BATTLE MOUNTAIN RESOURCES, INC.

February 23, 2023

Mr. Lucas J. West
State of Colorado
Colorado Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203

Re: Battle Mountain Resources, Inc.
San Luis Project M-88-112
Pond 2 Construction Completion Report

Dear Mr. West:

Please find the attached Construction Completion Report prepared by Engineering Analytics (EA) for the Pond 2 concrete containment at the Battle Mountain, San Luis Water Treatment Plant (WTP).

Should you have any questions or comments, please contact me at 719-379-0538.

Respectfully,

Julio F. Madrid
Sr. Supervisor Colorado Legacy Sites
Reclamation and Closure

Cc: David Carino, Battle Mountain Site Manager San Luis Site

February 14, 2023 Project No. 210105:09b

Mr. Julio Madrid
Battle Mountain Resources
P.O. Box 910
San Luis, CO 81152

RE: Construction Completion Report
San Luis Water Treatment Plant Pond 2 Improvements

Dear Mr. Madrid,

## 1.0 INTRODUCTION

### 1.1 Project Summary

This Construction Completion Report has been prepared by Engineering Analytics, Inc. (EA) to document the improvements made to Pond 2 at the Battle Mountain Resources San Luis Water Treatment Plant (WTP) near San Luis, Colorado. The Pond 2 improvements generally consisted of the construction of a new cast-in-place concrete water retention pond. The work was performed in accordance with the *Project Manual, San Luis Water Treatment Plant Pond 2 Improvements (Issued for Construction)* (EA, 2022). Work that has been completed to date includes the following:

- Removal of the existing high-density polyethylene (HDPE)-lined Pond 2.
- Minor regrading and compaction of the trapezoidal pond area to prepare the foundation subgrade for a new concrete pond.
- Construction of a new cast-in-place concrete water retention pond with the dimensions of 214 feet x 50 feet x approx. 8 feet (length x width x depth).
- Replacement and compaction of excavated materials (stockpiled locally) around the new concrete pond.

The following additional work is scheduled to be completed in the spring of 2023:

- Construction of a new cast-in-place concrete slab between the new Pond 2 and the existing Pond 3.
- Installation of galvanized steel fence posts and cable fencing.
- Placement of concrete ecology blocks along both sides of the slab between Ponds 2 and 3.
- Final pond inspection and commissioning.

Removal of the existing HDPE pond was performed by Battle Mountain site personnel. Construction of the new concrete Pond 2 and related earthwork and grading was performed by Robins Construction of Antonito, Colorado.

### 1.2 Project Schedule

The project kickoff meeting took place on August 2, 2022. The previous HDPE liner was removed in August 2022 by Battle Mountain site personnel and Robins Construction. Subgrade preparation took place in September and early October 2022. Construction of the new pond began in October 2022 and was substantially completed in December 2022.

### 1.3 Construction Oversight

EA performed part-time engineering oversight and quality control during the construction of Pond 2. EA subcontracted some field and laboratory concrete testing to the Pueblo office of CTL Thompson, Inc. Construction observations included:

- Inspection of the slab subgrade and field soil density testing.
- Inspection of concrete formwork, reinforcement and waterstop.
- Inspection of concrete placement and concrete testing.
- Laboratory testing of soil material used for backfill (Proctor density testing).
- Placement observation and testing of backfill for as-placed moisture and density.

The Pond 2 improvements were completed in general compliance with EA's construction plans and specification and approved contractor submittals. The as-constructed project drawings are provided in Attachment A. Project photographs are provided in Attachment B. Concrete testing results are provided in Attachment C. Field and laboratory soil testing results are provided in Attachment D. Contractor submittals are provided in Attachment E.

## 2.0 QUALITY CONTROL

### 2.1 Subgrade Preparation and Soil Testing

The excavation for Pond 2 improvements began in August 2022 with the removal of the previous HDPE-lined Pond 2. Pond shaping, fill placement and subgrade preparation took place in September and early October 2022. An initial proof roll test was conducted on the subgrade on September 21, 2022 to allow EA to observe subgrade conditions. Minor subgrade regrading and compaction took place until the proof roll met project specifications. On October 11, 2022, a final proof roll was performed and the subgrade was approved.

Prior to subgrade preparation or fill placement, EA conducted laboratory testing on soil samples of fill material. The material consisted of local soil which was to be re-used for backfill, and soil

from a nearby stockpile which appear to be of similar composition. Laboratory testing consisted of standard Proctor tests (ASTM D 698) to evaluate the maximum dry density and optimum moisture content of the soil. Laboratory test results are provided in Attachment D. EA provided part-time observation of placement and compaction of subgrade fill as the contractor brought the pond subgrade to the required level. A water truck was on-site to moisture-condition the backfill as necessary as the fill was placed. The subgrade fill was taken from a nearby stockpile and was placed and compacted per the project specifications. The subgrade was compacted using a vibratory sheepsfoot roller. Periodic compaction testing was performed by EA using a nuclear density gauge. If the subgrade did not meet the project specifications, the material was removed and re-compacted and tested again.

## 2.2 Concrete Placement

EA provided observation of the concrete reinforcement and placement of the concrete. All concrete was placed by pumping. Prior to pumping, the concrete was tested for temperature, entrained air content, and slump. An EA engineer was present for all concrete placement and field testing. All field testing was performed by EA, or by EA's subcontractor (CTL Thompson, Inc.). Cylinders for compressive strength tests were cast from selected batches of concrete (collected at the end of the concrete pump in most cases). After curing, the concrete cylinders were tested for compressive strength at EA's laboratory in Fort Collins, Colorado or at the Pueblo office of CTL Thompson, Inc. Concrete observations and test results are provided in Attachment C. Concrete was in general compliance with project specifications, but did vary from the specified slump and air content in some tests. All concrete batches tested for compressive strength met the project specification of 4,000 psi.

Dates of concrete placement and locations were as follows:

| Placement Date | Location |
|---|---|
| October 21, 2022 | Pond Floor (0 to 45 feet from west end) |
| October 26, 2022 | Pond Floor (90 to 135 feet from west end) |
| October 28, 2022 | Pond Floor (45 to 90 feet from west end) |
| November 2, 2022 | Pond Floor (135 to 180 feet from west end) |
| November 8, 2022 | East Ramp |
| November 17, 2022 | West Wall |
| November 21, 2022 | North and South Walls (0 to 45 feet from West Wall) |
| November 23, 2022 | North and South Walls (45 to 90 feet from West Wall) |
| December 1, 2022 | North and South Walls (90 to 135 feet from West Wall) |
| December 6, 2022 | North and South Walls (135 to 180 feet from West Wall) |
| December 12, 2022 | North and South Walls (Ramp Area) |
| Scheduled for spring 2023 | Slab Between Ponds 2 and 3 |

### 2.3 Placement of Backfill and Soil Testing

After Pond 2 was constructed, EA provided part-time observation of placement and compaction of backfill around the perimeter of the pond. Backfill consisted of local material removed during pond construction and material from a nearby stockpile. The exterior backfill was compacted using an articulated walk-behind roller in most locations. Backfill was compacted using a "jumping-jack" type compactor in areas with limited access. Periodic compaction testing was performed by EA using a nuclear density gauge. Backfilling was restricted to no more than three feet vertical difference around the outside perimeter of the newly constructed pond to control the pond wall loading. The final results for moisture and density were in general compliance with project specifications. Results of the in-situ moisture and density tests are provided in Attachment D.

### 2.4 Submittal Review

EA was responsible for reviewing contractor submittals for materials used in the construction of Pond 2 improvement project. The contractor submittals are provided in Attachment E.

## 3.0 MODIFICATIONS AND CHANGES

EA documented modifications and changes made during construction. Changes were made due to contractor requests and material availability and are not anticipated to change the intended function of the Pond 2 improvements. The changes and modifications are summarized in the following subsections.

### 3.1 Concrete Mix Design

The project specifications required the use of Type V Portland cement for chemical resistance. Due to cost and material availability, the contractor proposed the use of a CDOT Class DP concrete mix (7.0 sack mix with 25% flyash) which includes a modified Type I/II Portland cement. The contractor provided documentation indicating their proposed mix would have comparable chemical resistance to a mix including Type V cement, and the proposed mix was approved. See the corresponding contractor submittal in Attachment E.

### 3.2 Concrete Joint Spacing

The specified maximum concrete joint spacing was 15 feet on center for the pond floor and walls. To accommodate the dimensions of the pond floor and ramp, EA allowed the contractor to use a joint spacing of 16'8" in the short (north-south) direction of the pond floor, ramp, and west wall, and approximately 17 feet in the east-west direction of the ramp.

## 4.0 SUMMARY

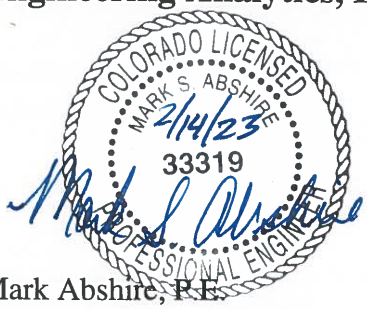
The portions of the Pond 2 improvements that have been completed to date at the Battle Mountain Resources San Luis WTP near San Luis, Colorado have been completed in general conformance with the project plans and specifications. This Construction Completion Report will be amended once the entire Pond 2 project is complete.

## 5.0 REFERENCES

Engineering Analytics, Inc. (EA), 2022. *Project Manual, San Luis Water Treatment Plant Pond 2 Improvements, Issued for Construction.* February 24.

Respectfully Submitted,

**Engineering Analytics, Inc.**




Mark Abshire, P.E.
Project Geotechnical Engineer

# ATTACHMENT A

# AS-CONSTRUCTED PROJECT DRAWINGS

# SAN LUIS WATER TREATMENT PLANT
# POND 2 IMPROVEMENTS

*FEBRUARY 2023*

## SHEET INDEX



## PREPARED FOR

BATTLE MOUNTAIN RESOURCES, INC.

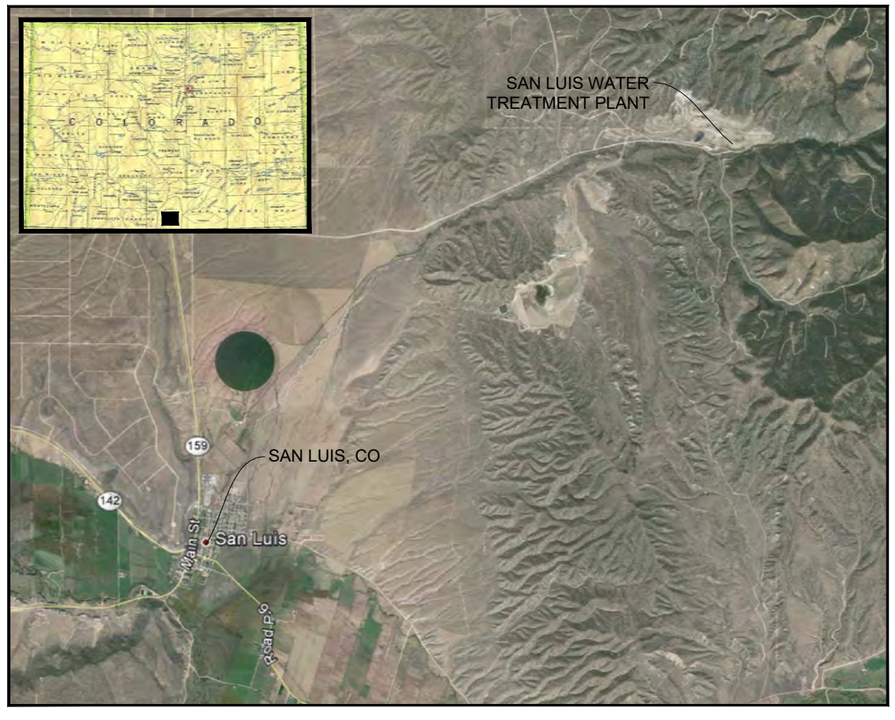
SAN LUIS, CO

## PREPARED BY


ENGINEERING ANALYTICS, INC.

1600 SPECHT POINT RD. STE. 209

FORT COLLINS, CO. 80525


## GENERAL NOTES AND SPECIFICATIONS

### GENERAL

1. THIS AS-BUILT DRAWING SET REPRESENTS THE POND 2 CONDITION AS OF FEBRUARY 2023. THE FOLLOWING WORK IS SCHEDULED FOR SPRING 2023 TO COMPLETE THE PROJECT: CONSTRUCT THE SLAB BETWEEN PONDS 2 AND 3, PLACE ECOLOGY BLOCKS, INSTALL PERIMETER POSTS AND CABLE FENCING.
2. REFER TO THE PROJECT MANUAL FOR COMPLETE LIST OF REQUIREMENTS.
3. THIS WORK OCCURS IN OR NEAR AN OPERATING FACILITY. COORDINATE ALL CONSTRUCTION ACCESS AND ACTIVITIES WITH THE FACILITY MANAGER TO AVOID DISRUPTION OF ONGOING FACILITY OPERATIONS.
4. DESIGN BASED ON TOPOGRAPHIC SURVEY CONDUCTED BY DEL-MONT CONSULTANTS, LLC., DATED 1/25/18. CONTOURS BELOW APPROXIMATELY 8,609 FEET WERE BELOW POND 2 WATER SURFACE AT THE TIME OF LIDAR FLIGHT, AND WERE RECONSTRUCTED BASED ON ORIGINAL 2016 POND 3 TOPOGRAPHY. POND 2 ELEVATIONS IN THIS DRAWING SET BASED ON AN ARBITRARY TOP-OF-WALL ELEVATION OF 110.40, AND ARE TO BE CONFIRMED IN THE FIELD. TOP OF WALL AND SLAB ELEVATIONS TO MATCH EXISTING POND 3.
5. CONTRACTOR TO VERIFY FOUNDATION ELEVATIONS WITH ENGINEER PRIOR TO COMMENCING CONSTRUCTION.
6. LOADS:
   a. LATERAL EARTH PRESSURES CALCULATED BASED ON ESTIMATED EQUIVALENT FLUID DENSITY FOR BACKFILL OF 73 PCF (AT-REST CONDITION).
7. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION. CALL 811 OR VISIT COLORADO811.ORG FOR PUBLIC UTILITIES, AND COORDINATE WITH CLIENT FOR PRIVATE UTILITIES.

### SUBGRADE PREPARATION

1. REMOVE ALL EXISTING HDPE LINER, PIPING, AND ANY AND ALL OTHER PROCESS-RELATED MATERIALS AND/OR EQUIPMENT.
2. FOR SUBGRADE THAT WILL RECEIVE EITHER CONCRETE OR STRUCTURAL FILL, RIP THE UPPER SIX (6) INCHES, MOISTURE CONDITION, AND COMPACT TO A MINIMUM OF 95% OF THE STANDARD PROCTOR (ASTM D698) MAXIMUM DRY DENSITY, WITHIN 2% (+/-) OF OPTIMUM WATER CONTENT.
3. IN THE PRESENCE OF ENGINEER, PROOF-ROLL THE SUBGRADE WITH A LOADED WATER TRUCK OR FRONT-END LOADER TO CONFIRM SUBGRADE INTEGRITY. SOFT AREAS SHALL BE EXCAVATED AND REPLACED TO THE SAME COMPACTION STANDARD AS FOR SUBGRADE DESCRIBED ABOVE, AT THE DIRECTION OF ENGINEER.
4. ENGINEER SHALL BE GIVEN A MINIMUM OF 3 DAYS' NOTICE PRIOR TO COMMENCING SUBGRADE PREPARATION.

### FILL PLACEMENT

1. WALLS MAY NOT BE BACKFILLED UNTIL CONCRETE HAS ATTAINED 90% OF ITS SPECIFIED 28-DAY STRENGTH AND ENGINEER HAS PROVIDED AUTHORIZATION.
2. STRUCTURAL FILL BENEATH CONCRETE WALLS AND SLABS SHALL BE ON-SITE OR IMPORTED MATERIALS; ALL STRUCTURAL FILL MATERIALS SHALL BE APPROVED BY ENGINEER PRIOR TO DELIVERY TO SITE AND/OR PLACEMENT.
3. CONTRACTOR SHALL COORDINATE WITH ENGINEER FOR FILL SAMPLING AND TESTING A MINIMUM OF TEN (10) DAYS PRIOR TO COMMENCEMENT OF FILL PLACEMENT ACTIVITIES TO ALLOW SUFFICIENT TIME FOR LABORATORY TESTING AND APPROVAL OF FILL MATERIALS.
4. STRUCTURAL FILL BENEATH CONCRETE SHALL BE MOISTURE-CONDITIONED TO WITHIN 2% (+/-) OF ASTM D698 (STANDARD PROCTOR) OPTIMUM WATER CONTENT, PLACED IN MINIMUM LOOSE LIFTS NOT EXCEEDING EIGHT (8) INCHES THICK, AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY.
5. WALL BACKFILL SHALL BE PLACED IN COMPLETE LIFTS AROUND THE ENTIRE PERIMETER AT MAXIMUM DEPTH OF 3 FT PER LIFT, WITH MAXIMUM LOOSE LIFT THICKNESS 8" PER #4.
6. WALL BACKFILL NOT SUPPORTING CONCRETE, SITE GRADING FILL, AND LINER ANCHOR TRENCH FILL SHALL BE MOISTURE-CONDITIONED TO WITHIN 2% (+/-) OF ASTM D698 (STANDARD PROCTOR) OPTIMUM WATER CONTENT, PLACED IN MINIMUM LOOSE LIFTS NOT EXCEEDING EIGHT (8) INCHES THICK, AND COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DRY DENSITY.
7. BACKFILL WITHIN 4 FEET OF THE WALL SHALL BE COMPACTED ONLY WITH SMALLER WALK-BEHIND TYPE EQUIPMENT, RATHER THAN HEAVY COMPACTORS OR LOADERS, TO MINIMIZE IMPACT ON THE WALL.
8. SLOPE BACKFILL AWAY FROM WALLS AT A MINIMUM SLOPE OF 0.5% WHERE POSSIBLE.

### CONCRETE

1. CAST-IN-PLACE CONCRETE AND REINFORCEMENT SHALL BE CONSTRUCTED PER THE LATEST VERSION OF ACI 318.
2. CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
3. ALL CONCRETE TO BE MADE WITH PORTLAND TYPE V CEMENT.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A616, AND SHALL BE NO. 5, GRADE 60 DEFORMED BARS UNLESS NOTED OTHERWISE (U.N.O).
5. PROVIDE CLEARANCE BETWEEN REINFORCING AND EARTH AND/OR FORMS, AS SHOWN ON THE PLANS.
6. PROVIDE 18" MINIMUM REBAR SPLICE OVERLAP TYPICAL U.N.O.
7. ALL BENDS SHALL BE STANDARD 90-DEGREE HOOKS U.N.O.
8. ALL WALL CORNER REINFORCING BARS SHALL BE CONTINUOUS AROUND CORNERS.
9. ALL EXPOSED CORNERS SHALL HAVE A ¾ INCH CHAMFER.
10. CONTINUOUS VINYLEX RB638H WATERSTOP, OR ENGINEER-APPROVED SUBSTITUTE, SHALL BE INSTALLED IN ALL CONSTRUCTION JOINTS. WATERSTOP JOINTS SHALL BE WELDED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED EQUIPMENT AND PROCEDURES. REINFORCEMENT SHALL NOT INTERFERE WITH WATERSTOP.
11. THE FINISHED SURFACE FOR THE MAJORITY OF THE FLOOR SHALL BE BROOMED. THE SURFACE OF THE RAMP SHALL BE BROOMED AND GROOVED, AS REQUESTED BY OWNER, TO FACILITATE VEHICLE TRAFFIC.

**AS-BUILT**

| NO | REVISION DESCR. | DATE | BY |
|---|---|---|---|
| 0 | ISSUE FOR BID | 2/24/2022 | MSA |
| 1 | ISSUE FOR CONSTRUCTION | 7/25/2022 | MSA |
| 2 | AS-BUILT | 2/6/2023 | MSA |



BATTLE MOUNTAIN RESOURCES, INC.

SAN LUIS WATER TREATMENT PLANT
POND 2 IMPROVEMENTS

TITLE SHEET


Engineering Analytics, Inc.
1600 Specht Point Road, Suite 209
Fort Collins, CO 80525
(970) 488-3111


ISSUED BY:

| | |
|---|---|
| Proj Number: | 210105.09b |
| Drawn By: | RDP |
| Designed By: | MSA |
| Approved By: | MSA |
| Date: | 2/6/2023 |
| Scale: | NTS |
| Drawing Number: | T1.0 |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PRE-CONSTRUCTION SITE CONDITIONS

**AS-BUILT**

| NO | REVISION DESCR. | DATE | BY |
|---|---|---|---|
| 0 | ISSUE FOR BID | 2/24/2022 | MSA |
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BATTLE MOUNTAIN RESOURCES, INC.

SAN LUIS WATER TREATMENT PLANT
POND 2 IMPROVEMENTS

PRE-CONSTRUCTION SITE CONDITIONS

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|---|---|
| Proj Number: | 210105.09b |
| Drawn By: | RDP |
| Designed By: | MSA |
| Approved By: | MSA |
| Date: | 2/6/2023 |
| Scale: | 1" = 60' |
| Drawing Number: | C1.0 |

N

0 30' 60'

O:\05 San Luis\09b Pond 2 Improvements\SURFACE_Main ASB.dwg SAVED: 2/6/23 PRINTED: 2/6/23

APPROX. EDGE OF EXISTING HDPE LINER

EXISTING HDPE LINER REMOVED AND DISPOSED PER OWNER

LINER ANCHOR TRENCH (3 / C5.0)

MIN. 15'

214.00'

181.00'

33.00'

1½" DIA STEEL POSTS 8' O.C. (1 / C4.0)

**POND 2 (PROPOSED)**

A (C3.0)

D (C4.0)

50.00'

WALL (1 / C4.0)

DRAINAGE BLOCKOUT @ ±40' OC PER DETAIL (1 / C4.0)

30' TO FIRST BLOCKOUT

RAMP (4:1)

RAMP ENTRY APRON (2 / C4.0)

18.00'

**8" CONCRETE SLAB BETWEEN PONDS (TO BE INSTALLED SPRING 2023)**

0.5% MIN

ECOLOGY BLOCKS OR APPROVED EQUAL PLACED ALONG BOTH SIDES OF ELEVATED ACCESS WAY FOR VEHICLE SAFETY (MIN 2' HIGH, SPACED 4' APART) (TO BE INSTALLED SPRING 2023)

EXISTING JIB CRANE

C (C4.0)

**POND 3 (EXISTING)**

APPROX. EDGE OF EXISTING HDPE LINER

B (C3.0)

8605 8606 8607 8608 8609 8610

NOTE: DESIGN BASED ON TOPOGRAPHIC SURVEY CONDUCTED BY DEL-MONT CONSULTANTS, LLC., DATED 1/25/2018. CONTOURS BELOW APPROXIMATELY 8,609 FEET WERE BELOW POND 2 WATER SURFACE AT THE TIME OF LIDAR FLIGHT ON 11/25/2017, AND WERE RECONSTRUCTED BASED ON ORIGINAL 2016 POND 3 TOPOGRAPHY. POND 2 ELEVATIONS IN THIS DRAWING SET BASED ON AN ARBITRARY TOP-OF-FOUNDATION ELEVATION OF 108.0', AND ARE TO BE CONFIRMED IN THE FIELD.

0 10' 20'

**AS-BUILT**

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|---|---|---|---|
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BATTLE MOUNTAIN RESOURCES, INC.

