



2273 River Road  
Grand Junction, CO 81505  
(970) 243-4900

210 Road 390  
Farmington, NM 87401  
(505) 324-3900

14802 W. 44<sup>th</sup> Ave  
Golden, CO 80403  
(303) 279-6611

[www.united-gj.com](http://www.united-gj.com)  
[www.fourcornersmaterials.com](http://www.fourcornersmaterials.com)

September 11, 2025

Division of Reclamation, Mining and Safety  
1313 Sherman Street, Room 215  
Denver, CO. 80203  
Attn: Jocelyn Carter

Re: Incompleteness Response to Transfer of Permit and  
Succession of Operators for Two Rivers Pit, Permit No. M-1998-038

Dear Ms. Carter,

In response to your letter dated July 10, 2025, regarding our application to transfer Mineral Permit M-1998-038 from Fremont Paving & Redi-Mix, Inc. to Oldcastle SW Group, Inc. dba United Companies. We appreciate your review and are working diligently to provide the remaining documentation. Please find below a summary for the requested items:

1. **Application Form:** We have updated the Administrative Information section accordingly to reflect the officially registered address for Oldcastle SW Group, Inc. dba United Companies. This revised page has been included with this communication for your review. It should be noted the mailing address for this business entity is different and contact information will be updated following approvals through e-permitting.
2. **Legal Right of Entry:** We appreciate that the previously submitted lease agreement was between the landowners and Fremont Paving & Redi-Mix, Inc. We have included a letter and supporting documents from K. Scott Voelker, Deputy General Counsel, CRH Americas Inc, as transactions counsel to Oldcastle SW Group, Inc. This document is meant to serve as a legal explanation clarifying the merger between Oldcastle SW Group, Inc. and Fremont Paving and Redi-Mix, Inc., and (certain affiliated business entities). As a result of the merger, all assets, rights, properties, leases and contractual interest of the Acquired Entities (Fremont Paving and Redi-Mix, Inc.) including permits, leases, and real property interests, became the assets and obligations of Oldcastle SW Group, Inc. by operation of law. Therefore, Oldcastle SW Group, Inc. retains the full right to operate under the existing lease agreements and no lease renewal is required to establish or maintain operational authority.
3. **Structure Agreements:** All identified structure owners within 200 feet of the permit boundary have been contacted by letter delivered via United States Postal Service Certified Mail, in accordance with Rule 6.4.19. Copies of the mailings were provided with the original submittal. For those structure owners that could not be reached, an engineering analysis was performed for each structure. This satisfies Rule 6.4.149(b). As discussed with the Division representatives, a table is provided with the site, structures, structure owners and distances are to be included for each site. These distances are consistent with site specific engineer evaluation provided and demonstrate that operations shall not impact the listed structures.



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4. **Affidavit of Authority:** An Affidavit signed by Brandon Pack, President of Oldcastle SW Group, Inc. dba United Companies, has been prepared and notarized for inclusion in the updated submission package. Additionally, as discussed, we have included documentation of Elected Officers who are authorized to execute agreements, contracts, documents, certificates, and other instruments for the purpose of conducting the Corporation's business. Originals copies have been mailed to Sara Stevenson-Benn and copies of mailings and documents are included with this package.

All original financial statements have been mailed to Sara Stevenson-Benn (Certified Mail No: 9589 0710 5270 1861 0241 26) and copies will be provided in the submission packet. If any adjustments are necessary or additional clarification is required, please do not hesitate to contact us. Thank you for your guidance and support throughout this transition process.

Thank you,

Sara Weimer  
EHS  
Oldcastle SW Group, Inc.

# STATE OF COLORADO

## DIVISION OF RECLAMATION, MINING AND SAFETY

Department of Natural Resources

1313 Sherman St., Room 215

Denver, Colorado 80203

Phone: (303) 866-3567

FAX: (303) 832-8106



## APPLICATION FORM FOR TRANSFER OF MINERAL PERMIT AND SUCCESSION OF OPERATORS

### ADMINISTRATIVE INFORMATION

#### Permit Information

Permit Number: M-1998-038

Operation Name: Two Rivers

#### Permittee Information

Contact Person: John Ary

Company Name: Fremont Paving and Redi-Mix, Inc

Street Address: 839 MacKenzie Ave

City: Canon City

State: Colorado Zip: 81212

Phone: ( 719 ) 275-3264

Email (optional): jp@arycorp.com

#### Prospective Successor Information

Contact Person: Tony Majka

Company Name: Oldcastle SW Group, Inc. dba United Companies

Street Address: 2273 River Road

City: Grand Junction

State: CO Zip: 81505

Phone: ( 715 ) 275-3264

Email (optional): tony.majka@unitedco.com

## LEASE AGREEMENT

This Lease Agreement (“**Agreement**”) is entered into this 19th day of July 2024 (the “**Effective Date**”), by and between **Oldcastle SW Group, Inc.**, a Colorado corporation (“**Tenant**”) of 2273 River Road, Grand Junction, CO 81505 and **Preferred Materials, Inc.**, a Georgia corporation (“**Landlord**”) of 4626 Scarborough Drive, Lutz, Florida 33559.

### RECITALS

A. Landlord is the owner of certain real property located in Fremont County, Chaffee County, Otero County, Prowers County, and Pueblo County, in the state of Colorado more particularly described in Exhibit A attached hereto (“**Land**”), and any improvements (“**Improvements**”) and personal property located thereon (“**Personal Property**”) the Land, Improvements and Personal Property collectively referred to as the “**Property**”).

B. Landlord desires to lease the Property to Tenant and Tenant desires to lease the Property from Landlord all in accordance with and subject to all of the terms, conditions and covenants set forth in this Agreement.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Landlord and Tenant agree as follows:

### AGREEMENT

1. **Term.** This Agreement shall commence on the Effective Date and expire July 18, 2044 (the “**Term**”).

2. **Rent.** Tenant shall pay annual rent in the amount equal to the annual depletion expense for CRH Americas’ financial accounting purposes at the end of each calendar year (“**Base Rent**”) to Landlord. Such Base Rent shall be paid through CRH Americas’ intercompany payment process.

3. **Taxes.** Tenant shall be responsible for all real estate, ad valorem taxes and assessments on the Property as well as all taxes related to its operations, equipment and fixtures.

4. **Possession and Use of the Property.** Tenant shall be entitled to possession of the Property, with right of ingress and egress, on the first day of the Term of this Agreement and shall yield possession to the Landlord at the end of the Term. Tenant shall use the Property to operate its construction materials business, conduct mining and mineral extraction, and for any other lawful purposes.

5. **Right of First Refusal.** Landlord will give Tenant the “Right of First Refusal” on any bona fide offer made to Landlord to purchase the Property, including but not limited to whether or not the sale or transfer of the interest in the Property is a part of a divestiture of all or a part of Landlord’s assets or the Property. If Landlord receives an offer, it shall give notice to Tenant, who shall have 45 days after receipt of the notice to exercise its right of first refusal. If Tenant makes no election within the 45-day period, the right of first refusal as to the offer shall

expire. Provided, however, if the sale or transfer of Landlord's interest in the Property is not consummated, Tenant shall retain its right of first refusal on subsequent bona fide offers. Further, the terms and conditions of this Agreement shall survive a sale or other transfer of Landlord's interest in the Property and this Agreement shall continue in full force and effect.

6. **Quiet Enjoyment.** Landlord covenants that its estate in the Property is in fee simple and that the Tenant, if not in default under this Agreement, shall peaceably have, hold and enjoy the Property for the Term of this Agreement. Landlord also warrants the terms and conditions of this Agreement shall remain effective until expiration of the Term if the Property is hereafter sold or transferred to another party.

7. **Exclusivity.** Landlord warrants that Landlord has full authority to enter into this Agreement and that it will not lease the Property, nor any portion thereof, to any other person or entity during the Term of this Agreement.

8. **Return of the Property.** Tenant shall have a period of 365 days from and after the termination or expiration of this Agreement (including extensions or renewals, if any) within which to remove from the Property any buildings, improvements, equipment, machinery or other property or improvements placed or erected by it thereon; and furthermore, it is agreed and understood that title to and ownership of any and all such property and improvements shall remain in Tenant during the term of this Agreement (including extensions and renewals), whether or not any such property becomes attached or affixed to the Premises.

9. **Indemnification.** Tenant shall indemnify, and hold Landlord, its officers, and employees, harmless from any and all losses, damages, expenses (including but not limited to attorney and expert fees), claims, liens, suits, liabilities, fines, penalties, and remedial or clean-up costs arising out of or in any way related to (i) Tenant's use of the Property, (ii) any breach of this Agreement, or (iii) any act or omission by Tenant, its invitees, or any person performing work directly or indirectly on behalf of Tenant.

10. **Triple Net.** The parties intend for this Agreement to be a triple net lease, and Tenant shall pay (i) all real estate taxes and assessments levied against the Property (as set forth in Section 4) from and after the Effective Date through the end of the Term; (ii) all expenses related to utilities servicing the Property; and (iii) insurance covering the Property. In the event that Landlord makes a payment of an item attributable to Tenant's obligations under this Agreement (e.g., real estate property taxes, utilities, etc.), Tenant shall promptly, and within fourteen days-notice from Landlord, reimburse Landlord for the same.

11. **Continued Operation.** If all or a portion of the Property is taken by eminent domain or Tenant's performance under this Agreement becomes illegal as a result of zoning changes, loss of permit(s) or otherwise, Tenant may elect to terminate this Agreement. Further, if Tenant determines that its performance under the Agreement has become commercially impractical (whether due to imposition of economic or ecological controls, imposition of significant operational restrictions or otherwise) or for any other reason, Tenant may, at its option, terminate the Agreement, at any time by providing Landlord with 30 days written notice of said termination, and be released from any further liabilities or obligations hereunder.

12. **Reclamation.** Following the expiration of this Agreement, Tenant shall perform the reclamation required under applicable State of Colorado law. Tenant shall have a period of Three (3) years from and after termination or expiration of this Agreement to complete any and all reclamation requirements as may be required pursuant to the laws of the state of Colorado or may be reasonably necessary or convenient in Tenant's reasonable discretion. Landlord shall permit Tenant access to the Premises to allow Tenant to perform such reclamation activities.

13. **Warranties.** Landlord makes the following warranties:

- (a) that during the Term of this Agreement and any renewal thereof, that it owns the Property in fee, has full authority to enter into this Agreement and that it will not lease the Property or any portion thereof to any other person or entity;
- (b) the terms and conditions of this Agreement shall remain effective until expiration of the Term and any renewal thereof if the Property is hereafter sold to a third party;
- (c) the Property has perpetual direct access rights to public roadways. All easements, cross easements, licenses, air rights, and rights-of-way, or other similar property interests (collectively, "***Easements***") necessary for the full utilization of the Property in their current uses and purposes have been obtained and are in full force and effect without default thereunder. No present default or breach exists regarding the Easements, and no condition or circumstance exists which, with the passage of time or the giving of notice, or both, would constitute or result in a default or breach;

14. **Heirs and Assigns.** This Agreement shall inure to the benefit of the heirs, successors and assigns of either party.

15. **Applicable Law.** This Agreement is to be construed and enforced in accordance with the laws of the State of Colorado.

16. **Mechanic's Liens.** Neither the Tenant nor anyone claiming by, through, or under the Tenant, shall have the right to file or place any mechanic's liens or other lien of any kind or character whatsoever, upon the Property or upon any building or improvement thereon, or upon the leasehold interest of the Tenant, and notice is hereby given that no contractor, sub-contractor, or anyone else who may furnish any material, service or labor for any building, improvements, alteration, repairs or any part thereof, shall at any time be or become entitled to any lien on the Property.

17. **Waiver.** The failure of either party to insist, in any one or more instances, upon a strict performance of any of the terms and conditions of this Agreement, or to exercise or fail to exercise any option or right contained herein, shall not be construed as a waiver or a relinquishment for the future of such right or option, but the same shall continue and remain in full force and effect. The continued performance by either party of this Agreement with

knowledge of the breach of any term or condition hereof shall not be deemed a waiver of such breach, and no waiver by either party of any provision hereof, shall be deemed to have been made, or operate as estoppel, unless expressed in writing and signed by such party.

18. **Severability.** Any provision of this Agreement that is found by an arbitrator or other adjudicator of competent jurisdiction to be invalid, void, or otherwise unenforceable shall in no way affect, impair, or invalidate any other provision hereof, and the remaining provisions hereof shall nevertheless remain in full force and effect. To the extent that any such provision is so found to be invalid, void, or otherwise unenforceable as written, the parties authorize the adjudicator to revise it retroactive to the effective date so that it is enforceable to the greatest extent allowed by applicable law. In the event that the adjudicator declines to exercise such authority, the parties agree to make such revision.

19. **Binding Effect; Assignment.** This Agreement shall be binding upon the parties hereto and their respective successors and permitted assigns. No other person or entity shall acquire or have any right under, or by virtue of, this Agreement. Landlord shall not assign or transfer any right or delegate any obligation hereunder to a third party other than as set forth below without the prior written consent of the Tenant which will not be unreasonably withheld, conditioned or delayed. Tenant may assign its interest in this Agreement to an affiliate of Tenant without the consent, but with notice, to the Landlord. Landlord may assign or transfer its rights hereunder to any affiliate. Tenant may also sublet the Property without the consent of Landlord. Any purported assignment or transfer in violation of this section shall be null and void.

20. **Notices.** Any notice or other communication provided for hereunder will be in writing and may be (i) served by personal delivery, (ii) made by facsimile transmission, email, or (iii) sent by overnight courier service (with all fees prepaid) to the receiving parties as set forth in the first paragraph, or to any other address which either party may hereafter designate for itself in writing.

21. **Counterparts.** This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall be deemed to be one and the same agreement. A signed copy of this Agreement delivered by facsimile, email or other means of electronic transmission shall be deemed to have the same legal effect as delivery of an original signed copy of this Agreement.

22. **Hazardous Substances.** Tenant shall keep the Property free and clear of any hazardous substances as that term is defined under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6901. Tenant shall not cause or permit a release of hazardous substances on, from, into, upon, under, or around the Property in violation of any laws.

23. **MANDATORY BINDING ARBITRATION. ANY DISPUTE ARISING UNDER THIS AGREEMENT SHALL BE SUBMITTED TO AND RESOLVED BY BINDING ARBITRATION IN MESA COUNTY, COLORADO. THE AMERICAN ARBITRATION ASSOCIATION ("AAA") SHALL CONDUCT THE ARBITRATION UNLESS THE PARTIES MUTUALLY AGREE TO USE AN ALTERNATIVE ARBITRATION SERVICE. THE COSTS OF THE ARBITRATION, INCLUDING**



**REASONABLE ATTORNEY FEES AND EXPENSES, SHALL BE BORNE EQUALLY BY THE PARTIES.**

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first herein set forth.

**TENANT:**

**OLDCASTLE SW GROUP, INC.,** a  
Colorado corporation

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

Print Name:

Title:

**LANDLORD:**

**PREFERRED MATERIALS, INC.,** a  
Georgia corporation

By: **Terrance Turner** Digitally signed by Terrance  
Turner  
Date: 2024.09.05 15:06:41 -04'00'

Print Name: **Terrance Turner**

Title: **CFO**




**REASONABLE ATTORNEY FEES AND EXPENSES, SHALL BE BORNE EQUALLY BY THE PARTIES.**

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first herein set forth.

