength average of 3,460 psi. This is below the specified 28-day requirement of 4,000 psi. The slump of the low break concrete was 6.25-inches. The attached batch ticket reflects a sump of 6-inches as that was the second slump test result. The first slump test was 6.5-inches. Braun Intertec averaged the slump test results. The specification range of the slump is 2 to 5 inches. There were 5 gallons of water added on site. This was within the allowable water to be added and the water cement ratio was 0.421 after the water was added and the maximum water cement ratio is 0.44. It is not believed the slump is the reason for the low concrete strength. Widseth requested the final 35-day cylinder be pushed to a 56-day break to provide additional cure time. The goal of this is to obtain an extended view of the concrete's strength. The results of this 56-day break will take place on October 2nd and will be provided at the Utility Commission and included in the Memo prior to City Council.

In review of the MnDOT specification, MnDOT recommends to average the 28-day breaks from consecutive pours of the same mix design. The average of the four 28-day breaks is 3,852 psi. This represents 96.3% of the specified strength. Following MnDOT table 2461.5-5, if the average 28-day concrete breaks is greater than 96.0% of the specified strength then no deductions are recommended for the materials as approved by the engineer.

The Widseth project management team reviewed the concrete breaks with the bridge team. Based on the total average 28-day concrete break, the application and location of the bridge, it is recommended for the bridge abutments to remain in place.

Widseth is happy to address any questions associated with this project.

Thank you,

A handwritten signature in blue ink that reads "Alex D Bitter". The signature is written in a cursive, flowing style.

Alex Bitter, PE
Contracted Project Engineer
Widseth, VP

Client:	Project:
City of Baxter 13190 Memorywood Dr Baxter, MN 56425-1000	10014372_001.00.01 Whiskey Creek Bridge Abutment Rehab Concrete Testing 7870 Excelsior Road Baxter, MN 56425

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Compressive Strength of Concrete	28 Day Concrete Break Results, 2026-08-05, Set 01	CC-000003
Compressive Strength of Concrete	28 Day Concrete Break Results, 2026-08-07, Set 02	CC-000004

Distribution List	
Name	Company
Bitter, Alex	Widseth
Kluempke, Keith	Braun Intertec Corp.

3900 Roosevelt Road
Suite 113
Saint Cloud, MN 56301
Phone: 320-253-9940

Compressive Strength of Concrete

Test Method: ASTM C39

Report #: CC-000003
Report Date: 09/02/2026
Sample: 748889

Client:

City of Baxter
13190 Memorywood Dr
Baxter, MN 56425-1000

Project:

10014372_001.00.01
Whiskey Creek Bridge Abutment Rehab Concrete
Testing
7870 Excelsior Road
Baxter, MN 56425

Sample Details

Set #:	1	Technician:	Xiong, Huechi	Batched:	09:27 CDT
Specimen Size:	4" X 8"	Cast By:	Xiong, Huechi	Sampled:	10:05 CDT
Specimens In Set:	4	Date Cast:	08/05/26	Cast:	10:17 CDT
Truck / Ticket #:	241 / 7016486	Sampled From:	Truck Mixer per ASTM C172	Truck Empty:	10:20 CDT
Contractor:	Anderson Brothers Construction	Placement Method:	Chute	Placement Time:	53 (min)

Location

Placement Location:	Bridge Abutment Repair
Location Details:	North Abutment Foundation repair, first portion.
Sample Location / Notes:	Same

Batch Log

Supplier:	Cemstone Products Co.	Mix Design:	CD 4000 3/4GV AE	Strength:	4000 (psi)
Sampling Method:	C172 - Concrete			Air:	5 - 8.5 (%)
On-Site Admixtures:	None			Slump:	2 - 5 (in)

Field Measurements

Weather:	Sunny	Slump (in):	3-1/2 (ASTM C143)	Plastic Unit Weight:	
Air Temperature (F):	71	Concrete Temp (F):	75 (ASTM C1064)	Air Content:	6.5 (ASTM C231)
				Load Volume:	5.25 (yd³)

Lab Test Results

Testing Lab: Hibbing, 3404 15th Avenue East, Suite 9, Hibbing, MN

Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
1-1	7	08/12/26	2 / 5	4.00	12.57	37,820	3,010	2	I	N
1-2	28	09/02/26	2 / 26	4.00	12.57	53,470	4,250	2	P	N
1-3	28	09/02/26	2 / 26	4.00	12.57	53,110	4,230	2	P	N
1-4	35 H	09/09/26	2 / 33							

Test Age Average Strengths (psi): 7 Day - 3010, 28 Day - 4240

Capping Methods

I: The result is for informational purposes.	N: ASTM C1231, Unbonded Caps
P: The result meets or exceeds the compressive strength of the project's specifications.	
Tested By: Robert Curtis (1,2,3)	
Checked In : 08/07/2026 (1,2,3,4)	



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6

Signed on Behalf of Keith Kluempke

3900 Roosevelt Road
Suite 113
Saint Cloud, MN 56301
Phone: 320-253-9940

Compressive Strength of Concrete

Test Method: ASTM C39

Report #: CC-000004
Report Date: 09/06/2026
Sample: 749694

Client:

City of Baxter
13190 Memorywood Dr
Baxter, MN 56425-1000

Project:

10014372_001.00.01
Whiskey Creek Bridge Abutment Rehab Concrete
Testing
7870 Excelsior Road
Baxter, MN 56425

Sample Details

Set #:	2	Technician:	Xiong, Huechi	Batched:	10:44 CDT
Specimen Size:	4" X 8"	Cast By:	Xiong, Huechi	Sampled:	11:10 CDT
Specimens In Set:	4	Date Cast:	08/07/26	Cast:	11:23 CDT
Truck / Ticket #:	239 / 7020382	Sampled From:	Truck Mixer per ASTM C172	Truck Empty:	12:08 CDT
Contractor:	Anderson Brothers Construction	Placement Method:	Chute	Placement Time:	84 (min)

Location

Placement Location: Bridge Abutment Repair
Location Details: North Abutment Foundation Repair, second portion, and the South Abutment Foundation Repair.
Sample Location / Notes: Same

Batch Log

Supplier: Cemstone Products Co. **Mix Design:** CD 4000 3/4GV AE
Plant: Plant 045 Brainerd, MN
Sampling Method: C172 - Concrete
On-Site Admixtures: None

Specifications

Strength: 4000 (psi)
Air: 5 - 8.5 (%)
Slump: 2 - 5 (in)

Field Measurements

Weather: Cloudy **Slump (in):** 6-1/4 (ASTM C143) **Plastic Unit Weight:**
Air Temperature (F): 74 **Concrete Temp (F):** 79 (ASTM C1064) **Air Content:** 6.6 (ASTM C231)
Load Volume: 6.50 (yd³)

Lab Test Results

Testing Lab: Bloomington, 11001 Hampshire Ave S, Bloomington, MN

Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in ²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
2-1	7	08/14/26	3 / 4	4.00	12.57	29,521	2,350	5	I	N
2-2	28	09/04/26	3 / 25	4.00	12.57	44,640	3,550	5	F	N
2-3	28	09/04/26	3 / 25	4.00	12.57	42,449	3,380	5	F	N
2-4	35 H	09/11/26	3 / 32							

Test Age Average Strengths (psi): 7 Day - 2350, 28 Day - 3460

Capping Methods

I: The result is for informational purposes.
F: The result does not meet the compressive strength of the project's specifications.
Tested By: Kelly Larson ACI #02262894 (1,2,3)
Checked In : 08/10/2026 (1,2,3,4)

N: ASTM C1231, Unbonded Caps



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6

Signed on Behalf of Keith Kluempke

CERTIFICATE OF COMPLIANCE

Cemstone CPC
17229 County Road 25
Brainerd, MN 56401

Plant: 045

CUSTOMER
Anderson Brothers Construction C

RM#246

Order# 175
Job# GREG 218-820-9920
Batch Record: 08/07/2026

Ticket# 7020382
S.P.# 26355

PO# 26355
Bridge # GREG 218-820

Begin Time: 10:44 AM
Volume: 6.50 CYDS

Mix ID 3B52CF

RMX 246-020
Mix Desc: 4000, 3/4GV, AE

Truck #: 239
QTY Order: 6.5

Driver: 0432283
QTY Del: 6.5

Loads: 1

Ingredient	Source	MCFac	AbsFac	OD	ABS	SSC	Free Mst	CYDS TARG	Target	Actual	Free Wat	Trim
67CIS	48001	0.019	0.014	1710 lb 24		1734	5.55	1742	11326 lb	11220	56 lb	
SANDCAI	01136	0.048	0.008	1362 lb 11		1373	54.48	1427	9278 lb	9260	354 lb	
FALCEMEN	ALPMIL			483 lb		483		493	3140 lb	3110		
FLYASH	COCUNND			85.0 lb		85.0		85.0	552.5 lb	575.0		
CWWATER	COLDWELL			30.00 gl		30.00		30.28	131.84 gl	131.00	105.23 lb	-2.00 gl
AEA	MAIR90			10.00 oz		10.00		10.00	65.00 oz	65.00	2.03 lb	
MRWRA	AMPOL1020			2.00 /C		00		1.36	73.84 oz	72.00	2.25 lb	
VMA	SMMAT358			3.00 /C		00		1.04	110.76 oz	111.00	3.47 lb	
HISANDCIS	48001		0.008	%								
RAWATER	HOTWELL			0.00 %								

Actual
Total Water: 1,509 lb
Design W/C: 0.440
Slump: 4.00 in

Num Batches: 1 OD
Design Water: 1624.4 lb
Water/Cement: 0.409 A
Water in Truck: 0.0 gl Adjust Water: 0.0 gl

To Add: 13.848 gl
/ Load Trim Water: -2.0 gl / CYDS

Plant Weather: Cloudy 65.0°F 3.4 mi/h winds out of SSW, RH: 92%

Observation Time 10:37 AM

CERTIFICATE OF COMPLIANCE

AIR CONTENT 6.6 AIR TEMP. 70 WATER ADDED @ PLANT _____ gl
CONCRETE TEMP. 81 SLUMP 16.0 WATER ADDED @ JOBSITE 5 gl
CYLINDER NO. _____ TIME DISCHARGED _____ TOTAL ACTUAL WATER _____ lb
LOCATION / PART of STRUCTURE _____
INSPECTOR SIGNATURE _____
PRODUCER SIGNATURE _____