SAN LUIS WATER TREATMENT PLANT
POND 2 IMPROVEMENTS

# POND 2 LAYOUT

Engineering Analytics, Inc.
1600 Specht Point Road, Suite 209
Fort Collins, CO 80525
(970) 488-3111

ISSUED BY:

| | |
|---|---|
| Proj Number: | 210105.09b |
| Drawn By: | RDP |
| Designed By: | MSA |
| Approved By: | MSA |
| Date: | 2/6/2023 |
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| Drawing Number: | C2.0 |

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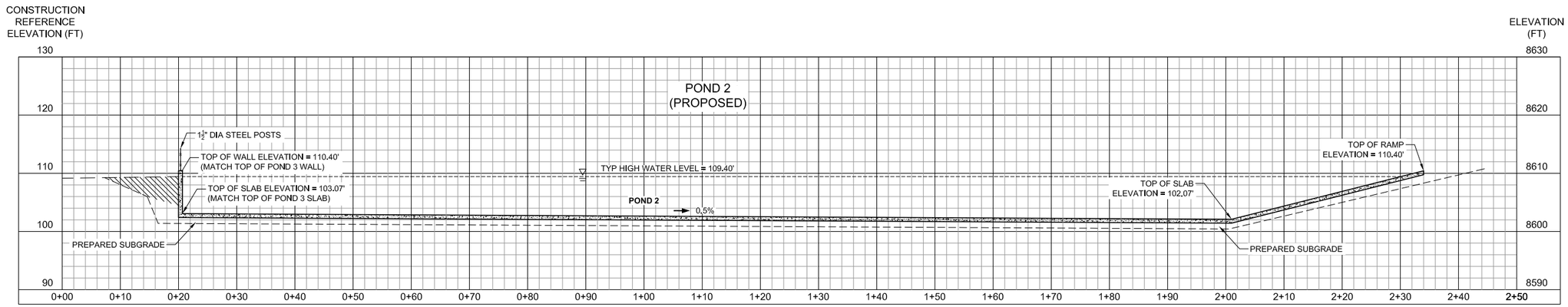
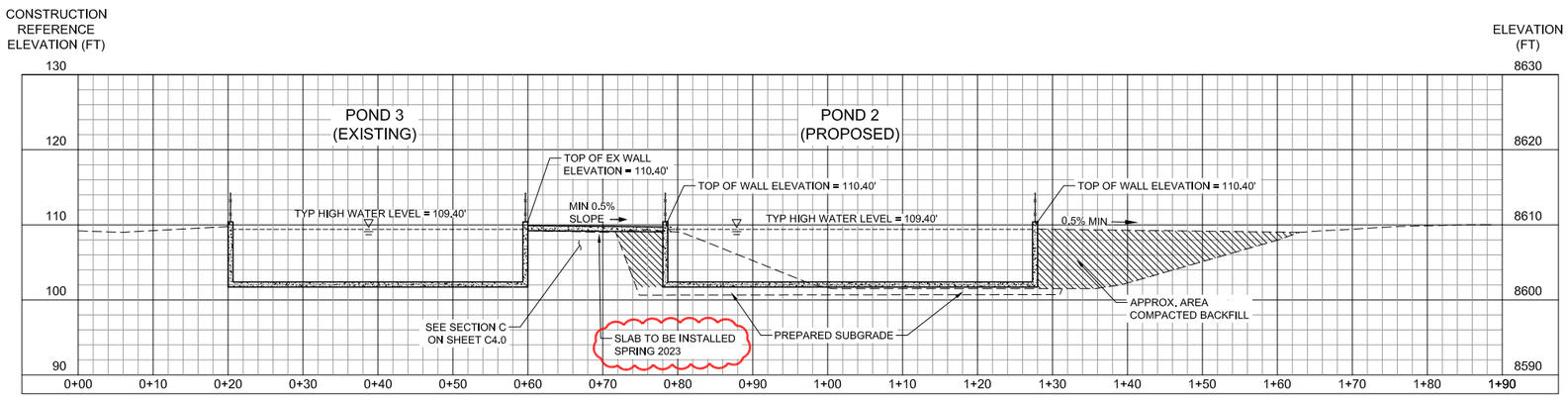



A C2.0 SECTION A




B C2.0 SECTION B

NOTE:
CONSTRUCTION JOINT SPACING IN THE FLOOR AND WALLS SHALL BE A MAXIMUM OF 15 FEET ON-CENTER, PER DETAIL 4 ON SHEET C5.0.

(THE CONTRACTOR WAS ALLOWED TO USE A JOINT SPACING UP TO 17 FEET IN SOME AREAS TO ACCOMMODATE THE DIMENSIONS OF THE POND.)

AS-BUILT

0 10' 20'

| NO | REVISION DESCR. | DATE | BY |
|---|---|---|---|
| 0 | ISSUE FOR BID | 2/24/2022 | MSA |
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| 2 | AS-BUILT | 2/6/2023 | MSA |



BATTLE MOUNTAIN RESOURCES, INC.

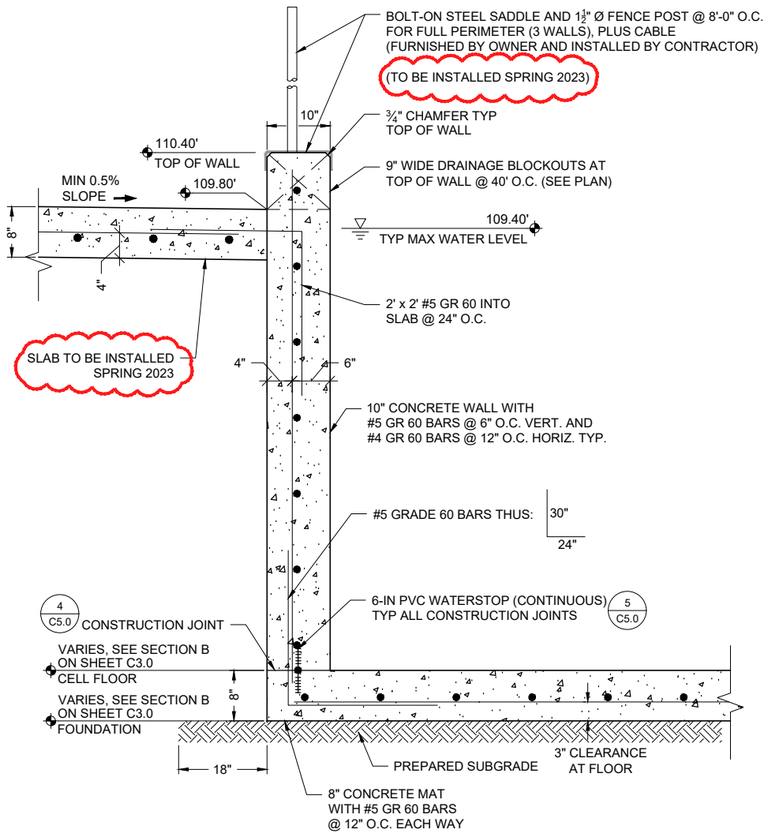
SAN LUIS WATER TREATMENT PLANT
POND 2 IMPROVEMENTS

# SITE CROSS-SECTIONS

Engineering Analytics, Inc.
1600 Specht Point Road, Suite 209
Fort Collins, CO 80525
(970) 488-3111

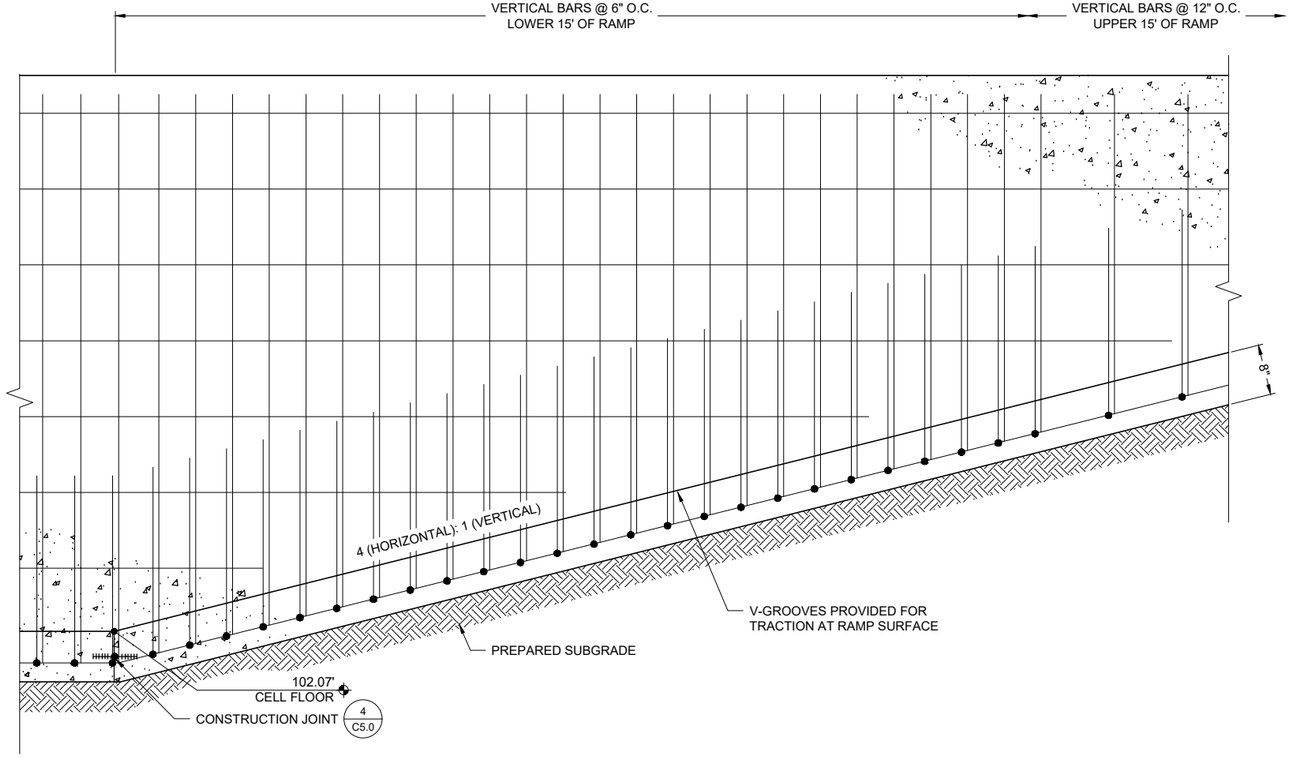
ISSUED BY:

| | |
|---|---|
| Proj Number: | 210105.09b |
| Drawn By: | RDP |
| Designed By: | MSA |
| Approved By: | MSA |
| Date: | 2/6/2023 |
| Scale: | 1" = 20' |
| Drawing Number: | C3.0 |



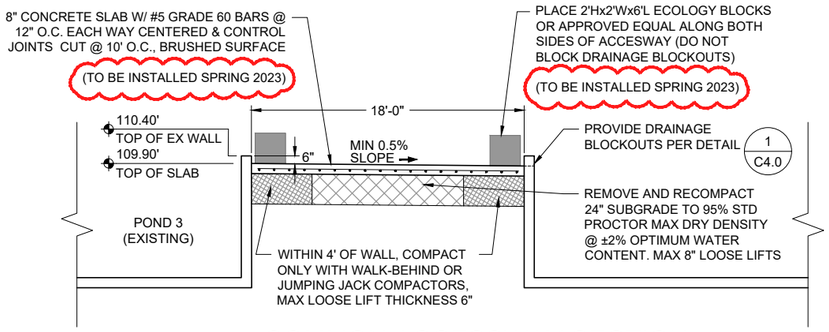

1 C2.0 **WALL DETAIL (TYP.)**

1/2" = 1'-0"



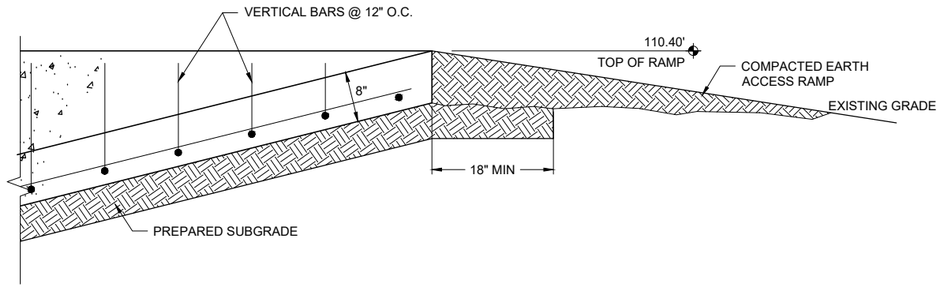

D C2.0 **RAMP SECTION**

1/2" = 1'-0"




C C2.0 **COMMON ACCESSWAY SECTION**

1" = 10'




2 C2.0 **RAMP ENTRY APRON DETAIL**

1/2" = 1'-0"

**AS-BUILT**

| NO | REVISION/DESCR. | DATE | BY |
|---|---|---|---|
| 0 | ISSUE FOR BID | 2/24/2022 | MSA |
| 1 | ISSUE FOR CONSTRUCTION | 7/25/2022 | MSA |
| 2 | AS-BUILT | 2/6/2023 | MSA |



BATTLE MOUNTAIN RESOURCES, INC.

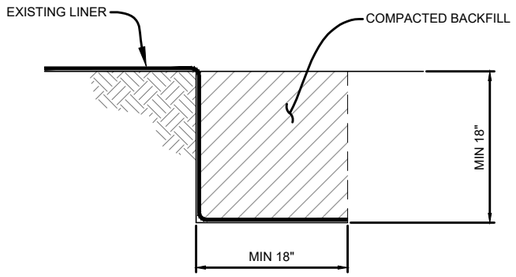
SAN LUIS WATER TREATMENT PLANT
POND 2 IMPROVEMENTS

# SECTIONS AND DETAILS

Engineering Analytics, Inc.
1600 Specht Point Road, Suite 209
Fort Collins, CO 80525
(970) 488-3111

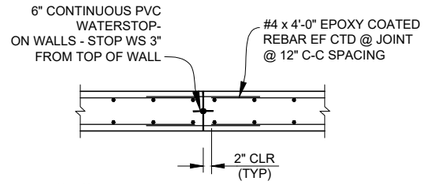
ISSUED BY:

| | |
|---|---|
| Proj Number: | 210105.09b |
| Drawn By: | RDP |
| Designed By: | MSA |
| Approved By: | MSA |
| Date: | 2/6/2023 |
| Scale: | AS NOTED |
| Drawing Number: | C4.0 |




3 C2.0 LINER ANCHOR TRENCH DETAIL

NOT TO SCALE




NOTES:

1. PROVIDE CONSTRUCTION JOINTS AT 15' O.C. MAX AT WALLS AND FLOOR.

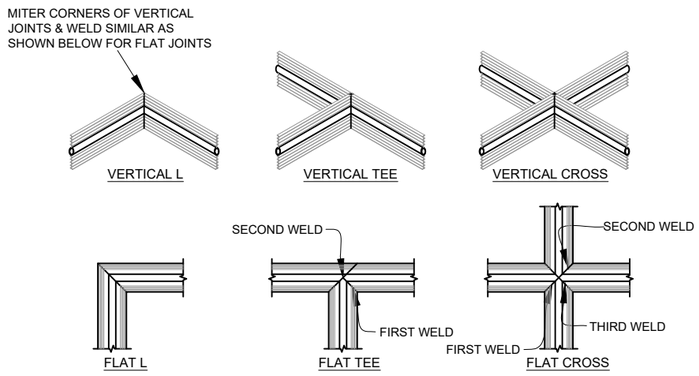
   (THE CONTRACTOR WAS ALLOWED TO USE A JOINT SPACING UP TO 17 FEET IN SOME AREAS TO ACCOMMODATE THE DIMENSIONS OF THE POND.)

2. CONCRETE CONSTRUCTION JOINTS SHALL BE CLEAN AND ROUGHENED USING EITHER WATER BLASTING OR SAND BLASTING TO A MINIMUM AMPLITUDE OF 1/4".

3. ADJACENT CONCRETE PLACEMENTS REQUIRE 2 DAY DELAY FOR SHRINKAGE.

4 C4.0 CONSTRUCTION JOINT DETAIL

NOT TO SCALE




NOTE:
1. ALL WELDS SHALL BE PER WATERSTOP MANUFACTURER'S RECOMMENDATIONS.
2. PLACE CONCRETE IN SHALLOW LIFTS ON BOTH SIDES SIMULTANEOUSLY TO AVOID DEFORMING WATERSTOP.
3. CONSOLIDATE THOROUGHLY AROUND WATERSTOP TO PREVENT VOIDS.

5 C4.0 WATERSTOP SPLICING DETAIL

NOT TO SCALE

**AS-BUILT**

| NO | REVISION/DESCR. | DATE | BY |
|---|---|---|---|
| 0 | ISSUE FOR BID | 2/24/2022 | MSA |
| 1 | ISSUE FOR CONSTRUCTION | 7/25/2022 | MSA |
| 2 | AS-BUILT | 2/6/2023 | MSA |



BATTLE MOUNTAIN RESOURCES, INC.

SAN LUIS WATER TREATMENT PLANT
POND 2 IMPROVEMENTS
GENERAL DETAILS

Engineering Analytics, Inc.
1600 Specht Point Road, Suite 209
Fort Collins, CO 80525
(970) 488-3111

ISSUED BY:

| | |
|---|---|
| Proj Number: | 210105.09b |
| Drawn By: | RDP |
| Designed By: | MSA |
| Approved By: | MSA |
| Date: | 2/6/2023 |
| Scale: | AS NOTED |
| Drawing Number: | C5.0 |

# ATTACHMENT B

# PROJECT PHOTOGRAPHS

## LIST OF PHOTOGRAPHS

Photo 1. Existing Pond 2 prior to construction.

Photo 2. Subgrade preparation.


Photo 3. Subgrade compaction.

Photo 4. Subgrade density testing.

Photo 5. Final subgrade proofroll.

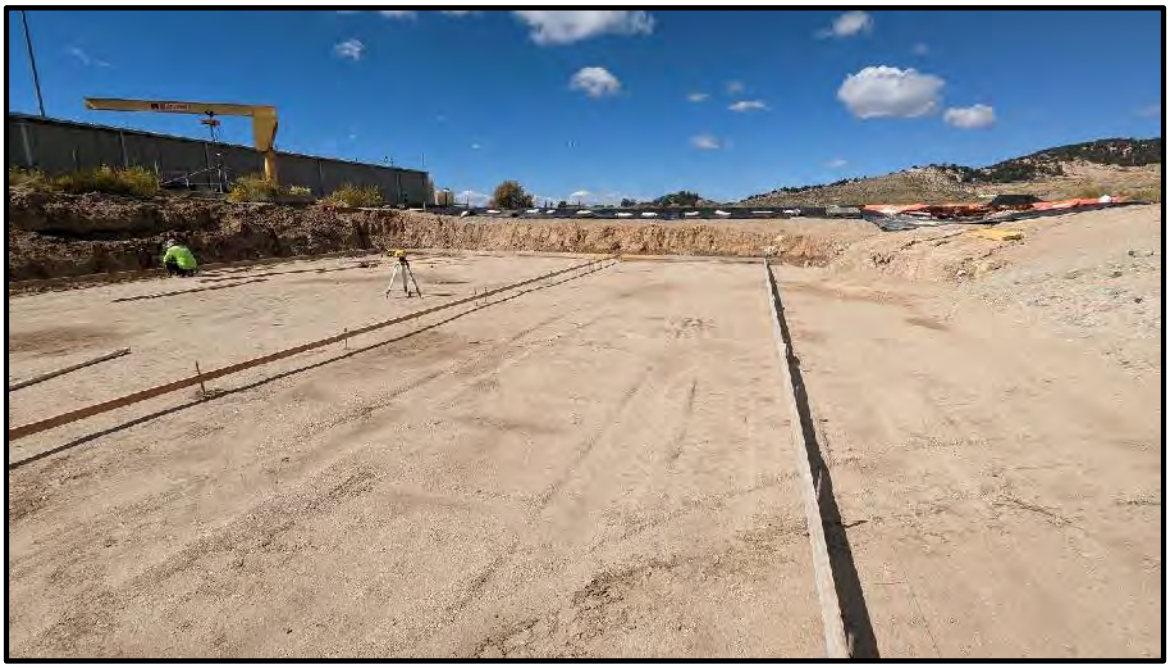


Photo 6. Completed pond subgrade and initial formwork.

Photo 7. Pond floor rebar and waterstop.

Photo 8. First pond floor concrete placement.

Photo 9. Second pond floor concrete placement.

Photo 10. Waterstop at construction and control joints.

Photo 11. Third pond floor concrete placement.

Photo 12. Fourth pond floor concrete placement.

Photo 13. Concrete placement at ramp.

Photo 14. Wall formwork.

Photo 15. Placing concrete in walls.

Photo 16. Backfill placement.


Photo 17. Backfill compaction.

Photo 18. Backfill density testing.

Photo 19. Completed pond.

Photo 20. Completed pond ramp with traction grooves.

# ATTACHMENT C

# CONCRETE TESTING RESULTS

**Table C.1 - Summary of Pond 2 Concrete Compressive Strength Results**

| Concrete Placement Date | EA Cylinder # | CTL Cylinder # | Break Date | Test Age (days) | Compressive Strength (psi) | Feature |
|---|---|---|---|---|---|---|
| 10/21/2022 | 1-1 A | - | 10/28/2022 | 7 | 3,470 | Pond Floor (0 to 45 feet from West Wall) Truck 1 |
| | 1-1 B | - | 11/18/2022 | 28 | 4,690 | |
| | 1-1 C | - | 11/18/2022 | 28 | 4,790 | |
| | 1-1 D | - | HOLD | - | - | |
| 10/21/2022 | 1-2 A | - | 10/28/2022 | 7 | 2,670 | Pond Floor (0 to 45 feet from West Wall) Truck 6 |
| | 1-2 B | - | 11/18/2022 | 28 | 4,780 | |
| | 1-2 C | - | 11/18/2022 | 28 | 4,940 | |
| | 1-2 D | - | HOLD | - | - | |
| 10/26/2022 | 2-1 A | 1-1 | 11/2/2022 | 7 | 3,850 | Pond Floor (90 to 135 feet from West Wall) Truck 1 |
| | 2-1 B | 1-2 | 11/23/2022 | 28 | 4,910 | |
| | 2-1 C | 1-3 | 11/23/2022 | 28 | 4,900 | |
| | 2-1 D | 1-4 | HOLD | - | - | |
| 10/26/2022 | 2-2 A | 2-1 | 11/2/2022 | 7 | 3,790 | Pond Floor (90 to 135 feet from West Wall) Truck 6 |
| | 2-2 B | 2-2 | 11/23/2022 | 28 | 4,720 | |
| | 2-2 C | 2-3 | 11/23/2022 | 28 | 4,740 | |
| | 2-2 D | 2-4 | HOLD | - | - | |
| 10/28/2022 | 3-1 A | 3-1 | 11/4/2022 | 7 | 4,210 | Pond Floor (45 to 90 feet from West Wall) Truck 1 |
| | 3-1 B | 3-2 | 11/25/2022 | 28 | 4,910 | |
| | 3-1 C | 3-3 | 11/25/2022 | 28 | 4,900 | |
| | 3-1 D | 3-4 | HOLD | - | - | |
| 10/28/2022 | 3-2 B | 4-1 | 11/25/2022 | 28 | 4,880 | Same as above Truck 6 |
| | 3-2 C | 4-2 | 11/25/2022 | 28 | 4,860 | |
| 11/2/2022 | 4-1 A | 5-1 | 11/9/2022 | 7 | 4,060 | Pond Floor (135 to 180 feet from West Wall) Truck 1 |
| | B | 5-2 | 11/30/2022 | 28 | 5,480 | |
| | C | 5-3 | 11/30/2022 | 28 | 5,500 | |
| | D | 5-4 | HOLD | - | - | |
| 11/2/2022 | 4-2 A | 6-1 | 11/9/2022 | 7 | 3,610 | Pond Floor (135 to 180 feet from West Wall) Truck 6 |
| | B | 6-2 | 11/30/2022 | 28 | 4,830 | |
| | C | 6-3 | 11/30/2022 | 28 | 4,820 | |
| | D | 6-4 | HOLD | - | - | |
| 11/8/2022 | 5-1 A | 7-1 | 11/15/2022 | 7 | 3,660 | East Ramp |
| | B | 7-2 | 12/6/2022 | 28 | 4,530 | |
| | C | 7-3 | 12/6/2022 | 28 | 4,480 | |
| | D | 7-4 | HOLD | - | - | |

**Table C.1 - Summary of Pond 2 Concrete Compressive Strength Results (continued)**

| Concrete Placement Date | EA Cylinder # | CTL Cylinder # | Break Date | Test Age (days) | Compressive Strength (psi) | Feature |
|---|---|---|---|---|---|---|
| 11/17/2022 | 6-1 A | 8-1 | 11/21/2022 | 4 | 3,240 | West Wall (N 2/3 of Wall) |
| | B | 8-2 | 11/24/2022 | 7 | 3,540 | |
| | C | 8-3 | 12/15/2022 | 28 | 4,390 | |
| | D | 8-4 | 12/15/2022 | 28 | 4,380 | |
| | E | 8-5 | HOLD | - | - | |
| 11/17/2022 | 6-2 A | 9-1 | 11/21/2022 | 4 | 3,870 | West Wall (S 1/3 of Wall) |
| | B | 9-2 | 11/24/2022 | 7 | 4,580 | |
| | C | 9-3 | 12/15/2022 | 28 | 5,450 | |
| | D | 9-4 | 12/15/2022 | 28 | 5,500 | |
| | E | 9-5 | HOLD | - | - | |
| 11/21/2022 | 7-1 A | 10-1 | 11/25/2022 | 4 | 3,470 | N & S Walls (0 to 45 feet from West Wall) Truck 1 |
| | B | 10-2 | 11/28/2022 | 7 | 3,970 | |
| | C | 10-3 | 12/19/2022 | 28 | 4,620 | |
| | D | 10-4 | 12/19/2022 | 28 | 4,610 | |
| | E | 10-5 | HOLD | - | - | |
| 11/21/2022 | 7-2 A | 11-1 | 11/25/2022 | 4 | 3,460 | N & S Walls (0 to 45 feet from West Wall) Truck 2 |
| | B | 11-2 | 11/28/2022 | 7 | 3,780 | |
| | C | 11-3 | 12/19/2022 | 28 | 4,620 | |
| | D | 11-4 | 12/19/2022 | 28 | 4,630 | |
| | E | 11-5 | HOLD | - | - | |
| 11/21/2022 | 7-3 A | 12-1 | 11/25/2022 | 4 | 2,420 | N & S Walls (0 to 45 feet from West Wall) Truck 3 (only 2 yards) |
| | B | 12-2 | 11/28/2022 | 7 | 2,640 | |
| | C | 12-3 | 12/13/2022 | 22 | 3,430 | |
| | D | 12-4 | 12/19/2022 | 28 | 3,740 | |
| | E | 12-5 | 1/16/2023 | 56 | 4,320 | |
| 11/23/2022 | 8-1 A | 13-1 | 11/30/2022 | 7 | 3,220 | N & S Walls (45 to 90 feet from West Wall) Truck 1 |
| | B | 13-2 | 12/13/2022 | 20 | 3,870 | |
| | C | 13-3 | 12/21/2022 | 28 | 4,310 | |
| | D | 13-4 | 12/21/2022 | 28 | 4,300 | |
| | E | 13-5 | HOLD | - | - | |
| 11/23/2022 | 8-2 A | 14-1 | 11/30/2022 | 7 | 3,110 | N & S Walls (45 to 90 feet from West Wall) Truck 2 |
| | B | 14-2 | 12/13/2022 | 20 | 3,830 | |
| | C | 14-3 | 12/21/2022 | 28 | 4,290 | |
| | D | 14-4 | 12/21/2022 | 28 | 4,310 | |
| | E | 14-5 | HOLD | - | - | |
| 11/23/2022 | 8-3 A | 15-1 | 11/30/2022 | 7 | 3,200 | N & S Walls (45 to 90 feet from West Wall) Truck 3 |
| | B | 15-2 | 12/13/2022 | 20 | 3,830 | |
| | C | 15-3 | 12/21/2022 | 28 | 4,310 | |
| | D | 15-4 | 12/21/2022 | 28 | 4,330 | |
| | E | 15-5 | HOLD | - | - | |