**TENANT:**

**OLDCASTLE SW GROUP, INC.,** a  
Colorado corporation

By:   
Print Name: *Kyle Alpha*  
Title: *V.P./GM*

**LANDLORD:**

**PREFERRED MATERIALS, INC.,** a  
Georgia corporation

By: \_\_\_\_\_  
Print Name:  
Title:

## TWO RIVERS PIT

The Land referred to herein below is situated in the County of Pueblo, State of Colorado, and is described as follows:

Parcel 1:

The SE 1/4 NE1/4 of Section 17, Township 21 South, Range 61 West of the 6th P.M.;

Lot 2 in the NW 1/4 NW 1/4 of Section 17, Township 21 South, Range 61 West of the 6th P.M.;

A portion of Lot 1 of the NE 1/4 of Section 18, Township 21 South, Range 61 West of the 6th P.M., described as follows:

Beginning at a point where the Northeasterly line of New Highway No. 50 intersects the East line of the NE 1/4 of said Section; thence North along said Section line a distance of 855 feet to a point; thence West at right angles, a distance of 659 feet to a point in said Northeasterly line of said New Highway No. 50; thence Southeasterly along the Northerly line of said New Highway No. 50 to the Point of Beginning;

Excepting therefrom a tract of land approximately 2 acres described in a Deed from Richard A. Harpman and Emily Harpman to Clarence A. Engelbrecht and Linda Engelbrecht, recorded August 14, 1967 in Book 1620 at Page 33;

All that part of Lot 1 of the NE1/4 of the NE1/4 of Section 18, Township 21 South, Range 61 West of the 6th P.M., lying South of the Centerline of the Huerfano River and East of the County Road, known as The Santa Fe Trail (U.S. Highway No. 50);

Lots 2 and 3, South of the Arkansas River, Except part conveyed to Mary Lee Russell in Book 206 at Page 534; and Lot 4 South of the Arkansas River in Section 8, Township 21 South, Range 61 West of the 6th P.M.;

The N 1/2 of the NE 1/4; and the NE 1/4 of the NW 1/4 all in Section 17, Township 21 South, Range 61 West of the 6th P.M.;

SW 1/4 of the NW 1/4; and NW 1/4 of the SW 1/4 lying Northeast of Highway 50, all in Section 17, Township 21 South, Range 61 West of the 6th P.M.; and

SE 1/4 of the NW 1/4 and the SW 1/4 of the NE 1/4 of Section 17, Township 21 South, Range 61 West of the 6th P.M.,

Excepting therefrom: Any portion thereof as conveyed in Deed recorded December 4, 1968 in Book 1645 at Page 186; Deed recorded February 16, 1996 in Book 2867 at Page 515; and in Deed to Dos Rios Ranch, LLC, a Colorado limited liability Company recorded March 8, 2006 at Reception No. 1664851;

and further excepting therefrom: Any portion thereof lying within the right of way for the Highline Ditch in said Section 17; and

further excepting those portions deeded to the Department of Highways in Book 1648 at Page 987; to Pueblo County for Public Highway in Book 116 at Page 75; Book 642 at Page 246; Book 574 at Page 320, Book 877 at Page 272; Book 168 at Page 610 and Book 281 at Page 135.

and further excepting any portion lying within that parcel contained in Amended Decree in Quiet Title recorded January 9, 2015 at Reception No. 1993941.

and further excepting that portion of Lot 1 in the Northwest 1/4 Northwest 1/4 of Section 17, Township 21 South, Range 61 West of the 6th P.M., shown as "not a part", on the ALTA/ACSM Land Title Survey prepared by Mangini & Associates, Inc. Job No. 2015-161, dated August 21, 2015 and recorded February 25, 2015 at Reception No. 2029850,

All in County of Pueblo, State of Colorado.

For informational purposes only: APN: 111700002, 111700003, 111700004, 111700017, 1117000021, 1108000011, 1108000018 and 1118000032

Parcel 2:

A parcel of land being a portion of the NW1/4 of the NW1/4 of Section 17, Township 21 South, Range 61 West of the 6th Principal Meridian, County of Pueblo, State of Colorado, lying North of the Bluff and being more particularly described as follows:

Beginning at a point on the North line of the NW1/4 of the NW1/4 of Section 17, Township 21 South, Range 61 West of the 6th Principal Meridian, from which the NW corner of said Section 17 bears S 89°48'22" W (bearing based on the North line of the NW 1/4 of the NW 1/4 of said Section 17 with a 3 1/2" aluminum cap PLS 16128 on the West and on the East monumented with a 2" aluminum cap PLS 33194, to bear N 89°28'22" E) a distance of 396.00 feet; thence N 89°48'22" E along the North line of the said NW 1/4 of the NW 1/4 of Section 17, a distance of 923.95 feet; thence S 01°15'09" W along the East line of the said NW 1/4 of the NW 1/4 of Section 17 a distance of 574.04 feet to a point on the toe of the bluff in the said NW 1/4 of the NW 1/4 of Section 17, thence along the said toe to the bluff the following (11) eleven courses:

1. N 81°57'22" W a distance of 17.78';
2. S 27°43'30" W a distance of 35.48';
3. N 75°47'27" W a distance of 206.17';
4. N 80°31'16" W a distance of 332.66';
5. N 36°46'42" W a distance of 67.41';
6. N 52°06'58" W a distance of 76.76';
7. N 67°15'07" W a distance of 89.59';
8. N 79°52'38" W a distance of 105.17';
9. N 85°12'57" W a distance of 170.52';
10. S 89°06'48" W a distance of 107.86';
11. S 78°23'01" W a distance of 192.25' to a point on the West line of said NW 1/4 of the NW 1/4 of Section 17;

thence N 01°17'41" E along the said West line, a distance of 227.35 feet to the SW corner of Lot 2, Section 17, Township 21 South, Range 61 West of the 6th Principal Meridian; thence N 71°01'07" E along the said South line of Lot 2, a distance of 422.02 feet to the Point of Beginning, County of Pueblo, State of Colorado.

Legal Description prepared by:  
Cardinal Points surveying Inc.  
Matthew A. Cordova  
Colorado PLS No. 33194

For informational purposes only: APN: 1117000023

Parcel 3:

A parcel of land being all of the NW 1/4 of the NW 1/4 of Section 17, Township 21 South, Range 61 West of the Sixth Principal Meridian lying South of the following described line, being more particularly described as follows:

Beginning at a point on the West line of the said NW 1/4 of the NW 1/4 from which the NW corner of said Section 17 bears N 01°17'41" E (bearings based on the West line of the said NW 1/4 of said Section 17, monumented at the North end with a No. 6 rebar with a 1 1/2" aluminum cap, PLS No. 16128 and at the South end with a No. 6 rebar with a 3" aluminum cap, PLS 38160 assumed to bear N 01°17'41" E), a distance of 363.31 feet; thence Easterly along the toe of a bluff the following eleven (11) courses;

1. N 78°53'01" E, a distance of 192.25 feet;
2. N 89°06'48" E, a distance of 107.86 feet;
3. S 85°12'57" E, a distance of 170.52 feet;
4. S 79°52'38" E, a distance of 105.17 feet;
5. S 67°15'07" E, a distance of 89.59 feet;
6. S 52°06'58" E, a distance of 75.76 feet;
7. S 36°46'42" E, a distance of 67.41 feet;
8. S 80°31'16" E, a distance of 322.66 feet;
9. S 75°47'27" E, a distance of 206.17 feet;
10. N. 27°43'30" E, a distance of 35.48 feet;
11. S 81°57'22" E, a distance of 17.78, more or less to the point of terminus on the East line of the said NW 1/4 of the NW 1/4 of Section 17 from which the NE corner of the said NW 1/4 of the NW 1/4 bears N 1°15'09" E a distance of 574.04 feet, County of Pueblo, State of Colorado.

Legal Description prepared by:  
Rocky Lee Mangini  
Professional Land Surveyor No. 16128

For informational purposes only: APN: 1117000022

**Oldcastle SW Group, Inc.**  
**2273 River Road Grand**  
**Junction, CO 81505**

July 29, 2025

Ladies and Gentlemen:

I serve as internal transactions counsel to Oldcastle SW Group, Inc. This letter is provided to clarify the structure and outcome of a transaction (the “Transaction”) whereby Oldcastle SW Group, Inc. (“Oldcastle”) acquired Fremont Paving and Redi-Mix, Inc., a Colorado corporation, and certain affiliated business entities and subsequently merged the acquired entities with and into Oldcastle.

Prior to the Transaction, Fremont Paving and Redi-Mix, Inc. operated under several registered “doing business as” names, including (i) All Rite Paving and Redi-Mix, Inc., (ii) Ary Corporation, and (iii) Hard Rock Paving and Redi-Mix, as documented in the Statements of Trade Name filed with the Colorado Secretary of State and attached hereto as Exhibit A.

On July 19, 2024, Oldcastle acquired 100% of the stock or equity interests (as applicable) in the following companies (collectively, the “Acquired Entities”):

1. Fremont Paving and Redi-Mix, Inc., a Colorado corporation (d/b/a All Rite Paving and Redi-Mix, Inc.; d/b/a Ary Corporation; and d/b/a Hard Rock Paving and Redi-Mix)
2. A&S Construction Co., a Colorado corporation
3. Ary Brothers Trucking, Inc., a Colorado corporation
4. Crane Services of Colorado, Inc., a Colorado corporation
5. Pueblo East Phase III LLC, a Colorado limited liability company
6. Hwy 47 Investment LLC, a Colorado limited liability company

The Stock Power transfer documents and the Membership Interest Assignment documents for the Acquired Entities reflecting the transfer of the equity of the applicable corporation or limited liability company of each are attached hereto as Exhibit B and Exhibit C, respectively.

Subsequently, pursuant to the Statement of Merger filed and stamped by the Colorado Secretary of State on July 22, 2024 (attached hereto as Exhibit D), each of the Acquired Entities merged with and into Oldcastle. As a result of the merger, all assets, rights, properties, and contractual interests of the Acquired Entities, including permits, leases, and real property interests, became the assets and obligations of Oldcastle by operation of law.

We hope this letter clarifies the steps involved in the Transaction and satisfies your requests. Should you have any questions or if there is further information we can provide, please do not hesitate to contact us.

Sincerely,

K. Scott Voelker  
Deputy General Counsel  
CRH Americas, Inc.

EXHIBIT A

STATEMENTS OF TRADE NAME

See attached



Colorado Secretary of State  
Date and Time: 04/19/2019 09:48 AM  
ID Number: 20191179338  
Document number: 20191330622  
Amount Paid: \$10.00

Document must be filed electronically.  
Paper documents are not accepted.  
Fees & forms are subject to change.  
For more information or to print copies  
of filed documents, visit [www.sos.state.co.us](http://www.sos.state.co.us).

ABOVE SPACE FOR OFFICE USE ONLY

**Statement of Correction of Trade Name Information**  
**Correcting the Trade Name**

filed pursuant to § 7-90-305 of the Colorado Revised Statutes (C.R.S.)

1. The entity ID number, if applicable, the trade name ID number, and the name of the person transacting business or conducting activities under the trade name are

Entity ID number (if applicable)	<u>19871465104</u> (Colorado Secretary of State ID number)
Trade name ID number	<u>20191179338</u> (Colorado Secretary of State ID number)
Name	<u>FREMONT PAVING AND REDI-MIX, INC.</u>

2. The document number of the document that is corrected and the trade name as stated in the statement of trade name are

Document number	<u>20191179338</u>
Trade name	<u>All Rite Paving and Redi-Mix</u>

3. The statement of the trade name in the document identified above is incorrect.

4. Such trade name, as corrected, is  
All Rite Paving and Redi-Mix, Inc.

5. (If applicable, adopt the following statement by marking the box and include an attachment.)

☐ This document contains additional information as provided by law.

**Notice:**

Causing this document to be delivered to the Secretary of State for filing shall constitute the affirmation or acknowledgment of each individual causing such delivery, under penalties of perjury, that such document is such individual's act and deed, or that such individual in good faith believes such document is the act and deed of the person on whose behalf such individual is causing such document to be delivered for filing, taken in conformity with the requirements of part 3 of article 90 of title 7, C.R.S. and, if applicable, the constituent documents and the organic statutes, and that such individual in good faith believes the facts stated in such document are true and such document complies with the requirements of that Part, the constituent documents, and the organic statutes.

This perjury notice applies to each individual who causes this document to be delivered to the Secretary of State, whether or not such individual is identified in this document as one who has caused it to be delivered.



6. The true name and mailing address of the individual causing this document to be delivered for filing are

<u>Ranson</u>	<u>Richard</u>	<u>Paul</u>	
<small>(Last)</small>	<small>(First)</small>	<small>(Middle)</small>	<small>(Suffix)</small>
<u>1040 Hunters Ridge Dr</u>			
<small>(Street number and name or Post Office Box information)</small>			
<hr/>			
<u>Colorado Springs</u>	<u>CO</u>	<u>80919</u>	
<small>(City)</small>	<small>(State)</small>	<small>(Zip/Postal Code)</small>	
<u>United States</u>			
<small>(Province – if applicable)</small>		<small>(Country – if not US)</small>	

(If applicable, adopt the following statement by marking the box and include an attachment.)

☐ This document contains the true name and mailing address of one or more additional individuals causing the document to be delivered for filing.

**Disclaimer:**

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Document must be filed electronically.  
Paper documents are not accepted.  
Fees & forms are subject to change.  
For more information or to print copies  
of filed documents, visit [www.sos.state.co.us](http://www.sos.state.co.us).

Colorado Secretary of State  
Date and Time: 02/27/2019 09:27 AM  
ID Number: 20191179338  
Document number: 20191179338  
Amount Paid: \$20.00

ABOVE SPACE FOR OFFICE USE ONLY

### Statement of Trade Name of a Reporting Entity

filed pursuant to §7-71-103 and §7-71-107 of the Colorado Revised Statutes (C.R.S)

1. For the reporting entity delivering this statement, its ID number, true name, form of entity and the jurisdiction under the law of which it is formed are

ID Number	<u>19871465104</u> <small>(Colorado Secretary of State ID number)</small>
True name	<u>FREMONT PAVING AND REDI-MIX, INC.</u>
Form of entity	<u>Corporation</u>
Jurisdiction	<u>Colorado</u>

2. The trade name under which such entity transacts business or conducts activities or contemplates transacting business or conducting activities in this state is

All Rite Paving and Redi-Mix

3. A brief description of the kind of business transacted or activities conducted or contemplated to be transacted or conducted in this state under such trade name is

aggregate material, concrete paving

4. (If the following statement applies, adopt the statement by marking the box and include an attachment.)

☐ This document contains additional information as provided by law.

5. (Caution: Leave blank if the document does not have a delayed effective date. Stating a delayed effective date has significant legal consequences. Read instructions before entering a date.)

(If the following statement applies, adopt the statement by entering a date and, if applicable, time using the required format.)

The delayed effective date and, if applicable, time of this document are \_\_\_\_\_  
(mm/dd/yyyy hour:minute am/pm)

#### Notice:

Causing this document to be delivered to the Secretary of State for filing shall constitute the affirmation or acknowledgment of each individual causing such delivery, under penalties of perjury, that such document is such individual's act and deed, or that such individual in good faith believes such document is the act and deed of the person on whose behalf such individual is causing such document to be delivered for filing, taken in conformity with the requirements of part 3 of article 90 of title 7, C.R.S. and, if applicable, the constituent documents and the organic statutes, and that such individual in good faith believes the facts stated in such document are true and such document complies with the requirements of that Part, the constituent documents, and the organic statutes.

This perjury notice applies to each individual who causes this document to be delivered to the Secretary of State, whether or not such individual is identified in this document as one who has caused it to be delivered.

6. The true name and mailing address of the individual causing this document to be delivered for filing are

<u>Ranson</u>	<u>Richard</u>	<u>Paul</u>	<u></u>
<small>(Last)</small>	<small>(First)</small>	<small>(Middle)</small>	<small>(Suffix)</small>
<u>1040 Hunters Ridge Dr</u>			
<small>(Street number and name or Post Office Box information)</small>			
<hr/>			
<u>Colorado Springs</u>	<u>CO</u>	<u>80919</u>	
<small>(City)</small>	<small>(State)</small>	<small>(Postal/Zip Code)</small>	
<u></u>	<u>United States</u>		
<small>(Province – if applicable)</small>	<small>(Country – if not US)</small>		

(If the following statement applies, adopt the statement by marking the box and include an attachment.)

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Document must be filed electronically.  
Paper documents are not accepted.  
Fees & forms are subject to change.  
For more information or to print copies  
of filed documents, visit [www.sos.state.co.us](http://www.sos.state.co.us).

Colorado Secretary of State  
Date and Time: 05/03/2019 03:13 PM  
ID Number: 20191386394  
Document number: 20191386394  
Amount Paid: \$20.00

ABOVE SPACE FOR OFFICE USE ONLY

### Statement of Trade Name of a Reporting Entity

filed pursuant to §7-71-103 and §7-71-107 of the Colorado Revised Statutes (C.R.S)

1. For the reporting entity delivering this statement, its ID number, true name, form of entity and the jurisdiction under the law of which it is formed are

ID Number	<u>19871465104</u> <small>(Colorado Secretary of State ID number)</small>
True name	<u>FREMONT PAVING AND REDI-MIX, INC.</u>
Form of entity	<u>Corporation</u>
Jurisdiction	<u>Colorado</u>

2. The trade name under which such entity transacts business or conducts activities or contemplates transacting business or conducting activities in this state is

Ary Corporation

3. A brief description of the kind of business transacted or activities conducted or contemplated to be transacted or conducted in this state under such trade name is

Heavy civil construction

4. (If the following statement applies, adopt the statement by marking the box and include an attachment.)

☐ This document contains additional information as provided by law.

5. (Caution: Leave blank if the document does not have a delayed effective date. Stating a delayed effective date has significant legal consequences. Read instructions before entering a date.)

(If the following statement applies, adopt the statement by entering a date and, if applicable, time using the required format.)

The delayed effective date and, if applicable, time of this document are \_\_\_\_\_  
(mm/dd/yyyy hour:minute am/pm)

#### Notice:

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This perjury notice applies to each individual who causes this document to be delivered to the Secretary of State, whether or not such individual is identified in this document as one who has caused it to be delivered.