**Table C.1 - Summary of Pond 2 Concrete Compressive Strength Results (continued)**

| Concrete Placement Date | EA Cylinder # | CTL Cylinder # | Break Date | Test Age (days) | Compressive Strength (psi) | Feature |
|---|---|---|---|---|---|---|
| 12/1/2022 | 9-1 A | 16-1 | 12/5/2022 | 4 | 2,250 | N & S Walls (90 to 135 feet from West Wall) Truck 1 |
| | B | 16-2 | 12/8/2022 | 7 | 3,810 | |
| | C | 16-3 | 12/29/2022 | - | - | |
| | D | 16-4 | 12/29/2022 | 28 | 4,870 | |
| | E | 16-5 | 12/29/2022 | 28 | 4,840 | |
| 12/1/2022 | 9-2 A | 17-1 | 12/5/2022 | 4 | 2,670 | N & S Walls (90 to 135 feet from West Wall) Truck 2 |
| | B | 17-2 | 12/8/2022 | 7 | 3,600 | |
| | C | 17-3 | 12/29/2022 | - | - | |
| | D | 17-4 | 12/29/2022 | 28 | 4,620 | |
| | E | 17-5 | 12/29/2022 | 28 | 4,570 | |
| 12/1/2022 | 9-3 A | 18-1 | 12/5/2022 | 4 | 2,970 | N & S Walls (90 to 135 feet from West Wall) Truck 3 |
| | B | 18-2 | 12/8/2022 | 7 | 3,620 | |
| | C | 18-3 | HOLD | - | - | |
| | D | 18-4 | 12/29/2022 | 28 | 4,870 | |
| | E | 18-5 | 12/29/2022 | 28 | 4,840 | |
| 12/6/2022 | 10-1 A | 19-1 | 12/10/2022 | 4 | 3,030 | N & S Walls (135 to 180 feet from West Wall) Truck 1 |
| | B | 19-2 | 12/10/2022 | 4 | 3,060 | |
| | C | 19-3 | 12/10/2022 | 4 | 3,050 | |
| | D | 19-4 | 12/13/2022 | 7 | 3,710 | |
| | E | 19-5 | 12/13/2022 | 7 | 3,690 | |
| | F | 19-6 | 12/13/2022 | 7 | 3,650 | |
| | G | 19-7 | 1/3/2023 | 28 | 5,230 | |
| | H | 19-8 | 1/3/2023 | 28 | 4,650 | |
| | I | 19-9 | 1/3/2023 | 28 | 4,770 | |
| 12/6/2022 | 10-2 A | 20-1 | 12/10/2022 | 4 | 2,890 | N & S Walls (135 to 180 feet from West Wall) Truck 2 |
| | B | 20-2 | 12/10/2022 | 4 | 2,880 | |
| | C | 20-3 | 12/10/2022 | 4 | 2,860 | |
| | D | 20-4 | 12/13/2022 | 7 | 3,250 | |
| | E | 20-5 | 12/13/2022 | 7 | 3,240 | |
| | F | 20-6 | 12/13/2022 | 7 | 3,210 | |
| | G | 20-7 | 12/20/2022 | 14 | 3,880 | |
| | H | 20-8 | 1/3/2023 | 28 | 4,500 | |
| | I | 20-9 | 1/3/2023 | 28 | 4,340 | |
| 12/6/2022 | 10-3 A | 21-1 | 12/10/2022 | 4 | 2,910 | N & S Walls (135 to 180 feet from West Wall) Truck 3 |
| | B | 21-2 | 12/10/2022 | 4 | 2,910 | |
| | C | 21-3 | 12/10/2022 | 4 | 2,940 | |
| | D | 21-4 | 12/13/2022 | 7 | 3,580 | |
| | E | 21-5 | 12/13/2022 | 7 | 3,670 | |
| | F | 21-6 | 12/13/2022 | 7 | 3,630 | |
| | G | 21-7 | 1/3/2023 | 28 | 4,550 | |
| | H | 21-8 | 1/3/2023 | 28 | 4,300 | |
| | I | 21-9 | 1/31/2023 | 56 | 5,190 | |

**Table C.1 - Summary of Pond 2 Concrete Compressive Strength Results (continued)**

| Concrete Placement Date | EA Cylinder # | CTL Cylinder # | Break Date | Test Age (days) | Compressive Strength (psi) | Feature |
|---|---|---|---|---|---|---|
| 12/12/2022 | 11-1 A | 22-1 | 12/16/2022 | 4 | 2,550 | N & S Walls (Ramp Area) Truck 1 |
| | B | 22-2 | 12/16/2022 | 4 | 2,590 | |
| | C | 22-3 | 12/16/2022 | 4 | 2,560 | |
| | D | 22-4 | 12/19/2022 | 7 | 2,960 | |
| | E | 22-5 | 12/19/2022 | 7 | 2,930 | |
| | F | 22-6 | 12/19/2022 | 7 | 2,890 | |
| | G | 22-7 | 12/26/2022 | 14 | 3,630 | |
| | H | 22-8 | 1/9/2023 | 28 | 4,430 | |
| | I | 22-9 | 1/9/2023 | 28 | 4,100 | |
| 12/12/2022 | 11-2 A | 23-1 | 12/16/2022 | 4 | 3,180 | N & S Walls (Ramp Area) Truck 2 |
| | B | 23-2 | 12/16/2022 | 4 | 3,200 | |
| | C | 23-3 | 12/16/2022 | 4 | 3,190 | |
| | D | 23-4 | 12/19/2022 | 7 | 3,580 | |
| | E | 23-5 | 12/19/2022 | 7 | 3,650 | |
| | F | 23-6 | 12/19/2022 | 7 | 3,620 | |
| | G | 23-7 | HOLD | - | - | |
| | H | 23-8 | 1/9/2023 | 28 | 5,280 | |
| | I | 23-9 | 1/9/2023 | 28 | 5,490 | |

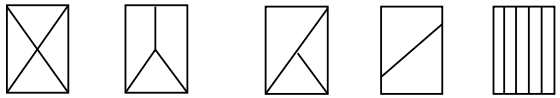
# REPORT OF CONCRETE COMPRESSIVE STRENGTH TESTS

Engineering Analytics, Inc.

| | | | |
|---|---|---|---|
| PROJECT: | San Luis WTP Pond 2 | SUPPLIER: | Robins Construction |
| JOB NO.: | 210105.09b | MIX CODE: | CDOT Class DP |
| PLACEMENT DATE: | 10/21/2022 | SPECIFIED STRENGTH: | 4,000 psi |
| CLIENT: | Battle Mountain Resources | TESTED BY: | Tyler Davis P.E. |
| CONTRACTOR: | Robins Construction | | |

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP (°F) | CONCRETE TEMP (°F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TICKET # 12294 | 1-1 A | 3.75 | 4.5 | 28 | 57 | 0 | 10/28/22 | 7 | 42,130 | 3,470 | 5 | Pond floor slab, west end 45' section. |
| TRUCK # 52 | B | | | | | | 11/18/22 | 28 | 58,920 | 4,690 | 3 | Placed using pump truck. Poured W. |
| TIME 7:25 AM | C | | | | | | 11/18/22 | 28 | 60,240 | 4,790 | 3 | to E. 1st Truck |
| | D | | | | | | | 56 | | | | |
| TICKET # 12295 | | 4.50 | 4.5 | 28 | 57 | 0 | | | | | | " " 2nd Truck |
| TRUCK # 84 | | | | | | | | | | | | |
| TIME 7:46 AM | | | | | | | | | | | | |
| TICKET # 12300 | | 3.75 | 4.5 | 42 | 61.5 | 0 | | | | | | " " 5th Truck |
| TRUCK # 51 | | | | | | | | | | | | |
| TIME 9:22 AM | | | | | | | | | | | | |
| TICKET # 12301 | 1-2 A | 4.50 | 5.4 | 45 | 63 | 0 | 10/28/22 | 7 | 33,540 | 2,670 | 5 | " " 6th Truck |
| TRUCK # 52 | B | | | | | | 11/18/22 | 28 | 60,050 | 4,780 | 3 | |
| TIME 10:18 AM | C | | | | | | 11/18/22 | 28 | 62,040 | 4,940 | 3 | |
| 10:33 AM | D | | | | | | | 56 | | | | |

TYPE OF FAILURE



1 CONE | 2 SPLIT CONE | 3 SHEAR CONE | 4 SHEAR | 5 SPLIT

4-inch Diameter Cylinders Unless Noted Otherwise

All samples prepared and tested in accordance with the following ASTM standards: Sampling C172; Curing C31; Slump C143; Air C231; Temperature C1064; Compression C39

**Remarks:**

Total of 60 Cubic Yards poured for Pond 2 concrete slab floor. Cylinder Compressive Strength testing: A=7 Days; B-C = 28 Days; D = HOLD (56 Days)

## FIELD CONCRETE TESTS

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 10/26/2022
CLIENT: Battle Mountain Resources
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: TLD of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP ( °F) | CONCRETE TEMP ( °F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12315<br>TRUCK # 84<br>TIME 9:08 AM | 2-1 A-D (CTL 1-1 thru 1-4) | 3.5 | 6.0 | 41 | 63 | | | | | | | Pond 2 floor slab, 3rd section from W (skipped 2nd section) | Cylinders taken from truck, not pump, 1st truck |
| BATCH # 12316<br>TRUCK # 97<br>TIME 9:36 AM | | 4.5 | 5.5 | 41 | 65 | | | | | | | Pond 2 floor slab, 3rd section from W (skipped 2nd section), poured W to E | 2nd truck |
| BATCH # 12319<br>TRUCK # 95<br>TIME 10:29 AM | | 4.5 | 5.9 | 40 | 66 | | | | | | | Pond 2 floor slab, 3rd section from W (skipped 2nd section), poured W to E | 5th truck |
| BATCH # 12320<br>TRUCK # 84<br>TIME 12:14 PM | 2-2 A-D (CTL 2-1 thru 2-4) | 4.0 | 5.0 | 38 | 67 | | | | | | | Pond 2 floor slab, 3rd section from W (skipped 2nd section), poured W to E | Collected 2nd set of cylinders from pump end, 6th truck |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |

**NOTES:**
Notes by TLD of EA. All cylinders 4-inch. Sample designation: "A" = 7 days; "B" and "C" = 28 days; "D" = HOLD.

Field measurements and cylinder collection by EA. Lab testing performed by CTL Thompson, Inc. See separate report.

## FIELD CONCRETE TESTS

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 10/28/2022
CLIENT: Battle Mountain Resources
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: TLD of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP ( °F) | CONCRETE TEMP ( °F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12334<br>TRUCK # 84<br>TIME 9:11 AM | | 5.25 | 5.0 | 20 | 59.5 | | | | | | | Floor slab, 2nd section from W end, 45'-90' | 1st truck - tested out of truck |
| BATCH # 12334<br>TRUCK # 84<br>TIME 9:26 AM | 3-1 A-D (CTL 3-1 thru 3-4) | 5.0 | 1.5 | 28 | 61 | | | | | | | Floor slab, 2nd section from W end, 45'-90', Poured S to N | 1st truck - tested out of pump |
| BATCH # 12335<br>TRUCK # 95<br>TIME 9:49 AM | | 3.5 | 5.3 | 30 | 64 | | | | | | | Floor slab, 2nd section from W end, 45'-90', Poured S to N | 2nd truck - tested out of truck |
| BATCH # 12338<br>TRUCK # 51<br>TIME 10:28 AM | | 4.25 | 4.9 | 40 | 64 | 5 | | | | | | Floor slab, 2nd section from W end, 45'-90', Poured S to N | 4th truck - tested out of truck |
| BATCH # 12340<br>TRUCK # 52<br>TIME 11:07 AM | 3-2 B-C (CTL 4-1 thru 4-2) | 3.75 | 2.2 | 42 | 68 | | | | | | | Floor slab, 2nd section from W end, 45'-90', Poured S to N | 6th truck - tested out of pump |

**NOTES:**
Notes by TLD of EA. All cylinders 4-inch. Sample designation: "A" = 7 days; "B" and "C" = 28 days; "D" = HOLD.

Field measurements and cylinder collection by EA. Lab testing performed by CTL Thompson, Inc. See separate report.

## FIELD CONCRETE TESTS

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 11/2/2022
CLIENT: Newmont
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: SCK of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP (°F) | CONCRETE TEMP (°F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12372<br>TRUCK # 84<br>TIME 9:01 AM | | 6.0 | 6.2 | 38 | 64 | 0 | | | | | | Pond floor slab E end, placed with pump truck, W corner of placement area, 1st truck | Tested from truck |
| BATCH # 12372<br>TRUCK # 84<br>TIME 9:10 AM | 4-1 A-D (CTL 5-1 thru 5-4) | 6.5 | 2.7 | 38 | 62 | 0 | | | | | | Pond floor slab E end, placed with pump truck, W corner of placement area, 1st truck | Tested from pump |
| BATCH # 12373<br>TRUCK # 83<br>TIME 9:40 AM | | 5.0 | 4.6 | 49 | 65 | 0 | | | | | | Pond floor slab E end, placed with pump truck, E corner of placement area, 2nd truck | Tested from truck |
| BATCH # 12377<br>TRUCK # 95<br>TIME 10:45 AM | 4-2 A-D (CTL 6-1 thru 6-4) | 4.75 | 5.9 | 50 | 68 | 0 | | | | | | Pond floor slab E end, placed with pump truck, E central placement area, 6th truck | Tested from pump |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |

**NOTES:**

Notes by SCK of EA. Insufficient quantity of concrete ordered initially. Last truck used to complete NE corner of pour area arrived roughly 1.5 hours after truck 95 test occurred. Existing concrete from truck 95 appeared to be malleable when final truck load of concrete was being placed/integrated.
All cylinders 4-inch. Sample designation: "A" = 7 days; "B" and "C" = 28 days; "D" = HOLD.
Field measurements and cylinder collection by EA. Lab testing performed by CTL Thompson, Inc. See separate report.

## FIELD CONCRETE TESTS

Engineering Analytics, Inc.

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 11/8/2022
CLIENT: Battle Mountain Resources
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: TLD of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP (°F) | CONCRETE TEMP (°F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12398<br>TRUCK # 84<br>TIME 8:54 AM | | | 6.0 | 33 | 66 | | | | | | | E end pond floor ramp, S 1/3 of ramp | Added 8-10 oz air, remix, from Truck 1 |
| BATCH # RETEST<br>TRUCK # 84<br>TIME 9:06 AM | | 3.75 | 8.5 | 33 | 68 | | | | | | | E end pond floor ramp, S 1/3 of ramp | Truck 1 |
| BATCH # RETEST AT PUMP<br>TRUCK # 84<br>TIME 9:21 AM | | 2.5 | 7.0 | 35 | 71 | | | | | | | E end pond floor ramp, S 1/3 of ramp | Truck 1, Pump |
| BATCH # 12399<br>TRUCK # 97<br>TIME 9:40 AM | 5-1 A-D (CTL 7-1 thru 7-4) | 3.5 | 6.5 | 40 | 70.5 | | | | | | | E end pond floor ramp, S 1/3 of ramp | Added ~6 oz air, Truck 2 pump |
| BATCH # 12400<br>TRUCK # 52<br>TIME 10:03 AM | | 3.5 | 3.6 | 42 | 68 | | | | | | | E end pond floor ramp, N 1/3 of ramp | Added no area, Truck 3 pump |
| BATCH # 12401<br>TRUCK # 95<br>TIME 10:23 AM | | 3.0 | 4.1 | 46 | 67 | | | | | | | E end pond floor ramp, N 1/3 of ramp | Added ~5 oz air, Truck 4 pump |

**NOTES:**
Notes by TLD of EA. Poured 40 CY total on Pond 2 ramp (N 1/3 & S 1/3, skipped middle).
All cylinders 4-inch. Sample designation: "A" = 7 days; "B" and "C" = 28 days; "D" = HOLD.
Field measurements and cylinder collection by EA. Lab testing performed by CTL Thompson, Inc. See separate report.

## REPORT OF CONCRETE COMPRESSIVE STRENGTH TESTS

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 11/17/2022
CLIENT: Battle Mountain Resources
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: IJS of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP ( °F) | CONCRETE TEMP ( °F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12447<br>TRUCK # 84<br>TIME 12:48 PM | 6-1 A-E (CTL 8-1 thru 8-5) | 5.0 | 6.2 | 40 | 68 | 0 | | | | | | N 2/3 of W wall | |
| BATCH # 12448<br>TRUCK # 97<br>TIME 1:09 PM | 6-2 A-E (CTL 9-1 thru 9-5) | 4.5 | 3.5 | 40 | 70 | 0 | | | | | | S 1/3 of W wall, generator slab | |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |

**NOTES:**
Notes by IJS of EA. All cylinders 4-inch. Sample designation: "A" = 4 days; "B" = 7 days; "C" and "D" = 28 days; "E" = HOLD.

Field measurements and cylinder collection by EA. Lab testing performed by CTL Thompson, Inc. See separate report.

## FIELD CONCRETE TESTS

Engineering Analytics, Inc.

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 11/21/2022
CLIENT: Battle Mountain Resources
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: DCH of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP ( °F) | CONCRETE TEMP ( °F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12462<br>TRUCK # 95<br>TIME 1:00 PM | 7-1 A-E (CTL 10-1 thru 10-5) | 1.5 | 2.0<br>6.0 | 37<br>37 | 65<br>65 | 0<br>0 | | | | | | SW wall | 10 yd; RETEST after adding air |
| BATCH # 12463<br>TRUCK # 84<br>TIME 2:00 PM | 7-2 A-E (CTL 11-1 thru 11-5) | 3.0 | 5.0 | 37 | 70 | 0 | | | | | | S and N walls, west side | 10 yd |
| BATCH # 12464<br>TRUCK # 97<br>TIME 2:20 PM | 7-3 A-E (CTL 12-1 thru 12-5) | 5.5 | 1.5 | 37 | 70 | 0 | | | | | | N wall west side | Only 2 yd used, completed pour before test complete |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |

**NOTES:**
Notes by DCH of EA. All cylinders 4-inch. Sample designation: "A" = 4 days; "B" = 7 days; "C" and "D" = 28 days; "E" = HOLD.

Field measurements and cylinder collection by EA. Lab testing performed by CTL Thompson, Inc. See separate report.

## FIELD CONCRETE TESTS

Engineering Analytics, Inc.

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 11/23/2022
CLIENT: Battle Mountain Resources
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: CTL Thompson, Inc.
OBSERVED BY: CJL of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP (°F) | CONCRETE TEMP (°F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12474<br>TRUCK # 84<br>TIME 10:30 AM | 8-1 A-E (CTL 13-1 thru 13-5) | 4.0 | 5.0<br>7.0 (retest after air) | 35 | 58 | 0 | | | | | | S side wall, W of center, lower half | added 1 oz air, restest<br>10 CY |
| BATCH # 12475<br>TRUCK # 52<br>TIME 11:17 AM | 8-2 A-E (CTL 14-1 thru 14-5) | 4.5 | 5.0<br>6.1 (retest after air) | 37 | 60 | 0 | | | | | | S side wall, W of center, upper half then moved to N side lower half | added 1 oz air, restest<br>10 CY |
| BATCH # 12476<br>TRUCK #<br>TIME 11:58 AM | 8-3 A-E (CTL 15-1 thru 15-5) | 2.5 | 4.5<br>6.0 (retest after air) | 37 | 58 | 0 | | | | | | Last truck upper half of N side wall | added 1 oz air, retest<br>2 CY |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |

**NOTES:**

Notes by CJL of EA. EA inspected rebar prior to pour - of size and placement per design. All water stops in place.
Slump and air tested at truck chute. All cylinders 4-inch, collected from end of pump hose. Sample designation: "A" = 4 days; "B" = 7 days; "C" and "D" = 28 days; "E" = HOLD.
Field measurements, cylinder collection, and lab testing performed by CTL Thompson, Inc. See separate report.

## FIELD CONCRETE TESTS

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 12/1/2022
CLIENT: Battle Mountain Resources
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: CTL Thompson, Inc.
OBSERVED BY: CJL of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP ( °F) | CONCRETE TEMP ( °F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12490<br>TRUCK # 84<br>TIME 10:00 AM | 9-1 A-E (CTL 16-1 thru 16-5) | 4.75 truck 2.5 hose | 6.2 truck 6.0 pump | 41 | 60 | 0 | | | | | | S wall, east of pond center | start pour 10:45, 1 CY placed then test at pump, sample taken 10:50 at pump, start pour 11 AM |
| BATCH # 12491<br>TRUCK # 97<br>TIME 11:30 AM | 9-2 A-E (CTL 17-1 thru 17-5) | 4.0 pump after air | 1.5 hose 5.4 pump after air | 41 | 62 | 0 | | | | | | Finish S wall, move to N wall east of pond center | test at 11:30 at pump, low air, add 2 oz, retest 11:45, air 5.4% at pump |
| BATCH # 12492<br>TRUCK # 52<br>TIME 12:00 PM | 9-3 A-E (CTL 18-1 thru 18-5) | 4.0 pump | 4.0 pump | 41 | 61 | 0 | | | | | | Finish N wall | |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |

**NOTES:**
Notes by CJL of EA. EA rebar prior to pour of size and placement per design drawings. All water stops in place.
All cylinders 4-inch, collected from end of pump hose. Sample designation: "A" = 4 days; "B" = 7 days; "C" and "D" = 28 days; "E" = HOLD.
Field measurements, cylinder collection, and lab testing performed by CTL Thompson, Inc. See separate report.

## FIELD CONCRETE TESTS

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 12/6/2022
CLIENT: Battle Mountain Resources
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: CTL Thompson, Inc.
OBSERVED BY: CJL of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP ( °F) | CONCRETE TEMP ( °F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12511<br>TRUCK # 84<br>TIME 10:45 AM | 10-1 A-I (CTL 19-1 thru 19-9) | 5.5 | 5.5 | 35 | 60 | 0 | | | | | | S wall, far east of pond center, adjacent to ramp | start pour 10:45, 1 CY placed then test at pump, sample taken 10:50 at pump, start pour 11 AM |
| BATCH # 12512<br>TRUCK # 97<br>TIME 11:30 AM | 10-2 A-I (CTL 20-1 thru 20-9) | 5.5 | 6.0 | 35 | 60 | 0 | | | | | | Finish S wall, move to N wall, far east of pond center adjacent to ramp | test at 11:30 at pump, low air, add 2 oz, retest 11:45, air 5.4% at pump |
| BATCH # 12513<br>TRUCK # 52<br>TIME 11:45 AM | 10-3 A-I (CTL 21-1 thru 21-5) | 4.25 | 2.5<br>6.2 after air | 35 to 42 | 63 | 0 | | | | | | Finish N wall | air at pump hose low, add 1 oz air and retest |
| BATCH # 12515<br>TRUCK # 95<br>TIME 1:45 PM | | | | | | | | | | | | Finish N wall | last truck 1 CY, not tested |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |

**NOTES:**
Notes by CJL of EA. EA rebar prior to pour of size and placement per design drawings. All water stops in place.
All slump and air measured at end of pump hose. All cylinders 4-inch, collected from end of pump hose. Sample designation: "A" thru "C" = 4 days; "D" thru "F" = 7 days; "G" and "H" = 28 days; "I" = HOLD.
Field measurements, cylinder collection, and lab testing performed by CTL Thompson, Inc. See separate report.

## FIELD CONCRETE TESTS

Engineering Analytics, Inc.

PROJECT: San Luis Pond #2
JOB NO.: 210105.09b
PLACEMENT DATE: 12/12/2022
CLIENT: Battle Mountain Resources
CONTRACTOR: Robins Construction

SUPPLIER: RCC Ready Mix
MIX CODE: CDOT Class DP
SPECIFIED STRENGTH: 4,000 psi
TESTED BY: CTL Thompson, Inc.
OBSERVED BY: CJL of EA

| | CYLINDER NUMBER | SLUMP (INCH) | AIR (%) | AIR TEMP (°F) | CONCRETE TEMP (°F) | WATER ADDED (GAL) | DATE TESTED | TEST AGE (DAYS) | MAX APPLIED LOAD (LBS) | COMPRESSIVE STRENGTH (PSI) | TYPE OF FAILURE | PLACEMENT LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH # 12548<br>TRUCK # 95<br>TIME 10:25 AM | 11-1 A-I (CTL 22-1 thru 22-9) | 5.25 | 5.5 | 35 | 63 | 0 | | | | | | S wall at ramp incline, move to N side | |
| BATCH # 12549<br>TRUCK # 97<br>TIME 10:53 AM | 11-2 A-I (CTL 23-1 thru 23-9) | 4.0 | 4.0 | 35 | 61 | 0 | | | | | | N wall at ramp incline | only about 1 CY from 2nd truck to complete N wall |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |
| BATCH #<br>TRUCK #<br>TIME | | | | | | | | | | | | | |

**NOTES:**

Notes by CJL of EA. EA inspected rebar prior to pour, of size and placement per design drawings. All water stops in place.