6. The true name and mailing address of the individual causing this document to be delivered for filing are

<u>Ary</u>	<u>Joshua</u>	<u>Paul</u>	<u></u>
<small>(Last)</small>	<small>(First)</small>	<small>(Middle)</small>	<small>(Suffix)</small>
<u>839 MacKenzie Ave</u>			
<small>(Street number and name or Post Office Box information)</small>			
<hr/>			
<u>Canon City</u>	<u>CO</u>	<u>81212</u>	
<small>(City)</small>	<small>(State)</small>	<small>(Postal/Zip Code)</small>	
<u></u>	<u>United States</u>		
<small>(Province – if applicable)</small>	<small>(Country – if not US)</small>		

(If the following statement applies, adopt the statement by marking the box and include an attachment.)

☐ This document contains the true name and mailing address of one or more additional individuals causing the document to be delivered for filing.

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of filed documents, visit [www.sos.state.co.us](http://www.sos.state.co.us).

Colorado Secretary of State  
Date and Time: 02/27/2019 09:07 AM  
ID Number: 20191179198  
Document number: 20191179198  
Amount Paid: \$20.00

ABOVE SPACE FOR OFFICE USE ONLY

### Statement of Trade Name of a Reporting Entity

filed pursuant to §7-71-103 and §7-71-107 of the Colorado Revised Statutes (C.R.S)

1. For the reporting entity delivering this statement, its ID number, true name, form of entity and the jurisdiction under the law of which it is formed are

ID Number	<u>19871465104</u> <small>(Colorado Secretary of State ID number)</small>
True name	<u>FREMONT PAVING AND REDI-MIX, INC.</u>
Form of entity	<u>Corporation</u>
Jurisdiction	<u>Colorado</u>

2. The trade name under which such entity transacts business or conducts activities or contemplates transacting business or conducting activities in this state is

Hard Rock Paving and Redi-Mix

3. A brief description of the kind of business transacted or activities conducted or contemplated to be transacted or conducted in this state under such trade name is

aggregate material, concrete paving

4. (If the following statement applies, adopt the statement by marking the box and include an attachment.)

☐ This document contains additional information as provided by law.

5. (Caution: Leave blank if the document does not have a delayed effective date. Stating a delayed effective date has significant legal consequences. Read instructions before entering a date.)

(If the following statement applies, adopt the statement by entering a date and, if applicable, time using the required format.)

The delayed effective date and, if applicable, time of this document are \_\_\_\_\_  
(mm/dd/yyyy hour:minute am/pm)

#### Notice:

Causing this document to be delivered to the Secretary of State for filing shall constitute the affirmation or acknowledgment of each individual causing such delivery, under penalties of perjury, that such document is such individual's act and deed, or that such individual in good faith believes such document is the act and deed of the person on whose behalf such individual is causing such document to be delivered for filing, taken in conformity with the requirements of part 3 of article 90 of title 7, C.R.S. and, if applicable, the constituent documents and the organic statutes, and that such individual in good faith believes the facts stated in such document are true and such document complies with the requirements of that Part, the constituent documents, and the organic statutes.

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6. The true name and mailing address of the individual causing this document to be delivered for filing are

<u>Ranson</u>	<u>Richard</u>	<u>Paul</u>	<u></u>
<small>(Last)</small>	<small>(First)</small>	<small>(Middle)</small>	<small>(Suffix)</small>
<u>1040 Hunters Ridge Dr</u>			
<small>(Street number and name or Post Office Box information)</small>			
<hr/>			
<u>Colorado Springs</u>	<u>CO</u>	<u>80919</u>	
<small>(City)</small>	<small>(State)</small>	<small>(Postal/Zip Code)</small>	
<u></u>	<u>United States</u>		
<small>(Province – if applicable)</small>	<small>(Country – if not US)</small>		

(If the following statement applies, adopt the statement by marking the box and include an attachment.)

☐ This document contains the true name and mailing address of one or more additional individuals causing the document to be delivered for filing.

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EXHIBIT B

STOCK POWER

TRANSFER DOCUMENTS

See attached

## **STOCK POWER**

July 19, 2024

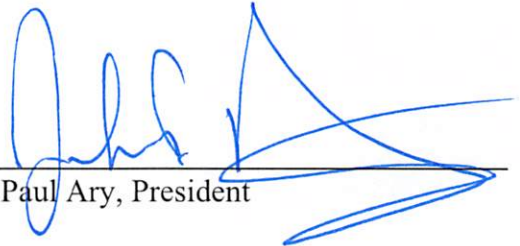
FOR VALUE RECEIVED, the undersigned hereby irrevocably assigns and transfers unto Oldcastle SW Group, Inc., a Colorado corporation ("Purchaser"), 127,500 voting shares of common stock of Fremont Paving and Redi-Mix, Inc., a Colorado corporation (the "Company"), standing in the name of the undersigned on the books of the Company represented by Certificate No. 7, together with all rights and benefits appurtenant thereto (the "Shares"). The undersigned hereby irrevocably constitutes and appoints any authorized officer of Purchaser as attorney-in-fact to transfer the Shares on the books of the Company with full power and substitution in the premises.

*[Signature Page Follows]*

IN WITNESS WHEREOF, this Stock Power is executed effective as of the date first written above.

**FRE HOLDINGS, INC.,**

a Colorado corporation

A handwritten signature in blue ink, appearing to read 'John Paul Ary', is written over a horizontal line.

John Paul Ary, President

## **STOCK POWER**

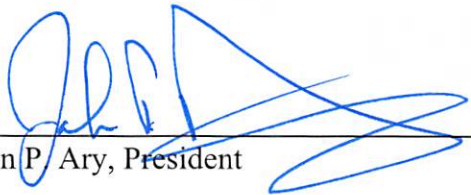
July 19, 2024

FOR VALUE RECEIVED, the undersigned hereby irrevocably assigns and transfers unto Oldcastle SW Group, Inc., a Colorado corporation ("Purchaser"), 122,500 nonvoting shares of common stock of Fremont Paving and Redi-Mix, Inc., a Colorado corporation (the "Company"), standing in the name of the undersigned on the books of the Company represented by Certificate No. 8, together with all rights and benefits appurtenant thereto (the "Shares"). The undersigned hereby irrevocably constitutes and appoints any authorized officer of Company as attorney-in-fact to transfer the Shares on the books of the Company with full power and substitution in the premises.

*[Signature Page Follows]*

IN WITNESS WHEREOF, this Stock Power is executed effective as of the date first written above.

**FRE HOLDINGS, INC.,**  
a Colorado corporation

  
\_\_\_\_\_  
John P. Ary, President

## **STOCK POWER**

July 19, 2024

FOR VALUE RECEIVED, the undersigned hereby irrevocably assigns and transfers unto Oldcastle SW Group, Inc., a Colorado corporation ("Purchaser"), 97,960 voting shares of common stock of Ary Brothers Trucking, Inc., a Colorado corporation (the "Company"), standing in the name of the undersigned on the books of the Company represented by Certificate No. 17, together with all rights and benefits appurtenant thereto (the "Shares"). The undersigned hereby irrevocably constitutes and appoints any authorized officer of Purchaser as attorney-in-fact to transfer the Shares on the books of the Company with full power and substitution in the premises.

*[Signature Page Follows]*

IN WITNESS WHEREOF, this Stock Power is executed effective as of the date first written above.

**ABT HOLDINGS, INC.,**  
a Colorado corporation



---

John Paul Ary, President



## **STOCK POWER**

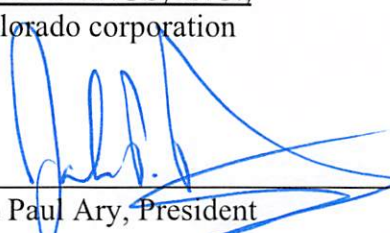
July 19, 2024

FOR VALUE RECEIVED, the undersigned hereby irrevocably assigns and transfers unto Oldcastle SW Group, Inc., a Colorado corporation ("Purchaser"), 41,456 voting shares of common stock of A&S Construction Co., a Colorado corporation (the "Company"), standing in the name of the undersigned on the books of the Company represented by Certificate No. 13, together with all rights and benefits appurtenant thereto (the "Shares"). The undersigned hereby irrevocably constitutes and appoints any authorized officer of Purchaser as attorney-in-fact to transfer the Shares on the books of the Company with full power and substitution in the premises.

*[Signature Page Follows]*

**IN WITNESS WHEREOF**, this Stock Power is executed effective as of the date first written above.

**AS HOLDINGS, INC.,**  
a Colorado corporation



---

John Paul Ary, President

## **STOCK POWER**

July 19, 2024

FOR VALUE RECEIVED, the undersigned hereby irrevocably assigns and transfers unto Oldcastle SW Group, Inc., a Colorado corporation ("Purchaser"), 5,000 voting shares of common stock of Crane Services of Colorado, Inc., a Colorado corporation (the "Company"), standing in the name of the undersigned on the books of the Company represented by Certificate No. 12, together with all rights and benefits appurtenant thereto (the "Shares"). The undersigned hereby irrevocably constitutes and appoints any authorized officer of Purchaser as attorney-in-fact to transfer the Shares on the books of the Company with full power and substitution in the premises.

*[Signature Page Follows]*

**IN WITNESS WHEREOF**, this Stock Power is executed effective as of the date first written above.

**CRANE HOLDINGS, INC.,**  
a Colorado corporation

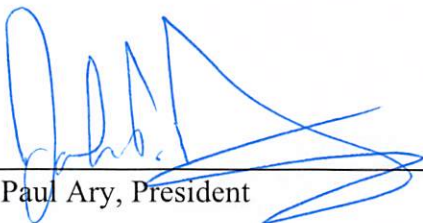
  
\_\_\_\_\_  
John Paul Ary, President

EXHIBIT C

MEMBERSHIP INTEREST ASSIGNMENTS

See attached

## **MEMBERSHIP INTEREST ASSIGNMENT**

July 19, 2024

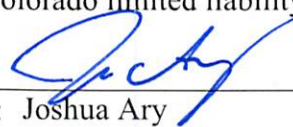
FOR VALUE RECEIVED, the Members identified on **Exhibit A** hereby irrevocably assign and transfer unto Oldcastle SW Group, Inc., a Colorado corporation ("Purchaser"), their respective ownership, identified in **Exhibit A**, totaling a transfer of 100% of the membership interest in Hwy 47 Investment, LLC, a Colorado limited liability company (the "Company"), together with all rights and benefits appurtenant thereto (collectively, the "Interests"). The undersigned hereby irrevocably constitute and appoint any authorized officer of Purchaser as attorney-in-fact to transfer the Interests on the books of the Company with full power and substitution in the premises.

*[Signature Page Follows]*

**IN WITNESS WHEREOF**, this Membership Interest Assignment is executed effective as of the date first written above.

**MEMBERS:**

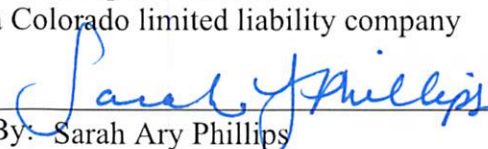
JC Ary Properties, LLC,  
a Colorado limited liability company

  
\_\_\_\_\_  
By: Joshua Ary  
Title: Member

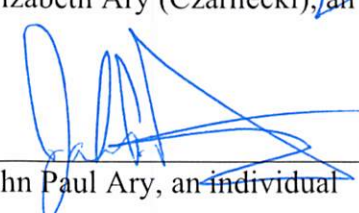
CS Rose Properties, LLC,  
a Colorado limited liability company

  
\_\_\_\_\_  
By: Samantha Ary  
Title: Member

N&S Properties, LLC,  
a Colorado limited liability company

  
\_\_\_\_\_  
By: Sarah Ary Phillips  
Title: Member

  
\_\_\_\_\_  
Elizabeth Ary (Czarnecki), an individual

  
\_\_\_\_\_  
John Paul Ary, an individual



**EXHIBIT A**  
(Membership)

<b><u>Member</u></b>	<b><u>Interest Transferred</u></b>
John Paul Ary	10%
JC Ary Properties, LLC	22.5%
CS Rose Properties, LLC	22.5%
N&S Properties, LLC	22.5%
Elizabeth Ary (Czarnecki)	22.5%

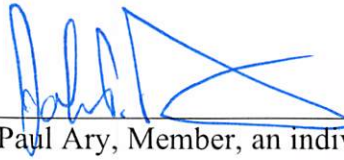
## **MEMBERSHIP INTEREST ASSIGNMENT**

July 19, 2024

FOR VALUE RECEIVED, the undersigned hereby irrevocably assigns and transfers unto Oldcastle SW Group, Inc., a Colorado corporation (“Purchaser”), a 100% membership interest in Pueblo East Phase III, LLC, a Colorado limited liability company (the “Company”), together with all rights and benefits appurtenant thereto (the “Interest”). The undersigned hereby irrevocably constitutes and appoints any authorized officer of Purchaser as attorney-in-fact to transfer the Interest on the books of the Company with full power and substitution in the premises.

*[Signature Page Follows]*

**IN WITNESS WHEREOF**, this Membership Interest Assignment is executed effective as of the date first written above.

A handwritten signature in blue ink, appearing to read 'John Paul Ary', is written over a horizontal line.

John Paul Ary, Member, an individual

EXHIBIT D

STATEMENT OF MERGER

See attached

# Statement of Merger (Surviving Entity is a Domestic Entity)

Business Program

Colorado Secretary of State

1700 Broadway, Ste. 550 Denver, CO 80290

Phone: 303-894-2200

Fax: 303-869-4864

Email: [Business@coloradosos.gov](mailto:Business@coloradosos.gov)

Website: [www.coloradosos.gov](http://www.coloradosos.gov)

20241757420

\$300.00

SECRETARY OF STATE

07/22/2024 14:53:27

This form must be typed. Documents may be submitted by mail or dropped off at our office along with payment.

Document processing fee: \$150.00

Filed pursuant to § 7-90-203.7 of the Colorado Revised Statutes (C.R.S.)

1. For each **merging** entity, its ID number (if applicable), entity name or true name, form of entity, jurisdiction under the law of which it is formed, and principal address are:

Colorado Secretary of State ID Number:

19871342310

Entity name or true name:

A & S Construction Co.

Form of entity:

Corporation

Jurisdiction:

Colorado

The principal office address of the entity's principal office is:

**Street Address**

Street Address 1

839 Mackenzie Ave

Street Address 2

City

Canon City

State

CO

ZIP code

81212



Province (if applicable)

Country

**Mailing Address (Leave blank if same as street address)**

Mailing Address 1

Mailing Address 2

City

State

ZIP code

Province (if applicable)

Country

---

Colorado Secretary of State ID Number:

Entity name or true name:

Form of entity:

Jurisdiction:

The principal office address of the entity's principal office is:

**Street Address**

Street Address 1

Street Address 2

City

State

ZIP code

Province (if applicable)  Country

**Mailing Address (Leave blank if same as street address)**

Mailing Address 1

Mailing Address 2

City  State  ZIP code

Province (if applicable)  Country

---

Colorado Secretary of State ID Number:

Entity name or true name:

Form of entity:

Jurisdiction:

The principal office address of the entity's principal office is:

**Street Address**

Street Address 1

Street Address 2

City  State  ZIP code

Province (if applicable)	Country	
	USA	
<b>Mailing Address (Leave blank if same as street address)</b>		
Mailing Address 1		
Mailing Address 2		
City	State	ZIP code
Province (if applicable)	Country	

If the following statement applies, adopt the statement by marking the box and include an attachment:

- ☒ **There are more than three merging entities and the ID number (if applicable), entity name or true name, form of entity, jurisdiction under the law of which it is formed, and the principal address of each additional merging entity is stated in an attachment.**

2. For the **surviving** entity, its entity ID number (if applicable), entity name or true name, form of entity, jurisdiction under the law of which it is formed, and principal address are:

Colorado Secretary of State ID Number:

19871178882

Entity name or true name:

Oldcastle SW Group, Inc.

Form of entity:

Corporation



Jurisdiction:

Colorado

The principal office address of the entity's principal office is:

**Street Address**

Street Address 1

2273 River Rd

Street Address 2

City

Grand Junction

State

CO

ZIP code

81505

Province (if applicable)

Country

USA

**Mailing Address (Leave blank if same as street address)**

Mailing Address 1

Mailing Address 2

City

State

ZIP code

Province (if applicable)

Country

3. Each merging entity has been merged into the surviving entity.

4. If the following statement applies, adopt the statement by marking the box:

☐

**The plan of merger provides for amendments to a constituent filed document of the surviving entity and an appropriate statement of change or other document effecting the amendments will be delivered to the Secretary of State for filing pursuant to Part 3 of Article 90 of Title 7, C.R.S.**

5. If the following statement applies, adopt the statement by marking the box and state the appropriate document number(s):

☐ **One or more of the merging entities is a registrant of a trademark described in a filed document in the records of the secretary of state and the document number of each filed document is:**

Document 1

Document 2

Document 3

If the following statement applies, adopt the statement by marking the box and include an attachment:

☐ **There are more than three trademarks and the document number of each additional trademark is stated in an attachment.**

6. If applicable, adopt the following statement by marking the box and include an attachment:

☐ **This document contains additional information as provided by law.**

7. The delayed effective date and/or time (mm/dd/yyyy hour:minute am/pm) of this document is (if applicable):

Caution: Leave blank if the document does not have a delayed effective date. Stating a delayed effective date has significant legal consequences. If you don't enter a specific time, the filing will take effect at 11:59 PM. Times are MST/MDT.

**Notice:**

Causing this document to be delivered to the Secretary of State for filing shall constitute the affirmation or acknowledgment of each individual causing such delivery, under penalties of perjury, that such document is such individual's act and deed, or that such individual in good faith believes such document is the act and deed of the person on whose behalf such individual is causing such document to be delivered for filing, taken in conformity with the requirements of part 3 of article 90 of title 7, C.R.S. and, if applicable, the constituent documents and the organic statutes, and that such individual in good faith believes the facts stated in such document are true and such document complies with the requirements of that Part, the constituent documents, and the organic statutes.

This perjury notice applies to each individual who causes this document to be delivered to the Secretary of State, whether or not such individual is identified in this document as one who has caused it to be delivered.

8. The name and mailing address of the individual causing the document to be delivered for filing are:

**Filer Information**

Last name	First name	Middle	Suffix
Williams	Nanci		

**Address 1**

1 E Washington ST Ste 1200
----------------------------

**Address 2**

--

City	State	ZIP code
Phoenix	AZ	85004

Province (if applicable)	Country

This document contains the true name and mailing address of one or more additional individuals causing the document to be delivered for filing.  
If applicable, mark this box and include an attachment stating the additional individuals.

☐ More information will be attached.

**Disclaimer:**

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Questions should be addressed to the user's legal, business or tax advisor(s).

**ATTACHMENT TO COLORADO STATEMENT OF MERGER  
ADDITIONAL MERGING ENTITIES**

**1.**

Colorado Secretary of State ID Number:	19871465104
Entity Name or True Name:	Fremont Paving and Redi-Mix, Inc.
Form of Entity:	Corporation
Jurisdiction:	Colorado
Street Address:	839 Mackenzie Ave, Canon City, CO 81212, USA
Mailing Address (leave blank if same as street address)	PO Box 841, Canon City, CO 81215, USA

**2.**

Colorado Secretary of State ID Number:	20181635649
Entity Name or True Name:	Pueblo East Phase III, LLC
Form of Entity:	Limited Liability Company
Jurisdiction:	Colorado
Street Address:	839 Mackenzie Ave, Canon City, CO 81212, USA
Mailing Address (leave blank if same as street address)	PO Box 566, Canon City, CO 81215, USA

**3.**

Colorado Secretary of State ID Number:	20221676677
Entity Name or True Name:	Hwy 47 Investment, LLC
Form of Entity:	Limited Liability Company
Jurisdiction:	Colorado
Street Address:	839 Mackenzie Ave, Canon City, CO 81212, USA
Mailing Address (leave blank if same as street address)	PO Box 1091, Canon City, CO 81215, USA



[www.united-gj.com](http://www.united-gj.com)  
[www.fourcornersmaterials.com](http://www.fourcornersmaterials.com)  
[www.apc.us.com](http://www.apc.us.com)

September 18, 2025

Certified Mail No: 9589 0710 5270 1861 0241 26

Division of Reclamation, Mining and Safety  
DRMS c/o Sara Stevenson-Benn  
1001 E 62<sup>nd</sup> Avenue  
Denver, CO 80216

Re: Incompleteness Response, Financial Warranty and required bonding documents  
DRMS Permit: M-1998-038, Two Rivers Pit

Ms. Stevenson-Benn,

In response to the required bonding documents, an affidavit signed by Brandon Pack, President of Oldcastle SW Group, Inc. dba United Companies, has been prepared and notarized for inclusion in the updated submission package. Additionally, as discussed, we have included documentation of Elected Officers who are authorized to execute agreements, contracts, documents, certificates, and other instruments for the purpose of conducting the Corporation's business.

A copy of these documents will be sent with the rest of the incompleteness package to DRMS at 1313 Sherman St., Ste. 215, Denver, CO 80203.

We appreciate your time on this matter. If there is anything more you require from us please do not hesitate to reach out.

Thanks,

Sara Weimer  
EHS  
Oldcastle SW Group, Inc.



## **Documentation of Legal Authority to Execute Financial Warranty Documents**

*The Colorado Mined Land Reclamation Board ("Board") has adopted the attached Affidavit of Authority to Execute Financial Warranty Documents pursuant to the Mined Land Reclamation Act (C.R.S. § 34-32-101 et. seq.) and the Land Reclamation Act for the Extraction of Construction Materials (C.R.S. § 34-32.5-101 et. seq.). The Board and the Division of Reclamation Mining and Safety ("Division") have determined that, in order to carry out the financial warranty requirements set forth in C.R.S. §§ 34-32-117 and 34-32.5-117 with reasonable diligence, it is prudent to verify the legal authority of the individual signing all necessary documents.*

*Accordingly, you must provide confirmation of the legal authority of the individual signing all Financial Warranty Documents to the Division. You may do so either by submitting a resolution of the decision-making body of your company that authorizes an individual to sign the Financial Warranty Documents on the company's behalf, or by completing and notarizing the attached affidavit. The Division reserves the right to require the attached affidavit in all circumstances. Please note that if you are a sole proprietor who is executing documents on your own behalf, documentation of legal authority is unnecessary.*



**Affidavit of Authority to Execute Financial Warranty Documents**

Before me this day, the undersigned Brandon Pack [name of authorized person], in his/her capacity as President [title of authorized person] ("Affiant"), personally appeared and, being first duly sworn upon oath said:

1. This affidavit is being executed and submitted on behalf of Oldcastle SW Group, Inc. (dba United Companies) [name of business organization], a(n) Corporation [legal form of business organization, e.g., corporation, partnership, limited liability company, etc.], in good standing in the State of Colorado (the "Company").
2. It is in the interest of the Company to execute certain financial warranty documents associated with file number M-1998-038 (DRMS file number), which are required by the Colorado Mined Land Reclamation Board and Division of Reclamation Mining and Safety pursuant to Colorado law ("Financial Warranty Documents").
3. Affiant is duly authorized to sign such Financial Warranty Documents on behalf of the Company and to bind the Company to the same.
4. Affiant is not prohibited or limited by the Company's governing documents or by any applicable law from executing the Financial Warranty Documents.
5. Affiant will inform the Division of Reclamation Mining and Safety within thirty (30) days in the event that his/her authorization to execute Financial Warranty Documents on the Company's behalf is terminated.

Further, Affiant sayeth not.

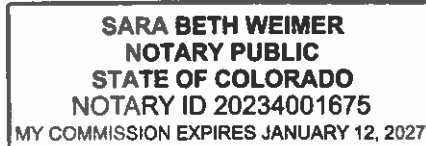
Brandon Pack

Affiant's Name



Signature


STATE OF Colorado )  
 ) ss.:  
COUNTY OF Jefferson )



The foregoing instrument was acknowledged before me this 31<sup>st</sup> day of July, 2025,  
by Brandon Pack as President of Oldcastle SW Group, Inc. (dba United Companies).

Notary Public

My Commission Expires

  
January 12, 2025

Two Rivers Plt M-1998-038

**ACTION BY WRITTEN CONSENT  
IN LIEU OF AN ANNUAL MEETING OF  
THE BOARD OF DIRECTORS  
OF  
OLDCASTLE SW GROUP, INC.**

The undersigned, being all of the members of the Board of Directors of Oldcastle SW Group, Inc., a Colorado corporation (the "**Corporation**"), do hereby, pursuant to §7-108-202 of the Colorado Business Corporation Act, give this written consent (a) to the dispensation of an annual meeting of the Board of Directors of the Corporation and (b) to the taking of the following actions, such actions to have the same force and effect had a meeting been duly called and held:

**I. ELECTION OF OFFICERS**

**RESOLVED**, that effective May 8, 2025, all previous elections of officers are terminated, and the following persons be, and hereby are, elected to serve as officers of the Corporation (each individually, an "**Officer**" and collectively, the "**Officers**") in the capacities set forth opposite their respective names until such time as their successors shall be elected and qualified:

Brandon Pack	President
Kyle Alpha	Vice President
Joy Trombley	Secretary, Treasurer, Controller
Kyle High	Assistant Secretary
Jeff Keller	Assistant Secretary
Tony Majka	Assistant Secretary
Ilana Overmeyer	Assistant Secretary

**FURTHER RESOLVED**, that the Officers be, and each of them hereby is, authorized to execute and deliver agreements, contracts, documents, certificates, and other instruments, under the seal of the Corporation if required, for the purpose of conducting the Corporation's business, including without limitation, selling products and securing construction work, and to take such other action, as they may deem necessary, advisable, convenient, or appropriate to carry out and fully perform duties incident to the office or offices so appointed, and such other duties as may be prescribed by the Board of Directors from time to time;

**FURTHER RESOLVED**, that the following persons are hereby designated officers solely for the purpose of attesting signatures of other officers on behalf of the Corporation, and for executing and attesting various corporate documents, tax returns, affidavits, and similar such instruments as may be necessary from time to time:

David M. Toolan	Assistant Secretary
Tim P. George	Assistant Secretary

**FURTHER RESOLVED**, that the President of the Corporation may, from time to time, without further action by the Board of Directors, appoint other persons to serve as authorized employees, or remove any individuals from this capacity, and to direct those appointed to take



such action, as he may deem necessary, advisable, convenient or appropriate to carry out and fully perform the duties incident to the office of President.

## **II. REMOVALS**

**RESOLVED**, that any current officers of the Corporation not elected in the foregoing resolution are hereby removed.

## **III. AUTHORIZATION OF TRADE AND DIVISIONAL NAMES**

**RESOLVED**, that the activities and operations of the Corporation may be carried on in any of the following manners or styles as may from time-to-time be deemed necessary or appropriate:

**Asphalt Paving Company  
APC Construction Company  
APC Southern Construction Company  
B&B Excavating  
Delta Sand & Gravel Co.  
Four Corners Materials  
Granby Sand & Gravel  
Telluride Gravel  
United Companies of Mesa County  
United Paving, Incorporated  
United Redi-Mix, Inc.  
United Sand and Gravel Company, Inc.  
United Companies**

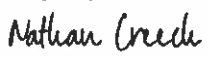
**FURTHER RESOLVED**, that the President of the Corporation may, from time to time, without further action by the Board of Directors, authorize the use of additional trade names, and to deem unauthorized any trade name previously authorized, as he may deem necessary, advisable, convenient or appropriate.


## **IV. MISCELLANEOUS**

**RESOLVED**, that all actions previously taken by any Officer of the Corporation appointed hereunder in his/her capacity as such Officer be, and each of them hereby is, adopted, ratified, confirmed and approved in all respects as the authorized acts and deeds of the Corporation;

**FURTHER RESOLVED**, that each undersigned agrees that electronic signatures, whether digital or encrypted, of the Board of Directors are intended to authenticate this consent and to have the same force and effect as manual signatures. As used in the previous sentence, the term "electronic signatures" means any electronic sound, symbol or process attached to or logically associated with this consent and executed and adopted by a member of the Board of Directors with the intent to sign such consent, including, but not limited to, e-mail electronic signatures executed through DocuSign; and

**FURTHER RESOLVED**, that this Consent, following execution by all of the members of the Board of Directors, be filed in appropriate order in the minute book of the Corporation.

Signed by:  
  
9245E30E1BD4459  
Nathan Creech

Signed by:  
  
596E90AE2FBA4D0...  
John Rothering

FP<sup>®</sup> US POSTAGE  
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034B 0081838956

DRMS c/o Sara Stevenson-Benn  
1001 E. 62nd Ave  
Denver, CO 80216

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT  
OF THE RETURN ADDRESS, FOLD AT DOTTED LINE  
**CERTIFIED MAIL<sup>®</sup>**



9589 0710 5270 1861 0241 26

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

**1. Article Addressed to:**

DRMS c/o Sara Stevenson-Benn  
1001 E. 62nd Ave.  
Denver, CO 80216



9590 9402 9264 4295 5314 13

**2. Article Number (Transfer from service label)**

9589 0710 5270 1861 0241 26

**COMPLETE THIS SECTION ON DELIVERY**

**A. Signature**

**X**

☐ Agent

☐ Addressee

**B. Received by (Printed Name)**

**C. Date of Delivery**

**D. Is delivery address different from item 1? ☐ Yes**  
If YES, enter delivery address below: ☐ No

**3. Service Type**

- ☒ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☒ Certified Mail<sup>®</sup>
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over \$500)

- ☐ Priority Mail Express<sup>®</sup>
- ☐ Registered Mail<sup>™</sup>
- ☐ Registered Mail Restricted Delivery
- ☒ Signature Confirmation<sup>™</sup>
- ☐ Signature Confirmation Restricted Delivery

S. Weimer  
APC  
14802 W. 44<sup>th</sup> Ave  
Golden, CO 80403

## Two Rivers Pit

Structure	Structure Owner	Distance (ft)
Fence	Kent Ricken	80
Water Well and Water Line	Gary Fillmore	0 ft; goes through property
Power Lines	Black Hills Energy	0 ft; goes through property
Fence	Linda Scholtz	163
Fence	Colorado State Land Board	17
Fence	Dos Rios Ranch	13
Canal and Fence	High Line Canal	63
Water Hydrant and Water Line	Orchard Park	96
County Roads 57th and 58th	Pueblo County	60
Fence	Michael Romero	108
Fence	Filadelfio Rael, Jr.	40
Fence, Barn and Animal Sheds	Jose Gonzales	88
Pedestal and Underground phone lines	Century Link	15
Fence	Dennis Pritchard	137
Fence	Valerie Harris	10
Home and Outbuildings	Anthony Gonzales	34
Fence	Posada	69

All distances measured for structures are from the permit boundary. As demonstrated in the following slope stability exhibit, no slope failures risk any disturbance outside of the disturbed area slope, therefore no structures are risked.

# RULE 6.5: GEOTECHNICAL STABILITY EXHIBIT

There are no known geologic hazards on the proposed site. Based on a slope stability analysis, buildings or other structures within 200' of the Two Rivers Pit affected area will not be affected by mining excavation. Sufficient buffers will be maintained between the slope crest and the permit boundary. A standard slope was analyzed for stability.

The material properties are derived from Table 2.5 in the SME Mining Reference Handbook<sup>1</sup>, as there is no site-specific strength data of the material available. Therefore, all materials are matched to a classification from this table that best matches the materials in terms of description. The native alluvial material is best classified as sand and gravel with a mixed grain size. A layer of soil and sand lies atop the sand and gravel deposit. This material is best described as loose sand, mixed grain size. A summary of the material properties can be seen in Table GS-1.

**Table GS-1. Material Properties**

Material	Unit Weight (lbs/ft)	Cohesion	Friction Angle
Sand and gravel, mixed grain size	110	0	45
Loose sand, mixed grain size	99	0	34

The final reclamation (3H:1V) slope was analyzed. The final reclaimed slope crest will be the closest excavation comes to any structures.

## 1. Reclamation Slopes

Factor of Safety is expressed in terms of strength divided by stress as a ratio. It is arrived at by an iterative computer process where a slope failure is assumed, the strength and stress of that slope failure are calculated, and those values are compared to determine a lowest factor of safety. In the case of the Two Rivers Pit slope stability analysis, the Bishop's Method of Slices was the iterative calculation used, and the software GALENA was used to model slopes and calculate the factor of safety. One slope (see Figure GS-1) was analyzed to look at the factor of safety. Table GS-2 lists the analysis conducted and their respective factors of safety.

GALENA data tables and analysis result figures are attached as Appendix GS-1.