All slump and air measured at end of pump hose. All cylinders 4-inch, collected from end of pump hose. Sample designation: "A" thru "C" = 4 days; "D" thru "F" = 7 days; "G" and "H" = 28 days; "I" = HOLD.

Field measurements, cylinder collection, and lab testing performed by CTL Thompson, Inc. See separate report.

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Founded in 1971

# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000009
10/26/2022, 28-day
**Report Date:** 11/23/2022
**Sample:** 107565


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 1 | **Technician:** | Orazem, Victor | **Batched:** | 08:32 MDT |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 09:00 MDT |
| **Specimens In Set:** | 4 | **Date Cast:** | 10/26/22 | **Cast:** | 09:08 MDT |
| **Truck / Ticket #:** | 84 / 12315 | **Sampled From:** | Chute | **Truck Empty:** | |
| **Contractor:** | Robins construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Slab on Grade
**Location Details:** Pond 2 floor slab third section
**Sample Location / Notes:** west end

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | Robins Redi Mix | **Mix Design:** | cdot dp |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | sunny | **Slump (in):** | 3-1/2 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 41 | **Concrete Temp (F):** | 63 | **Air Content:** | 6.0 |
| | | | | **Load Volume:** | |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

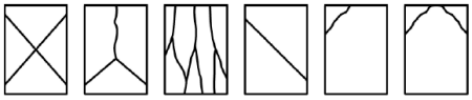
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 1-1 | 7 | 11/02/22 | 2 / 5 | 4.00 | 12.57 | 48,340 | 3,850 | 3 | | N |
| 1-2 | 28 | 11/23/22 | 2 / 26 | 4.00 | 12.57 | 61,700 | 4,910 | 3 | C4 | N |
| 1-3 | 28 | 11/23/22 | 2 / 26 | 4.00 | 12.57 | 61,610 | 4,900 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 7 Day - **3850**, 28 Day - **4910**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3)
**Checked In :** 10/28/2022 (1,2,3)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000010
10/26/2022, 28-day
**Report Date:** 11/23/2022
**Sample:** 107566

**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287

**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 2 | **Technician:** | Orazem, Victor | **Batched:** | 11:45 MDT |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 12:01 MDT |
| **Specimens In Set:** | 4 | **Date Cast:** | 10/26/22 | **Cast:** | 12:14 MDT |
| **Truck / Ticket #:** | 84 / 12320 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Slab on Grade
**Location Details:** Pond 2 floor slab third section
**Sample Location / Notes:** east end

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | Robins Redi Mix | **Mix Design:** | cdot dp |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | sunny | **Slump (in):** | 4 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 38 | **Concrete Temp (F):** | 67 | **Air Content:** | 5.0 |
| | | | | **Load Volume:** | |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

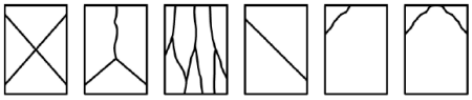
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-1 | 7 | 11/02/22 | 2 / 5 | 4.00 | 12.57 | 47,630 | 3,790 | 3 | | N |
| 2-2 | 28 | 11/23/22 | 2 / 26 | 4.00 | 12.57 | 59,330 | 4,720 | 3 | C4 | N |
| 2-3 | 28 | 11/23/22 | 2 / 26 | 4.00 | 12.57 | 59,590 | 4,740 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 7 Day - **3790**, 28 Day - **4730**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3)
**Checked In :** 10/28/2022 (1,2,3)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)



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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000014
10/28/2022, 28-day
**Report Date:** 11/28/2022
**Sample:** 107645


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 3 | **Technician:** | Orazem, Victor | **Batched:** | 07:41 MDT |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 09:26 MDT |
| **Specimens In Set:** | 4 | **Date Cast:** | 10/28/22 | **Cast:** | 09:36 MDT |
| **Truck / Ticket #:** | 84 / 12334 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Slab on Grade
**Location Details:** 2nd section from west end1st truck
**Sample Location / Notes:** south end

## Batch Log

**Supplier:** Robins Redi Mix
**Mix Design:** 4000
**On-Site Admixtures:** None

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | sunny | **Slump (in):** | 5 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 28 | **Concrete Temp (F):** | 61 | **Air Content:** | 1.5 |
| | | | | **Load Volume:** | 10.00 ($yd^3$) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

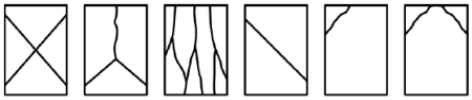
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area ($in^2$) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 3-1 | 7 | 11/04/22 | 3 / 4 | 4.00 | 12.57 | 52,870 | 4,210 | 3 | | N |
| 3-2 | 28 | 11/25/22 | 3 / 25 | 4.00 | 12.57 | 61,750 | 4,910 | 3 | C4 | N |
| 3-3 | 28 | 11/25/22 | 3 / 25 | 4.00 | 12.57 | 61,550 | 4,900 | 3 | C4 | N |
| 3-4 | 56 H | 12/23/22 | 3 / 53 | | | | | | | |

**Test Age Average Strengths (psi):** 7 Day - **4210**, 28 Day - **4910**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3)
**Checked In :** 10/31/2022 (1,2,3,4)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

CTL | THOMPSON
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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000013
10/28/2022, 28-day
**Report Date:** 11/28/2022
**Sample:** 107646


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 4 | **Technician:** | Orazem, Victor | **Batched:** | 09:13 MDT |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 11:07 MDT |
| **Specimens In Set:** | 2 | **Date Cast:** | 10/28/22 | **Cast:** | 11:15 MDT |
| **Truck / Ticket #:** | 52 / 12340 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Slab on Grade
**Location Details:** 2nd section from west end
**Sample Location / Notes:** west end

## Batch Log

**Supplier:** Robins Redi Mix
**Mix Design:** 4000
**On-Site Admixtures:** None

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | sunny | **Slump (in):** | 3-3/4 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 42 | **Concrete Temp (F):** | 68 | **Air Content:** | 2.2 |
| | | | | **Load Volume:** | 10.00 ($yd^3$) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

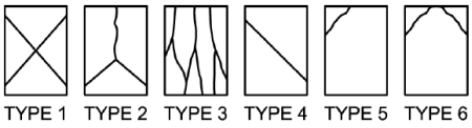
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area ($in^2$) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-1 | 28 | 11/25/22 | 3 / 25 | 4.00 | 12.57 | 61,300 | 4,880 | 3 | C4 | N |
| 4-2 | 28 | 11/25/22 | 3 / 25 | 4.00 | 12.57 | 61,030 | 4,860 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 28 Day - **4870**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2)
**Checked In :** 10/31/2022 (1,2)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000018
11/02/2022, 28-day
**Report Date:** 11/30/2022
**Sample:** 107828


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 5 | **Technician:** | Orazem, Victor | **Batched:** | 07:25 MDT |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 09:00 MDT |
| **Specimens In Set:** | 4 | **Date Cast:** | 11/02/22 | **Cast:** | 09:10 MDT |
| **Truck / Ticket #:** | 84 / 12372 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Slab on Grade
**Location Details:** Pond 2 floor east end
**Sample Location / Notes:** east end

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | 4000 |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | sunny | **Slump (in):** | 6-1/2 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 38 | **Concrete Temp (F):** | 62 | **Air Content:** | 2.7 |
| | | | | **Load Volume:** | 8.00 ($yd^3$) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

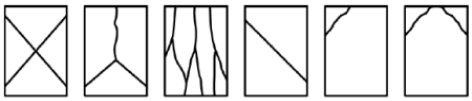
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area ($in^2$) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 5-1 | 7 | 11/09/22 | 1 / 6 | 4.00 | 12.57 | 51,090 | 4,060 | 3 | | N |
| 5-2 | 28 | 11/30/22 | 1 / 27 | 4.00 | 12.57 | 68,940 | 5,480 | 3 | C4 | N |
| 5-3 | 28 | 11/30/22 | 1 / 27 | 4.00 | 12.57 | 69,080 | 5,500 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 7 Day - **4060**, 28 Day - **5490**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3)
**Checked In :** 11/03/2022 (1,2,3)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000019
11/02/2022, 28-day
**Report Date:** 11/30/2022
**Sample:** 107829


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 6 | **Technician:** | Orazem, Victor | **Batched:** | 08:55 MDT |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 10:35 MDT |
| **Specimens In Set:** | 4 | **Date Cast:** | 11/02/22 | **Cast:** | 10:44 MDT |
| **Truck / Ticket #:** | 95 / 12377 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Slab on Grade
**Location Details:** Pond #2 floor east end
**Sample Location / Notes:** center

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | 4000 |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | sunny | **Slump (in):** | 4-3/4 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 50 | **Concrete Temp (F):** | 68 | **Air Content:** | 5.9 |
| | | | | **Load Volume:** | |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

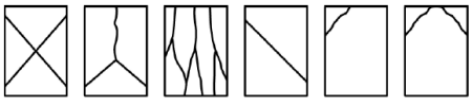
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 6-1 | 7 | 11/09/22 | 1 / 6 | 4.00 | 12.57 | 45,420 | 3,610 | 3 | | N |
| 6-2 | 28 | 11/30/22 | 1 / 27 | 4.00 | 12.57 | 60,710 | 4,830 | 3 | C4 | N |
| 6-3 | 28 | 11/30/22 | 1 / 27 | 4.00 | 12.57 | 60,530 | 4,820 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 7 Day - **3610**, 28 Day - **4820**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3)
**Checked In :** 11/03/2022 (1,2,3)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000027
11/08/2022, 28-day
**Report Date:** 12/06/2022
**Sample:** 108201


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 7 | **Technician:** | Orazem, Victor | **Batched:** | 07:41 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 09:25 MST |
| **Specimens In Set:** | 4 | **Date Cast:** | 11/08/22 | **Cast:** | 09:40 MST |
| **Truck / Ticket #:** | 97 / 12399 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Slab on Grade
**Location Details:** Pond #2 ramp North 51/3 and south
**Sample Location / Notes:** 2nd truck

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | 4000 |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | sunny | **Slump (in):** | 3-1/2 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 40 | **Concrete Temp (F):** | 70 | **Air Content:** | 6.5 |
| | | | | **Load Volume:** | 10.00 ($yd^3$) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

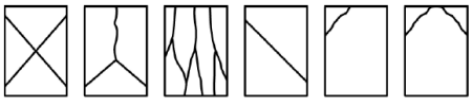
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area ($in^2$) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 7-1 | 7 | 11/15/22 | 2 / 5 | 4.00 | 12.57 | 46,030 | 3,660 | 3 | | N |
| 7-2 | 28 | 12/06/22 | 2 / 26 | 4.00 | 12.57 | 56,940 | 4,530 | 3 | C4 | N |
| 7-3 | 28 | 12/06/22 | 2 / 26 | 4.00 | 12.57 | 56,340 | 4,480 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 7 Day - **3660**, 28 Day - **4510**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3)
**Checked In :** 11/10/2022 (1,2,3)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

# Compressive Strength of Concrete

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**Test Method: ASTM C 39**

**Report #:** CC-000041
11/17/2022, 28-day
**Report Date:** 12/15/2022
**Sample:** 108453


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 8 | **Technician:** | Orazem, Victor | **Batched:** | 12:00 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 12:35 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 11/17/22 | **Cast:** | 12:48 MST |
| **Truck / Ticket #:** | 84 / 12447 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Wall
**Location Details:** north 2/3 of wall
**Sample Location / Notes:** north 2/3 of wall

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | 4000 |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | cloudy | **Slump (in):** | 5 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 40 | **Concrete Temp (F):** | 68 | **Air Content:** | 6.2 |
| | | | | **Load Volume:** | |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

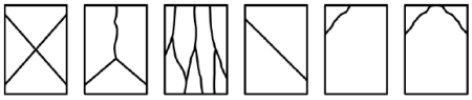
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 8-1 | 4 | 11/21/22 | 1 / 3 | 4.00 | 12.57 | 40,710 | 3,240 | 3 | | N |
| 8-2 | 7 | 11/24/22 | 1 / 6 | 4.00 | 12.57 | 44,540 | 3,540 | 3 | | N |
| 8-3 | 28 | 12/15/22 | 1 / 27 | 4.00 | 12.57 | 55,120 | 4,390 | 3 | C4 | N |
| 8-4 | 28 | 12/15/22 | 1 / 27 | 4.00 | 12.57 | 55,040 | 4,380 | 3 | C4 | N |
| 8-5 | 56 H | 01/12/23 | 1 / 55 | | | | | | | |

**Test Age Average Strengths (psi):** 4 Day - **3240**, 7 Day - **3540**, 28 Day - **4380**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4)
**Checked In :** 11/18/2022 (1,2,3,4,5)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000042
11/17/2022, 28-day
**Report Date:** 12/15/2022
**Sample:** 108454


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 9 | **Technician:** | Orazem, Victor | **Batched:** | |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 13:25 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 11/17/22 | **Cast:** | 13:39 MST |
| **Truck / Ticket #:** | 97 / 12448 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

| | |
|---|---|
| **Placement Location:** | Wall |
| **Location Details:** | south 1/3 of wall |
| **Sample Location / Notes:** | south 1/3 of wall |

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | 4000 |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | cloudy | **Slump (in):** | 4-1/2 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 40 | **Concrete Temp (F):** | 70 | **Air Content:** | 3.5 |
| | | | | **Load Volume:** | |

## Standard Cure

| | |
|---|---|
| **Initial Cure Method:** | Box |
| **Final Cure Method:** | Tank |

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

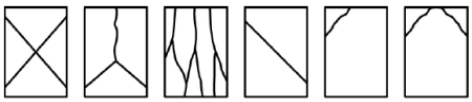
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 9-1 | 4 | 11/21/22 | 1 / 3 | 4.00 | 12.57 | 48,670 | 3,870 | 3 | | N |
| 9-2 | 7 | 11/24/22 | 1 / 6 | 4.00 | 12.57 | 57,550 | 4,580 | 3 | | N |
| 9-3 | 28 | 12/15/22 | 1 / 27 | 4.00 | 12.57 | 68,510 | 5,450 | 3 | C4 | N |
| 9-4 | 28 | 12/15/22 | 1 / 27 | 4.00 | 12.57 | 69,100 | 5,500 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **3870**, 7 Day - **4580**, 28 Day - **5470**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4)
**Checked In :** 11/18/2022 (1,2,3,4)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000045
11/21/2022, 28-day
**Report Date:** 12/19/2022
**Sample:** 108593


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 10 | **Technician:** | Orazem, Victor | **Batched:** | 11:18 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 12:50 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 11/21/22 | **Cast:** | 13:00 MST |
| **Truck / Ticket #:** | 95 / 12462 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Wall
**Location Details:** Southwest wall
**Sample Location / Notes:** west end

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | 4000 |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | | **Slump (in):** | 1-1/2 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 37 | **Concrete Temp (F):** | 65 | **Air Content:** | 6.0 |
| | | | | **Load Volume:** | 10.00 ($yd^3$) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

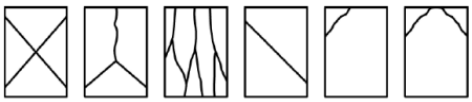
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area ($in^2$) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 10-1 | 4 | 11/25/22 | 1 / 3 | 4.00 | 12.57 | 43,600 | 3,470 | 3 | | N |
| 10-2 | 7 | 11/28/22 | 1 / 6 | 4.00 | 12.57 | 49,930 | 3,970 | 3 | | N |
| 10-3 | 28 | 12/19/22 | 1 / 27 | 4.00 | 12.57 | 58,070 | 4,620 | 3 | C4 | N |
| 10-4 | 28 | 12/19/22 | 1 / 27 | 4.00 | 12.57 | 57,930 | 4,610 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **3470**, 7 Day - **3970**, 28 Day - **4620**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4)
**Checked In :** 11/22/2022 (1,2,3,4)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000046
11/21/2022, 28-day
**Report Date:** 12/19/2022
**Sample:** 108594


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 11 | **Technician:** | Orazem, Victor | **Batched:** | 11:37 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 13:50 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 11/21/22 | **Cast:** | 14:00 MST |
| **Truck / Ticket #:** | 84 / 12463 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Wall
**Location Details:** south and north walls
**Sample Location / Notes:** west end

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | 4000 |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | | **Slump (in):** | 3 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 37 | **Concrete Temp (F):** | 70 | **Air Content:** | 5.0 |
| | | | | **Load Volume:** | 10.00 ($yd^3$) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

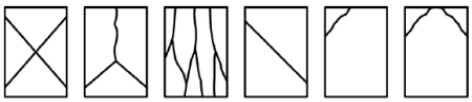
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area ($in^2$) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 11-1 | 4 | 11/25/22 | 1 / 3 | 4.00 | 12.57 | 43,470 | 3,460 | 3 | | N |
| 11-2 | 7 | 11/28/22 | 1 / 6 | 4.00 | 12.57 | 47,470 | 3,780 | 3 | | N |
| 11-3 | 28 | 12/19/22 | 1 / 27 | 4.00 | 12.57 | 58,030 | 4,620 | 3 | C4 | N |
| 11-4 | 28 | 12/19/22 | 1 / 27 | 4.00 | 12.57 | 58,180 | 4,630 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **3460**, 7 Day - **3780**, 28 Day - **4620**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4)
**Checked In :** 11/22/2022 (1,2,3,4)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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Founded in 1971

# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000065
11/21/2022, 56-day
**Report Date:** 01/16/2023
**Sample:** 108595


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 12 | **Technician:** | Orazem, Victor | **Batched:** | 11:52 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Orazem, Victor | **Sampled:** | 14:09 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 11/21/22 | **Cast:** | 14:20 MST |
| **Truck / Ticket #:** | 97 / 12464 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Wall
**Location Details:** north wall
**Sample Location / Notes:** west end

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | 4000 |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | | **Slump (in):** | 5-1/2 | **Plastic Unit Weight:** | |
| **Air Temperature (F):** | 37 | **Concrete Temp (F):** | 70 | **Air Content:** | 1.5 |
| | | | | **Load Volume:** | 4.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

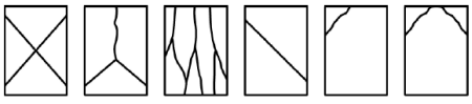
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 12-1 | 4 | 11/25/22 | 1 / 3 | 4.00 | 12.57 | 30,440 | 2,420 | 3 | C1 | N |
| 12-2 | 7 | 11/28/22 | 1 / 6 | 4.00 | 12.57 | 33,210 | 2,640 | 3 | C1 | N |
| 12-3 | 22 | 12/13/22 | 1 / 21 | 4.00 | 12.57 | 43,150 | 3,430 | 3 | | N |
| 12-4 | 28 | 12/19/22 | 1 / 27 | 4.00 | 12.57 | 47,020 | 3,740 | 3 | C2 | N |
| 12-5 | 56 | 01/16/23 | 1 / 55 | 4.00 | 12.57 | 54,310 | 4,320 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **2420**, 7 Day - **2640**, 22 Day - **3430**, 28 Day - **3740**, 56 Day - **4320**

**C1:** Strength is less than 70 percent of f'c.
**C2:** Strength is less than f'c. One cylinder will be held to break at 56 days.
**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4,5)
**Checked In :** 11/22/2022 (1,2,3,4,5)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)



# Compressive Strength of Concrete

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**Test Method: ASTM C 39**

**Report #:** CC-000051
11/23/2022, 28-day
**Report Date:** 12/21/2022
**Sample:** 108640


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 13 | **Technician:** | Chavez, Angel | **Batched:** | 09:04 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Chavez, Angel | **Sampled:** | 10:40 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 11/23/22 | **Cast:** | 10:55 MST |
| **Truck / Ticket #:** | 84 / 12474 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Wall
**Location Details:** San Luis WTP Pond 2 improvements North and South wall.
**Sample Location / Notes:** San Luis WTP Pond 2 improvements North and South wall. At the South wall approximately 50 feet East of South West corner.

## Batch Log

**Supplier:** RC Ready Mix
**Mix Design:** CdotClassDP
**Plant:** Antonito
**On-Site Admixtures:** 1.00 Oz AEA-Air Entraining Admixture (9.00 yd³)

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Sunny | **Slump (in):** | 4 | **Plastic Unit Weight:** | 132.0 (lb/ft³) |
| **Air Temperature (F):** | 49 | **Concrete Temp (F):** | 58 | **Air Content:** | 7.0 |
| | | | | **Load Volume:** | 10.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 13-1 | 7 | 11/30/22 | 5 / 2 | 4.00 | 12.57 | 40,410 | 3,220 | 3 | | N |
| 13-2 | 20 | 12/13/22 | 5 / 15 | 4.00 | 12.57 | 48,600 | 3,870 | 3 | | N |
| 13-3 | 28 | 12/21/22 | 5 / 23 | 4.00 | 12.57 | 54,160 | 4,310 | 3 | C4 | N |
| 13-4 | 28 | 12/21/22 | 5 / 23 | 4.00 | 12.57 | 54,060 | 4,300 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 7 Day - **3220**, 20 Day - **3870**, 28 Day - **4310**

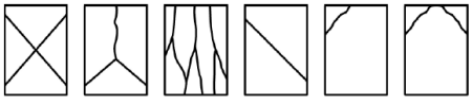
**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4)
**Checked In :** 11/28/2022 (1,2,3,4)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)

## General Remarks

**San Luis WTP Pond 2 improvements North and South wall.**



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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000052
11/23/2022, 28-day
**Report Date:** 12/21/2022
**Sample:** 108641


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 14 | **Technician:** | Chavez, Angel | **Batched:** | 09:21 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Chavez, Angel | **Sampled:** | 11:20 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 11/23/22 | **Cast:** | 11:35 MST |
| **Truck / Ticket #:** | 52 / 12475 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Wall
**Location Details:** San Luis WTP Pond 2 improvements for north and south wall.
**Sample Location / Notes:** Sampled from the West corner of the North wall approximately 45 feet east of the start of of the north wall

## Batch Log

**Supplier:** RC Ready Mix
**Mix Design:** CdotClassDP
**Plant:** Antonito
**On-Site Admixtures:** 1.00 Oz AEA-Air Entraining Admixture (9.00 yd³)

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Sunny | **Slump (in):** | 4-1/2 | **Plastic Unit Weight:** | 132.4 (lb/ft³) |
| **Air Temperature (F):** | 49 | **Concrete Temp (F):** | 60 | **Air Content:** | 6.1 |
| | | | | **Load Volume:** | 10.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

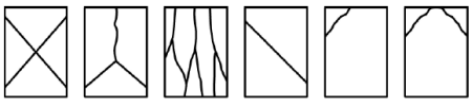
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 14-1 | 7 | 11/30/22 | 5 / 2 | 4.00 | 12.57 | 39,070 | 3,110 | 3 | | N |
| 14-2 | 20 | 12/13/22 | 5 / 15 | 4.00 | 12.57 | 48,080 | 3,830 | 3 | | N |
| 14-3 | 28 | 12/21/22 | 5 / 23 | 4.00 | 12.57 | 53,910 | 4,290 | 3 | C4 | N |
| 14-4 | 28 | 12/21/22 | 5 / 23 | 4.00 | 12.57 | 54,170 | 4,310 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 7 Day - **3110**, 20 Day - **3830**, 28 Day - **4300**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4)
**Checked In :** 11/28/2022 (1,2,3,4)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000053
11/23/2022, 28-day
**Report Date:** 12/21/2022
**Sample:** 108642


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 15 | **Technician:** | Chavez, Angel | **Batched:** | 09:35 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Chavez, Angel | **Sampled:** | 12:00 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 11/23/22 | **Cast:** | 12:15 MST |
| **Truck / Ticket #:** | 97 / 12476 | **Sampled From:** | Pump | **Truck Empty:** | |
| **Contractor:** | Robins Construction | **Placement Method:** | Pump | **Placement Time:** | |

## Location

**Placement Location:** Wall
**Location Details:** San Luis WTP Pond 2 Improvements North and South wall.
**Sample Location / Notes:** At the East corner of the north wall approximately 100 feet from the west corner.