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<sup>1</sup> Original source: Hoek and Bray 1977

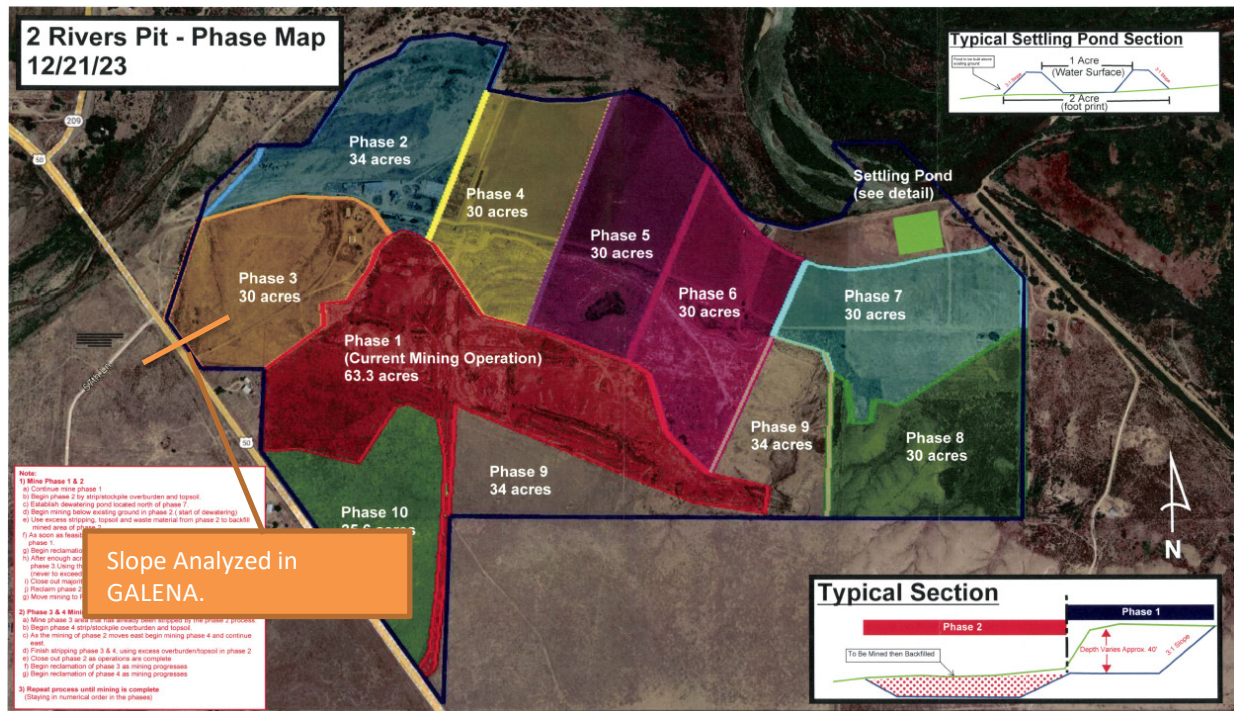


Figure GS-1. Locations of Slope Stability Analysis from Map F-1

**Table GS-2. Factors of Safety for Slope Stability**

Slope Condition	Lowest Factor of Safety (static)	Lowest Factor of Safety (seismic)	Nearest Structure
Final Reclamation	3.06	2.57	Power poles

## 2. Conclusion

The Final Reclamation slope has a minimum factor of safety (FoS = 3.06) of greater than 1.5 for static conditions. This Factor of Safety is greater than the CDRMS minimum for critical structure of 1.5. The seismic condition analysis is similarly above the CDRMS minimums for critical structures:  $2.57 > 1.3$

The slope stability analysis in this permit has been prepared according to appropriate engineering standards and practices.



Ben Langenfeld, P.E.

P.E.# 0047151

## APPENDIX GS-1

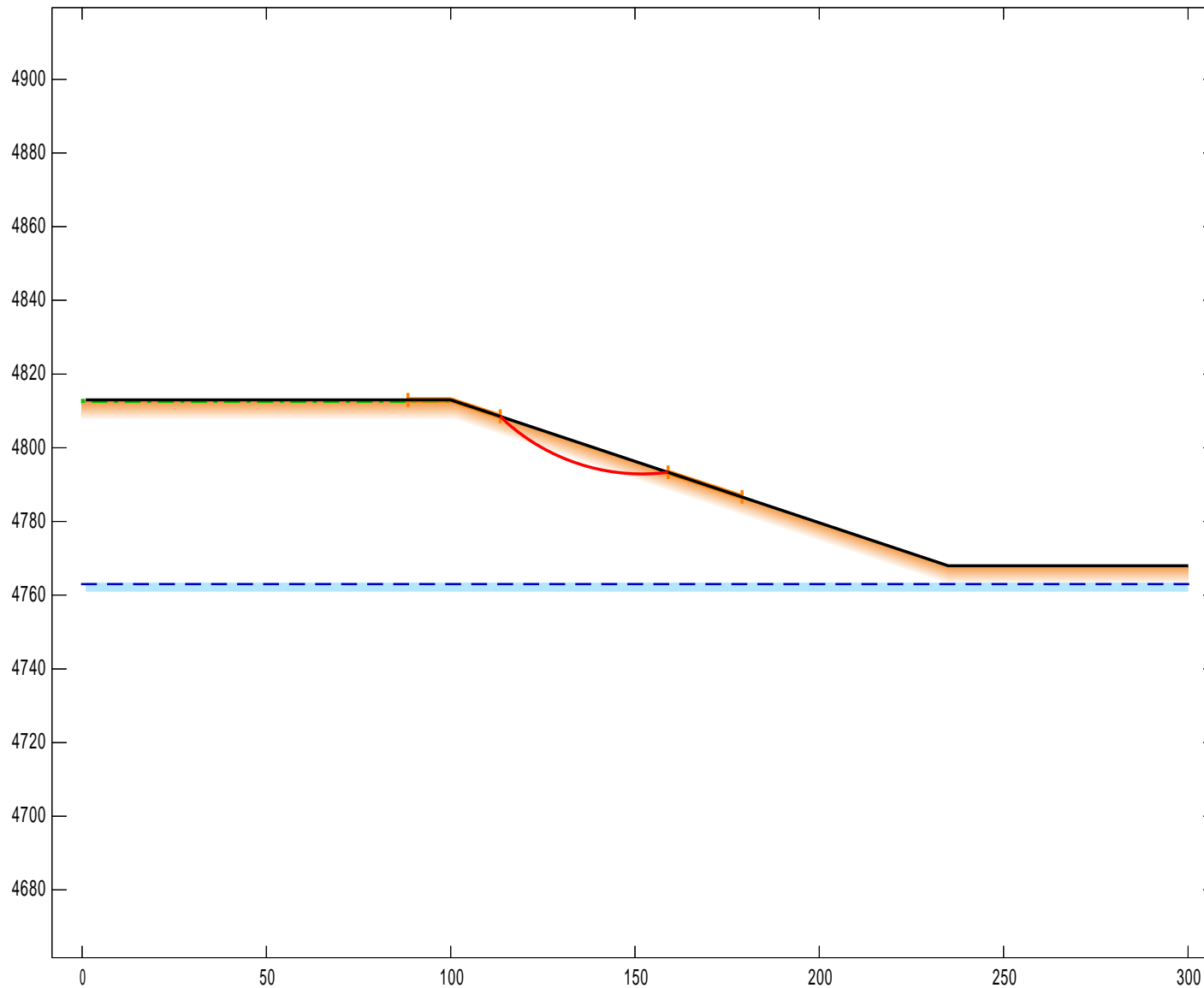
## GALENA INFORMATION



### Material Keys

1: Sand and gravel, mixed grain size

2: OB - loose sand, mixed grain size



**GALENA** Version 7.1

Licensed to: Greg Lewicki and Associates

### Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

### Results

Critical Factor of Safety: 3.28

Edited: 20 Nov 2024

Processed: 20 Nov 2024

Project Two Rivers Pit  
Reclaimed Condition

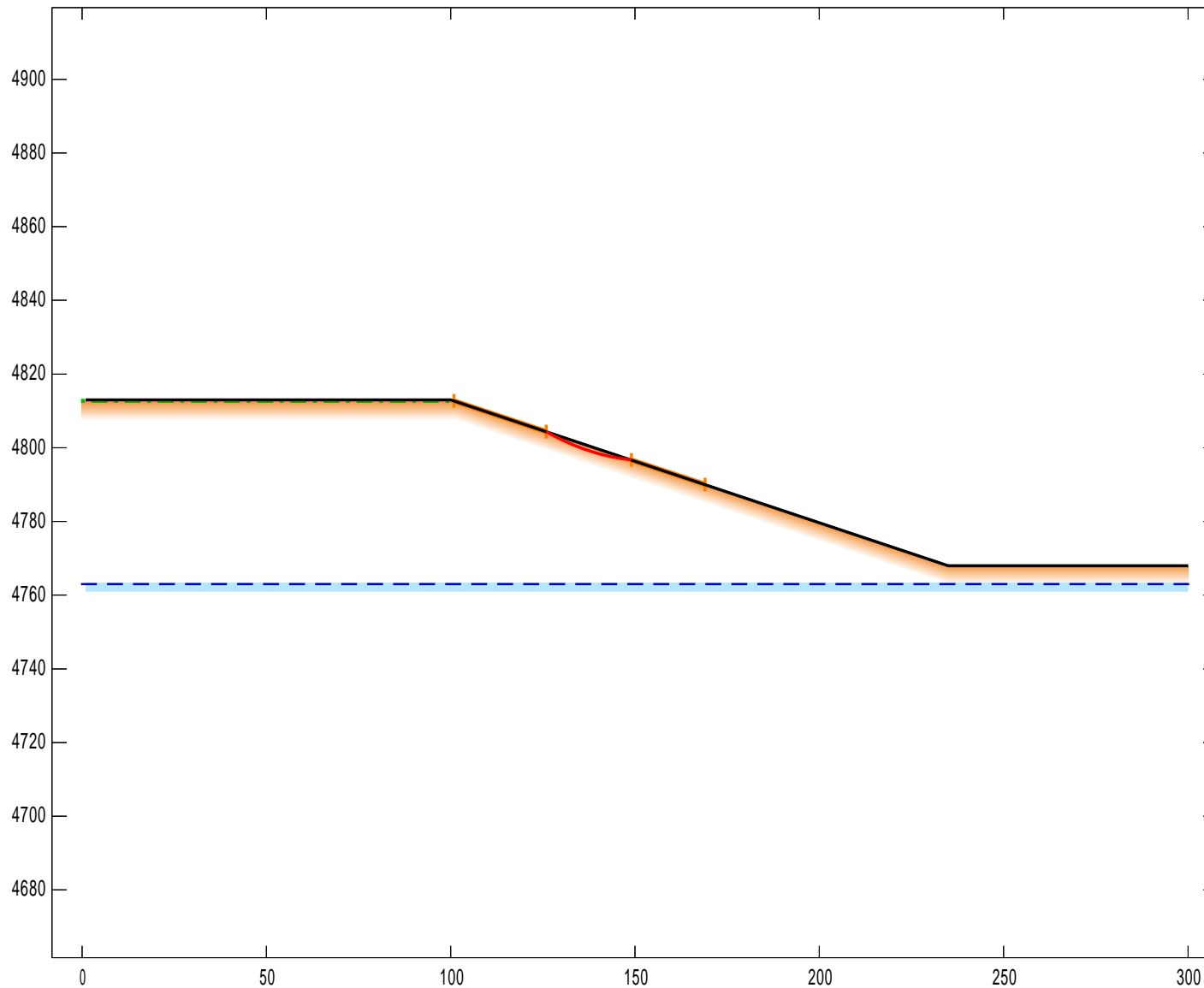
File: E:\Work\GLA Dropbox\Ben Langenfeld\United Companies\Two Rivers\Slope Stability\Two Rivers Slope Stability.gmf



### Material Keys

1: Sand and gravel, mixed grain size

2: OB - loose sand, mixed grain size



GALENA Version 7.1

Licensed to: Greg Lewicki and Associates

### Analysis 2

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular (Critical Seed)

### Results

Critical Factor of Safety: 3.06

Edited: 20 Nov 2024  
Processed: 20 Nov 2024

Project Two Rivers Pit  
Reclaimed Condition

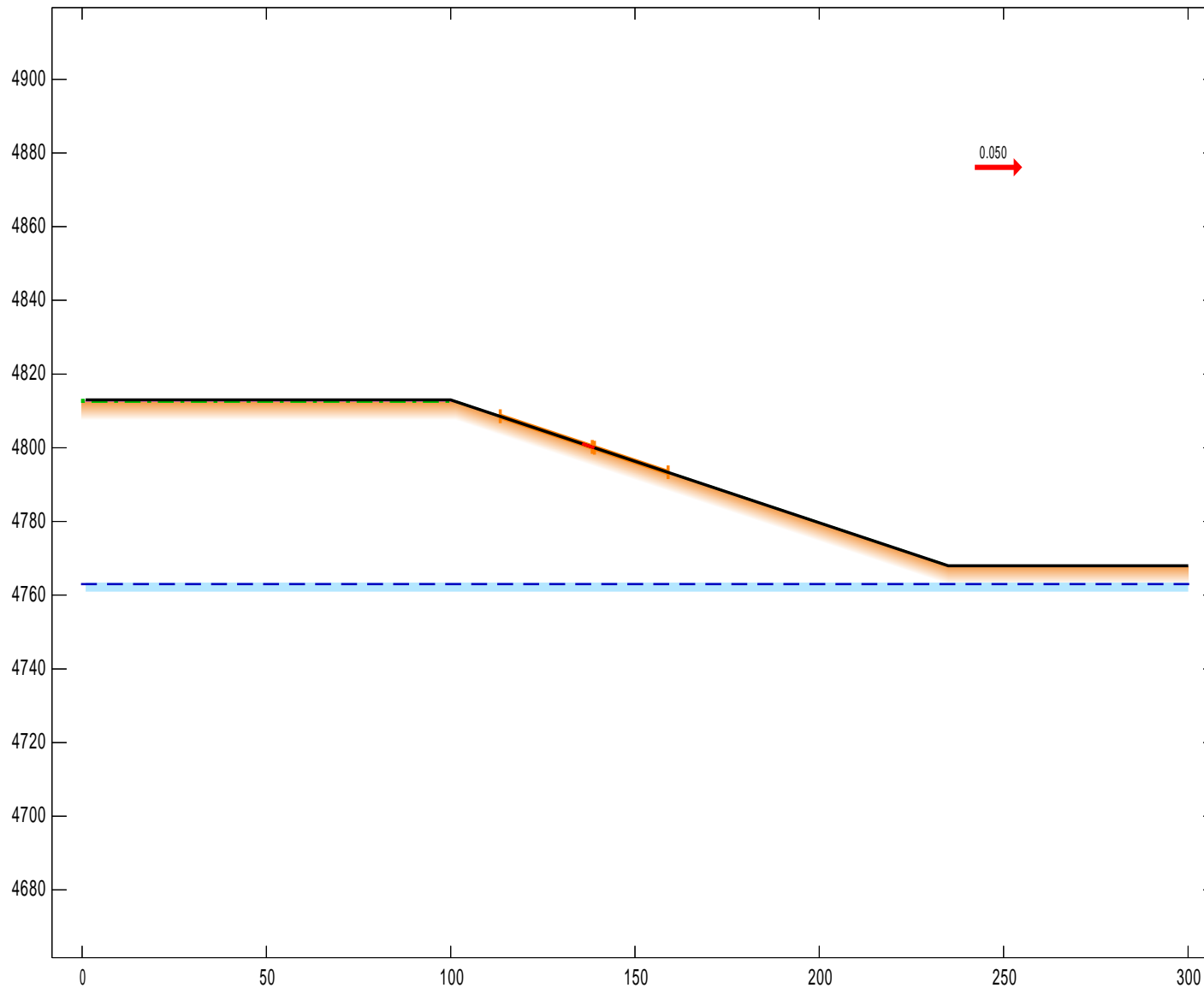
File: E:\Work\GLA Dropbox\Ben Langenfeld\United Companies\Two Rivers\Slope Stability\Two Rivers Slope Stability.gmf



### Material Keys

1: Sand and gravel, mixed grain size

2: OB - loose sand, mixed grain size



**GALENA** Version 7.1

Licensed to: Greg Lewicki and Associates

### Analysis 3

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular (Critical Seed)

### Results

Critical Factor of Safety: 2.57

Edited: 20 Nov 2024  
Processed: 20 Nov 2024

Project Two Rivers Pit  
Reclaimed Condition

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Project: Two Rivers Pit

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DATA: Analysis 1 - Reclaimed Condition

Material Properties (4 materials)

-----  
Material: 1 (Mohr-Coulomb Isotropic) - Sand and gravel, mixed grain size

Cohesion	Phi	UnitWeight	Ru
----------	-----	------------	----

0.00	45.0	110.00	Auto
------	------	--------	------

Material: 2 (Mohr-Coulomb Isotropic) - OB - loose sand, mixed grain size

Cohesion	Phi	UnitWeight	Ru
----------	-----	------------	----

0.00	34.0	99.00	Auto
------	------	-------	------

Material: 3 (Mohr-Coulomb Isotropic) - Bedrock - claystone

Cohesion	Phi	UnitWeight	Ru
----------	-----	------------	----

20000.00	25.0	110.00	Auto
----------	------	--------	------

Material: 4 (Mohr-Coulomb Isotropic) - Slurry Wall

Cohesion	Phi	UnitWeight	Ru
----------	-----	------------	----

Unsaturated: 0.00	0.0	112.00	Auto
-------------------	-----	--------	------

Saturated: 0.00	0.0	115.00	Auto
-----------------	-----	--------	------

Water Properties

-----  
Unit weight of water: 62.400      Unit weight of water/medium above ground: 0.000

Material Profiles (2 profiles)

-----  
Profile: 1 (2 points) Material beneath: 2 - OB - loose sand, mixed grain size

0.00	4813.00	300.00	4813.00
------	---------	--------	---------

Profile: 2 (2 points) Material beneath: 1 - Sand and gravel, mixed grain size

0.00	4812.50	300.00	4812.50
------	---------	--------	---------

Slope Surface (4 points)

-----  

1.00	4813.00	100.00	4813.00	235.00	4768.00	300.00	4768.00
------	---------	--------	---------	--------	---------	--------	---------

Phreatic Surface (2 points)

-----  

0.00	4763.00	300.00	4763.00
------	---------	--------	---------

## Piezometric Surfaces (1 surface)

-----

### Failure Surface

-----

Initial circular surface for critical search defined by: XL,XR,R

Intersects: XL: 100.90 YL: 4812.70 XR: 169.00 YR: 4790.00

Centre: XC: 145.96 YC: 4834.37 Radius: R: 50.00

### Variable Restraints

-----

Parameter descriptor:	XL	XR	R
Range of variation:	25.00	20.00	10.50
Trial positions within range:	10	10	10

- - - - -

## RESULTS: Analysis 1 - Reclaimed Condition

### Bishop Simplified Method of Analysis - Circular Failure Surface

-----

#### Critical Failure Surface Search using Multiple Circle Generation Techniques

Factor of Safety for initial failure surface approximation: 3.993

There were: 994 successful analyses from a total of 1001 trial surfaces

7 analyses terminated due to unacceptable geometry

Critical (minimum) Factor of Safety: 3.28

-----

### Results Summary - Lowest 99 Factor of Safety circles

-----

Circle	X-Left	Y-Left	X-Right	Y-Right	X-Centre	Y-Centre	Radius	FoS	
1	113.40	4808.53	159.00	4793.33	151.93	4848.13	55.25	3.283	<-- Critical Surface
2	113.40	4808.53	159.00	4793.33	151.52	4846.90	54.08	3.297	
3	113.40	4808.53	159.00	4793.33	151.11	4845.66	52.92	3.312	
4	113.40	4808.53	161.22	4792.59	152.86	4847.21	55.25	3.315	
5	110.62	4809.46	159.00	4793.33	150.31	4847.90	55.25	3.324	
6	113.40	4808.53	159.00	4793.33	150.69	4844.41	51.75	3.328	
7	113.40	4808.53	161.22	4792.59	152.44	4845.96	54.08	3.331	
8	110.62	4809.46	159.00	4793.33	149.89	4846.64	54.08	3.340	
9	113.40	4808.53	159.00	4793.33	150.27	4843.16	50.58	3.346	
10	113.40	4808.53	161.22	4792.59	152.02	4844.70	52.92	3.348	
11	113.40	4808.53	163.44	4791.85	153.77	4846.25	55.25	3.350	
12	110.62	4809.46	159.00	4793.33	149.47	4845.39	52.92	3.357	
13	110.62	4809.46	161.22	4792.59	151.22	4846.93	55.25	3.359	
14	113.40	4808.53	159.00	4793.33	149.85	4841.90	49.42	3.365	
15	113.40	4808.53	161.22	4792.59	151.60	4843.44	51.75	3.366	

16	113.40	4808.53	163.44	4791.85	153.35	4844.99	54.08	3.368
17	107.84	4810.39	159.00	4793.33	148.67	4847.61	55.25	3.368
18	110.62	4809.46	159.00	4793.33	149.05	4844.12	51.75	3.376
19	110.62	4809.46	161.22	4792.59	150.80	4845.66	54.08	3.377
20	113.40	4808.53	159.00	4793.33	149.43	4840.62	48.25	3.386
21	113.40	4808.53	161.22	4792.59	151.18	4842.17	50.58	3.386
22	113.40	4808.53	163.44	4791.85	152.93	4843.71	52.92	3.387
23	107.84	4810.39	159.00	4793.33	148.25	4846.34	54.08	3.387
24	113.40	4808.53	165.67	4791.11	154.68	4845.26	55.25	3.387
25	110.62	4809.46	163.44	4791.85	152.12	4845.93	55.25	3.397
26	110.62	4809.46	161.22	4792.59	150.38	4844.39	52.92	3.397
27	110.62	4809.46	159.00	4793.33	148.63	4842.84	50.58	3.397
28	107.84	4810.39	161.22	4792.59	149.57	4846.60	55.25	3.407
29	113.40	4808.53	165.67	4791.11	154.25	4843.98	54.08	3.407
30	107.84	4810.39	159.00	4793.33	147.82	4845.06	52.92	3.407
31	113.40	4808.53	163.44	4791.85	152.50	4842.43	51.75	3.407
32	113.40	4808.53	161.22	4792.59	150.75	4840.89	49.42	3.408
33	113.40	4808.53	159.00	4793.33	149.00	4839.34	47.08	3.409
34	105.07	4811.31	159.00	4793.33	147.02	4847.27	55.25	3.417
35	110.62	4809.46	163.44	4791.85	151.70	4844.64	54.08	3.417
36	110.62	4809.46	161.22	4792.59	149.95	4843.10	51.75	3.418
37	110.62	4809.46	159.00	4793.33	148.20	4841.56	49.42	3.419
38	113.40	4808.53	167.89	4790.37	155.57	4844.23	55.25	3.427
39	107.84	4810.39	161.22	4792.59	149.14	4845.31	54.08	3.428
40	113.40	4808.53	165.67	4791.11	153.82	4842.69	52.92	3.428
41	107.84	4810.39	159.00	4793.33	147.39	4843.76	51.75	3.429
42	113.40	4808.53	163.44	4791.85	152.07	4841.14	50.58	3.430
43	113.40	4808.53	161.22	4792.59	150.32	4839.60	48.25	3.432
44	113.40	4808.53	159.00	4793.33	148.57	4838.05	45.92	3.434
45	110.62	4809.46	165.67	4791.11	153.01	4844.89	55.25	3.437
46	105.07	4811.31	159.00	4793.33	146.58	4845.97	54.08	3.438
47	110.62	4809.46	163.44	4791.85	151.26	4843.35	52.92	3.439
48	110.62	4809.46	161.22	4792.59	149.51	4841.80	50.58	3.442
49	110.62	4809.46	159.00	4793.33	147.76	4840.26	48.25	3.444
50	107.84	4810.39	163.44	4791.85	150.46	4845.55	55.25	3.448
51	113.40	4808.53	167.89	4790.37	155.14	4842.93	54.08	3.449
52	107.84	4810.39	161.22	4792.59	148.71	4844.01	52.92	3.451
53	113.40	4808.53	165.67	4791.11	153.39	4841.38	51.75	3.452
54	107.84	4810.39	159.00	4793.33	146.96	4842.46	50.58	3.453
55	113.40	4808.53	163.44	4791.85	151.64	4839.84	49.42	3.455
56	113.40	4808.53	161.22	4792.59	149.89	4838.29	47.08	3.458
57	105.07	4811.31	161.22	4792.59	147.90	4846.21	55.25	3.459
58	110.62	4809.46	165.67	4791.11	152.58	4843.59	54.08	3.460
59	113.40	4808.53	159.00	4793.33	148.14	4836.75	44.75	3.462
60	105.07	4811.31	159.00	4793.33	146.15	4844.67	52.92	3.462
61	110.62	4809.46	163.44	4791.85	150.83	4842.04	51.75	3.463
62	110.62	4809.46	161.22	4792.59	149.08	4840.49	49.42	3.467
63	102.29	4812.24	159.00	4793.33	145.34	4846.87	55.25	3.470
64	113.40	4808.53	170.11	4789.63	156.45	4843.16	55.25	3.470

65	110.62	4809.46	159.00	4793.33	147.33	4838.95	47.08	3.471
66	107.84	4810.39	163.44	4791.85	150.02	4844.24	54.08	3.472
67	113.40	4808.53	167.89	4790.37	154.70	4841.62	52.92	3.473
68	107.84	4810.39	161.22	4792.59	148.27	4842.70	51.75	3.475
69	113.40	4808.53	165.67	4791.11	152.95	4840.07	50.58	3.477
70	107.84	4810.39	159.00	4793.33	146.52	4841.15	49.42	3.480
71	110.62	4809.46	167.89	4790.37	153.89	4843.82	55.25	3.481
72	113.40	4808.53	163.44	4791.85	151.20	4838.52	48.25	3.482
73	105.07	4811.31	161.22	4792.59	147.46	4844.90	54.08	3.483
74	110.62	4809.46	165.67	4791.11	152.14	4842.27	52.92	3.485
75	113.40	4808.53	161.22	4792.59	149.45	4836.97	45.92	3.487
76	105.07	4811.31	159.00	4793.33	145.71	4843.35	51.75	3.488
77	110.62	4809.46	163.44	4791.85	150.39	4840.72	50.58	3.490
78	107.84	4810.39	165.67	4791.11	151.33	4844.47	55.25	3.493
79	102.29	4812.24	159.00	4793.33	144.90	4845.55	54.08	3.495
80	113.40	4808.53	170.11	4789.63	156.01	4841.84	54.08	3.495
81	110.62	4809.46	161.22	4792.59	148.64	4839.17	48.25	3.495
82	107.84	4810.39	163.44	4791.85	149.58	4842.92	52.92	3.497
83	113.40	4808.53	167.89	4790.37	154.26	4840.29	51.75	3.500
84	110.62	4809.46	159.00	4793.33	146.89	4837.62	45.92	3.501
85	107.84	4810.39	161.22	4792.59	147.83	4841.37	50.58	3.503
86	105.07	4811.31	163.44	4791.85	148.77	4845.12	55.25	3.504
87	113.40	4808.53	165.67	4791.11	152.51	4838.74	49.42	3.505
88	110.62	4809.46	167.89	4790.37	153.45	4842.49	54.08	3.507
89	107.84	4810.39	159.00	4793.33	146.08	4839.82	48.25	3.508
90	105.07	4811.31	161.22	4792.59	147.02	4843.57	52.92	3.510
91	113.40	4808.53	163.44	4791.85	150.76	4837.19	47.08	3.512
92	110.62	4809.46	165.67	4791.11	151.70	4840.94	51.75	3.512
93	105.07	4811.31	159.00	4793.33	145.26	4842.02	50.58	3.516
94	102.29	4812.24	161.22	4792.59	146.20	4845.76	55.25	3.516
95	113.40	4808.53	172.33	4788.89	157.32	4842.06	55.25	3.516
96	113.40	4808.53	161.22	4792.59	149.00	4835.64	44.75	3.518
97	110.62	4809.46	163.44	4791.85	149.94	4839.39	49.42	3.519
98	107.84	4810.39	165.67	4791.11	150.88	4843.14	54.08	3.519
99	102.29	4812.24	159.00	4793.33	144.45	4844.21	52.92	3.522

Critical Failure Surface (circle 1)

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Intersects: XL: 113.40 YL: 4808.53 XR: 159.00 YR: 4793.33

Centre: XC: 151.93 YC: 4848.13 Radius: R: 55.25

Generated failure surface: (20 points)

113.40	4808.53	115.32	4806.75	117.32	4805.07	119.40	4803.47	121.55	4801.98
123.77	4800.60	126.05	4799.32	128.39	4798.15	130.78	4797.09	133.22	4796.14
135.71	4795.32	138.23	4794.61	140.78	4794.02	143.35	4793.55	145.94	4793.20
148.55	4792.98	151.17	4792.88	153.78	4792.91	156.40	4793.06	159.00	4793.33

Slice Geometry and Properties - Critical Failure Surface (circle 1, 38 slices)

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Slice	X-S	----- Base -----	PoreWater	Normal	Test
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	X-Left	Area	Angle	Width	Length	Matl	Cohesion	Phi	Weight	Force	Stress	Factor
1	113.40	0.27	42.9	0.96	1.31	1	0.00	45.0	30.14	0.00	24.50	1.06
2	114.36	0.82	42.9	0.96	1.31	1	0.00	45.0	90.30	0.00	73.40	1.06
3	115.32	1.40	40.2	1.00	1.31	1	0.00	45.0	153.59	0.00	122.17	1.04
4	116.32	1.91	40.2	1.00	1.31	1	0.00	45.0	209.78	0.00	166.87	1.04
5	117.32	2.48	37.4	1.04	1.31	1	0.00	45.0	272.67	0.00	212.81	1.02
6	118.36	2.95	37.4	1.04	1.31	1	0.00	45.0	324.07	0.00	252.92	1.02
7	119.40	3.50	34.7	1.08	1.31	1	0.00	45.0	384.85	0.00	295.47	1.00
8	120.47	3.91	34.7	1.08	1.31	1	0.00	45.0	430.60	0.00	330.60	1.00
9	121.55	4.43	32.0	1.11	1.31	1	0.00	45.0	487.57	0.00	369.15	0.99
10	122.66	4.79	32.0	1.11	1.31	1	0.00	45.0	527.15	0.00	399.07	0.99
11	123.77	5.26	29.3	1.14	1.31	1	0.00	45.0	578.76	0.00	433.14	0.98
12	124.91	5.56	29.3	1.14	1.31	1	0.00	45.0	611.30	0.00	457.50	0.98
13	126.05	5.96	26.6	1.17	1.31	1	0.00	45.0	656.14	0.00	486.55	0.97
14	127.22	6.19	26.6	1.17	1.31	1	0.00	45.0	681.41	0.00	505.28	0.97
15	128.39	6.53	23.9	1.20	1.31	1	0.00	45.0	718.19	0.00	528.91	0.96
16	129.59	6.69	23.9	1.20	1.31	1	0.00	45.0	735.35	0.00	541.55	0.96
17	130.78	6.94	21.2	1.22	1.31	1	0.00	45.0	763.04	0.00	559.33	0.96
18	132.00	7.02	21.2	1.22	1.31	1	0.00	45.0	771.89	0.00	565.82	0.96
19	133.22	7.18	18.4	1.24	1.31	1	0.00	45.0	789.57	0.00	577.45	0.96
20	134.47	7.18	18.4	1.24	1.31	1	0.00	45.0	789.57	0.00	577.39	0.96
21	135.71	7.24	15.7	1.26	1.31	1	0.00	45.0	796.61	0.00	582.51	0.96
22	136.97	7.16	15.7	1.26	1.31	1	0.00	45.0	787.54	0.00	575.88	0.96
23	138.23	7.12	13.0	1.27	1.31	1	0.00	45.0	783.40	0.00	574.07	0.96
24	139.50	6.96	13.0	1.27	1.31	1	0.00	45.0	765.17	0.00	560.72	0.96
25	140.78	6.81	10.3	1.29	1.31	1	0.00	45.0	749.59	0.00	551.70	0.96
26	142.06	6.56	10.3	1.29	1.31	1	0.00	45.0	721.86	0.00	531.29	0.96
27	143.35	6.32	7.6	1.30	1.31	1	0.00	45.0	694.87	0.00	514.87	0.97
28	144.65	5.98	7.6	1.30	1.31	1	0.00	45.0	657.81	0.00	487.36	0.97
29	145.94	5.63	4.9	1.30	1.31	1	0.00	45.0	619.33	0.00	463.03	0.98
30	147.25	5.21	4.9	1.30	1.31	1	0.00	45.0	572.97	0.00	428.37	0.98
31	148.55	4.76	2.2	1.31	1.31	1	0.00	45.0	523.51	0.00	395.81	0.99
32	149.86	4.25	2.1	1.31	1.31	1	0.00	45.0	467.88	0.00	353.80	0.99
33	151.17	3.71	-0.6	1.31	1.31	1	0.00	45.0	408.04	0.00	312.77	1.00
34	152.48	3.12	-0.6	1.31	1.31	1	0.00	45.0	343.38	0.00	263.24	1.00
35	153.78	2.49	-3.3	1.31	1.31	1	0.00	45.0	273.93	0.00	213.40	1.02
36	155.09	1.82	-3.3	1.31	1.31	1	0.00	45.0	200.54	0.00	156.23	1.02
37	156.40	1.11	-6.0	1.30	1.31	1	0.00	45.0	122.46	0.00	97.21	1.04
38	157.70	0.37	-6.0	1.30	1.31	1	0.00	45.0	40.82	0.00	32.40	1.04

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X-S Area: 177.60 Path Length: 49.72 X-S Weight: 19535.69

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DATA: Analysis 2 - Reclaimed Condition

Material Properties (4 materials)



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Material: 1 (Mohr-Coulomb Isotropic) - Sand and gravel, mixed grain size

Cohesion	Phi	UnitWeight	Ru
0.00	45.0	110.00	Auto

Material: 2 (Mohr-Coulomb Isotropic) - OB - loose sand, mixed grain size

Cohesion	Phi	UnitWeight	Ru
0.00	34.0	99.00	Auto

Material: 3 (Mohr-Coulomb Isotropic) - Bedrock - claystone

Cohesion	Phi	UnitWeight	Ru
20000.00	25.0	110.00	Auto

Material: 4 (Mohr-Coulomb Isotropic) - Slurry Wall

Cohesion	Phi	UnitWeight	Ru
Unsaturated:	0.00	0.0	112.00 Auto
Saturated:	0.00	0.0	115.00 Auto