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | CdotClassDP |
| **Plant:** | Antonito | | |

**On-Site Admixtures:** 1.00 Oz AEA-Air Entraining Admixture (4.00 yd³)

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Sunny | **Slump (in):** | 2-1/2 | **Plastic Unit Weight:** | 134.4 (lb/ft³) |
| **Air Temperature (F):** | 49 | **Concrete Temp (F):** | 58 | **Air Content:** | 6.0 |
| | | | | **Load Volume:** | 4.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

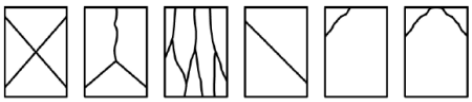
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 15-1 | 7 | 11/30/22 | 5 / 2 | 4.00 | 12.57 | 40,170 | 3,200 | 3 | | N |
| 15-2 | 20 | 12/13/22 | 5 / 15 | 4.00 | 12.57 | 48,160 | 3,830 | 3 | | N |
| 15-3 | 28 | 12/21/22 | 5 / 23 | 4.00 | 12.57 | 54,220 | 4,310 | 3 | C4 | N |
| 15-4 | 28 | 12/21/22 | 5 / 23 | 4.00 | 12.57 | 54,370 | 4,330 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 7 Day - **3200**, 20 Day - **3830**, 28 Day - **4320**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4)
**Checked In :** 11/28/2022 (1,2,3,4)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000055
12/01/2022, 28-day
**Report Date:** 12/29/2022
**Sample:** 108863


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 16 | **Technician:** | Tafoya, Jacob | **Batched:** | 09:11 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Tafoya, Jacob | **Sampled:** | 10:10 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 12/01/22 | **Cast:** | 10:25 MST |
| **Truck / Ticket #:** | LI / | **Sampled From:** | Pump | **Truck Empty:** | 10:35 MST |
| **Contractor:** | Engineering Analytics | **Placement Method:** | Pump | **Placement Time:** | 84 (min) |

## Location

**Placement Location:** Wall
**Location Details:** Pond structure walls in the middle of south wall
**Sample Location / Notes:** Pond structure walls

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | CdotClassDP |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Sunny | **Slump (in):** | 3-1/2 | **Plastic Unit Weight:** | 137.6 (lb/ft³) |
| **Air Temperature (F):** | 45 | **Concrete Temp (F):** | 60 | **Air Content:** | 5.4 |
| | | | | **Load Volume:** | 10.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

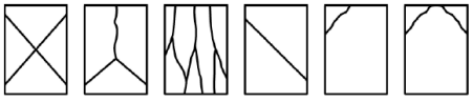
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 16-1 | 4 | 12/05/22 | 1 / 3 | 4.00 | 12.57 | 28,300 | 2,250 | 3 | C1 | N |
| 16-2 | 7 | 12/08/22 | 1 / 6 | 4.00 | 12.57 | 47,880 | 3,810 | 3 | | N |
| 16-4 | 28 | 12/29/22 | 1 / 27 | 4.00 | 12.57 | 61,250 | 4,870 | 3 | C4 | N |
| 16-5 | 28 | 12/29/22 | 1 / 27 | 4.00 | 12.57 | 60,830 | 4,840 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **2250**, 7 Day - **3810**, 28 Day - **4860**

**C1:** Strength is less than 70 percent of f'c.
**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,4,5)
**Checked In :** 12/02/2022 (1,2,4,5)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000056
12/01/2022, 28-day
**Report Date:** 12/29/2022
**Sample:** 108864


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 17 | **Technician:** | Tafoya, Jacob | **Batched:** | 09:00 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Tafoya, Jacob | **Sampled:** | 10:30 MST |
| **Specimens In Set:** | 5 | **Date Cast:** | 12/01/22 | **Cast:** | 10:45 MST |
| **Truck / Ticket #:** | 97 / | **Sampled From:** | Pump | **Truck Empty:** | 10:45 MST |
| **Contractor:** | Engineering Analytics | **Placement Method:** | Pump | **Placement Time:** | 105 (min) |

## Location

**Placement Location:** Wall
**Location Details:** Pond structure wall in south east corner of wall
**Sample Location / Notes:** Pond wall in the south east corner

## Batch Log

**Supplier:** Action Ready Mix, LLC
**Plant:** 2
**On-Site Admixtures:** None

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Sunny | **Slump (in):** | 4-1/2 | **Plastic Unit Weight:** | 138.4 (lb/ft³) |
| **Air Temperature (F):** | 45 | **Concrete Temp (F):** | 62 | **Air Content:** | 6.2 |
| | | | | **Load Volume:** | 10.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

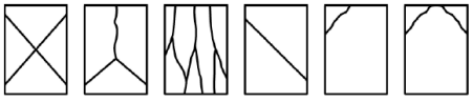
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 17-1 | 4 | 12/05/22 | 1 / 3 | 4.00 | 12.57 | 33,560 | 2,670 | 3 | C1 | N |
| 17-2 | 7 | 12/08/22 | 1 / 6 | 4.00 | 12.57 | 45,290 | 3,600 | 3 | | N |
| 17-4 | 28 | 12/29/22 | 1 / 27 | 4.00 | 12.57 | 58,030 | 4,620 | 3 | C4 | N |
| 17-5 | 28 | 12/29/22 | 1 / 27 | 4.00 | 12.57 | 57,460 | 4,570 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **2670**, 7 Day - **3600**, 28 Day - **4590**

**C1:** Strength is less than 70 percent of f'c.
**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,4,5)
**Checked In :** 12/02/2022 (1,2,4,5)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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Founded in 1971

# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000057
12/01/2022, 28-day
**Report Date:** 12/29/2022
**Sample:** 108865


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 18 | **Technician:** | Tafoya, Jacob | **Batched:** | 11:00 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Tafoya, Jacob | **Sampled:** | 11:15 MST |
| **Specimens In Set:** | 6 | **Date Cast:** | 12/01/22 | **Cast:** | 11:30 MST |
| **Truck / Ticket #:** | 52 / | **Sampled From:** | Pump | **Truck Empty:** | 12:45 MST |
| **Contractor:** | Engineering Analytics | **Placement Method:** | Pump | **Placement Time:** | 105 (min) |

## Location

**Placement Location:** Wall
**Location Details:** Pond structure wall in the north east corner of structure
**Sample Location / Notes:** Pond structure wall

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | CdotClassDP |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Sunny | **Slump (in):** | 4 | **Plastic Unit Weight:** | 140.4 (lb/ft³) |
| **Air Temperature (F):** | 48 | **Concrete Temp (F):** | 61 | **Air Content:** | 4.0 |
| | | | | **Load Volume:** | 4.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

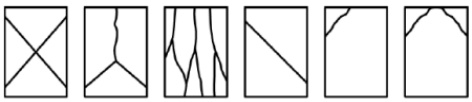
| Specimen Number | Test Age Days | Test Date | Field / Lab Cure Days | Average Cylinder Diameter (in) | Cylinder Area (in²) | Max Load (lbs) | Strength (psi) | Fracture Type | Break Remark | Capping Method |
|---|---|---|---|---|---|---|---|---|---|---|
| 18-1 | 4 | 12/05/22 | 1 / 3 | 4.00 | 12.57 | 37,290 | 2,970 | 3 | | N |
| 18-2 | 7 | 12/08/22 | 1 / 6 | 4.00 | 12.57 | 45,530 | 3,620 | 3 | | N |
| 18-4 | 28 | 12/29/22 | 1 / 27 | 4.00 | 12.57 | 61,190 | 4,870 | 3 | C4 | N |
| 18-5 | 28 | 12/29/22 | 1 / 27 | 4.00 | 12.57 | 60,790 | 4,840 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **2970**, 7 Day - **3620**, 28 Day - **4850**

**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,4,5)
**Checked In :** 12/02/2022 (1,2,4,5)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

CTL | THOMPSON Founded in 1971

# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000067
12/06/22, 28-day Revised
**Report Date:** 02/01/2023
**Sample:** 108998


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 19 | **Technician:** | Tafoya, Jacob | **Batched:** | 09:23 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Tafoya, Jacob | **Sampled:** | 10:45 MST |
| **Specimens In Set:** | 9 | **Date Cast:** | 12/06/22 | **Cast:** | 11:00 MST |
| **Truck / Ticket #:** | 84 / | **Sampled From:** | Pump | **Truck Empty:** | 11:10 MST |
| **Contractor:** | Robins construction | **Placement Method:** | Pump | **Placement Time:** | 107 (min) |

## Location

**Placement Location:** Wall
**Location Details:** South wall far east of center adjacent to the ramp
**Sample Location / Notes:** Wall

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | CdotClassDP |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Sunny | **Slump (in):** | 5-1/2 | **Plastic Unit Weight:** | 139.6 (lb/ft³) |
| **Air Temperature (F):** | 35 | **Concrete Temp (F):** | 60 | **Air Content:** | 5.5 |
| | | | | **Load Volume:** | 10.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 19-1 | 4 | 12/10/22 | 1 / 3 | 4.00 | 12.57 | 38,130 | 3,030 | 3 | C1 | N |
| 19-2 | 4 | 12/10/22 | 1 / 3 | 4.00 | 12.57 | 38,410 | 3,060 | 3 | C1 | N |
| 19-3 | 4 | 12/10/22 | 1 / 3 | 4.00 | 12.57 | 38,310 | 3,050 | 3 | C1 | N |
| 19-4 | 7 | 12/13/22 | 1 / 6 | 4.00 | 12.57 | 46,580 | 3,710 | 3 | | N |
| 19-5 | 7 | 12/13/22 | 1 / 6 | 4.00 | 12.57 | 46,420 | 3,690 | 3 | | N |
| 19-6 | 7 | 12/13/22 | 1 / 6 | 4.00 | 12.57 | 45,910 | 3,650 | 3 | | N |
| 19-7 | 28 | 01/03/23 | 1 / 27 | 4.00 | 12.57 | 65,790 | 5,230 | 3 | C4 | N |
| 19-8 | 28 | 01/03/23 | 1 / 27 | 4.00 | 12.57 | 58,460 | 4,650 | 5 | C4 | N |
| 19-9 | 28 | 01/03/23 | 1 / 27 | 4.00 | 12.57 | 59,960 | 4,770 | 5 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **3050**, 7 Day - **3680**, 28 Day - **4890**

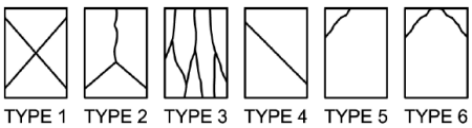
**C1:** Strength is less than 70 percent of f'c.
**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4,5,6), Daniel Richards (7,8,9)
**Checked In :** 12/07/2022 (1,2,3,4,5,6,7,8,9)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)

## General Remarks

**(REVISED 02/01/2023: CORRECTED PSI FROM 4500 TO 4000)**



# Compressive Strength of Concrete

CTL|THOMPSON Founded in 1971

**Test Method: ASTM C 39**

**Report #:** CC-000068
12/06/22, 28-day Revised
**Report Date:** 02/01/2023
**Sample:** 108999


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 20 | **Technician:** | Tafoya, Jacob | **Batched:** | 10:22 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Tafoya, Jacob | **Sampled:** | 11:30 MST |
| **Specimens In Set:** | 9 | **Date Cast:** | 12/06/22 | **Cast:** | 11:45 MST |
| **Truck / Ticket #:** | 97 / 12511 | **Sampled From:** | Pump | **Truck Empty:** | 12:00 MST |
| **Contractor:** | Robins construction | **Placement Method:** | Pump | **Placement Time:** | 98 (min) |

## Location

**Placement Location:** Wall
**Location Details:** Finish south wall remainder of truck into north wall east of center adjacent to ramp
**Sample Location / Notes:** Wall

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | CdotClassDP |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Sunny | **Slump (in):** | 5-1/2 | **Plastic Unit Weight:** | 139.2 (lb/ft³) |
| **Air Temperature (F):** | 35 | **Concrete Temp (F):** | 60 | **Air Content:** | 6.0 |
| | | | | **Load Volume:** | 10.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 20-1 | 4 | 12/10/22 | 1 / 3 | 4.00 | 12.57 | 36,360 | 2,890 | 3 | C1 | N |
| 20-2 | 4 | 12/10/22 | 1 / 3 | 4.00 | 12.57 | 36,140 | 2,880 | 3 | C1 | N |
| 20-3 | 4 | 12/10/22 | 1 / 3 | 4.00 | 12.57 | 35,950 | 2,860 | 3 | C1 | N |
| 20-4 | 7 | 12/13/22 | 1 / 6 | 4.00 | 12.57 | 40,880 | 3,250 | 3 | | N |
| 20-5 | 7 | 12/13/22 | 1 / 6 | 4.00 | 12.57 | 40,780 | 3,240 | 3 | | N |
| 20-6 | 7 | 12/13/22 | 1 / 6 | 4.00 | 12.57 | 40,300 | 3,210 | 3 | | N |
| 20-7 | 14 | 12/20/22 | 1 / 13 | 4.00 | 12.57 | 48,810 | 3,880 | 3 | | N |
| 20-8 | 28 | 01/03/23 | 1 / 27 | 4.00 | 12.57 | 56,550 | 4,500 | 5 | C4 | N |
| 20-9 | 28 | 01/03/23 | 1 / 27 | 4.00 | 12.57 | 54,610 | 4,340 | 3 | C3 | N |

**Test Age Average Strengths (psi):** 4 Day - **2880**, 7 Day - **3230**, 14 Day - **3880**, 28 Day - **4420**

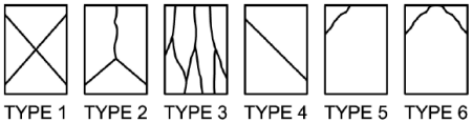
**C1:** Strength is less than 70 percent of f'c.
**C4:** Strength is greater than or equal to f'c.
**C3:** Strength is less than f'c.
**Tested By:** Victor Orazem (1,2,3,4,5,6,7), Daniel Richards (8,9)
**Checked In :** 12/07/2022 (1,2,3,4,5,6,7,8,9)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)

## General Remarks

**(REVISED 02/01/2023: CORRECTED PSI FROM 4500 TO 4000)**






Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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Founded in 1971

# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000069
12/06/22, 56-day Revised
**Report Date:** 02/01/2023
**Sample:** 109000


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 21 | **Technician:** | Tafoya, Jacob | **Batched:** | 10:23 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Tafoya, Jacob | **Sampled:** | 11:45 MST |
| **Specimens In Set:** | 9 | **Date Cast:** | 12/06/22 | **Cast:** | 12:00 MST |
| **Truck / Ticket #:** | 52 / 12513 | **Sampled From:** | Pump | **Truck Empty:** | 12:10 MST |
| **Contractor:** | Robins construction | **Placement Method:** | Pump | **Placement Time:** | 107 (min) |

## Location

**Placement Location:** Wall
**Location Details:** Finishing north wall adjacent to ramp
**Sample Location / Notes:** Wall

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | CdotClassDP |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Sunny | **Slump (in):** | 4-1/4 | **Plastic Unit Weight:** | 139.8 (lb/ft³) |
| **Air Temperature (F):** | 42 | **Concrete Temp (F):** | 63 | **Air Content:** | 6.2 |
| | | | | **Load Volume:** | 4.00 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 21-1 | 4 | 12/10/22 | 1 / 3 | 4.00 | 12.57 | 36,610 | 2,910 | 3 | C1 | N |
| 21-2 | 4 | 12/10/22 | 1 / 3 | 4.00 | 12.57 | 36,590 | 2,910 | 3 | C1 | N |
| 21-3 | 4 | 12/10/22 | 1 / 3 | 4.00 | 12.57 | 37,010 | 2,940 | 3 | C1 | N |
| 21-4 | 7 | 12/13/22 | 1 / 6 | 4.00 | 12.57 | 45,030 | 3,580 | 3 | | N |
| 21-5 | 7 | 12/13/22 | 1 / 6 | 4.00 | 12.57 | 46,080 | 3,670 | 3 | | N |
| 21-6 | 7 | 12/13/22 | 1 / 6 | 4.00 | 12.57 | 45,580 | 3,630 | 3 | | N |
| 21-7 | 28 | 01/03/23 | 1 / 27 | 4.00 | 12.57 | 57,140 | 4,550 | 3 | C4 | N |
| 21-8 | 28 | 01/03/23 | 1 / 27 | 4.00 | 12.57 | 53,990 | 4,300 | 5 | C2 | N |
| 21-9 | 56 | 01/31/23 | 1 / 55 | 4.00 | 12.57 | 65,280 | 5,190 | 3 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **2920**, 7 Day - **3630**, 28 Day - **4420**, 56 Day - **5190**

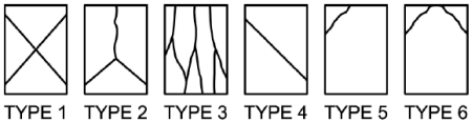
**C1:** Strength is less than 70 percent of f'c.
**C4:** Strength is greater than or equal to f'c.
**C2:** Strength is less than f'c. One cylinder will be held to break at 56 days.
**Tested By:** Victor Orazem (1,2,3,4,5,6,9), Daniel Richards (7,8)
**Checked In :** 12/07/2022 (1,2,3,4,5,6,7,8,9)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)

## General Remarks

**(REVISED 02/01/2023: CORRECTED PSI FROM 4500 TO 4000)**




Test results relate only to the sample tested.



Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

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# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000070
12/12/22, 28-day Revised
**Report Date:** 02/01/2023
**Sample:** 109283


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 22 | **Technician:** | Tafoya, Jacob | **Batched:** | 09:01 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Tafoya, Jacob | **Sampled:** | 10:25 MST |
| **Specimens In Set:** | 9 | **Date Cast:** | 12/12/22 | **Cast:** | 10:40 MST |
| **Truck / Ticket #:** | 95 / 12548 | **Sampled From:** | Pump | **Truck Empty:** | 10:40 MST |
| **Contractor:** | Robins construction | **Placement Method:** | Pump | **Placement Time:** | 99 (min) |

## Location

**Placement Location:** Wall
**Location Details:** South Wall adjacent to ramp
**Sample Location / Notes:** Wall

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | CdotClassDP |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Cold with light wind | **Slump (in):** | 5-1/4 | **Plastic Unit Weight:** | 135.6 (lb/ft³) |
| **Air Temperature (F):** | 35 | **Concrete Temp (F):** | 63 | **Air Content:** | 5.5 |
| | | | | **Load Volume:** | 6.50 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 22-1 | 4 | 12/16/22 | 2 / 2 | 4.00 | 12.57 | 32,090 | 2,550 | 3 | C1 | N |
| 22-2 | 4 | 12/16/22 | 2 / 2 | 4.00 | 12.57 | 32,550 | 2,590 | 3 | C1 | N |
| 22-3 | 4 | 12/16/22 | 2 / 2 | 4.00 | 12.57 | 32,190 | 2,560 | 3 | C1 | N |
| 22-4 | 7 | 12/19/22 | 2 / 5 | 4.00 | 12.57 | 37,210 | 2,960 | 3 | C1 | N |
| 22-5 | 7 | 12/19/22 | 2 / 5 | 4.00 | 12.57 | 36,820 | 2,930 | 3 | C1 | N |
| 22-6 | 7 | 12/19/22 | 2 / 5 | 4.00 | 12.57 | 36,380 | 2,890 | 3 | C1 | N |
| 22-7 | 14 | 12/26/22 | 2 / 12 | 4.00 | 12.57 | 45,630 | 3,630 | 3 | | N |
| 22-8 | 28 | 01/09/23 | 2 / 26 | 4.00 | 12.57 | 55,710 | 4,430 | 5 | C2 | N |
| 22-9 | 28 | 01/09/23 | 2 / 26 | 4.00 | 12.57 | 51,560 | 4,100 | 5 | C2 | N |

**Test Age Average Strengths (psi):** 4 Day - **2570**, 7 Day - **2930**, 14 Day - **3630**, 28 Day - **4270**

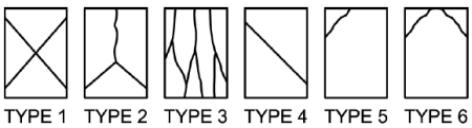
**C1:** Strength is less than 70 percent of f'c.
**C2:** Strength is less than f'c. One cylinder will be held to break at 56 days.
**Tested By:** Victor Orazem (1,2,3,4,5,6,7), Daniel Richards (8,9)
**Checked In :** 12/14/2022 (1,2,3,4,5,6,7,8,9)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)

## General Remarks

**(REVISED 02/01/2023: CORRECTED PSI FROM 4500 TO 4000)**



CTL | THOMPSON
Founded in 1971

# Compressive Strength of Concrete

**Test Method: ASTM C 39**

**Report #:** CC-000071
12/12/22, 28-day Revised
**Report Date:** 02/01/2023
**Sample:** 109284


**Southern Colorado**
4718 N Elizabeth Street
Suite C-2
Pueblo, CO 81008
Phone: 719-595-1287


**Client:**
Engineering Analytics, Inc.
1600 Specht Point Rd, Ste 209
Fort Collins, CO 80525

**Project:**
SC03597.000F-365
San Luis WTP Pond 2 Improvements
Pueblo Laboratory
Pueble, CO

## Sample Details

| | | | | | |
|---|---|---|---|---|---|
| **Set #:** | 23 | **Technician:** | Tafoya, Jacob | **Batched:** | 09:13 MST |
| **Specimen Size:** | CS 4" X 8" | **Cast By:** | Tafoya, Jacob | **Sampled:** | 10:45 MST |
| **Specimens In Set:** | 9 | **Date Cast:** | 12/12/22 | **Cast:** | 11:00 MST |
| **Truck / Ticket #:** | 97 / 12549 | **Sampled From:** | Pump | **Truck Empty:** | 11:00 MST |
| **Contractor:** | Robin construction | **Placement Method:** | Pump | **Placement Time:** | 107 (min) |

## Location

**Placement Location:** Wall
**Location Details:** North wall adjacent to ramp
**Sample Location / Notes:** Wall

## Batch Log

| | | | |
|---|---|---|---|
| **Supplier:** | RC Ready Mix | **Mix Design:** | CdotClassDP |
| **Plant:** | Antonito | | |
| **On-Site Admixtures:** | None | | |

## Specifications

**Strength:** 4000 (psi)

## Field Measurements

| | | | | | |
|---|---|---|---|---|---|
| **Weather:** | Cold with light breeze | **Slump (in):** | 4 | **Plastic Unit Weight:** | 138.6 (lb/ft³) |
| **Air Temperature (F):** | 35 | **Concrete Temp (F):** | 61 | **Air Content:** | 4.0 |
| | | | | **Load Volume:** | 6.50 (yd³) |

## Standard Cure

**Initial Cure Method:** Box
**Final Cure Method:** Tank

## Field Cure

## Lab Test Results

**Testing Lab:** Southern Colorado, 4718 N. Elizabeth Street, Suite C-2, Pueblo, CO, 81008

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 23-1 | 4 | 12/16/22 | 2 / 2 | 4.00 | 12.57 | 39,940 | 3,180 | 3 | | N |
| 23-2 | 4 | 12/16/22 | 2 / 2 | 4.00 | 12.57 | 40,190 | 3,200 | 3 | | N |
| 23-3 | 4 | 12/16/22 | 2 / 2 | 4.00 | 12.57 | 40,110 | 3,190 | 3 | | N |
| 23-4 | 7 | 12/19/22 | 2 / 5 | 4.00 | 12.57 | 45,010 | 3,580 | 3 | | N |
| 23-5 | 7 | 12/19/22 | 2 / 5 | 4.00 | 12.57 | 45,920 | 3,650 | 3 | | N |
| 23-6 | 7 | 12/19/22 | 2 / 5 | 4.00 | 12.57 | 45,500 | 3,620 | 3 | | N |
| 23-8 | 28 | 01/09/23 | 2 / 26 | 4.00 | 12.57 | 66,340 | 5,280 | 5 | C4 | N |
| 23-9 | 28 | 01/09/23 | 2 / 26 | 4.00 | 12.57 | 69,020 | 5,490 | 5 | C4 | N |

**Test Age Average Strengths (psi):** 4 Day - **3190**, 7 Day - **3620**, 28 Day - **5390**

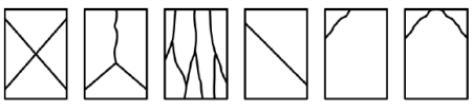
**C4:** Strength is greater than or equal to f'c.
**Tested By:** Victor Orazem (1,2,3,4,5,6), Daniel Richards (8,9)
**Checked In :** 12/14/2022 (1,2,3,4,5,6,8,9)

## Capping Methods

**N:** Unbonded Caps (ASTM C1231)

## General Remarks

**(REVISED 02/01/2023: CORRECTED PSI FROM 4500 TO 4000)**



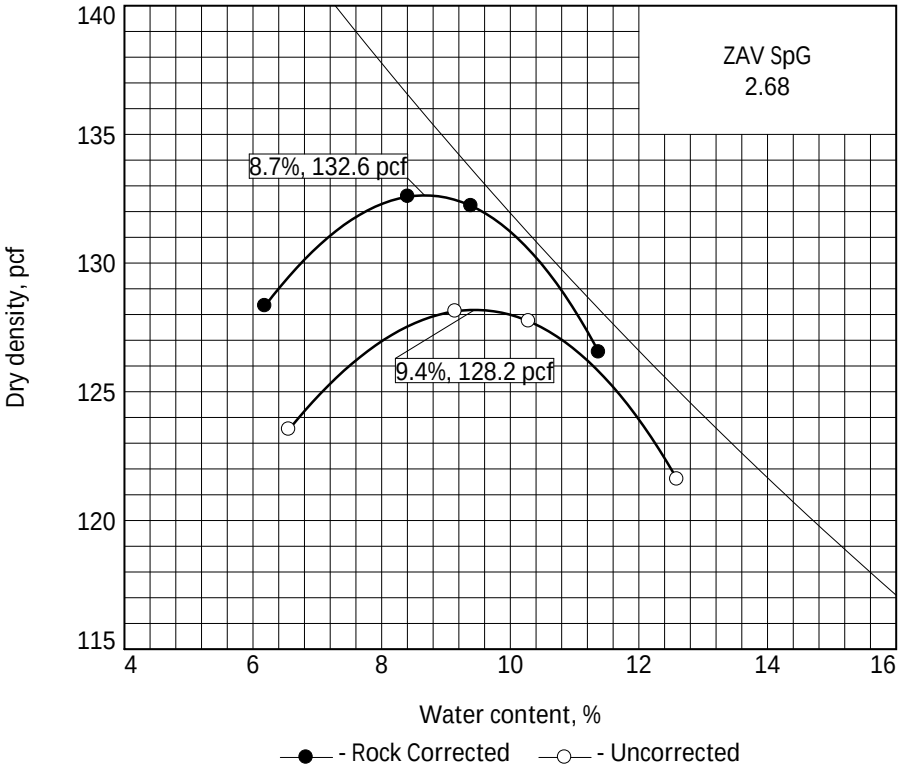



Cylinders received in good condition unless noted otherwise. Physical properties of concrete (ASTM C143, C231, C138, C1064).