Water Properties

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Unit weight of water: 62.400      Unit weight of water/medium above ground: 0.000

Material Profiles (2 profiles)

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Profile: 1 (2 points) Material beneath: 2 - OB - loose sand, mixed grain size

0.00	4813.00	300.00	4813.00
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Profile: 2 (2 points) Material beneath: 1 - Sand and gravel, mixed grain size

0.00	4812.50	300.00	4812.50
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Slope Surface (4 points)

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1.00	4813.00	100.00	4813.00	235.00	4768.00	300.00	4768.00
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Phreatic Surface (2 points)

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0.00	4763.00	300.00	4763.00
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Piezometric Surfaces (1 surface)

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Failure Surface (Critical, from previous analysis)

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Initial circular surface for critical search defined by: XL,XR,R

Intersects: XL:	113.40	YL:	4808.53	XR:	159.00	YR:	4793.33
Centre: XC:	151.93	YC:	4848.13	Radius: R:	55.25		

Variable Restraints

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Parameter descriptor:	XL	XR	R
Range of variation:	25.00	20.00	10.50
Trial positions within range:	10	10	10

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RESULTS: Analysis 2 - Reclaimed Condition

Bishop Simplified Method of Analysis - Circular Failure Surface

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Critical Failure Surface Search using Multiple Circle Generation Techniques

Factor of Safety for initial failure surface approximation: 3.283

There were: 1001 successful analyses from a total of 1001 trial surfaces

Critical (minimum) Factor of Safety: 3.06

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Results Summary - Lowest 99 Factor of Safety circles

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Circle	X-Left	Y-Left	X-Right	Y-Right	X-Centre	Y-Centre	Radius	FoS	
1	125.90	4804.37	149.00	4796.67	156.19	4856.74	60.50	3.055	<-- Critical Surface
2	125.90	4804.37	149.00	4796.67	155.81	4855.61	59.33	3.058	
3	125.90	4804.37	149.00	4796.67	155.44	4854.48	58.17	3.060	
4	125.90	4804.37	149.00	4796.67	155.06	4853.34	57.00	3.063	
5	125.90	4804.37	149.00	4796.67	154.68	4852.21	55.83	3.065	
6	125.90	4804.37	151.22	4795.93	157.22	4856.13	60.50	3.067	
7	125.90	4804.37	149.00	4796.67	154.30	4851.08	54.67	3.068	
8	125.90	4804.37	151.22	4795.93	156.84	4854.99	59.33	3.070	
9	123.12	4805.29	149.00	4796.67	154.70	4856.90	60.50	3.070	
10	125.90	4804.37	149.00	4796.67	153.92	4849.94	53.50	3.071	
11	125.90	4804.37	151.22	4795.93	156.46	4853.86	58.17	3.072	
12	123.12	4805.29	149.00	4796.67	154.32	4855.76	59.33	3.073	
13	125.90	4804.37	149.00	4796.67	153.55	4848.80	52.33	3.074	
14	125.90	4804.37	151.22	4795.93	156.09	4852.72	57.00	3.076	
15	123.12	4805.29	149.00	4796.67	153.94	4854.62	58.17	3.076	
16	125.90	4804.37	149.00	4796.67	153.17	4847.66	51.17	3.078	
17	125.90	4804.37	151.22	4795.93	155.71	4851.58	55.83	3.079	
18	123.12	4805.29	149.00	4796.67	153.56	4853.48	57.00	3.079	
19	125.90	4804.37	153.44	4795.19	158.25	4855.49	60.50	3.079	
20	125.90	4804.37	149.00	4796.67	152.79	4846.52	50.00	3.082	
21	125.90	4804.37	151.22	4795.93	155.33	4850.44	54.67	3.082	
22	123.12	4805.29	149.00	4796.67	153.18	4852.34	55.83	3.082	
23	125.90	4804.37	153.44	4795.19	157.87	4854.35	59.33	3.083	
24	123.12	4805.29	151.22	4795.93	155.72	4856.26	60.50	3.083	
25	125.90	4804.37	151.22	4795.93	154.94	4849.30	53.50	3.086	
26	123.12	4805.29	149.00	4796.67	152.80	4851.20	54.67	3.086	
27	125.90	4804.37	153.44	4795.19	157.48	4853.21	58.17	3.086	
28	123.12	4805.29	151.22	4795.93	155.34	4855.12	59.33	3.086	
29	120.34	4806.22	149.00	4796.67	153.20	4857.02	60.50	3.086	
30	120.34	4806.22	149.00	4796.67	152.82	4855.88	59.33	3.090	
31	123.12	4805.29	151.22	4795.93	154.96	4853.97	58.17	3.090	

32	125.90	4804.37	153.44	4795.19	157.10	4852.07	57.00	3.090
33	123.12	4805.29	149.00	4796.67	152.42	4850.06	53.50	3.090
34	125.90	4804.37	151.22	4795.93	154.56	4848.15	52.33	3.090
35	125.90	4804.37	155.67	4794.44	159.26	4854.84	60.50	3.093
36	120.34	4806.22	149.00	4796.67	152.44	4854.73	58.17	3.094
37	123.12	4805.29	151.22	4795.93	154.58	4852.83	57.00	3.094
38	125.90	4804.37	153.44	4795.19	156.72	4850.92	55.83	3.094
39	123.12	4805.29	149.00	4796.67	152.04	4848.91	52.33	3.094
40	125.90	4804.37	151.22	4795.93	154.18	4847.01	51.17	3.094
41	123.12	4805.29	153.44	4795.19	156.74	4855.60	60.50	3.097
42	125.90	4804.37	155.67	4794.44	158.88	4853.69	59.33	3.097
43	120.34	4806.22	149.00	4796.67	152.05	4853.58	57.00	3.098
44	123.12	4805.29	151.22	4795.93	154.20	4851.68	55.83	3.098
45	125.90	4804.37	153.44	4795.19	156.34	4849.77	54.67	3.098
46	123.12	4805.29	149.00	4796.67	151.66	4847.76	51.17	3.099
47	125.90	4804.37	151.22	4795.93	153.80	4845.86	50.00	3.099
48	120.34	4806.22	151.22	4795.93	154.21	4856.35	60.50	3.101
49	123.12	4805.29	153.44	4795.19	156.35	4854.45	59.33	3.101
50	125.90	4804.37	155.67	4794.44	158.50	4852.54	58.17	3.101
51	120.34	4806.22	149.00	4796.67	151.67	4852.44	55.83	3.102
52	123.12	4805.29	151.22	4795.93	153.81	4850.53	54.67	3.102
53	125.90	4804.37	153.44	4795.19	155.96	4848.63	53.50	3.103
54	123.12	4805.29	149.00	4796.67	151.27	4846.61	50.00	3.104
55	117.57	4807.14	149.00	4796.67	151.68	4857.11	60.50	3.105
56	120.34	4806.22	151.22	4795.93	153.83	4855.20	59.33	3.105
57	123.12	4805.29	153.44	4795.19	155.97	4853.30	58.17	3.105
58	125.90	4804.37	155.67	4794.44	158.11	4851.39	57.00	3.106
59	120.34	4806.22	149.00	4796.67	151.29	4851.29	54.67	3.107
60	123.12	4805.29	151.22	4795.93	153.43	4849.38	53.50	3.107
61	125.90	4804.37	153.44	4795.19	155.57	4847.48	52.33	3.107
62	125.90	4804.37	157.89	4793.70	160.27	4854.16	60.50	3.108
63	117.57	4807.14	149.00	4796.67	151.30	4855.96	59.33	3.109
64	120.34	4806.22	151.22	4795.93	153.44	4854.05	58.17	3.109
65	123.12	4805.29	153.44	4795.19	155.59	4852.15	57.00	3.110
66	125.90	4804.37	155.67	4794.44	157.73	4850.24	55.83	3.110
67	120.34	4806.22	149.00	4796.67	150.90	4850.13	53.50	3.111
68	123.12	4805.29	151.22	4795.93	153.05	4848.23	52.33	3.112
69	123.12	4805.29	155.67	4794.44	157.74	4854.91	60.50	3.112
70	125.90	4804.37	153.44	4795.19	155.19	4846.32	51.17	3.113
71	125.90	4804.37	157.89	4793.70	159.88	4853.00	59.33	3.113
72	117.57	4807.14	149.00	4796.67	150.92	4854.80	58.17	3.113
73	120.34	4806.22	151.22	4795.93	153.06	4852.90	57.00	3.114
74	123.12	4805.29	153.44	4795.19	155.20	4850.99	55.83	3.115
75	125.90	4804.37	155.67	4794.44	157.34	4849.09	54.67	3.115
76	120.34	4806.22	153.44	4795.19	155.21	4855.66	60.50	3.117
77	120.34	4806.22	149.00	4796.67	150.52	4848.98	52.33	3.117
78	123.12	4805.29	155.67	4794.44	157.36	4853.75	59.33	3.117
79	123.12	4805.29	151.22	4795.93	152.66	4847.07	51.17	3.117
80	125.90	4804.37	157.89	4793.70	159.50	4851.85	58.17	3.118

81	125.90	4804.37	153.44	4795.19	154.80	4845.17	50.00	3.118
82	117.57	4807.14	149.00	4796.67	150.53	4853.65	57.00	3.118
83	120.34	4806.22	151.22	4795.93	152.67	4851.74	55.83	3.119
84	123.12	4805.29	153.44	4795.19	154.82	4849.83	54.67	3.120
85	125.90	4804.37	155.67	4794.44	156.96	4847.93	53.50	3.121
86	117.57	4807.14	151.22	4795.93	152.69	4856.41	60.50	3.121
87	120.34	4806.22	153.44	4795.19	154.83	4854.50	59.33	3.121
88	123.12	4805.29	155.67	4794.44	156.97	4852.60	58.17	3.122
89	120.34	4806.22	149.00	4796.67	150.13	4847.82	51.17	3.122
90	125.90	4804.37	157.89	4793.70	159.11	4850.69	57.00	3.123
91	123.12	4805.29	151.22	4795.93	152.27	4845.91	50.00	3.123
92	117.57	4807.14	149.00	4796.67	150.14	4852.49	55.83	3.124
93	120.34	4806.22	151.22	4795.93	152.29	4850.58	54.67	3.125
94	114.79	4808.07	149.00	4796.67	150.16	4857.16	60.50	3.125
95	125.90	4804.37	160.11	4792.96	161.27	4853.45	60.50	3.125
96	123.12	4805.29	153.44	4795.19	154.43	4848.68	53.50	3.126
97	117.57	4807.14	151.22	4795.93	152.30	4855.25	59.33	3.126
98	125.90	4804.37	155.67	4794.44	156.57	4846.77	52.33	3.126
99	120.34	4806.22	153.44	4795.19	154.44	4853.34	58.17	3.126

#### Critical Failure Surface (circle 1)

-----  
Intersects: XL: 125.90 YL: 4804.37 XR: 149.00 YR: 4796.67  
Centre: XC: 156.19 YC: 4856.74 Radius: R: 60.50

Generated failure surface: (20 points)

125.90	4804.37	127.02	4803.73	128.16	4803.12	129.31	4802.54	130.47	4801.98
131.65	4801.44	132.83	4800.93	134.03	4800.44	135.23	4799.98	136.45	4799.55
137.67	4799.14	138.90	4798.76	140.14	4798.40	141.39	4798.08	142.65	4797.77
143.91	4797.50	145.17	4797.25	146.44	4797.03	147.72	4796.83	149.00	4796.67

#### Slice Geometry and Properties - Critical Failure Surface (circle 1, 38 slices)

Slice	X-S -----				Base -----				PoreWater		Normal	Test
	X-Left	Area	Angle	Width	Length	Matl	Cohesion	Phi	Weight	Force	Stress	Factor
1	125.90	0.04	29.4	0.56	0.65	1	0.00	45.0	4.01	0.00	6.03	0.97
2	126.46	0.11	29.4	0.56	0.65	1	0.00	45.0	12.01	0.00	18.05	0.97
3	127.02	0.18	28.2	0.57	0.65	1	0.00	45.0	19.85	0.00	29.70	0.97
4	127.59	0.25	28.2	0.57	0.65	1	0.00	45.0	27.06	0.00	40.48	0.97
5	128.16	0.31	27.0	0.57	0.65	1	0.00	45.0	34.21	0.00	51.02	0.96
6	128.74	0.37	27.0	0.57	0.65	1	0.00	45.0	40.61	0.00	60.53	0.96
7	129.31	0.43	25.8	0.58	0.65	1	0.00	45.0	47.03	0.00	69.91	0.96
8	129.89	0.48	25.8	0.58	0.65	1	0.00	45.0	52.61	0.00	78.19	0.96
9	130.47	0.53	24.5	0.59	0.65	1	0.00	45.0	58.28	0.00	86.40	0.96
10	131.06	0.57	24.5	0.59	0.65	1	0.00	45.0	62.92	0.00	93.26	0.96
11	131.65	0.62	23.3	0.59	0.65	1	0.00	45.0	67.78	0.00	100.26	0.95
12	132.24	0.65	23.3	0.59	0.65	1	0.00	45.0	71.57	0.00	105.86	0.95
13	132.83	0.69	22.1	0.60	0.65	1	0.00	45.0	75.51	0.00	111.51	0.95
14	133.43	0.71	22.1	0.60	0.65	1	0.00	45.0	78.40	0.00	115.78	0.95
15	134.03	0.74	20.9	0.60	0.65	1	0.00	45.0	81.46	0.00	120.14	0.95

16	134.63	0.76	20.9	0.60	0.65	1	0.00	45.0	83.37	0.00	122.95	0.95
17	135.23	0.78	19.6	0.61	0.65	1	0.00	45.0	85.50	0.00	126.01	0.95
18	135.84	0.79	19.7	0.61	0.65	1	0.00	45.0	86.48	0.00	127.42	0.95
19	136.45	0.80	18.4	0.61	0.65	1	0.00	45.0	87.58	0.00	129.01	0.95
20	137.06	0.80	18.4	0.61	0.65	1	0.00	45.0	87.61	0.00	129.05	0.95
21	137.67	0.80	17.2	0.62	0.65	1	0.00	45.0	87.72	0.00	129.23	0.95
22	138.29	0.79	17.2	0.62	0.65	1	0.00	45.0	86.72	0.00	127.77	0.95
23	138.90	0.78	16.0	0.62	0.65	1	0.00	45.0	85.81	0.00	126.49	0.95
24	139.52	0.76	16.0	0.62	0.65	1	0.00	45.0	83.81	0.00	123.55	0.95
25	140.14	0.74	14.7	0.62	0.65	1	0.00	45.0	81.83	0.00	120.77	0.95
26	140.77	0.72	14.8	0.62	0.65	1	0.00	45.0	78.84	0.00	116.34	0.95
27	141.39	0.69	13.5	0.63	0.65	1	0.00	45.0	75.77	0.00	111.98	0.95
28	142.02	0.65	13.6	0.63	0.65	1	0.00	45.0	71.72	0.00	105.98	0.95
29	142.65	0.61	12.3	0.63	0.65	1	0.00	45.0	67.57	0.00	100.05	0.96
30	143.28	0.57	12.3	0.63	0.65	1	0.00	45.0	62.56	0.00	92.63	0.96
31	143.91	0.52	11.1	0.63	0.65	1	0.00	45.0	57.30	0.00	85.05	0.96
32	144.54	0.47	11.1	0.63	0.65	1	0.00	45.0	51.28	0.00	76.10	0.96
33	145.17	0.41	9.9	0.64	0.65	1	0.00	45.0	44.86	0.00	66.77	0.96
34	145.81	0.34	9.9	0.64	0.65	1	0.00	45.0	37.86	0.00	56.35	0.96
35	146.44	0.28	8.7	0.64	0.65	1	0.00	45.0	30.35	0.00	45.33	0.96
36	147.08	0.20	8.7	0.64	0.65	1	0.00	45.0	22.27	0.00	33.25	0.96
37	147.72	0.12	7.4	0.64	0.65	1	0.00	45.0	13.71	0.00	20.55	0.97
38	148.36	0.04	7.4	0.64	0.65	1	0.00	45.0	4.57	0.00	6.85	0.97

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X-S Area:    20.08   Path Length:   24.52                      X-S Weight:   2208.40

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DATA: Analysis 3 - Reclaimed Condition

Material Properties (4 materials)

-----  
Material: 1 (Mohr-Coulomb Isotropic) - Sand and gravel, mixed grain size

Cohesion   Phi   UnitWeight   Ru

0.00   45.0   110.00   Auto

Material: 2 (Mohr-Coulomb Isotropic) - OB - loose sand, mixed grain size

Cohesion   Phi   UnitWeight   Ru

0.00   34.0   99.00   Auto

Material: 3 (Mohr-Coulomb Isotropic) - Bedrock - claystone

Cohesion   Phi   UnitWeight   Ru

20000.00   25.0   110.00   Auto

Material: 4 (Mohr-Coulomb Isotropic) - Slurry Wall

Cohesion   Phi   UnitWeight   Ru

Unsaturated:   0.00   0.0   112.00   Auto

Saturated:    0.00   0.0   115.00   Auto

Water Properties

-----  
Unit weight of water: 62.400      Unit weight of water/medium above ground: 0.000

Material Profiles (2 profiles)

-----  
Profile: 1 (2 points)    Material beneath: 2 - OB - loose sand, mixed grain size

0.00   4813.00      300.00   4813.00

Profile: 2 (2 points)    Material beneath: 1 - Sand and gravel, mixed grain size

0.00   4812.50      300.00   4812.50

Slope Surface (4 points)

-----  
1.00   4813.00      100.00   4813.00      235.00   4768.00      300.00   4768.00

Phreatic Surface (2 points)

-----  
0.00   4763.00      300.00   4763.00

Piezometric Surfaces (1 surface)

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Failure Surface (Critical, from previous analysis)

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Initial circular surface for critical search defined by: XL,XR,R

Intersects: XL: 125.90    YL: 4804.37    XR: 149.00    YR: 4796.67

Centre: XC: 156.19    YC: 4856.74      Radius: R: 60.50

Earthquake Force

-----  
Pseudo-static earthquake (seismic) coefficient: 0.050

Variable Restraints

-----  
Parameter descriptor:      XL      XR      R  
Range of variation:      25.00    20.00    10.50  
Trial positions within range:    10      10      10

- - - - -  
RESULTS: Analysis 3 - Reclaimed Condition

Bishop Simplified Method of Analysis - Circular Failure Surface

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Critical Failure Surface Search using Multiple Circle Generation Techniques

Factor of Safety for initial failure surface approximation: 2.614

There were: 981 successful analyses from a total of 1001 trial surfaces  
20 analyses terminated due to unacceptable geometry

Critical (minimum) Factor of Safety: 2.57

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Results Summary - Lowest 99 Factor of Safety circles

Circle	X-Left	Y-Left	X-Right	Y-Right	X-Centre	Y-Centre	Radius	FoS	
1	135.62	4801.13	139.00	4800.00	158.10	4862.92	65.75	2.566	<-- Critical Surface
2	135.62	4801.13	139.00	4800.00	157.73	4861.81	64.58	2.566	
3	135.62	4801.13	139.00	4800.00	157.36	4860.70	63.42	2.566	
4	135.62	4801.13	139.00	4800.00	156.99	4859.59	62.25	2.566	
5	135.62	4801.13	139.00	4800.00	156.62	4858.49	61.08	2.566	
6	135.62	4801.13	139.00	4800.00	155.51	4855.17	57.58	2.566	
7	135.62	4801.13	139.00	4800.00	155.14	4854.06	56.42	2.566	
8	135.62	4801.13	139.00	4800.00	156.25	4857.38	59.92	2.566	
9	135.62	4801.13	139.00	4800.00	155.88	4856.27	58.75	2.566	
10	135.62	4801.13	139.00	4800.00	154.77	4852.95	55.25	2.567	
11	138.40	4800.20	143.44	4798.52	161.33	4860.58	64.58	2.567	
12	138.40	4800.20	143.44	4798.52	160.96	4859.47	63.42	2.567	
13	138.40	4800.20	143.44	4798.52	161.70	4861.68	65.75	2.567	
14	138.40	4800.20	143.44	4798.52	160.59	4858.36	62.25	2.567	
15	138.40	4800.20	143.44	4798.52	160.22	4857.25	61.08	2.568	
16	135.62	4801.13	141.22	4799.26	158.45	4860.29	63.42	2.568	
17	135.62	4801.13	141.22	4799.26	159.19	4862.51	65.75	2.568	
18	138.40	4800.20	143.44	4798.52	159.85	4856.15	59.92	2.568	
19	138.40	4800.20	143.44	4798.52	159.11	4853.93	57.58	2.568	
20	135.62	4801.13	141.22	4799.26	158.82	4861.40	64.58	2.568	
21	138.40	4800.20	143.44	4798.52	159.48	4855.04	58.75	2.568	
22	138.40	4800.20	143.44	4798.52	158.74	4852.82	56.42	2.568	
23	135.62	4801.13	141.22	4799.26	157.72	4858.07	61.08	2.568	
24	138.40	4800.20	143.44	4798.52	158.38	4851.71	55.25	2.568	
25	132.84	4802.05	139.00	4800.00	156.69	4863.33	65.75	2.568	
26	135.62	4801.13	141.22	4799.26	158.09	4859.18	62.25	2.568	
27	135.62	4801.13	141.22	4799.26	156.24	4853.64	56.42	2.568	
28	135.62	4801.13	141.22	4799.26	157.35	4856.97	59.92	2.568	
29	132.84	4802.05	139.00	4800.00	156.32	4862.22	64.58	2.568	
30	132.84	4802.05	139.00	4800.00	155.95	4861.11	63.42	2.568	
31	135.62	4801.13	141.22	4799.26	156.61	4854.75	57.58	2.568	
32	135.62	4801.13	141.22	4799.26	156.98	4855.86	58.75	2.568	
33	132.84	4802.05	139.00	4800.00	155.58	4860.00	62.25	2.568	
34	132.84	4802.05	139.00	4800.00	154.84	4857.78	59.92	2.568	
35	135.62	4801.13	141.22	4799.26	155.87	4852.53	55.25	2.568	
36	132.84	4802.05	139.00	4800.00	155.21	4858.89	61.08	2.569	
37	132.84	4802.05	139.00	4800.00	154.47	4856.68	58.75	2.569	
38	132.84	4802.05	139.00	4800.00	154.10	4855.57	57.58	2.569	
39	138.40	4800.20	145.67	4797.78	162.79	4861.26	65.75	2.569	
40	132.84	4802.05	139.00	4800.00	153.73	4854.46	56.42	2.569	
41	138.40	4800.20	145.67	4797.78	162.05	4859.04	63.42	2.569	
42	138.40	4800.20	145.67	4797.78	162.42	4860.15	64.58	2.569	

43	138.40	4800.20	145.67	4797.78	161.68	4857.93	62.25	2.569
44	132.84	4802.05	139.00	4800.00	153.36	4853.35	55.25	2.569
45	138.40	4800.20	145.67	4797.78	161.31	4856.82	61.08	2.570
46	135.62	4801.13	143.44	4798.52	160.28	4862.08	65.75	2.570
47	138.40	4800.20	145.67	4797.78	160.94	4855.71	59.92	2.570
48	135.62	4801.13	143.44	4798.52	159.91	4860.97	64.58	2.570
49	138.40	4800.20	145.67	4797.78	160.57	4854.61	58.75	2.570
50	135.62	4801.13	143.44	4798.52	159.55	4859.86	63.42	2.570
51	138.40	4800.20	145.67	4797.78	160.20	4853.50	57.58	2.570
52	135.62	4801.13	143.44	4798.52	159.18	4858.75	62.25	2.570
53	132.84	4802.05	141.22	4799.26	157.78	4862.89	65.75	2.570
54	135.62	4801.13	143.44	4798.52	158.81	4857.64	61.08	2.570
55	132.84	4802.05	141.22	4799.26	157.41	4861.78	64.58	2.571
56	135.62	4801.13	143.44	4798.52	158.44	4856.53	59.92	2.571
57	138.40	4800.20	145.67	4797.78	159.83	4852.39	56.42	2.571
58	132.84	4802.05	141.22	4799.26	157.04	4860.67	63.42	2.571
59	135.62	4801.13	143.44	4798.52	158.07	4855.42	58.75	2.571
60	138.40	4800.20	145.67	4797.78	159.46	4851.28	55.25	2.571
61	132.84	4802.05	141.22	4799.26	156.67	4859.56	62.25	2.571
62	130.07	4802.98	139.00	4800.00	155.27	4863.71	65.75	2.571
63	135.62	4801.13	143.44	4798.52	157.70	4854.31	57.58	2.571
64	130.07	4802.98	139.00	4800.00	154.90	4862.60	64.58	2.571
65	132.84	4802.05	141.22	4799.26	156.30	4858.45	61.08	2.571
66	132.84	4802.05	141.22	4799.26	155.93	4857.34	59.92	2.571
67	135.62	4801.13	143.44	4798.52	157.33	4853.20	56.42	2.572
68	130.07	4802.98	139.00	4800.00	154.53	4861.49	63.42	2.572
69	135.62	4801.13	143.44	4798.52	156.96	4852.09	55.25	2.572
70	132.84	4802.05	141.22	4799.26	155.56	4856.23	58.75	2.572
71	138.40	4800.20	147.89	4797.04	163.88	4860.81	65.75	2.572
72	130.07	4802.98	139.00	4800.00	154.16	4860.38	62.25	2.572
73	130.07	4802.98	139.00	4800.00	153.79	4859.27	61.08	2.572
74	138.40	4800.20	147.89	4797.04	163.51	4859.70	64.58	2.572
75	132.84	4802.05	141.22	4799.26	155.19	4855.12	57.58	2.572
76	132.84	4802.05	141.22	4799.26	154.82	4854.01	56.42	2.572
77	130.07	4802.98	139.00	4800.00	153.42	4858.16	59.92	2.572
78	138.40	4800.20	147.89	4797.04	163.14	4858.59	63.42	2.573
79	132.84	4802.05	141.22	4799.26	154.45	4852.90	55.25	2.573
80	135.62	4801.13	145.67	4797.78	161.37	4861.63	65.75	2.573
81	130.07	4802.98	139.00	4800.00	153.05	4857.04	58.75	2.573
82	138.40	4800.20	147.89	4797.04	162.77	4857.48	62.25	2.573
83	138.40	4800.20	147.89	4797.04	162.40	4856.37	61.08	2.573
84	135.62	4801.13	145.67	4797.78	161.00	4860.51	64.58	2.573
85	130.07	4802.98	139.00	4800.00	152.68	4855.93	57.58	2.573
86	130.07	4802.98	139.00	4800.00	152.31	4854.82	56.42	2.573
87	135.62	4801.13	145.67	4797.78	160.63	4859.40	63.42	2.573
88	138.40	4800.20	147.89	4797.04	162.03	4855.26	59.92	2.573
89	132.84	4802.05	143.44	4798.52	158.86	4862.44	65.75	2.574
90	130.07	4802.98	139.00	4800.00	151.94	4853.71	55.25	2.574
91	135.62	4801.13	145.67	4797.78	160.26	4858.29	62.25	2.574



92	138.40	4800.20	147.89	4797.04	161.66	4854.15	58.75	2.574
93	132.84	4802.05	143.44	4798.52	158.49	4861.32	64.58	2.574
94	135.62	4801.13	145.67	4797.78	159.89	4857.18	61.08	2.574
95	138.40	4800.20	147.89	4797.04	161.29	4853.04	57.58	2.574
96	132.84	4802.05	143.44	4798.52	158.12	4860.21	63.42	2.574
97	135.62	4801.13	145.67	4797.78	159.52	4856.07	59.92	2.574
98	138.40	4800.20	147.89	4797.04	160.92	4851.93	56.42	2.575
99	130.07	4802.98	141.22	4799.26	156.35	4863.25	65.75	2.575

Critical Failure Surface (circle 1)

-----  
Intersects: XL: 135.62 YL: 4801.13 XR: 139.00 YR: 4800.00  
Centre: XC: 158.10 YC: 4862.92 Radius: R: 65.75

Generated failure surface: (20 points)

135.62	4801.13	135.80	4801.06	135.97	4801.00	136.15	4800.94	136.33	4800.87
136.51	4800.81	136.68	4800.75	136.86	4800.69	137.04	4800.63	137.21	4800.57
137.39	4800.51	137.57	4800.45	137.75	4800.39	137.93	4800.34	138.11	4800.28
138.28	4800.22	138.46	4800.17	138.64	4800.11	138.82	4800.05	139.00	4800.00

Slice Geometry and Properties - Critical Failure Surface (circle 1, 38 slices)

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Slice	X-S		Base						PoreWater		Normal	Test
	X-Left	Area	Angle	Width	Length	Matl	Cohesion	Phi	Weight	Force	Stress	Factor
1	135.62	0.00	19.8	0.09	0.09	1	0.00	45.0	0.01	0.00	0.14	0.93
2	135.71	0.00	20.1	0.09	0.09	1	0.00	45.0	0.04	0.00	0.38	0.93
3	135.80	0.00	19.8	0.09	0.09	1	0.00	45.0	0.07	0.00	0.66	0.93
4	135.89	0.00	19.8	0.09	0.09	1	0.00	45.0	0.09	0.00	0.85	0.93
5	135.97	0.00	19.5	0.09	0.09	1	0.00	45.0	0.10	0.00	1.04	0.93
6	136.06	0.00	19.5	0.09	0.09	1	0.00	45.0	0.12	0.00	1.23	0.93
7	136.15	0.00	19.5	0.09	0.09	1	0.00	45.0	0.14	0.00	1.37	0.93
8	136.24	0.00	19.5	0.09	0.09	1	0.00	45.0	0.16	0.00	1.56	0.93
9	136.33	0.00	19.2	0.09	0.09	1	0.00	45.0	0.18	0.00	1.75	0.93
10	136.42	0.00	19.5	0.09	0.09	1	0.00	45.0	0.19	0.00	1.84	0.93
11	136.51	0.00	18.9	0.09	0.09	1	0.00	45.0	0.20	0.00	1.99	0.93
12	136.59	0.00	19.2	0.09	0.09	1	0.00	45.0	0.21	0.00	2.13	0.93
13	136.68	0.00	18.9	0.09	0.09	1	0.00	45.0	0.22	0.00	2.18	0.93
14	136.77	0.00	19.1	0.09	0.09	1	0.00	45.0	0.23	0.00	2.32	0.93
15	136.86	0.00	18.8	0.09	0.09	1	0.00	45.0	0.24	0.00	2.37	0.93
16	136.95	0.00	18.6	0.09	0.09	1	0.00	45.0	0.24	0.00	2.37	0.93
17	137.04	0.00	18.5	0.09	0.09	1	0.00	45.0	0.24	0.00	2.42	0.93
18	137.13	0.00	18.5	0.09	0.09	1	0.00	45.0	0.24	0.00	2.42	0.93
19	137.21	0.00	18.5	0.09	0.09	1	0.00	45.0	0.25	0.00	2.47	0.93
20	137.30	0.00	18.5	0.09	0.09	1	0.00	45.0	0.25	0.00	2.52	0.93
21	137.39	0.00	18.2	0.09	0.09	1	0.00	45.0	0.25	0.00	2.48	0.93
22	137.48	0.00	18.2	0.09	0.09	1	0.00	45.0	0.24	0.00	2.43	0.93
23	137.57	0.00	17.9	0.09	0.09	1	0.00	45.0	0.24	0.00	2.43	0.93
24	137.66	0.00	18.2	0.09	0.09	1	0.00	45.0	0.23	0.00	2.33	0.93
25	137.75	0.00	17.9	0.09	0.09	1	0.00	45.0	0.23	0.00	2.29	0.93
26	137.84	0.00	18.2	0.09	0.09	1	0.00	45.0	0.22	0.00	2.19	0.93

27	137.93	0.00	17.9	0.09	0.09	1	0.00	45.0	0.21	0.00	2.10	0.93
28	138.02	0.00	17.6	0.09	0.09	1	0.00	45.0	0.20	0.00	2.01	0.93
29	138.11	0.00	17.6	0.09	0.09	1	0.00	45.0	0.19	0.00	1.86	0.93
30	138.19	0.00	17.6	0.09	0.09	1	0.00	45.0	0.17	0.00	1.72	0.93
31	138.28	0.00	17.3	0.09	0.09	1	0.00	45.0	0.16	0.00	1.58	0.93
32	138.37	0.00	17.6	0.09	0.09	1	0.00	45.0	0.14	0.00	1.39	0.93
33	138.46	0.00	17.3	0.09	0.09	1	0.00	45.0	0.12	0.00	1.25	0.93
34	138.55	0.00	17.3	0.09	0.09	1	0.00	45.0	0.10	0.00	1.01	0.93
35	138.64	0.00	17.3	0.09	0.09	1	0.00	45.0	0.08	0.00	0.81	0.93
36	138.73	0.00	17.0	0.09	0.09	1	0.00	45.0	0.06	0.00	0.62	0.93
37	138.82	0.00	17.0	0.09	0.09	1	0.00	45.0	0.04	0.00	0.38	0.93
38	138.91	0.00	17.0	0.09	0.09	1	0.00	45.0	0.01	0.00	0.14	0.93

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X-S Area:    0.06   Path Length:   3.56                      X-S Weight:    6.33

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