# ATTACHMENT D

# SOIL TESTING RESULTS

# COMPACTION TEST REPORT




Curve No.
**1**

Test Specification:
ASTM D 698-12 Method C Standard
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Preparation Method
Hammer Wt. 5.5 lb.
Hammer Drop 12 in.
Hammer Type: manual
Layers three Blows/Layer 56
Mold Size 0.075 cu. ft.

Test Performed on Material Passing 3/4 in. Sieve

NM LL PI
Sp.G. (D854): 2.65
%>3/4 in. 14 %<No.200
USCS AASHTO
Date Sampled
Date Received
Date Tested 06/21/2022
Tested By CC

| TESTING DATA | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 7649.4 | 7929.9 | 7964.1 | 7830.2 | | |
| WM | 3171.1 | 3172.4 | 3171.4 | 3172.4 | | |
| WW + T #1 | 1703.9 | 1566.0 | 2673.7 | 2606.2 | | |
| WD + T #1 | 1617.6 | 1460.0 | 2459.4 | 2348.3 | | |
| TARE #1 | 301.9 | 301.1 | 376.4 | 300.6 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOISTURE | 6.2 | 8.4 | 9.4 | 11.4 | | |
| DRY DENSITY | 128.3 | 132.6 | 132.2 | 126.5 | | |

| ROCK CORRECTED TEST RESULTS | UNCORRECTED |
|---|---|
| Maximum dry density = 132.6 pcf | 128.2 pcf |
| Optimum moisture = 8.7 % | 9.4 % |

Material Description: Sandy CLAY with gravel

Remarks:

Project No. 210105.09b Client: Battle Mountain Resources, Inc.
Project: Pond 2 Improvements

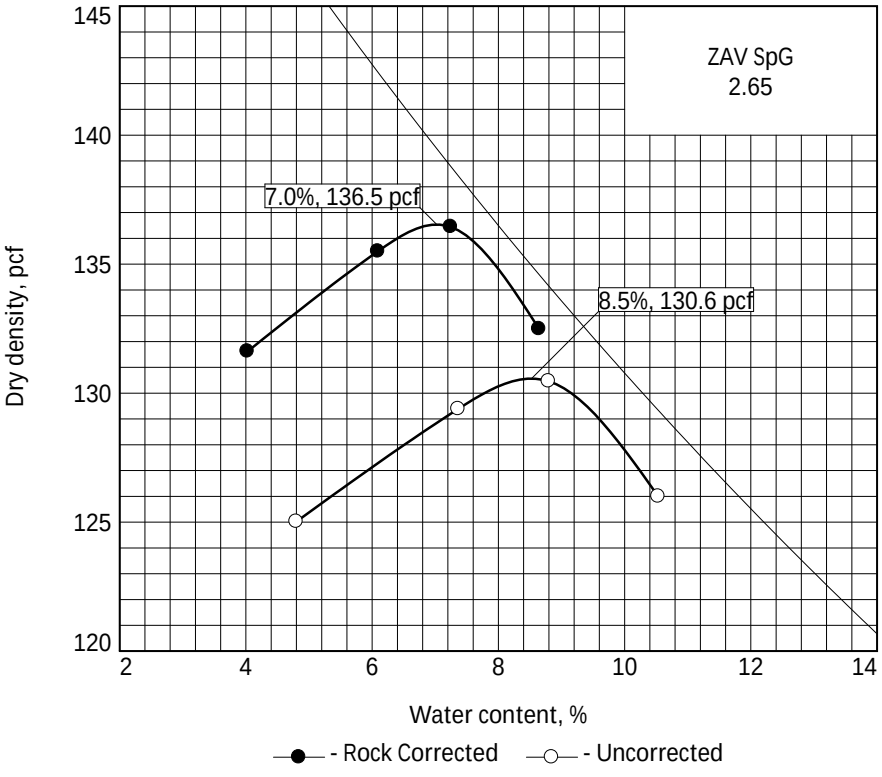
○ Location: Native Soil between Ponds 2 and 3

Checked by: EH
Title:

Figure

ENGINEERING ANALYTICS, INC.

# COMPACTION TEST REPORT




Curve No.
**2**

Test Specification:
ASTM D 698-12 Method C Standard
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Preparation Method
Hammer Wt. 5.5 lb.
Hammer Drop 12 in.
Hammer Type: manual
Layers three Blows/Layer 56
Mold Size 0.075 cu. ft.

Test Performed on Material
Passing 3/4 in. Sieve

NM LL PI
Sp.G. (D854): 2.650
%>3/4 in. 19.4 %<No.200
USCS AASHTO
Date Sampled
Date Received
Date Tested 9/26/2022
Tested By AW

| TESTING DATA | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 10956.3 | 11225.0 | 11327.6 | 11236.8 | | |
| WM | 6499.0 | 6499.0 | 6499.0 | 6499.0 | | |
| WW + T #1 | 1492.0 | 2206.4 | 1205.8 | 1733.8 | | |
| WD + T #1 | 1435.8 | 2075.9 | 1132.0 | 1596.3 | | |
| TARE #1 | 265.0 | 304.1 | 293.0 | 291.0 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOISTURE | 4.0 | 6.1 | 7.2 | 8.6 | | |
| DRY DENSITY | 131.6 | 135.5 | 136.4 | 132.5 | | |

| ROCK CORRECTED TEST RESULTS | UNCORRECTED |
|---|---|
| Maximum dry density = 136.5 pcf | 130.6 pcf |
| Optimum moisture = 7.0 % | 8.5 % |

Material Description
Material # 2
Gravelly Sand W/ Clay

Remarks:

Project No. 210105.09b Client: Battle Mountain
Project: San Luis WTP Pond # 2

○ Source of Sample: Stock Pile

Checked by: KG
Title:

ENGINEERING ANALYTICS, INC.

Figure

# FIELD DENSITY TEST REPORT

ASTM D 2922-Density
ASTM D3017-Moisture

**MOISTURE-DENSITY RELATIONSHIPS**
ASTM D 4253 & 4254

| Curve No. | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|
| 1 | 132.6 | 8.7% |
| 2 | 136.5 | 7.0% |
| | | |
| | | |
| | | |

**PROJECT:** San Luis Water Treatment Pond 2
**JOB NO:** 210105.09b

**CLIENT:** Battle Mountain Resources
**CONTRACTOR:** Robins Construction
**ENGINEER:** EA
**TESTED BY:** Tyler Davis, P.E.

| **NOTES:** |
|---|
| Field proctor (135 pcf @ 6.2%) used in the field while curve 2 was developed. |
| Curve 2 deemed most representative of the material used. |
| |

Datum: Measured from surrounding grade near top of adj pond

| Test No. | Date | Location | Elevation | % Moist | Density (pcf) | | % Compaction | Required Compaction | Curve No. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Moist | Dry | | | |
| 1 | 9/15/2022 | W end middle under proposed pond about 12" fill per lift | -6' from top of pond | 4.4% | 128.8 | 123.4 | 90% | 95% | 2 |
| 2 | 9/15/2022 | W end near N corner, under proposed pond | -6' from top of pond | 4.7% | 140.0 | 133.7 | 98% | 95% | 2 |
| 3 | 9/15/2022 | W end SW corner, under proposed pond | -6' from top of pond | 6.4% | 146.4 | 137.6 | 100+% | 95% | 2 |
| 4 | 9/15/2022 | RETEST of #3 (2" test) | -6 from top of pond | 7.1% | 139.1 | 129.9 | 95% | 95% | 2 |
| 5 | 9/16/2022 | WS corner under pond (8") | -5.5' | 4.3% | 135.9 | 130.3 | 95% | 95% | 2 |
| 6 | 9/16/2022 | 75' from W end, 5' from N end inside pond footprint (8") | 2nd lift | 7.0% | 135.0 | 126.2 | 92% | 95% | 2 |
| 7 | 9/16/2022 | Middle inside pond (8") | 2nd lift | 6.4% | 139.3 | 130.9 | 96% | 95% | 2 |
| 8 | 9/16/2022 | NW corner, sump hole (4" test) | 2nd lift | 7.1% | 140.2 | 130.9 | 96% | 95% | 2 |
| 9 | 9/16/2022 | SW corner after 1 roller pass (for reference only) (4" test) | 2nd lift | 5.2% | 130.7 | 124.2 | 91% | 95% | 2 |
| 10 | 9/16/2022 | W end just N of center, 10' from W end beneath pond | 2nd lift | 7.5% | 145.8 | 135.6 | 99% | 95% | 2 |
| 11 | 9/16/2022 | 6' from W end at center of pond | 2nd lift | 5.5% | 142.3 | 134.9 | 99% | 95% | 2 |

**Additional Notes:**

Engineering Analytics, Inc.

# FIELD DENSITY TEST REPORT

ASTM D 2922-Density
ASTM D3017-Moisture

**MOISTURE-DENSITY RELATIONSHIPS**
ASTM D 4253 & 4254

| Curve No. | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|
| 1 | 132.6 | 8.7% |
| 2 | 136.5 | 7.0% |
| | | |
| | | |
| | | |

**PROJECT:** San Luis WTP Pond #2
**JOB NO:** 210105.09b

**CLIENT:** Battle Mountain Resources
**CONTRACTOR:** Robins Contruction
**ENGINEER:** EA
**TESTED BY:** Ian Stockdill, P.E.

| **NOTES:** |
|---|
| Field proctor (135 pcf @ 6.2%) used in the field while curve 2 was developed. |
| Curve 2 deemed most representative of the material used. |
| |

Datum: 0 = Final Subgrade

| Test No. | Date | Location | Elevation | % Moist | Density (pcf) Moist | Density (pcf) Dry | % Compaction | Required Compaction | Curve No. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 9/20/2022 | SE corner approx 15' N of S bank | -0.5 | 4.3% | 139.6 | 133.8 | 98% | 95% | 2 |
| 2 | 9/20/2022 | NW corner appox 40' N of S bank | -1 | 6.5% | 143.5 | 134.7 | 99% | 95% | 2 |
| 3 | 9/20/2022 | SW corner appox 25' N of S bank | -0.5 | 4.6% | 138.8 | 132.7 | 97% | 95% | 2 |
| 4 | 9/20/2022 | Approx E of pond 25' E of W bank | 0 | 5.4% | 140.7 | 133.5 | 98% | 95% | 2 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Additional Notes:**

Engineering Analytics, Inc.

# FIELD DENSITY TEST REPORT

ASTM D 2922-Density
ASTM D3017-Moisture

**MOISTURE-DENSITY RELATIONSHIPS**
ASTM D 4253 & 4254

| Curve No. | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|
| 1 | 132.6 | 8.7% |
| 2 | 136.5 | 7.0% |
| | | |
| | | |
| | | |

**PROJECT:** San Luis WTP Pond #2
**JOB NO:** 210105.09b

**CLIENT:** Battle Mountain Resources
**CONTRACTOR:** Robins Contruction
**ENGINEER:** EA
**TESTED BY:** Tyler Davis, P.E.

**NOTES:** 6" test depth unless otherwise noted

Datum: Measured from top of wall

| Test No. | Date | Location | Elevation | % Moist | Density (pcf) | | % Compaction | Required Compaction | Curve No. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Moist | Dry | | | |
| 12 | 10/11/2022 | Previous pumping area near NW corner | F.G. | 4.5% | 143.2 | 137.0 | 100% | 95% | 2 |
| 13 | 10/11/2022 | Center of ramp at bottom | F.G. | 3.4% | 147.2 | 142.4 | 100+% | 95% | 2 |
| 14 | 10/11/2022 | Top of ramp SE corner | F.G. | 6.3% | 142.4 | 134.0 | 98% | 95% | 2 |
| 15 | 10/11/2022 | Middle N end of ramp (4" test) | F.G. | 5.5% | 143.8 | 136.3 | 100% | 95% | 2 |
| 16 | 10/11/2022 | In pond near middle on south side | F.G. | 4.8% | 141.7 | 135.2 | 99% | 95% | 2 |
| 17 | 10/11/2022 | In pond center of west end | F.G. | 4.0% | 140.1 | 134.7 | 99% | 95% | 2 |
| 18 | 10/11/2022 | In pond center, middle | F.G. | 4.6% | 147.3 | 140.8 | 100+% | 95% | 2 |
| 19 | 12/20/2022 | Outside along walls N side E end 1st lift 4" | -8' from top of wall | 6.3% | 103.6 | 97.5 | 74% | 90% | 1 |
| 20 | 12/20/2022 | Outside wall N side middle 1st lift 6" | -8' from top of wall | 6.7% | 125.6 | 117.7 | 89% | 90% | 1 |
| 21 | 12/20/2022 | Outside wall N side W end 1st lift 4" | -7.5 from top of wall | 8.4% | 131.8 | 121.6 | 92% | 90% | 1 |

**Additional Notes:** For exterior backfill, used excavated material as backfill, cleaned out concrete debris and 6" or larger of rocks, no moisture added due to cold temps.

Engineering Analytics, Inc.

# FIELD DENSITY TEST REPORT

ASTM D 2922-Density
ASTM D3017-Moisture

**MOISTURE-DENSITY RELATIONSHIPS**
ASTM D 4253 & 4254

| Curve No. | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|
| 1 | 132.6 | 8.7% |
| 2 | 136.5 | 7.0% |
| | | |
| | | |
| | | |

**PROJECT:** San Luis WTP Pond #2
**JOB NO:** 210105.09b

**CLIENT:** Battle Mountain Resources
**CONTRACTOR:** Robins Contruction
**ENGINEER:** EA
**TESTED BY:** Tyler Davis, P.E.

**NOTES:** 6" test depth unless otherwise noted

Datum: Top of pond wall used for reference

| Test No. | Date | Location | Elevation | % Moist | Density (pcf) Moist | Density (pcf) Dry | % Compaction | Required Compaction | Curve No. |
|---|---|---|---|---|---|---|---|---|---|
| 22 | 12/20/2022 | Outside wall of pond N side E end 4", RETEST of #19 | -8' from top of wall | 6.7% | 126.1 | 118.2 | 89% | 90% | 1 |
| 23 | 12/20/2022 | RETEST of #19 NE corner 4" | -8' from top of wall | 7.4% | 128.3 | 119.5 | 90% | 90% | 1 |
| 24 | 12/20/2022 | NW end outside, RETEST of #21 2" | -7.5' from top of wall | 9.5% | 131.3 | 119.9 | 90% | 90% | 1 |
| 25 | 12/20/2022 | 2nd lift outside N end W side 6" | -7' | 6.1% | 138.0 | 130.1 | 95% | 90% | 2 |
| 26 | 12/20/2022 | 2nd lift N side middle 6" | -7' | 8.6% | 117.5 | 108.2 | 82% | 90% | 1 |
| 27 | 12/20/2022 | 2nd lift N side E end 6" | -7' | 7.8% | 127.2 | 118.0 | 89% | 90% | 1 |
| 28 | 12/20/2022 | RETEST of #26 4" | -7' | 8.2% | 130.3 | 120.4 | 91% | 90% | 1 |
| 29 | 12/20/2022 | RETEST of #27 | -7' | 7.6% | 129.8 | 120.6 | 91% | 90% | 1 |
| 30 | 12/20/2022 | W side of pond 1st lift 6" | -7' | 9.9% | 132.1 | 120.2 | 91% | 90% | 1 |
| 31 | 12/20/2022 | 3rd lift N side E pond 6" | -6.5' | 11.6% | 131.8 | 118.1 | 89% | 90% | 1 |

**Additional Notes:** For exterior backfill, used excavated material as backfill, cleaned out concrete debris and 6" or larger of rocks, no moisture added due to cold temps.

Engineering Analytics, Inc.

# FIELD DENSITY TEST REPORT

ASTM D 2922-Density
ASTM D3017-Moisture

**MOISTURE-DENSITY RELATIONSHIPS**
ASTM D 4253 & 4254

| Curve No. | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|
| 1 | 132.6 | 8.7% |
| 2 | 136.5 | 7.0% |
| | | |
| | | |
| | | |

**PROJECT:** San Luis WTP Pond #2
**JOB NO:** 210105.09b

**CLIENT:** Battle Mountain Resources
**CONTRACTOR:** Robins Contruction
**ENGINEER:** EA
**TESTED BY:** Tyler Davis, P.E.

**NOTES:** 6" test depth unless otherwise noted

Datum: Top of concrete pond wall

| Test No. | Date | Location | Elevation | % Moist | Density (pcf) Moist | Density (pcf) Dry | % Compaction | Required Compaction | Curve No. |
|---|---|---|---|---|---|---|---|---|---|
| 32 | 12/20/2022 | 3rd lift N side middle | -6.5' | 8.0% | 130.7 | 121.0 | 91% | 90% | 1 |
| 33 | 12/20/2022 | 1st lift S side W end 4" | -7' | 10.8% | 139.6 | 126.0 | 95% | 90% | 1 |
| 34 | 12/20/2022 | 1st lift S side middle 4" | -7' | 7.7% | 131.9 | 122.5 | 92% | 90% | 1 |
| 35 | 12/20/2022 | 1st lift S side E end 6" | -7.5' | 8.2% | 134.4 | 124.2 | 94% | 90% | 1 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Additional Notes:** For exterior backfill, used excavated material as backfill, cleaned out concrete debris and 6" or larger of rocks, no moisture added due to cold temps.

Engineering Analytics, Inc.

# ATTACHMENT E

# CONTRACTOR SUBMITTALS

# Submittal Notification Form

## Submittal Information

| | |
|---|---|
| **Project Title** | San Luis Pond 2 |
| **EA Project No.** | 210105.09b |
| **Contractor** | Robins Construction |
| **Submittal ID & Date** | 3/28/22 |
| **Submittal Description** | Concrete Mix |
| **Applicable Spec. or Dwg.** | 03300 Concrete 2.2.1.A. |

## Submittal Status

| | |
|---|---|
| ☒ **NO EXCEPTION TAKEN. Work may proceed.** | |
| ☐ **REVISE AND RESUBMIT. Work may proceed subject to incorporation of changes indicated.** | |
| ☐ **REVISE AND RESUBMIT. Work may not proceed.** | |
| ☐ **REJECTED.** | |
| ☐ **FOR REFERENCE ONLY.** | |
| **Reviewed By** | M. Abshire |
| **Notification Date** | 3/28/22 |
| Permission to proceed does not relieve contractor/supplier from full compliance with project specifications and contractual obligations. | |

## Review Comments (attach separate sheet if necessary)

None.

## Attachments

Robins Construction Submittal 3/23/22 (Type V Concrete Mix) and related correspondence.

## Rob Schaut

**From:** chad@robinsconstruction.com
**Sent:** Wednesday, March 23, 2022 11:22 AM
**To:** Mark Abshire
**Cc:** estimating@robinsconstruction.com; Rob Schaut
**Subject:** San Luis Water Treatment Plant
**Attachments:** Type V Concrete Mix.pdf

Hello,

The plans call for a type V design. On previous projects we have received engineer approval on the attached design. We would like to confirm that this mix design will be acceptable for use on pond 2.

The reason we want to use this mix design is it will save on costs due to logistics. We have used this specific mix design for the town of Antonito's waste water treatment plant with success.

Also, is there a bid sheet available?

What is the expected time frame of the project?

Thank you,

Chad Bagwell
Project Manager / Estimator
38767 State Highway 17
Antonito, CO 81120
719.376.2351 (O)
719.580.2304 (M)
chad@robinsconstruction.com

CESARE, INC.
*Geotechnical Engineers & Construction Materials Consultants*

# CONCRETE MIX DESIGN SUMMARY - FLEXURAL STRENGTH CRITERIA

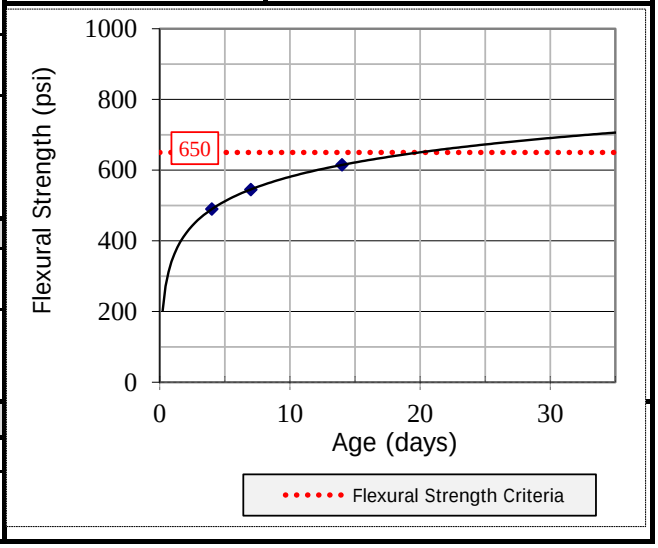
| | | | |
|---|---|---|---|
| Project number | 20.171, Robins Construction | | |
| Project name | General Lab Testing | Date performed | February 18, 2021 |
| Lab ID number | F214039 | Report date | March 13, 2021 |
| Concrete mix design by | Cesare, Inc. | Technician | C. Conrad / J. Jordan |
| Client mix design ID | CDOT Class DP (7.0 Sack w/ 25% Ash) | Reviewer | R. Zoetewey |
| Lab batch size ($ft^3$) | 7.8 | | |
| Description | CDOT Class DP | | |
| Client | Robins Construction | | |

| Design | | | | | Physical Properties | | |
|---|---|---|---|---|---|---|---|
| Material | Source and Type | Specific Gravity | Batch Weights ($yd^3$) | | As Tested by Cesare | | |
| | | | | | Test | Result | Spec. |
| Cement (ASTM C150) | GCC - Pueblo Type I/II (75%) | 3.15 | 495 | lb | Slump (in) | 2 1/4 | N/S |
| Fly ash (ASTM C618) | CR Minerals - Tephra NP - Class N (25%) | 2.36 | 165 | lb | Air Content (%) | 5.6 | 5 to 8 |
| Fly ash (ASTM C618) | - - | - - | 0 | lb | Mix Temp. (°F) | 68 | 50 to 90 |
| *Coarse aggregate #1 (ASTM C33) | - - | 0.00 | 0 | lb | Air Temp. (°F) | 65 | N/S |
| *Coarse aggregate #2 (ASTM C33) | Antonito Pit - ASTM Size #67 Coarse Aggregate (60%) | 2.56 | 1666 | lb | Unit Weight (pcf) | 138.2 | N/S |
| *Fine aggregate (ASTM C33) | - - | 0.00 | 0 | lb | Yield, CF/CY | 27.1 | N/S |
| *Fine aggregate (ASTM C33) | Antonito Pit - Washed Concrete Sand (40%) | 2.59 | 1124 | lb | Relative Yield | 1.00 | 0.99 - 1.02 |
| Water | Municipal | 1.00 | 291 | lb | w/(c+p) Ratio | 0.44 | N/S |
| Air entraining agent (ASTM C260) | Mapei Poly Chem SA (1.5 oz/cwt) | n/a | 9.8 | oz | Aggregate Absorptions (%) | | |
| Water reducer (ASTM C494) Type A/F | Mapei KB 1200 (11.0 oz/cwt) | n/a | 72.5 | oz | Coarse Aggregate #1 | | 0.0 |
| Target air content (%) | 6.0 | -- | -- | -- | Coarse Aggregate #2 | | 2.4 |
| *Aggregate mass determined at SSD condition | | Total: | 3741 | lb | Fine Aggregate | | 0.0 |
| | | | | | Fine Aggregate | | 2.6 |
| | | | | | Combined Absorption (%) | | 2.48 |

N/S = Not Specified

| Flexural Strength Data | | | | |
|---|---|---|---|---|
| Date | Test Age (days) | Strength (psi) | Average Strength | Spec. |
| 02/25/21 | 7 | 555<br>530 | 545 | N/A |
| 03/04/21 | 14 | 610<br>615 | 615 | N/A |
| 03/18/21 | 28 | Pending Results | | ≥650 psi |
| **Compressive Strength Data** | | | | |
| 02/25/21 | 7 | 4,600<br>4,840 | 4,720 | N/S |
| 03/18/21 | 28 | Pending Results | | ≥4,500 psi |

| Super Air Meter Data | | | | |
|---|---|---|---|---|
| (No leak) | 14.5 psi | 30 psi | 45 psi | SAM # |
| 1st Run | 6.79 | 17.29 | 29.48 | 0.30 |
| 2nd Run | 6.92 | 17.52 | 29.78 | |




**7108 South Alton Way, Building B • Centennial, Colorado 80112 • www.cesareinc.com.**
**Phone 303-220-0300 • Fax 303-220-0442**

**GCC of America**
600 S. Cherry Street, Suite 1000, Glendale, CO 80246
Sales (303) 739-5900, Customer Service (800) 225-5422

# MATERIAL CERTIFICATION REPORT

**Plant:** Pueblo
**Address:** 3372 Lime Road
Pueblo, CO 81004
**Contact:** Urs Fuchs
**Phone:** (719) 647-6821

**Cement Type:** I/II, GU
**Date Issued:** 11-Dec-20
**Production Period:** 1-Nov-20
**To:** 30-Nov-20

## STANDARD REQUIREMENTS ASTM C150/AASHTO M85/ASTM C1157

| CHEMICAL | | | |
|---|---|---|---|
| **Item** | **ASTM Test Method** | **ASTM C150 Spec. Limit** | **Test Result** |
| $SiO_2$ (%) | C114 | - | 20.3 |
| $Al_2O_3$ (%) | C114 | 6.0 max | 4.5 |
| $Fe_2O_3$ (%) | C114 | 6.0 max | 3.2 |
| CaO (%) | C114 | - | 63.4 |
| MgO (%) | C114 | 6.0 max | 0.8 |
| $SO_3$ (%) | C114 | 3.0 max[A] | 3.3 |
| Loss On Ignition (%)[B] | C114 | 3.5 max[C] | 3.0 |
| $Na_2O$ (%) | C114 | - | 0.17 |
| $K_2O$ (%) | C114 | - | 0.63 |
| Insoluble Residue (%) | C114 | 1.5 max | 1.1 |
| $CO_2$ (%)[B] | C114 | - | 1.6 |
| Limestone (%) | C150 | 5.0 max | 4.4 |
| $CaCO_3$ in Limestone (%) | C150 | 70 min | 83 |
| Inorganic Processing Addition | C150 | 5.0 max | - |
| Potential Phase Composition | | | |
| $C_3S$ (%) | C150 | - | 55 |
| $C_2S$ (%) | C150 | - | 16 |
| $C_3A$ (%) | C150 | 8 max | 6 |
| $C_4AF$ (%) | C150 | - | 10 |

| PHYSICAL | | | | | |
|---|---|---|---|---|---|
| **Item** | **ASTM Test Method** | **ASTM C150 Spec. Limit** | **ASTM C1157 Spec. Limit** | **Test Result** | |
| Air Content (% vol) | C185 | 12 max | 12 max | 8 | |
| Blaine Fineness ($m^2$/kg) | C204 | 260 min | - | 412 | |
| Residue 45 µm (No.325) Sieve (%) | C430 | - | - | 2.2 | |
| Autoclave Expansion (%) | C151 | 0.80 max | 0.80 max | 0.03 | |
| Compressive Strength | | | | | |
| 3 days, MPa (psi) | C109 | 12.0 (1740) min | 13.0 (1890) min | 30.1 | (4370) |
| 7 days, MPa (psi) | C109 | 19.0 (2760) min | 20.0 (2900) min | 35.5 | (5150) |
| 28 days, MPa (psi)[D] | C109 | - | 28.0 (4060) min | 42.2 | (6120) |
| Time of Setting, Initial Vicat (min) | C191 | 45 min / 375 max | 45 min / 420 max | 108 | |
| Mortar Bar Expansion (%) | C1038 | 0.020 max | 0.020 max | 0.007 | |

| ADDITIONAL DATA | | | | | |
|---|---|---|---|---|---|
| **Type** | **Limestone** | **Test Method** | **Base Phase Composition** | **ASTM Test Method** | **Test Result** |
| $SiO_2$ (%) | 9.4 | Internal | $C_3S$ (%) | C150 | 57 |
| $Al_2O_3$ (%) | 2.3 | Internal | $C_2S$ (%) | C150 | 16 |
| $Fe_2O_3$ (%) | 1.5 | Internal | $C_3A$ (%) | C150 | 7 |
| CaO (%) | 47.0 | Internal | $C_4AF$ (%) | C150 | 10 |
| $SO_3$ (%) | 0.3 | Internal | | | |

## OPTIONAL REQUIREMENTS ASTM C150/AASHTO M85/ASTM C1157

| CHEMICAL | | | |
|---|---|---|---|
| **Item** | **ASTM Test Method** | **ASTM C150 Spec. Limit** | **Test Result** |
| Equivalent Alkalies (%) | C114 | NA | 0.58 |

| PHYSICAL | | | | |
|---|---|---|---|---|
| **Item** | **ASTM Test Method** | **ASTM C150 Spec. Limit** | **ASTM C1157 Spec. Limit** | **Test Result** |
| False Set (%) | C451 | 50 min | 50 min | 72 |

[A] It is permissible to exceed the specification limit provided that ASTM C1038 Mortar Bar Expansion does not exceed 0.020 % at 14 days.
[B] This alternative analysis has been qualified in accordance with ASTM C114 and meets requirements of Table 1.
[C] Loss on ignition, max: 3.0 % when limestone is not an ingredient; Loss on ignition, max: 3.5 % when limestone is an ingredient
[D] Test result of prior month

Wiss, Janney, Elstner Associates, Inc.
330 Pfingsten Road
Northbrook, Illinois 60062
847.272.7400 tel
www.wje.com

March 23, 2020

Anne Miller
Chemist
GCC
3372 Lime Rd
Pueblo, CO 81004

## ASTM C452 Testing

WJE No. 2020.1174

Dear Ms. Miller

As requested, a cement sample, received in the Northbrook laboratory of Wiss, Janney, Elstner associates via FedEx on February 25, 2020, was analyzed for potential sulfate expansion. The sample was identified as FMC 12-03-19 and labeled as a Type I/II cement with a sulfate content of 3.37%.

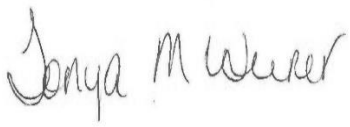
Testing was performed in accordance with ASTM C452, *Test Method for Potential Expansion of Portland-Cement Mortars Exposed to Sulfate*. The gypsum used for testing was provided by GCC for a previous project. The sulfate content of this gypsum source was measured by evolution and infrared detection methods just prior to use on this project. Expansion measurements were taken at twenty-four (24) hours and fourteen (14) days. Pertinent testing data and the percent expansion are listed in Table 1.

The expansion of Sample FMC 12-03-19 is determined to be 0.036% at 14 days. This meets the specification for Type V cement in ASTM C150, *Specification for Portland Cement*, Table 4, Optional Physical Requirements.

If you have any questions or require additional information, please do not hesitate to contact us. Thank you for the opportunity to work with you on this project.

Sincerely,

**WISS, JANNEY, ELSTNER ASSOCIATES, INC.**



Tonya Werner
Associate III

Table 1. Batch Data and Test Results

| **Sample** | **FMC 12-03-19 Type I/II** |
|---|---|
| Cement (g) | 365 |
| Gypsum (g) | 35 |
| Sand (g) | 1100 |
| Water (mL) | 194 |
| $SO_3$ Content, Cement, % | 3.37 |
| $SO_3$ Content, Gypsum, % | 44.6 |
| | |
| **% Expansion** | |
| Bar #1 | 0.036 |
| Bar #2 | 0.034 |
| Bar #3 | 0.036 |
| Bar #4 | 0.036 |
| Bar #5 | 0.037 |
| Bar #6 | Broken |
| **Average** | **0.036** |

CTL | THOMPSON
MATERIALS ENGINEERS, INC.

March 2, 2021

CR Minerals Company, LLC
3345 Lime Road
Pueblo, Colorado 81004

Attention: Mr. Tom Cummings

Subject: ASTM Sulfate Resistance Testing – CR Minerals Tephra NP
Project CT16208.000-405

Dear Mr. Cummings:

CTL | Thompson Materials Engineers has tested Tephra NP natural pozzolan for its impact on sulfate attack in hardened concrete. The applicable test method is ASTM C1012, and testing was begun in August 2019. Final results qualify your Tephra NP per ACI C201 (Durability) and ACI 301 (Specifications for Concrete). The performance of this material when used to replace 25% of the GCC Type II portland cement is presented in tabular and graphical format in Figure No. 1, attached. The performance of the control test with just cement is presented in Figure 2. The mix proportions and properties are presented in Figure 3.

Based on the expansions, the cement-only mix meets industry standards for Class 2 exposure to sulfates (severe), and the the combination with 25% NP meets industry standards for the most severe Class 3 exposure (very severe) . The NP mixture expanded 0.021% at 12 months and 0.025% at 18 months, which is less than the 0.1% limit for Class 3 at 18 months. The cement-only mixture expanded 0.041% which is less than the 0.05% limit for Class 2 at 12 months, but it expanded 0.51% at 18 months, showing substantial improvement in resistance when 25% Tephra NP is added.

If you have any questions, please do not hesitate to contact us.

Very truly yours,

CTL | THOMPSON MATERIALS ENGINEERS, INC.

Orville R. Werner II, P.E.
Senior Principal Engineer

Enclosures
ORW/clm

1 copy sent
1 copy emailed: Tom.Cummings@crminerals.com;
Shane.Allen@crminerals.com;

# Appendix A

## ASTM C1012 Performance

## CRM NP-(natural pozzolan)

## CR Minerals Company – Client

# ASTM C 1012

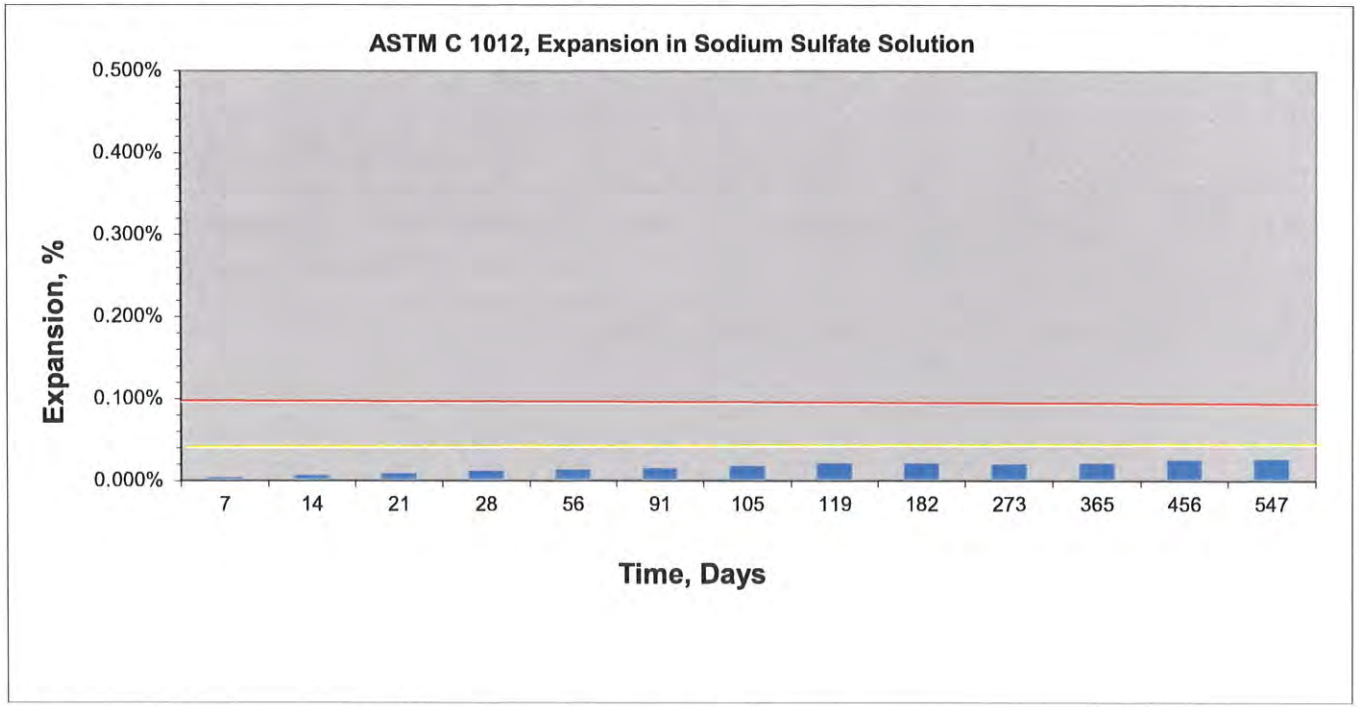
## Length Change of Hydraulic Cement Mortars Exposed to a Sulfate Solution

**Project Number: CT 16208.000**

| | | | |
|---|---|---|---|
| **Client:** | **CRMinerals** | **Compressive Strength : 3000 psi** | **(48hrs)** |
| **Cement Description:** | **GCC Type I/II** | **Flow:** | **108** |
| **Blending Material:** | **25% Tephra NP** | **Water/Cementitious Ratio:** | **0.486** |
| **Cast Date:** | **8/8/2019** | | |

% expansion at indicated age, days

| Bar No. | tial Length, | 7 | 14 | 21 | 28 | 56 | 91 | 105 | 119 | 182 | 273 | 365 | 456 | 547 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10.0130 | 0.002% | 0.005% | 0.008% | 0.012% | 0.014% | 0.015% | 0.020% | 0.023% | 0.024% | 0.021% | 0.023% | 0.028% | 0.028% |
| 2 | 10.0726 | 0.002% | 0.004% | 0.006% | 0.008% | 0.009% | 0.011% | 0.014% | 0.018% | 0.019% | 0.017% | 0.018% | 0.024% | 0.025% |
| 3 | 10.0349 | 0.004% | 0.007% | 0.010% | 0.013% | 0.013% | 0.015% | 0.017% | 0.020% | 0.020% | 0.019% | 0.020% | 0.023% | 0.024% |
| 4 | 9.9923 | 0.003% | 0.006% | 0.009% | 0.011% | 0.013% | 0.015% | 0.017% | 0.020% | 0.020% | 0.019% | 0.020% | 0.023% | 0.025% |
| 5 | 10.0021 | 0.003% | 0.005% | 0.008% | 0.011% | 0.012% | 0.014% | 0.016% | 0.020% | 0.020% | 0.018% | 0.021% | 0.022% | 0.024% |
| 6 | 9.9984 | 0.004% | 0.006% | 0.008% | 0.011% | 0.014% | 0.015% | 0.017% | 0.021% | 0.021% | 0.021% | 0.022% | 0.026% | 0.027% |
| **AVG.** | 10.0189 | **0.003%** | **0.005%** | **0.008%** | **0.011%** | **0.012%** | **0.014%** | **0.017%** | **0.020%** | **0.021%** | **0.019%** | **0.021%** | **0.024%** | **0.025%** |



# ASTM C 1012

## Length Change of Hydraulic Cement Mortars Exposed to a Sulfate Solution

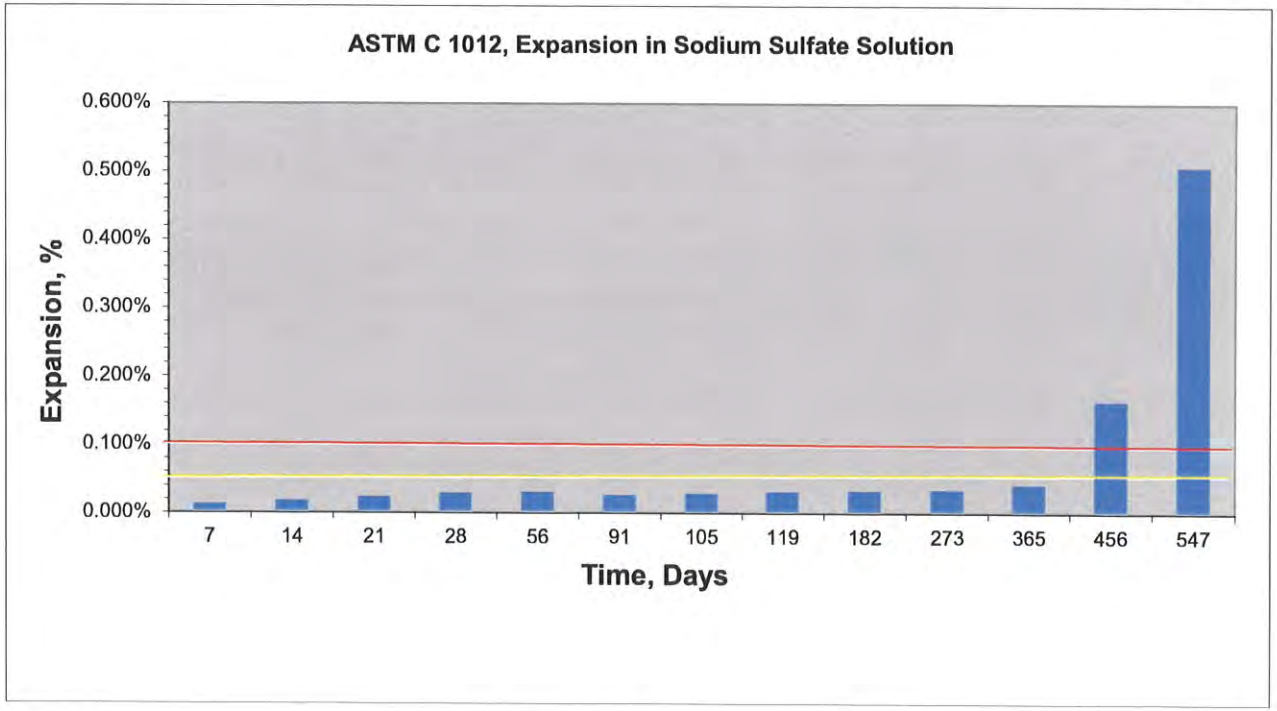
**Project Number: CT16208.000**

**Client:** CRMinerals
**Cement Description:** GCC Type I/II
**Blending Material:** None Control
**Cast Date:** 8/7/2019

**Compressive Strength : 3000 psi (24hrs)**
**Flow: 113**
**Water/Cementitious Ratio: 0.485**

% expansion at indicated age, days

| Bar No. | tial Length, | 7 | 14 | 21 | 28 | 56 | 91 | 105 | 119 | 182 | 273 | 365 | 456 | 547 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10.0013 | 0.005% | 0.008% | 0.011% | 0.014% | 0.015% | 0.017% | 0.020% | 0.023% | 0.023% | 0.027% | 0.032% | 0.149% | 0.493% |
| 2 | 10.0164 | 0.005% | 0.010% | 0.015% | 0.020% | 0.021% | 0.014% | 0.016% | 0.021% | 0.024% | 0.024% | 0.030% | 0.122% | 0.412% |
| 3 | 9.9924 | 0.002% | 0.007% | 0.012% | 0.017% | 0.018% | 0.021% | 0.022% | 0.024% | 0.024% | 0.026% | 0.041% | 0.199% | 0.536% |
| 4 | 9.9834 | 0.054% | 0.060% | 0.066% | 0.073% | 0.076% | 0.067% | 0.070% | 0.073% | 0.076% | 0.076% | 0.086% | 0.219% | 0.568% |
| 5 | 10.0036 | 0.004% | 0.011% | 0.019% | 0.024% | 0.025% | 0.017% | 0.021% | 0.022% | 0.023% | 0.024% | 0.027% | 0.135% | 0.474% |
| 6 | 9.9491 | 0.004% | 0.010% | 0.015% | 0.024% | 0.025% | 0.019% | 0.021% | 0.024% | 0.024% | 0.026% | 0.032% | 0.157% | 0.554% |
| **AVG.** | 9.9910 | **0.012%** | **0.018%** | **0.023%** | **0.029%** | **0.030%** | **0.026%** | **0.028%** | **0.031%** | **0.032%** | **0.034%** | **0.041%** | **0.164%** | **0.506%** |



# Mix Data - Figure 3

| | |
|---|---|
| Client: | CR Minerals |
| Project #: | CT16208.000 |

| Mix ID | Control | Mix 2 |
|---|---|---|
| Date Mixed | 8/7/19 | 8/8/19 |
| Time Mixed | 1:30 PM | 11:30 AM |
| % pozzolan | 0 | 25 |
| Cement ID | GCC I/II | GCC I/II |
| Cement Source | Pueblo | Pueblo |
| Pozzolan ID | n/a | Tephra NP |
| | | |
| Cement, g | 740 | 555 |
| Pozzolan, g | 0 | 185 |
| Stand.Graded Sand, g | 2035 | 2035 |
| Water, ml | 358.9 | 360 |
| W/C+P | 0.485 | 0.486 |
| Flow Mix 1 | 113 | 108 |

Note Duplicate each mix, make cubes from first, bars from second.

## Rob Schaut

**From:** chad@robinsconstruction.com
**Sent:** Monday, March 28, 2022 5:21 PM
**To:** Mark Abshire
**Cc:** estimating@robinsconstruction.com; Rob Schaut; 'David Carino'; 'Julio Madrid'
**Subject:** RE: San Luis Water Treatment Plant

Mark,

Okay, we can confirm that we will use the same cement, Tephra, etc. Our batch tickets will also show what concrete we will use.

Thank you, we appreciate it.

Chad Bagwell
Project Manager / Estimator
38767 State Highway 17
Antonito, CO 81120
719.376.2351 (O)
719.580.2304 (M)
chad@robinsconstruction.com

**From:** Mark Abshire <mabshire@enganalytics.com>
**Sent:** Monday, March 28, 2022 3:21 PM
**To:** chad@robinsconstruction.com
**Cc:** estimating@robinsconstruction.com; Rob Schaut <RSchaut@enganalytics.com>; 'David Carino' <David.Carino@newmont.com>; 'Julio Madrid' <Julio.Madrid@newmont.com>
**Subject:** RE: San Luis Water Treatment Plant

Chad,

I have finished my review of Robins' proposed alternate mix design and spoken to Julio and Steven about it. The following documents were reviewed:

1. Cesare, Inc. March 13, 2021. Concrete Mix Design using GCC Pueblo Type I/II cement (75%) and CR Minerals Tephra NP Class N Flyash (25%)
2. CTL/Thompson March 2, 2021 Sulfate Resistance Test Report for cement/pozzolan for #1 mix design
3. WJE March 23, 2020 ASTM C452 Test Report for GCC cement sample submitted February 25, 2020.

The proposed mix design, designated as 'CDOT Class DP (7.0 Sack w/ 25% Ash)' on Cesare's test report is approved as an alternate to the specified Type V cement. However, the mix design report is over a year old. Please confirm that the

GCC-Pueblo Type I/II cement and the CR Minerals Tephra NP- Class N pozzolan, as tested, are still available and will be used for the project concrete. Concrete batch tickets will need to indicate this mix design ID for approval.

Please let me know if you have questions.

Mark

**Mark S. Abshire, P.E.**
Main 970-488-3111 | Cell 970-692-4265
mabshire@enganalytics.com

---

**From:** chad@robinsconstruction.com <chad@robinsconstruction.com>
**Sent:** Thursday, March 24, 2022 4:09 PM
**To:** Mark Abshire <mabshire@enganalytics.com>
**Cc:** estimating@robinsconstruction.com; Rob Schaut <RSchaut@enganalytics.com>; 'David Carino' <David.Carino@newmont.com>; 'Julio Madrid' <Julio.Madrid@newmont.com>
**Subject:** RE: San Luis Water Treatment Plant

Hello,

Can you please confirm that these two letters have been considered?

Though this specific concrete is labeled as a type I/II it has been tested and not only meets requirements for type V concrete in resisting sulfate corrosion, but it exceeds the requirements.

We have even used this mix design for the treatment plant at the Union Gold mine.

Please let us know what we can do about this.

Thank you,

Chad Bagwell
Project Manager / Estimator
38767 State Highway 17
Antonito, CO 81120
719.376.2351 (O)
719.580.2304 (M)
chad@robinsconstruction.com

---

**From:** Mark Abshire <mabshire@enganalytics.com>
**Sent:** Wednesday, March 23, 2022 12:40 PM
**To:** chad@robinsconstruction.com
**Cc:** estimating@robinsconstruction.com; Rob Schaut <RSchaut@enganalytics.com>; David Carino (David.Carino@newmont.com) <David.Carino@newmont.com>; Julio Madrid <Julio.Madrid@newmont.com>
**Subject:** RE: San Luis Water Treatment Plant

Chad,

The water chemistry at the San Luis Mine industrial water treatment plant is very different from that of municipal sewage wastewater treatment plants. There is considerable etching in the existing drying pad concrete for the WTP, which is why we required and used Type V cement on Pond 3. The attached design from JA Cesare is a fly ash modified Type I/II cement mix, not a Type 5 mix as the file name suggests. The fly ash alone won't provide the required corrosion protection, so we have to stay with a Type V mix. If Type V cement is unavailable at a reasonable cost, get back with us and we may have to re-evaluate the mix design.

Mark

**Mark S. Abshire, P.E.**
Main 970-488-3111 | Cell 970-692-4265
mabshire@enganalytics.com

---

**From:** chad@robinsconstruction.com <chad@robinsconstruction.com>
**Sent:** Wednesday, March 23, 2022 11:22 AM
**To:** Mark Abshire <mabshire@enganalytics.com>
**Cc:** estimating@robinsconstruction.com; Rob Schaut <RSchaut@enganalytics.com>
**Subject:** San Luis Water Treatment Plant

Hello,

The plans call for a type V design. On previous projects we have received engineer approval on the attached design. We would like to confirm that this mix design will be acceptable for use on pond 2.

The reason we want to use this mix design is it will save on costs due to logistics. We have used this specific mix design for the town of Antonito's waste water treatment plant with success.

Also, is there a bid sheet available?

What is the expected time frame of the project?

Thank you,

Chad Bagwell
Project Manager / Estimator
38767 State Highway 17
Antonito, CO 81120
719.376.2351 (O)
719.580.2304 (M)
chad@robinsconstruction.com

# Submittal Notification Form

## Submittal Information

| | |
|---|---|
| **Project Title** | San Luis Pond 2 |
| **EA Project No.** | 210105.09b |
| **Contractor** | Robins Construction |
| **Submittal ID & Date** | 01 – 8/15/22 |
| **Submittal Description** | Gates SM3 Form Tie |
| **Applicable Spec. or Dwg.** | 03110 Concrete Formwork 2.1.H. |

## Submittal Status

| | |
|---|---|
| ☒ **NO EXCEPTION TAKEN. Work may proceed.** | |
| ☐ **REVISE AND RESUBMIT. Work may proceed subject to incorporation of changes indicated.** | |
| ☐ **REVISE AND RESUBMIT. Work may not proceed.** | |
| ☐ **REJECTED.** | |
| ☐ **FOR REFERENCE ONLY.** | |
| **Reviewed By** | R. Schaut, M. Abshire |
| **Notification Date** | 8/17/22 |
| Permission to proceed does not relieve contractor/supplier from full compliance with project specifications and contractual obligations. | |

## Review Comments (attach separate sheet if necessary)

None.

## Attachments

Robins Construction Submittal 8/15/22 (SM3 Form Ties)

## Rob Schaut

**From:** Chad Bagwell <chad@robinsconstruction.com>
**Sent:** Monday, August 15, 2022 4:59 PM
**To:** Mark Abshire
**Cc:** Rob Schaut; Gabe Romero
**Subject:** Form Tie Spec Sheets
**Attachments:** SM-3 Tie NWS Cone or Washer 4-28-20.pdf; SM3 B Cone with NWS.pdf

Hello,

Here is the spec sheet for the form ties we propose to use for the project.

Please let us know of any questions or concerns.

Thank you,

Chad Bagwell
Project Manager / Estimator
38767 State Highway 17
Antonito, CO 81120
719.376.2351 (O)
chad@robinsconstruction.com

GATES CONCRETE FORMING SYSTEMS

# Gates & Sons, Inc.

90 SOUTH FOX , DENVER, CO 80223 (303) 744-6185 FAX (303) 744-6192

January 11, 2017

Re: Gates SM3 Tie with B cone with Neoprene Water Stop tie specifications

To whom it may concern:
This letter is to confirm that the Gates SM3 ties used by your contractors are factory-manufactured at Gates & Sons Inc. in Denver, Colorado with American-made raw materials, and are snap-off metal ties using a 3-gage high carbon wire with a working load of 2,750 pounds and a minimum load-carrying capacity of 5,500 pounds for a 2:1 safety factor

Ties fitted with standard “B” cones have a 1” break-back, and will leave a 1” diameter by 1” deep hole at the concrete form surface. The ties are designed not to spall the concrete when properly broken.

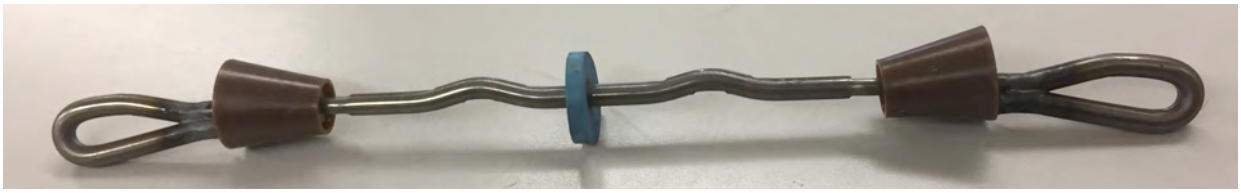
Ties are fitted with a 1” diameter x 3/16” thick Neoprene Water Stop (NWS) washer that prevents moisture from traveling down the tie wire. These washers are unaffected by normally used form oils.

This certification of compliance meets or exceeds the requirements or specifications of Sections 3-A Pargraph 9.5 Form ties.

Gates SM3 Ties comply with the specifications listed on the Buy-American Compliance.

Sincerely,

Jeff Drobny
National Sales Manager
Gates & Sons, Inc



GATES OF COLORADO
80 S. Galapago St.
Denver, GO 80223
(303) 744-6181

GATES & SONS, INC.
90 S. Fox
Denver, CO 80223
(303) 744-6185
Fax (303) 744-6192

INDIANAPOLIS WAREHOUSE
8230 Country Club Place
Indianapolis, IN 46224
(317) 271-1051

# Product Specifications

SM-3 Water Stop Tie with Cone or Washer

## Specifications

Gates SM-3 Tie with Cone or Washer

This letter is to confirm that Gates SM-3 Ties are manufactured at Gates & Sons, Inc. in Denver, Colorado with American-made raw materials.

SM-3 Ties are snap-off metal ties with a self-spreading feature and polyethylene cones, or hardened steel washers designed not to spall the concrete when properly broken.

Wire Specifications:

- Wire type: 3-gage high-carbon wire
- Ultimate Strength: 5,500 lbs.
- Working capacity: 2,750 lbs. with a 2:1 safety factor.

Cone Specifications

- 'B' Cones: No self-centering fins 1" wire break-back resulting in a 1" diameter by 1" deep hole at the concrete surface.

- 'N' Cones: 1 ½" wire break-back resulting in a 1 1/8" diameter by 1 ½" deep hole at the concrete surface.

Washer Specifications

- 'G' Washer: 1/8" wire break-back resulting in a 1-1/8" diameter by 1/16" deep hole at the concrete surface.

Neoprene Water Stop Specifications

- 1" Diameter x 3/16" thick neoprene washer that prevents moisture from traveling down the tie wire. These washers are unaffected by normally used form oils.
-

Gates SM-3 Ties comply with the specifications listed on the Buy-American Compliance checklist.

# Submittal Notification Form

## Submittal Information

| | |
|---|---|
| **Project Title** | San Luis Pond 2 |
| **EA Project No.** | 210105.09b |
| **Contractor** | Robins Construction |
| **Submittal ID & Date** | 02 – 8/15/22 |
| **Submittal Description** | Sika Greenstreak Waterstop 732 |
| **Applicable Spec. or Dwg.** | Spec. 31516 2.1.I.2 |

## Submittal Status

| | |
|---|---|
| ☒ **NO EXCEPTION TAKEN. Work may proceed.** | |
| ☐ **REVISE AND RESUBMIT. Work may proceed subject to incorporation of changes indicated.** | |
| ☐ **REVISE AND RESUBMIT. Work may not proceed.** | |
| ☐ **REJECTED.** | |
| ☐ **FOR REFERENCE ONLY.** | |
| **Reviewed By** | R. Schaut |
| **Notification Date** | 8/18/22 |
| Permission to proceed does not relieve contractor/supplier from full compliance with project specifications and contractual obligations. | |

## Review Comments (attach separate sheet if necessary)

The Sika Greenstreak Waterstop 732 (6” x 3/8”) is specifically listed as approved in Spec. 31516 2.1.I.2.

## Attachments

Robins Construction Submittal 8/15/22 (Waterstop)

## Rob Schaut

**From:** Chad Bagwell <chad@robinsconstruction.com>
**Sent:** Monday, August 15, 2022 9:59 AM
**To:** Mark Abshire
**Cc:** Rob Schaut; Gabe Romero
**Subject:** RE: Submittal Approval
**Attachments:** 3387_001.pdf

Here are the two spec sheets.

Thank you.

---

**From:** Chad Bagwell
**Sent:** Monday, August 15, 2022 9:57 AM
**To:** 'mabshire@enganalytics.com' <mabshire@enganalytics.com>
**Cc:** 'RSchaut@enganalytics.com' <RSchaut@enganalytics.com>; Gabe Romero <estimating@robinsconstruction.com>
**Subject:** Submittal Approval

Hello,

Can you please check these two spec sheets (one for the concrete cure and the other one for the waterstop)?

Can you please let us know if these are acceptable products so we can get them ordered and coming? The lead time for the waterstop is 4-6 weeks.

Thank you,

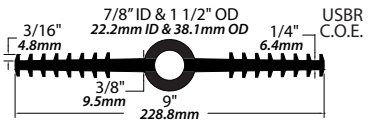
Chad Bagwell
Project Manager / Estimator
38767 State Highway 17
Antonito, CO 81120
719.376.2351 (O)
chad@robinsconstruction.com

# PROJECT PROFILES AND SIZES

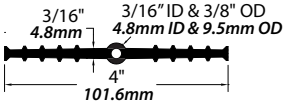
SHAPES ARE DRAWN TO VARYING SCALES

## RIBBED CENTERBULB

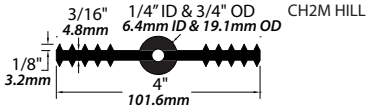
| NO. | STD. WT. | HEAD PRESS. |
|---|---|---|
| 696 | 2.65 lb/ft (3.94 kg/m) | 175' (523 KPa) |



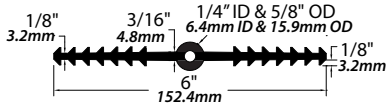

| 701 | 0.42 lb/ft (0.63 kg/m) | 65' (194 KPa) |
|---|---|---|



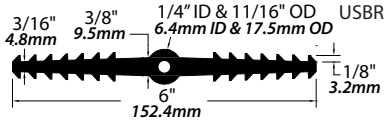

| 702 | 0.74 lb/ft (1.10 kg/m) | 65' (194 KPa) |
|---|---|---|



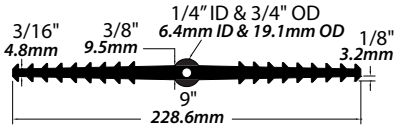

| 703 | 0.73 lb/ft (1.09 kg/m) | 100' (299 KPa) |
|---|---|---|



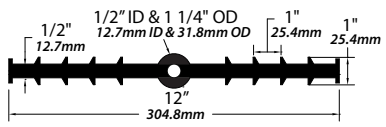

| 705 | 1.19 lb/ft (1.77 kg/m) | 125' (373 KPa) |
|---|---|---|



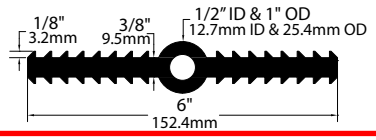

| 709 | 1.63 lb/ft (2.43 kg/m) | 175' (523 KPa) |
|---|---|---|



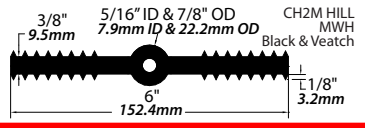

| 712 | 4.38 lb/ft (6.52 kg/m) | 225' (672 KPa) |
|---|---|---|



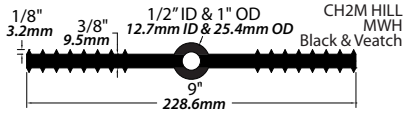

| 717 | 1.52 lb/ft (2.26 kg/m) | 125' (373 KPa) |
|---|---|---|




| 732 | 1.60 lb/ft (2.38 kg/m) | 125' (373 KPa) |
|---|---|---|

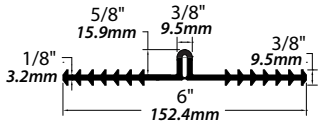



| 735 | 2.45 lb/ft (3.65 Kg/m) | 175' (523 KPa) |
|---|---|---|

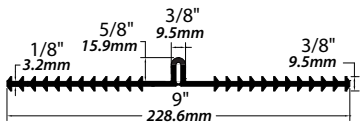



## RIBBED TEAR WEB

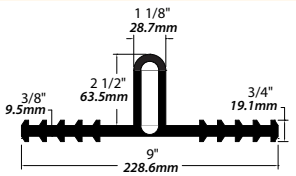
| NO. | STD. WT. | HEAD PRESS. |
|---|---|---|
| 698 | 0.78 lb/ft (1.16 kg/m) | 65' (194 KPa) |




| 699 | 1.00 lb/ft (1.49 kg/m) | 100' (299 KPa) |
|---|---|---|

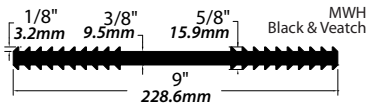



| 700 | 3.78 lb/ft (5.63 kg/m) | 150' (448 KPa) |
|---|---|---|

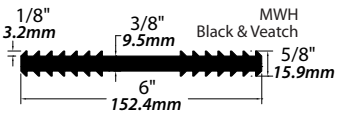



## FLAT RIBBED

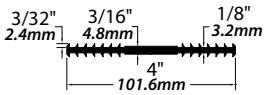
| NO. | STD. WT. | HEAD PRESS. |
|---|---|---|
| 646 | 2.37 lb/ft (3.53 kg/m) | 175' (523 KPa) |



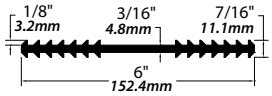

| 679 | 1.50 lb/ft (2.23 kg/m) | 125' (373 KPa) |
|---|---|---|



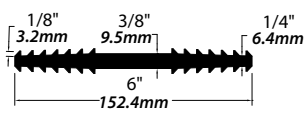

| 781 | .43 lb/ft (.64 kg/m) | 65' (194 KPa) |
|---|---|---|



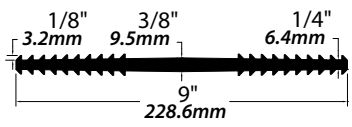

| 782 | .84 lb/ft (1.25 kg/m) | 75' (224 KPa) |
|---|---|---|




| 783 | 1.39 lb/ft (2.07 kg/m) | 125' (373 KPa) |
|---|---|---|




| 786 | 2.07 lb/ft (3.08 kg/m) | 175' (523 KPa) |
|---|---|---|




**FOR A FULL LIST OF AVAILABLE WATERSTOP PROFILES VISIT: USA.SIKA.COM**

BUILDING TRUST

PRODUCT DATA SHEET

# Greenstreak® PVC Waterstop

Flexible PVC Waterstop

## PRODUCT DESCRIPTION

Greenstreak® PVC Waterstop is a flexible PVC waterstop for joint waterproofing.

## USES

- Water/Waste Water Treatment Plants
- Lock and Dam Systems
- Reservoirs and Aqueducts
- Flood Walls
- Retaining Walls
- Foundations
- Tunnels and Culverts
- Bridge Abutments
- Containment Structures and Tanks
- Slabs-on-Ground

## CHARACTERISTICS / ADVANTAGES

- Embedded in concrete, across and/or along the joint, waterstops form a watertight diaphragm that prevents the passage of liquid through the joint.
- Suitable for potable water contact, meets NSF/ANSI Standard 61.
- Meets the physical property requirements of Army Corp. of Engineers PVC Waterstop Specification CRD-C 572-74

## PRODUCT INFORMATION

| | |
|---|---|
| **Packaging** | Available in various lengths. |
| **Shelf Life** | N/A |
| **Storage Conditions** | Material must be protected from direct sunlight |

## TECHNICAL INFORMATION

| | | |
|---|---|---|
| Shore A Hardness | 79 +/- 3 | (ASTM D2240) |
| Tensile Strength | 2000 psi min. | (ASTM D638) |
| Elongation | 350% | (ASTM D638) |
| Tear Strength | 300 lb/in min | (ASTM D624) |
| Ambient Air Temperature | Low Temperature Brittleness Passes at -35ºF (-37ºC) | (ASTM D746) |

## APPLICATION INSTRUCTIONS

APPLICATION METHOD / TOOLS

Greenstreak® PVC Waterstop must be installed prior to concrete placement to ensure proper positioning and concrete consolidation around the waterstop. All transitions, intersections, and splices should be heat welded to maintain continuity. Factory Made Fabrications are
recommended for all intersections and changes of direction. Specific installation requirements will vary depending on the style of profile, please refer to Sika's PVC Waterstop Installation Guide and Splicing PVC Waterstop Installation Guide available at usa.sika.com. All transitions, intersections, and splices must be heat welded using a Sika Greenstreak Splicing Iron in compliance with the instructions shown in Sika's Splicing PVC Waterstop Installation Guidelines found at usa.sika.com.

## LIMITATIONS

The size, shape, and style of waterstop should be based on specific application needs. Please consult a Sika Greenstreak Engineer at 800-325-9504 for assistance with profile selection.

## BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

## OTHER RESTRICTIONS

See Legal Disclaimer.

## ENVIRONMENTAL, HEALTH AND SAFETY

REGULATION (EC) NO 1907/2006 - REACH

## LEGAL DISCLAIMER

- KEEP CONTAINER TIGHTLY CLOSED
- KEEP OUT OF REACH OF CHILDREN
- NOT FOR INTERNAL CONSUMPTION
- FOR INDUSTRIAL USE ONLY
- FOR PROFESSIONAL USE ONLY

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates ("SIKA"), the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA's Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product's shelf life. User determines suitability of product for intended use and assumes all risks. User's and/or buyer's sole remedy shall be limited to the purchase price or replacement of this product exclusive of any labor costs. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS**

**PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.**

Sale of SIKA products are subject to the Terms and Conditions of Sale which are available at https://usa.sika.com/en/group/SikaCorp/termsandconditions.html or by calling 1-800-933-7452.

**Sika Corporation**
201 Polito Avenue
Lyndhurst, NJ 07071
Phone: +1-800-933-7452
Fax: +1-201-933-6225
usa.sika.com

**Sika Mexicana S.A. de C.V.**
Carretera Libre Celaya Km. 8.5
Fracc. Industrial Balvanera
Corregidora, Queretaro
C.P. 76920
Phone: 52 442 2385800
Fax: 52 442 2250537

# Submittal Notification Form

## Submittal Information

| | |
|---|---|
| **Project Title** | San Luis Pond 2 |
| **EA Project No.** | 210105.09b |
| **Contractor** | Robins Construction |
| **Submittal ID & Date** | 03b – 8/31/22 |
| **Submittal Description** | Rebar Shop Drawings (revised) |
| **Applicable Spec. or Dwg.** | Spec. 03300 (Concrete) |

## Submittal Status

| | |
|---|---|
| ☒ **NO EXCEPTION TAKEN. Work may proceed.** | |
| ☐ **REVISE AND RESUBMIT. Work may proceed subject to incorporation of changes indicated.** | |
| ☐ **REVISE AND RESUBMIT. Work may not proceed.** | |
| ☐ **REJECTED.** | |
| ☐ **FOR REFERENCE ONLY.** | |
| **Reviewed By** | M. Abshire, R. Schaut |
| **Notification Date** | 9/2/22 |
| Permission to proceed does not relieve contractor/supplier from full compliance with project specifications and contractual obligations. | |

## Review Comments (attach separate sheet if necessary)

This Submittal Notification supersedes Notification #3 dated 8/19/22.

Take note of Note #3 on Detail 4 on Drawing C5.0: "Adjacent concrete placements require 2 day delay for shrinkage."

## Attachments

Robins Construction Submittal 8/31/22 (Rebar Shop Drawings) (revised)

## Rob Schaut

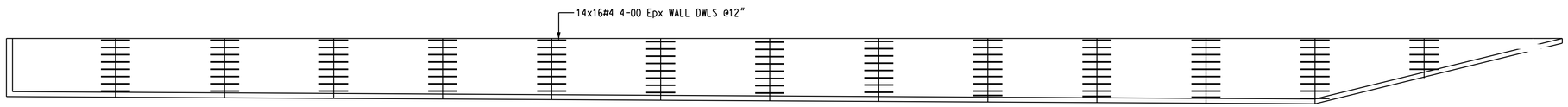
**From:** Chad Bagwell <chad@robinsconstruction.com>
**Sent:** Wednesday, August 31, 2022 11:22 AM
**To:** Rob Schaut
**Cc:** Gabe Romero; Mark Abshire
**Subject:** Resubmittal for Rebar Drawings
**Attachments:** Rebar Drawing.pdf

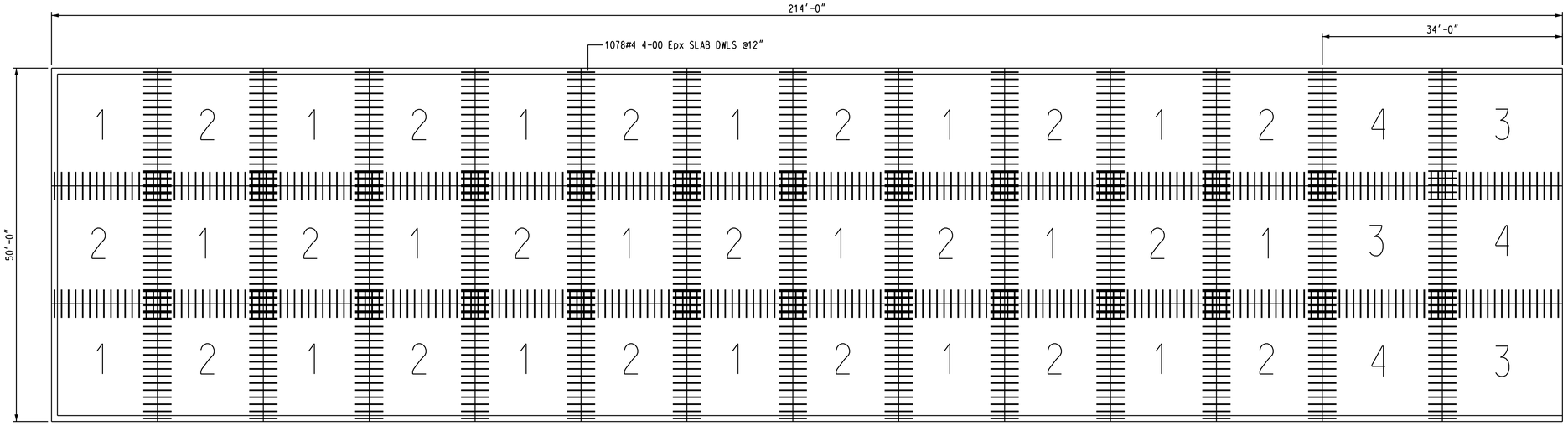
Here are the updated rebar drawings.

Please let us know if you have any questions.

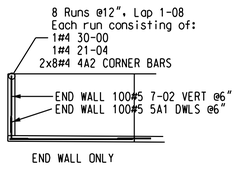
Thank you,

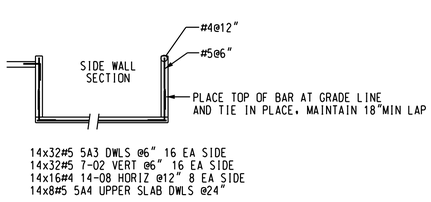
Chad Bagwell
Project Manager / Estimator
38767 State Highway 17
Antonito, CO 81120
719.376.2351 (O)
chad@robinsconstruction.com

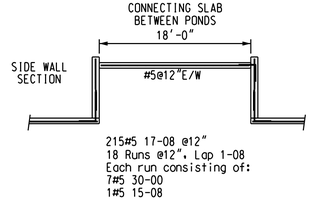


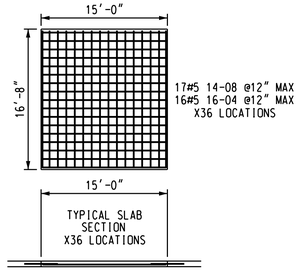



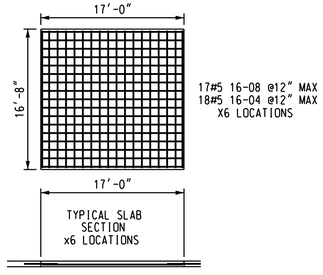

# ALTERNATE POUR SEQUENCE

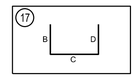




| SIZE | EP | BAR MARK | V | BND TYP | CD | BENDING DIMENSIONS A | B | C | D | E | F/R | G | H | J | K | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | | 5A1 | | 17 | | | 2-00 | 2-06 | | | | | | | | |
| 5 | | 5A3 | | 17 | | | 2-00 | 2-08 | | | | | | | | |
| 5 | | 5A4 | | 17 | | | 2-00 | 2-00 | | | | | | | | |
| 4 | | 4A2 | | 17 | | | 2-00 | 2-00 | | | | | | | | |

REBAR PLACEMENT DRAWINGS ARE NOT TO BE CONSIDERED "STAND ALONE" DOCUMENTS, AND MUST BE USED IN CONJUNCTION WITH THE ARCHITECTURAL & ENGINEERING CONTRACT DRAWINGS, INCLUDING ALL CURRENT REVISIONS TO SAID PLAN. BARTON SUPPLY IS NOT RESPONSIBLE FOR FAILURE OF THE CONTRACTOR TO INTEGRATE ALL PLANS APPLICABLE TO THE PROJECT.

**REVISIONS**

| Date | Remarks |
|---|---|
| 8/29/2022 | CORRECTED PER GC NOTES |
| 8/31/2022 | CORRECTED PER GC NOTES |


Concrete Forms & Steel Supplies
14800 E. MONCRIEFF PL
AURORA, CO 80011
Phone: 303-576-2248
Fax: 303-576-2276


BARTON SUPPLY

DRAWING CONTENTS

Project: WTP POND 2

Location: SAN LUIS, COLORADO

Customer: ROBIN'S CONSTRUCTION

Contract No. RU-22080

Checked by:

Drawn by: SJG

Date: 8/9/2022

Dwg. No. 1